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EDINBURGH MEDICAL JOURNAL.

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Exhibiting a Concise View of the latest and most important Discoveries in  
Medicine, Surgery, and Pharmacy.

(*Published Quarterly.*)

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After the experience of a second year, the Editors have the satisfaction to find the approbation of their Professional Brethren become daily more decided.

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# ENCYCLOPÆDIA BRITANNICA.

F O R

**F**ORDYCE, DAVID, an elegant and learned writer, was born at Aberdeen in the year 1711. Having received the early part of his education at the grammar school, at the age of 13 he was entered at the Greek class in Marischal college, Aberdeen; in 1728 he took the degree of A. M. and was afterwards, in 1742, admitted professor of philosophy in the same college. He was originally designed for the ministry; to prepare himself for which was the whole object of his ambition, and for a course of years the whole purpose of his studies. How well he was qualified to appear in that character, appears from his "Theodorus, a dialogue concerning the art of preaching." Having finished this work, he went abroad in 1750 on his travels, in order to obtain fresh stores of knowledge: but after a successful tour through several parts of Europe, he was, on his return home, unfortunately cast way in a storm on the coast of Holland, in the 41st year of his age. Besides the above work, he wrote Dialogues on Education, 8vo, and a Treatise of Moral Philosophy, published in the Preceptor. The third edition of his Theodorus was published in London, in 1751, after his death, by his brother James, the subject of the following article.

FORDYCE, *James*, a Scotch divine, justly esteemed for his piety and ingenuity, as well as for his pulpit eloquence, was born at Aberdeen in the year 1720. He received his classical education at the public grammar school, and went afterwards to the Marischal college, where he went through the usual course of studies necessary for a minister of the gospel. His natural abilities were excellent, and he improved to the utmost the favourable opportunities he enjoyed at the university, which made him be considered as well qualified for a preacher of the gospel at an early period of life. His first appointment was that of second minister in the church of Brechin in the county of Angus, after which he accepted of a call to Alloa near Stirling. The people of that parish were prepossessed in favour of another, and prejudiced against Mr Fordyce, which could not fail to be a most unpleasant circumstance; yet by his impressive delivery, and indefatigable attention to every part of his ministerial duty, he soon changed their prejudice into esteem, and their esteem into admiration.

During his residence at Alloa, he drew on him the notice of the public by three excellent sermons; the first on the eloquence of the pulpit, the second on the method of promoting edification by public institutions, and

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the third on the delusive and bloody spirit of popery, preached before the synod of Perth and Stirling. But still greater wonder and astonishment were excited by his inimitable sermon on the folly, infamy, and misery of unlawful pleasure, preached before the general assembly of the church of Scotland in 1760. It contains such masterly composition with respect to description, spirit, and elegance, and was delivered with such uncommon solemnity, animation, and pathos, that it filled his learned fathers and brethren with astonishment, and justly raised him to unrivalled eminence among his clerical cotemporaries. About this time he was complimented with the degree of doctor in divinity by the university of Glasgow, probably on account of the fame he acquired by this extraordinary sermon.

The friends of Dr Fordyce being mostly in London, he was invited to that metropolis to be the colleague of Dr Lawrence, minister of a respectable congregation in Monkwell-street, on whose death, which happened a few months after, Dr Fordyce became once more famous for his pulpit eloquence, always preaching to overflowing audiences. This popularity he justly deserved, whether with respect to the elegance of his compositions, or their happy tendency to impress the heart with the love of virtue and religion. Yet even Dr Fordyce lived to see his popularity on the decline; for such as attend a place of worship from mere motives of curiosity must have fickle and unstable minds, changing their preachers as they do their dress, loving to be where others are, of doing what others do, and of admiring what others admire, for they have no taste of their own.

His pews were thinned from another cause, which was the failure of a younger brother, an extensive banker, which ruined many of the doctor's constant hearers and most liberal supporters. Although the doctor could not be reasonably blamed for the failure of his brother, yet it is certain that it brought a degree of odium on the whole family. Another cause of the diminution of his hearers was an unhappy difference between him and Mr Toller his colleague, which happened in the year 1755, and which ended in a division of the congregation, many respectable families following Mr Toller to another place of worship. Soon after this he declined officiating as a minister, the declining state of his health rendering such a step necessary. The best specimen of pulpit eloquence which perhaps ever came from his pen, was delivered at the ordina-

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**Fordyce.** tion of his successor Mr James Lindsay, and highly meriting the attentive perusal of every clergyman. The remainder of his valuable life he spent chiefly at a retirement in Hampshire in the vicinity of the earl of Bute, with whom he lived in the greatest intimacy, and to whose valuable library he had unlimited access. He afterwards went to Bath, where he suffered much from an asthmatic affection, but bore it with the heroic fortitude of a Christian, and expired without a groan on the first of October 1796, in the 76th year of his age.

The doctor's writings discover much genius and imagination, a correct taste, extensive knowledge of the world, and a happy method of engaging the attention; full of ardent piety, and a zeal for the interests of genuine virtue. His religious sentiments were manly and rational; in private life he was highly amiable, and deservedly beloved by all who knew him. He was author of Sermons to Young Women, in two volumes 12mo, which have been translated into several European languages; A Sermon on the Character and Conduct of the Female Sex; Addresses to Young Men, in two volumes 12mo; Addresses to the Deity; A volume of Poems; A discourse on Pain, and Additions to his brother's Temple of Virtue.

**FORDYCE, George**, a writer and lecturer on medicine, was born in the year 1736, and studied at the university of Aberdeen, where he obtained the literary degree of M. A. at the early age of 14, perhaps not altogether owing to the superior cast of his genius, or the extent of his acquirements, which could not be extraordinary in a boy of his years. He became apprentice to an uncle who practised surgery at Uppingham in Rutlandshire, when he was only 15, and afterwards went to the university of Edinburgh, where his diligence and progress attracted the attention of Dr Cullen, at that time professor of chemistry, who very generously promoted his improvement. He graduated in 1758, when only 22 years of age; after which he resided one winter at Leyden. The greater part of his patrimony being spent on his education, he resolved to try his fortune in London, where he settled in the year 1759. He commenced with a course of lectures on chemistry; and although his encouragement at first was by no means flattering, yet he steadily and diligently persevered, notwithstanding such unfavourable appearances, till his literary merit began gradually to be discovered and properly appreciated. A number of young men who came to study in London did not think that their medical course was complete, without availing themselves of the benefit of his course of lectures.

In the year 1768, he published his Elements of the Practice of Physic, which formed the text book of his medical course, and were much read as a valuable epitome of medicine. His private practice was very respectable; and in the year 1770 his medical reputation was so great, that he was chosen physician to the hospital of St Thomas, although he had to contend against a gentleman with very powerful interest; and his merit as a man of science made him a member of the Royal Society in 1776. He was chosen in 1787 a fellow of the College of Physicians; and his chemical knowledge was of singular importance to that body for a new edition of their Pharmacopœia. By the influence of his connections, but probably more so by his literary repu-

tion, he was appointed to furnish the navy with fourkrout, which we believe he executed with advantage both to himself and the public.

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His constitution discovered symptoms of premature decay, yet he continued to discharge his professional duties till he fell a victim to an irregular gout, and a water in his chest, on the 25th of June 1802, in the 66th year of his age. If his lectures wanted the charms of an eloquent delivery, he made ample compensation by the originality of his ideas and his scientific information, and by a memory which was uncommonly retentive. His works are, Elements of Agriculture and Vegetation; Of the Practice of Physic; A Treatise on the Digestion of Food; and Four Dissertations on Fever.

**FORE**, applied to a ship, denotes all that part of a ship's frame and machinery which lies near the stem.

**FORE and aft**, is used for the whole ship's length, or from end to end.

**FORECASTLE of a Ship**, that part where the foremast stands. It is divided from the rest by a bulkhead.

**FOREIGN**, something extraneous, or that comes from abroad. The word is formed from the Latin *foras*, "doors;" or *foris*, "out of doors;" or *forum*, "market," &c.

Foreign minister, foreign prince, foreign goods, &c. are those belonging to other nations. See **MINISTER**, &c.

Foreign to the purpose, signifies a thing remote or impertinent.

**FOREIGN**, in the *English Law*, is used in various significations. Thus,

**FOREIGN Attachment**, is an attachment of the goods of foreigners found within a city or liberty, for the satisfaction of some citizen to whom the foreigner is indebted; or it signifies an attachment of a foreigner's money in the hands of another person.

**FOREIGN Kingdom**, a kingdom under the dominion of a foreign prince.

At the instance of an ambassador or consul, any offender against the laws here may be sent for hither from a foreign kingdom to which he hath fled. And, where a stranger of Holland, or any foreign country, buys goods at London, for instance, and then gives a note under his hand for payment, and then goes away privately into Holland; in that case, the seller may have a certificate from the lord mayor, on the proof of the sale and delivery of such goods, whereupon a process will be executed on the party in Holland.

**FOREIGN Opposer**, or *Apposer*, an officer in the exchequer that opposes or makes a charge on all sheriffs, &c. of their green wax; that is to say, fines, issues, amerciements, recognizances, &c.

**FOREIGN Plea**, signifies an objection to the judge of the court, by refusing him as incompetent, because the matter in question is not within his jurisdiction.

**FOREIGN Seamen**, serving two years on board British ships, whether of war, trade, or privateers, during the time of war, shall be deemed natural-born subjects.

**FOREIGNER**, the natural-born subject to some foreign prince.

Foreigners, though made denizens, or naturalized,  
are

**Forejudger** are disabled to bear any office in government, to be of the privy council, or members of parliament, &c.—  
**Fore-locks.** This is by the acts of the settlement of the crown.—  
 Such persons as are not freemen of a city or corporation, are also called *foreigners*, to distinguish them from the members of the same.

**FOREJUDGER**, in *Law*, signifies a judgment whereby one is deprived or put by a thing in question.

To be *forejudged the court*, is where an officer or attorney of any court is expelled the same for malpractice, or for not appearing to an action on a bill filed against him, &c. And where an attorney of the common-pleas is sued, the plaintiff's attorney delivers the bill to one of the criers of the court, who calls the attorney defendant, and solemnly proclaims aloud, that, if he does not appear thereto, he will be forejudged: likewise a rule is given by the secondary for his appearance; and if the attorney appears not in four days, then the clerk of the warrants strikes such an attorney off the roll of attorneys; after which he becomes liable to be arrested like any other person; but where an attorney is forejudged, he may be restored on clearing himself from his contumacy, and making satisfaction to the plaintiff, &c.

**FORELAND**, or **FORENESS**, in *Navigation*, a point of land jutting out into the sea.

*North FORELAND*, in the isle of Thanet, Kent, of which it is the N. E. point, is the promontory ascertained by act of parliament to be the most southern part of the port of London, which is thereby extended N. in a right line to the point called the Naze on the coast of Essex, and forms that properly called the Mouth of the Thames. A sea-mark was erected here by the Trinity-house corporation at the public expence, which is a round brick tower, near 80 feet high. The sea gains so much upon the land here by the winds at S. W. that within the memory of some that are living about 30 acres of land have been lost in one place. All vessels that pass on the south side of this head-land are said to enter the Channel, which is the name for the narrow sea between England and France; and all the towns or harbours between London and this place, whether on the Kentish or Essex shore, are called members of the port of London.

*South FORELAND*, in Kent, a head-land forming the east point of the Kentish shore; and called *South*, in respect to its bearing from the other Foreland, which is about six miles to the north. Its situation is of great security to the Downs, the road between both, which would be a very dangerous road for ships, did not this point break the sea off, that would otherwise come rolling up from the west to the Flats or banks of sand, which for three leagues together, and at about a league or a league and a half from the shore, run parallel with it, and are dry at low water; so that these two capes breaking all the force of the sea on the S. E. and S. W. make the Downs accounted a good road, except when the wind blows excessive hard from S. E. E. by N. or E. N. E. when ships in the Downs are driven from their anchors, and often run ashore, or are forced on the sands, or into Sandwich bay or Ramsgate pier.

**FORE-LOCKS**, in the sea language, little flat wedges made of iron, used at the ends of bolts, to keep them from flying out of their holes.

**FOREMAST** of a SHIP, a large round piece of timber, placed in her fore part or fore-castle, and carrying the fore-sail and fore-top-sail yards. Its length is usually  $\frac{3}{4}$  of the main-mast, and the fore-top-gallant-mast is  $\frac{1}{2}$  the length of the fore-top.

**FOREMAST Men**, are those on board a ship that take in the top-sails, sling the yards, furl the sails, bowse, trice, and take their turn at the helm, &c.

**FOREST**, in *Geography*, a huge wood; or, a large extent of ground covered with trees. The word is formed of the Latin *foresta*, which first occurs in the capitulars of Charlemagne, and which itself is derived from the German *frost*, signifying the same thing. Spelman derives it from the Latin *foris restat*, by reason forests are out of towns. Others derive *foresta* from *feris*. q. d. *Foresta, quod sit tuta statio ferarum*, as being a safe station or abode for wild beasts.

The Caledonian and Hercynian forests are famous in history. The first was a celebrated retreat of the ancient Picts and Scots: The latter anciently occupied the greatest part of Europe; particularly Germany, Poland, Hungary, &c. In Cæsar's time it extended to the borders of Alfatia and Switzerland to Transylvania; and was computed 60 days journey long, and 9 broad: some parts or cantons thereof are still remaining.

The ancients adored forests, and imagined a great part of their gods to reside therein: temples were frequently built in the thickest forests; the gloom and silence whereof naturally inspire sentiments of devotion, and turn men's thoughts within themselves.

For the like reason, the Druids made forests the place of their residence, performed their sacrifices, instructed their youth, and gave laws therein.

**FOREST**, in *Law*, is defined, by Manwood, a certain territory of woody grounds and fruitful pastures, privileged for wild beasts and fowls of forest, chase, and warren, to rest and abide under the protection of the king, for his princely delight; bounded with unremoveable marks and meres, either known by matter of record or prescription; replenished with wild beasts of venery or chase, with great coverts of vert for the said beasts; for preservation and continuance whereof, the vert and venison, there are certain particular laws, privileges, and officers.

Forests are of such antiquity in England, that, excepting the New Forest in Hampshire, erected by William the conqueror, and Hampton Court, erected by Henry VIII. it is said, that there is no record or history which makes any certain mention of their erection, though they are mentioned by several writers and in several of our laws and statutes. Ancient historians tell us, "that New forest was raised by the destruction of 22 parish churches, and many villages, chapels, and manors, for the space of 30 miles together, which was attended with divers judgments on the posterity of William I. who erected it: for William Rufus was there shot with an arrow, and before him Richard the brother of Henry I.; and Henry nephew to Robert, the eldest son of the Conqueror, did hang by the hair of the head in the boughs of the forest, like unto Absalom." *Blount*.

Besides the New forest, there are 68 other forests in England, 13 chases, and more than 700 parks: the four principal forests are New forest on the sea, Shire-

Forest. wood forest on the Trent, Dean forest on the Severn, and Windsor forest on the Thames.

A forest in the hands of a subject is properly the same thing with a CHASE; being subject to the common law, and not to the forest laws. But a chase differs from a forest in that it is not enclosed: and likewise, that a man may have a chase in another man's ground as well as his own; being indeed the liberty of keeping beasts of chase, or royal game therein, protected even from the owner of the land, with a power of hunting them thereon. See PARK.

The manner of erecting a forest is thus: Certain commissioners are appointed under the great seal, who view the ground intended for a forest, and fence it round; this commission being returned into chancery, the king causeth it to be proclaimed throughout the county where the land lieth, that it is a forest; and prohibits all persons from hunting there, without his leave. Though the king may erect a forest on his own ground and waste, he may not do it on the ground of other persons without their consent; and agreements with them for that purpose ought to be confirmed by parliament.

A forest, strictly taken, cannot be in the hands of any but the king; for no person but the king has power to grant a commission to be justice in eyre of the forest: yet, if he grants a forest to a subject, and that on request made in the chancery, that subject and his heirs shall have justices of the forest, in which case the subject has a forest in law.

A second property of a forest is, the courts thereof. See FOREST Courts, *infra*.

A third property is the officers belonging to it, as the justices, warden, verderer, forester, agistor, regarder, keeper, bailiff, beadle, &c. See the articles AGISTOR, BAILIFF, FORESTER, &c.

By the laws of the forest, the receivers of trespasses in hunting, or killing of the deer, if they know them to be the king's property, are principal trespassers. Likewise, if a trespass be committed in a forest, and the trespasser dies, after his death it may be punished in the lifetime of the heir, contrary to common law. Our Norman kings punished such as killed deer in any of their forests with great severity; also in various manners; as by hanging, loss of limbs, gelding, and putting out eyes. By *magna charta de foresta*, it is ordained, that no person shall lose life or member for killing the king's deer in forests, but shall be fined; and if the offender has nothing to pay the fine, he shall be imprisoned a year and a day, and then be delivered, if he can give security not to offend for the future, &c. 9 Hen. III. c. 1.

Before this statute, it was felony to hunt the king's deer; and by a late act, persons armed and disguised, appearing in any forest, &c. if they hunt, kill, or steal any deer, &c. are guilty of felony. 9 Geo. I. c. 22.

He who has any license to hunt in a forest or chase, &c. is to take care that he does not exceed his authority; otherwise he shall be deemed a trespasser from the beginning, and be punished for that fact, as if he had no license. See further, the articles GAME, and Game-Law.

Beasts of the forest are, the hart, hind, buck, doe, boar, wolf, fox, hare, &c. The seasons for hunting

whereof are as follow, viz. that of the hart and buck begins at the feast of St John Baptist, and ends at Holy-wood-day; of the hind and doe, begins at Holy-wood, and continues till Candlemas; of the boar, from Christmas to Candlemas; of the fox, begins at Christmas, and continues till Lady-day; of the hare at Michaelmas, and lasts till Candlemas.

FOREST-COURTS, courts instituted for the government of the king's forests in different parts of the kingdom, and for the punishment of all injuries done to the king's deer or venison, to the vert or greenward, and to the covert in which such deer are lodged. These are the courts of ATTACHMENTS, of REGARD, of SWEINMOTE, and of JUSTICE-SEAT. 1. The court of attachments, woodmote, or forty-days court, is to be held before the verderers of the forest once in every forty days; and is instituted to inquire into all offenders against vert and venison: who may be attached by their bodies, if taken with the mainour (or *mainœuvre, à manu*) that is, in the very act of killing venison, or stealing wood, or in the preparing so to do, or by fresh and immediate pursuit after the act is done; else they must be attached by their goods. And in this forty-days court the foresters or keepers are to bring in their attachments, or presentments *de viridi et venatione*; and the verderers are to receive the same, and to enrol them, and to certify them under their seals to the court of justice-seat or sweinmote: for this court can only inquire of, but not convict, offenders. 2. The court of regard, or survey of dogs, is to be holden every third year for the lawing or expeditation of mastiffs; which is done by cutting off the claws of the fore feet, to prevent them from running after deer. No other dogs but mastiffs are to be thus lawed or expeditated, for none other were permitted to be kept within the precincts of the forest; it being supposed that the keeping of these, and these only, was necessary for the defence of a man's house. 3. The court of sweinmote is to be holden before the verderers, as judges, by the steward of the sweinmote, thrice in every year; the sweins or freeholders within the forest composing the jury. The principal jurisdiction of this court is, first, to inquire into the oppressions and grievances committed by the officers of the forest; "*de super-oneracione forestariorum, et aliorum ministrorum forestæ; et de eorum oppressionibus populo regis illatis*:" and, secondly, to receive and try presentments certified from the court of attachments against offences in vert and venison. And this court may not only inquire, but convict also; which conviction shall be certified to the court of justice-seat under the seals of the jury, for this court cannot proceed to judgment. But the principal court is, 4. The court of justice seat, which is held before the chief justice in eyre, or chief itinerant judge, *capitalis justiciarius in itinere*, or his deputy; to hear and determine all trespasses within the forest, and all claims of franchises, liberties, and privileges, and all pleas and causes whatsoever therein arising. It may also proceed to try presentments in the inferior courts of the forests, and to give judgment upon conviction of the sweinmote. And the chief justice may therefore, after presentment made or indictment found, but not before, issue his warrant to the officers of the forest to apprehend the offenders. It may be held every third year; and 40 days notice ought to be given of its sitting. This court may

Forest.

may

Forest,  
Fore-staff.

may fine and imprison for offences within the forest, it being a court of record: and therefore a writ of error lies from hence to the court of king's-bench, to rectify and redress any mal-administrations of justice; or the chief justice in eyre may adjourn any matter of law into the court of king's-bench.

**FOREST-LAWS**, are peculiar laws, different from the common law of England. Before the making of *Charita de Foresta*, in the time of King John and his son Henry III. confirmed in parliament by 9 Henry III. offences committed therein were punished at the pleasure of the king in the severest manner. By this charter, many forests were disafforested and stripped of their oppressive privileges, and regulations were made for the government of those that remained; particularly, killing the king's deer was made no longer a capital offence, but only punished by fine, imprisonment, or abjuration of the realm: yet even in the charter there were some grievous articles, which the clemency of latter princes have since by statute though fit to alter *per assisas forestæ*. And to this day, in trespasses relating to the forest, *voluntas reputabitur pro facto*; so that if a man be taken hunting a deer, he may be arrested as if he had taken a deer.

**FOREST-TOWNS**, in *Geography*, certain towns of Suabia in Germany, lying along the Rhine, and the confines of Switzerland, and subject to the house of Austria. Their names are *Rhinefield, Seckingen, Lausenbourg, and Waldshut*.

**FORE-STAFF**, an instrument used at sea for taking the altitudes of heavenly bodies. The fore-staff, called also *cross-staff*, takes its denomination hence, that the observer, in using it, turns his face towards the object; in opposition to the back-staff, where he turns his back to the object.

The fore or cross-staff, consists of a straight square staff, graduated like a line of tangents, and four crosses or vanes, which slide on it. The first and shortest of these vanes, is called the *ten cross*, or *vane*, and belongs to that side of the instrument on which the divisions begin at three degrees and end at ten. The next longer vane, is called the *thirty cross*, belonging to that side of the staff in which the divisions begin at ten degrees and end at thirty, called the *thirty scale*. The next vane is called the *sixty cross*, and belongs to the side where the divisions begin at twenty degrees and end at sixty. The last and longest, called the *ninety cross*, belongs to the side where the divisions begin at thirty degrees and end at ninety.

The use of this instrument is to take the height of the sun and stars, or the distance of two stars: and the ten, thirty, sixty, or ninety crosses, are to be used according as the altitude is greater or less; that is, if the altitude be less than ten degrees, the ten cross is to be used; if above ten, but less than thirty, the thirty cross is to be used, &c. *Note*, For altitudes greater than thirty degrees, this instrument is not so convenient as a quadrant or semicircle.

*To observe an Altitude by this instrument.*—Apply the flat end of the staff to your eye, and look at the upper end of the cross for the centre of the sun or star, and at the lower end for the horizon. If you see the sky instead of the horizon, slide the cross a little nearer the eye; and if you see the sea instead of the horizon, slide the cross farther from the eye; and thus continue moving till

you see exactly the sun or star's centre by the top of the cross, and the horizon by the bottom thereof. Then the degrees and minutes, cut by the inner edge of the cross upon the side of the staff peculiar to the cross you use, give the altitude of the sun or star.

Forestaller  
Forestar.

If it be the meridian altitude you want, continue your observation as long as you find the altitude increase, still moving the cross nearer to the eye. By subtracting the meridian altitude thus found from 90 degrees, you will have the zenith distance. To work accurately, an allowance must be made for the height of the eye above the surface of the sea, viz. for one English foot, 1 minute; for 5 feet,  $2\frac{1}{2}$ ; for 10 feet,  $3\frac{1}{2}$ ; for 20 feet, 5; for 40 feet, 7, &c. These minutes subtracted from the altitude observed, and added to the zenith distance observed, give the true altitude and zenith distance.

*To observe the distance of two stars, or the moon's distance from a star, by the fore-staff.*—Apply the instrument to the eye, and looking to both ends of the cross, move it nearer or farther from the eye till you see the two stars, the one on the one end, and the other on the other end of the cross; then the degrees and minutes cut by the cross on the side proper to the vane in use give the stars distance.

**FORESTALLER**, a person who is guilty of forestalling. See the next article.

**FORESTALLING**, in *Law*, buying or bargaining for any corn, cattle, victuals, or merchandise, in the way as they come to fairs or markets to be sold, before they get thither, with an intent to sell the same again at a higher price.

The punishment for this offence, upon conviction at the quarter sessions by two or more witnesses, is, for the first time, two months imprisonment and the loss of the goods, or the value; for the second offence the offender shall be imprisoned six months, and lose double the value of the goods; for the third offence he shall suffer imprisonment during the king's pleasure, forfeit all his goods and chattels, and stand on the pillory; but the statute does not extend to maltsters buying barley, or to badgers licensed.

**FORESTER**, a sworn officer of the forest, appointed by the king's letters patent, to walk the forest at all hours, and watch over the vert and venison; also to make attachments and true presentments of all trespasses committed within the forest.

If a man comes into a forest in the night, a forester cannot lawfully beat him before he makes some resistance; but in a case such a person resists the forester, he may justify a battery. And a forester shall not be questioned for killing a trespasser that, after the peace cried to him, will not surrender himself, if it be not done on any former malice; though, where trespassers in a forest, &c. do kill a person that opposes them, it is murder in all, because they were engaged in an unlawful act, and therefore malice is implied to the person killed.

**FORETHOUGHT FELONY**, in *Scots Law*, signifies premeditated murder. See **MURDER**.

**FORFAR**, a town of Scotland, and capital of the county of that name, situated in N. Lat. 56. 25. W. Long. 2. 32. This town, with Dundee, Cupar, Perth, and St Andrew's, jointly send one member to the British parliament. It stands in the great valley

*Forfar.* valley of Strathmore that runs from Perth north-east to the sea, almost in a straight line, about 50 miles long and betwixt four and five miles broad, bounded on the south side by gentle hills, and on the north by the Grampian mountains.

Forfar is a very ancient town, and was once a royal residence. Here Malcolm Canmore held his first parliament in 1057. The ruins of his palace are still to be seen on the top of an artificial mount of a circular form, resting upon a base of about three acres of ground, and rising 50 feet high above the plain. The lake of Forfar, stretching two miles in length from east to west, and half a mile in breadth, and covering the palace on the north, afforded not only a plentiful supply of water for every purpose, but also added to the strength of the place. This lake which abounds with trout, pike, perch, and eel, has been greatly reduced by draining; and fine marl has been found in strata from two to six and eight feet deep, with moss below ten feet deep.

Within this lake were formerly two islands raised by art, with buildings on each; to which Margaret, Malcolm Canmore's queen, retired after the decease of her husband. Part of the ruins of these edifices are still to be seen.

Little is known of Forfar till the middle of the 17th century, except an act passed in the 13th parliament of James VI. 21st July, 1593, in the following words, which affords a specimen of the manners and language of the times, "Our soveraine Lorde, understanding that be acte and ordinance maid anent obseruation of the Sabbath-daie within this realme, the mercatte-daie of the burgh of Forfare, being the head burgh of the schire, quhilk was Sundaie, is taken from them; and his hiennesse not willing that they in onie waies suld be prejudged hereby, therefore his hiennesse, with aduise of the estaites of this present parliament, alteris and changis their said mercatte-daie from Sundaie to Fridaie, and willis the samen Fridaie oukly to be their mercatte-daie to them in all times hereafter; and the samin to stande with the like priueleges and freedoms as the Sundaie did of before." The market day has been long held on Saturday.

During the usurpation of Oliver Cromwell, a detachment of his forces, after sacking Dundee, came to Forfar and burnt all the public records of the place; and the only charter the town now has is one granted by Charles II. after his restoration, confirming all its ancient rights and priueleges.

As an evidence of the ignorance and barbarity of the times, it appears from the records of the trials kept in the charter-chest of Forfar, that nine persons were condemned and burnt here for witchcraft betwixt the years 1650 and 1662. These innocent people were all tried by a special commission from the lords of the privy council at Edinburgh; and although the commission expressly discharged torturing them on purpose to extort a confession of their guilt, yet, as it was then thought meritorious to obtain confession of guilt by whatever means, many inhuman cruelties were exercised upon the unfortunate objects; particularly, an iron boot was drawn upon one of their legs, and a wedge driven with great force between it and the leg. Another instrument, still carefully preserved here, was likewise used, and is called the *witch bridle*. It is made of iron in the shape of a dog's collar, with two pikes

on the inside, about four inches distant and two and a half long. These pikes were put into the mouth, and the collar afterwards buckled strait on the back of the head, to which was affixed an iron chain, whereby the condemned persons were led to the place of execution called the *Play-field*, about a quarter of a mile to the northward of the town.

The streets of Forfar are rather irregular; but many of the houses are neat and well built. Osnaburgs and coarse linens are manufactured here; and many of the inhabitants are employed in making a coarse kind of shoes.

*FORFAR-Shire*, a county of Scotland, of which Forfar is the capital. Including Angus, Glenila, Glenesk, and Glenprossin, it extends between 40 and 50 miles from east to west, and 16 were broadest, though in some places the breadth does not exceed five miles. On the north it is divided from the Brae of Mar by a ridge of the Binchinnan mountains; it is bounded on the south by the frith of Tay and the British ocean, on the east by Mearns, and on the west by Perthshire. Part of the Grampian mountains runs through this county, which is agreeably diversified with hill and dale. It produces some lead and iron, together with freestone, slate, and limestone. Coarse linens and sail-cloth are the chief manufactures of the county. It is well watered with lakes, rivers, rivulets, and fountains, shaded with large forests, roughened with brown mountains and waved with green hills interspersed with fields and meadows, and adorned with fine seats and plantations. Their heaths and woods abound with hart, hind, roebuck, and moor game; their streams are stocked with trout and salmon. Their hills are covered with flocks of sheep, and their fields afford plentiful harvests of wheat and all sorts of grain. The mountains to the west and north are inhabited by Highlanders: but the Lowlanders possess the towns and champaign country, and are remarkable for their politeness and hospitality.

The population of this county in 1801 amounted to 97,778. But in the following table is exhibited a view of its population, at two different periods.

<i>Parishes.</i>	Population in 1755.	Population in 1790—1798.
1 Aberbrothwick	2098	4676
Aberlemno	943	1033
Airly	1013	865
Arbirlot	865	1055
5 Awdcherhouse	600	600
Barry	689	796
Brechin	3181	5000
Carmylie	745	700
Carraldstone	269	260
10 Cortachy	1233	1020
Craig	935	1314
Dun	657	500
Dundee	12,477	23,500
Dunnichen	653	872
15 Edzell	862	963
Essie and Nevay	500	630
Fearn	500	490
Fernell	799	620
Forfar	2450	4756
20 Glammis	1780	2040
		Glenisla

Forfar-shire, Forfeiture.	Pariſhes.	Population in 1755.	Population in 1790—1798.	Forfeiture.
	Gleniſla	1852	1018	
	Guthrie	584	571	
	Innerarity	996	929	
	Inverkeilor	1286	1747	
25	Kettins	1475	1100	
	Kingoldrum	780	600	
	Kinnell	761	830	
	Kinnettles	616	621	
	Kirkden	585	727	
30	Kirrymuir	3409	4358	
	Lentrathen	1165	900	
	Lethnot	635	505	
	Liff	1311	1790	
	Lochlee	686	608	
35	Logie Pert	696	999	
	Lunan	208	291	
	Mains	709	876	
	Maryton	633	529	
	Menmuir	743	900	
40	Moneikie	1345	1278	
	Monifeith	1421	1218	
	Montroſe	4150	6194	
	Muirhouſe	623	462	
	Newtyle	913	594	
45	Oathlaw	435	430	
	Panbride	1259	1460	
	Reſcobie	798	934	
	Ruthven	280	220	
	St Vigeans	1592	3336	
50	Strathmartine	368	340	
	Strickathro	529	672	
	Tannadyce	1470	1470	
53	Tealing	755	802	
		68,297	91,001	
			68,297	
	Increase,		22,704	

FORFEITURE, originally ſignifies a tranſgreſſion or offence againſt ſome penal law. The word is formed of the baſe Latin *foriſactura*; whence *forſaitura* and *forſactura*, and the French *forſait*. *Foriſactura* comes of *foriſacere*; which, according to Iſidore, ſignifies to “hurt or offend,” *facere contra rationem*; and which is not improbably derived of *foris* “out,” and *facere*, “to do,” q. d. an action out of rule or contrary to the rules. Borel will have *forſait* derived from the uſing of force or violence: Lobineau, in his gloſſary, will have *foriſacta* properly to ſignify a mulct or amend, not a *forſeit*; which latter he derives from the Bas-Breton *forſed*, “a penalty.”

But, with us, it is now more frequently uſed for the effect of ſuch tranſgreſſion; or the loſing ſome right, privilege, eſtate, honour, office, or effects, in conſequence thereof; than for the tranſgreſſion itſelf.

Forfeiture differs from *confiſcation*, in that the former is more general; while *confiſcation* is particularly applied to ſuch things as become forfeited to the king’s exchequer; and goods *confiſcated* are ſaid to be ſuch as nobody claims.

Forfeitures may be either in *civil* or *criminal* caſes.

L. With reſpect to the firſt, a man that hath an

eſtate for life or years, may forfeit it many ways, as well as by treaſon or felony; ſuch as alienation, claiming a greater eſtate than he hath, or affirming the reverſion to be in a ſtranger, &c. When a tenant in tail makes leaſes not warranted by the ſtatute; a copyholder commits waſte, refuſes to pay his rent, or do ſuit of court; and where an eſtate is granted upon condition, on non-performance thereof, &c. they will make a forfeiture.

Entry for a forfeiture ought to be by him who is next in reverſion, or remainder, after the eſtate forfeited. As if a tenant for life or years commits a forfeiture, he who has the immediate reverſion or remainder ought to enter, though he has the fee, or only an eſtate-tail.

II. Forfeiture in criminal caſes is twofold; of real, and perſonal eſtates.

1. As to real eſtates by *ATTAINDER* in high treaſon, a man forfeits to the king all his lands and tenements of inheritance, whether fee-ſimple or fee-tail; and all his rights of entry on lands and tenements, which he had at the time of the offence committed, or at any time afterwards, to be for ever veſted in the crown; and alſo the profits of all lands and tenements, which he had in his own right for life or years, ſo long as ſuch intereſt ſhall ſubſiſt. This forfeiture relates backwards to the time of the treaſon committed; ſo as to avoid all intermediate ſales and encumbrances, but not thoſe before the fact: and therefore a wife’s jointure is not forfeitable for the treaſon of her huſband; becauſe ſettled upon her previous to the treaſon committed. But her dower is forfeited, by the expreſs proviſion of ſtatute 5 and 6 Edw. VI. c. 11. And yet the huſband ſhall be tenant by courtesy of the wife’s lands, if the wife be attainted of treaſon; for that is not prohibited by the ſtatute. But, though after attainder the forfeiture relates back to the time of the treaſon committed, yet it does not take effect unleſs an attainder be had, of which it is one of the fruits; and therefore, if a traitor dies before judgment pronounced, or is killed in open rebellion, or is hanged by martial law, it works no forfeiture of his lands: for he never was attainted of treaſon. But if the chief juſtice of the king’s bench (the ſupreme coroner of all England) in perſon, upon the view of the body of him killed in open rebellion, records it and returns the record into his own court, both lands and goods ſhall be forfeited.

The natural juſtice of forfeiture or confiſcation of property, for treaſon, is founded on this conſideration: That he who hath thus violated the fundamental principles of government, and broken his part of the original contract between king and people, hath abandoned his connexions with ſociety, and hath no longer any right to thoſe advantages which before belonged to him purely as a member of the community; among which *ſocial* advantages, the right of tranſferring or tranſmitting property to others is one of the chief. Such forfeitures, moreover, whereby his poſterity muſt ſuffer as well as himſelf, will help to reſtrain a man, not only by the ſenſe of his duty, and dread of perſonal puniſhment, but alſo by his paſſions and natural affections; and will intereſt every dependent and relation he has to keep him from offending: according to that beautiful ſentiment of Cicero, “*nec vero me fugit quam ſit acerbum, parentum ſcelera filiorum pennis lui; ſed hoc præclare*”

Forfeiture. *præclare legibus comparatum est, ut caritas liberorum amiciores parentes reipublicæ redderet.*" And therefore Aulus Cascellius, a Roman lawyer in the time of the triumvirate, used to boast that he had two reasons for despising the power of the tyrants; his old age and his want of children; for children are pledges to the prince of the father's obedience. Yet many nations have thought, that this posthumous punishment favours of hardship to the innocent; especially for crimes that do not strike at the very root and foundation of society, as treason against the government expressly does. And therefore, although confiscations were very frequent in the times of the earlier emperors, yet Arcadius and Honorius, in every other instance but that of treason, thought it more just, *ibi esse pœnam, ubi et noxa est*; and ordered, that "*peccata suos teneant auctores, nec ulterius progrediatur metus, quam reperitur delictum*;" and Justinian also made a law to restrain the punishment of relations; which directs the forfeiture to go, except in the case of *crimen majestatis*, to the next of kin to the delinquent. On the other hand, the Macedonian laws extended even the capital punishment of treason, not only to the children, but to all the relations of the delinquent; and of course their estates must be also forfeited, as no man was left to inherit them. And in Germany, by the famous golden bull (copied almost *verbatim* from Justinian's code), the lives of the sons of such as conspire to kill an elector are spared, as it is expressed, by the emperor's *particular bounty*. But they are deprived of all their effects and rights of succession, and are rendered incapable of any honour ecclesiastical and civil: to the end that, being always poor and necessitous, they may for ever be accompanied by the infamy of their father; may languish in continual indigence; and may find (says this mercilefs edict) their punishment in living, and their relief in dying."

In England, forfeiture of lands and tenements to the crown for treason is by no means derived from the feudal policy, but was antecedent to the establishment of that system in this island; being transmitted from our Saxon ancestors, and forming a part of the ancient Scandianavian constitution. But in certain treasons relating to the coin (which seem rather a species of the *crimen falsi* than the *crimen læsæ majestatis*), it is provided by some of the modern statutes which constitute the offence, that it shall work no forfeiture of lands, save only for the life of the offenders; and by all, that it shall not deprive the wife of her dower. And, in order to abolish such hereditary punishment entirely, it was enacted by statute 7 Ann. c. 21. that, after the decease of the late pretender, no attainder for treason should extend to the disinheriting of any heir, nor to the prejudice of any person, other than the traitor himself. By which the law of forfeitures for high treason would by this time have been at an end, had not a subsequent statute intervened to give them a longer duration. The history of this matter is somewhat singular, and worthy observation. At the time of the union, the crime of treason in Scotland was, by the Scots law, in many respects different from that of treason in England; and particularly in its consequence of forfeitures of entailed estates, which was more peculiarly English: yet it seemed necessary, that a crime so nearly affecting government should, both in its essence and consequences, be put upon the same footing

in both parts of the united kingdoms. In new-mo-Forfeiture. delling these laws, the Scots nation and the English house of commons struggled hard, partly to maintain, and partly to acquire, a total immunity from forfeiture and corruption of blood: which the house of lords as firmly resisted. At length a compromise was agreed to, which is established by this statute, viz. that the same crimes, and no other, should be treason in Scotland that are so in England; and that the English forfeitures and corruption of blood should take place in Scotland till the death of the then pretender, and then cease throughout the whole of Great Britain; the lords artfully proposing this temporary clause, in hopes (it is said) that the prudence of succeeding parliaments would make it perpetual. This has partly been done by the statute 17 Geo. II. c. 39. made in the year preceding the late rebellion), the operation of these indemnifying clauses being thereby still farther suspended till the death of the sons of the pretender.

In petit treason and felony, the offender also forfeits all his chattel interests absolutely, and the profits of all freehold estates during life; and after his death all his lands and tenements in fee simple (but not those in tail) to the crown, for a very short period of time: for the king shall have them for a year and a day, and may commit therein what waste he pleases; which is called the king's *year, day, and waste*. Formerly the king had only a liberty of committing waste on the lands of felons, by pulling down their houses, extirpating their gardens, ploughing their meadows, and cutting down their woods. And a punishment of a similar spirit appears to have obtained in the oriental countries, from the decrees of Nebuchadnezzar and Cyrus in the books of Daniel and Ezra; which, besides the pain of death inflicted on the delinquents there specified, ordain, "that their houses shall be made a dunghill." But this tending greatly to the prejudice of the public, it was agreed in the reign of Henry I. of England, that the king should have the profits of the land for one year and a day in lieu of the destruction he was otherwise at liberty to commit: and therefore *magna charta* provides, that the king shall only hold such lands for a year and a day, and then restore them to the lord of the fee, without any mention made of waste. But the statute 17 Edward II. *de prerogativa regis*, seems to suppose, that the king shall have his year, day, and waste; and not the year and day *instead of* waste: which Sir Edward Coke (and the author of the *Mirror* before him) very justly look upon as an encroachment, though a very ancient one, of the royal prerogative. This year, day, and waste, are now usually compounded for; but otherwise they regularly belong to the crown: and after their expiration the land would naturally have descended to the heir (as in gavelkind tenure it still does) did not its feudal quality intercept such descent, and give it by way of escheat to the lord. These forfeitures for felony do also arise only upon attainder; and therefore a *felo de se* forfeits no lands of inheritance or freehold, for he never is attainted as a felon. They likewise relate back to the time the offence was committed as well as forfeitures for treason, so as to avoid all intermediate charges and conveyances. This may be hard upon such as have unwarily engaged with the offender; but the cruelty and reproach must lie on the part, not of the law, but

**Forfeiture** of the criminal: who has thus knowingly and dishonestly involved others in his own calamities.

**Forge.** 2. The forfeiture of goods and chattels accrues in every one of the high kinds of offence; in high treason, or imprisonment thereof, petit treason, felonies of all sorts whether clergyable or not, self murder or felony *de se*, petty larceny, standing mute, &c. For flight also, on an accusation of treason, felony, or even petit larceny, whether the party be found guilty or acquitted, if the jury find the flight, the party shall forfeit his goods and chattels: for the very flight is an offence, carrying with it a strong presumption of guilt, and is at least an endeavour to elude and to fluster the course of justice prescribed by the law. But the jury very seldom find the flight: forfeiture being looked upon, since the vast increase of personal property of late years, as too large a penalty for an offence to which a man is prompted by the natural love of liberty.

There is a remarkable difference between the forfeiture of lands and of goods and chattels. (1.) Lands are forfeited upon *attainder*, and not before; goods and chattels are forfeited by *conviction*. Because in many of the cases where goods are forfeited, there never is any attainder; which happens only where judgment of death or outlawry is given: therefore, in those cases, the forfeiture must be upon conviction, or not at all; and, being necessarily upon conviction in those, it is so ordered in all other cases, for the law loves uniformity. (2.) The forfeiture of lands has relation to the time the fact was committed, so as to avoid all subsequent sales and encumbrances: but the forfeiture of goods and chattels has no relation backwards; so that those only which a man has at the time of conviction shall be forfeited. Therefore a traitor or felon may *bona fide* sell any of his chattels, real or personal, for the sustenance of himself and family between the fact and conviction; for personal property is of so fluctuating a nature, that it passes through many hands in a short time; and no buyer could be safe, if he were liable to return the goods which he had fairly bought, provided any of the prior vendors had committed a treason or felony. Yet if they be collusively and not *bona fide* parted with, merely to defraud the crown, the law (and particularly the statute 13 Eliz. c. 5.) will reach them; for they are all the while truly and substantially the goods of the offender: and as he, if acquitted, might recover them himself, as not parted with for a good consideration; so, in case he happens to be convicted, the law will recover them for the king.

**FORFEX**, in Roman antiquity, was a way of drawing up an army in the form of a pair of sheers. It was intended to receive the *cuneus* or wedge, if the enemy should make use of that figure. For when the forfex opened to admit the wedge, they had an opportunity of defeating their design, and cutting them in pieces.

**FORFICULA**, the **EARWIG**, a genus of insects belonging to the order of coleoptera. See **ENTOMOLOGY Index**.

**FORGE**, properly signifies a little furnace, wherein smiths and other artificers of iron or steel, &c. heat their metals red hot, in order to soften them and render them more malleable and manageable on the anvil.

An ordinary forge is nothing but a pair of bellows, the nozzle of which is directed upon a smooth area,

on which coals are placed. The nozzle of a pair of bellows may be also directed to the bottom of any furnace, to excite the combustion of the coals placed there, by which a kind of forge is formed. In laboratories, there is generally a small furnace consisting of one cylindrical piece, open at top, which has at its lower side a hole for receiving the nozzle of a double bellows. This kind of forge furnace is very convenient for fusions, as the operation is quickly performed, and with few coals. In its lower part, two inches above the hole for receiving the nozzle of the bellows, may be placed an iron plate of the same diameter, supported upon two horizontal bars, and pierced near its circumference with four holes diametrically opposite to each other. By this disposition, the wind of the bellows, pushed forcibly under this plate, enters at these four holes; and thus the heat of the fire is equally distributed, and the crucible in the furnace is equally surrounded by it. This contrivance is used in the forge-furnaces for melting copper, with this difference only, that these furnaces are square, which is a matter of no consequence.

As the wind of bellows strongly and rapidly excites the action of the fire, a forge is very convenient when a great heat is to be applied quickly: but it is not suitable when the heat is to be gradually increased.

The forge, or blast of bellows, is used in several operations in small; as to fuse salts, metals, ores, &c. It is also much used in works in the great, which require strong heat, without much management; and chiefly in the smelting of ores, and fusion of metallic matters.

**FORGE** is also used for a large furnace, wherein iron ore, taken out of the mine, is melted down: or it is more properly applied to another kind of furnace, wherein the iron-ore, melted down and separated in a former furnace, and then cast into sows and pigs, is heated and fused over again, and beaten afterwards with large hammers, and thus rendered more soft, pure, ductile, and fit for use.

**FORGE**, in the train of artillery, is generally called a *travelling forge*, and may not be improperly called a portable smith's shop: at this forge all manner of smith's work is made, and it can be used upon a march as well as in camp. Formerly they were very ill contrived, with two wheels only, and wooden supporters to prop the forge for working when in the park. Of late years they are made with four wheels, which answers their purpose much better.

**FORGE for red-hot Balls**, is a place where the balls are made red hot before they are fired off: it is built about five or six feet below the surface of the ground, of strong brick-work, and an iron grate, upon which the balls are laid, with a large fire under them.

**FORGER**, in *Law*, one guilty of **FORGERY**.

**FORGERY** (from the French *forger*, i. e. *accudare, fabricare*, "to beat on an anvil, forge, or form,") may be defined at common law, to be "the fraudulent making or alteration of a writing, to the prejudice of another man's right:" for which the offender may suffer fine, imprisonment, and pillory. And also, by a variety of statutes, a more severe punishment is inflicted on the offender in many particular cases, which are so multiplied of late as almost to become general. We shall mention the principal instances.

By statute 5 Eliz. c. 14. to forge or make, or knowingly

**Forgery.** ingly to publish or give in evidence, any forged deed, court-roll, or will, with intent to affect the right of real property, either freehold or copyhold, is punished by a forfeiture to the party grieved of double costs and damages; by standing in the pillory, and having both his ears cut off, and his nostrils slit and seared; by forfeiture to the crown of the profits of his lands, and by perpetual imprisonment. For any forgery relating to a term of years or annuity, bond, obligation, acquittance, release, or discharge of any debt or demand of any personal chattels, the same forfeiture is given to the party grieved; and on the offender is inflicted the pillory, loss of one of his ears, and half a year's imprisonment: the second offence, in both cases, being felony without benefit of clergy.

Besides this general act, a multitude of others, since the Revolution (when paper credit was first established), have inflicted capital punishment on the forging, altering, or uttering as true when forged, of any bank bills or notes, or other securities; of bills of credit issued from the exchequer; of South Sea bonds, &c.; of lottery tickets or orders; of army or navy debentures; of East India bonds; of writings under seal of the London or royal exchange assurance; of the hand of the receiver of the pre-fines, or of the accountant-general and certain other officers of the court of chancery; of a letter of attorney or other power to receive or transfer stock or annuities; and on the personating a proprietor thereof, to receive or transfer such annuities, stock or dividends: also on the personating, or procuring to be personated, any seaman or other person, entitled to wages or other naval emoluments, or any of his personal representatives; and the taking, or procuring to be taken, any false oath in order to obtain a probate or letters of administration, in order to receive such payments; and the forging, or procuring to be forged, and likewise the uttering or publishing, as true, of any counterfeited seaman's will or power: to which may be added, though not strictly reducible to this head, the counterfeiting of Mediterranean passes under the hands of the lords of the admiralty, to protect one from the piratical states of Barbary; the forging or imitating of any stamps to defraud the public revenue; and the forging of any marriage register or license: all which are, by distinct acts of parliament, made felonies without benefit of clergy. By statutes 13 Geo. III. c. 52. & 59. forging or counterfeiting any stamp or mark to denote the standard of gold and silver plate, and certain other offences of the like tendency, are punished with transportation for 14 years. By statute 12 Geo. III. c. 48. certain frauds on the stamp-duties, therein described, principally by using the same stamps more than once, are made single felony, and liable to transportation for seven years. And the same punishment is inflicted by statute 13 Geo. III. c. 38. on such as counterfeit the common seal of the corporation for manufacturing plate glass (thereby erected), or knowingly demand money of the company by virtue of any writing under such counterfeit seal.

There are also two other general laws with regard to forgery; the one 2 Geo. II. c. 25. whereby the first offence in forging or procuring to be forged, acting or assisting therein, or uttering or publishing as true, any forged deed, will, bond, writing obligatory, bill of ex-

change, promissory note, indorsement or assignment thereof, or any acquittance or receipt for money or goods, with intention to defraud any person (or corporation), is made felony without benefit of clergy. And by statute 7 Geo. II. c. 22. it is equally penal to forge, or cause to be forged, or utter as true, a counterfeit acceptance of a bill of exchange, or the number of any accountable receipt for any note, bill, or any other security for money, or any warrant or order for the payment of money, or delivery of goods. So that, through the number of these general and special provisions, there is now hardly a case possible to be conceived, wherein forgery, that tends to defraud, whether in the name of a real or fictitious person, is not made a capital crime.

**FORGING**, in *Law*, the act of **FORGERY**.

**FORGING**, in smithery, the beating or hammering iron on the anvil, after having first made it red hot in the forge, in order to extend it into various forms, and fashion it into various works. See **FORGE**.

There are two ways of forging and hammering iron. One is by the force of the hand, in which there are usually several persons employed, one of them turning the iron and hammering likewise, and the rest only hammering. The other way is by the force of a water-mill, which raises and works several huge hammers beyond the force of man; under the strokes whereof the workmen present large lumps or pieces of iron, which are sustained at one end by the anvils, and at the other by iron chains fastened to the ceiling of the forge. See **MILL**.

This last way of forging is only used in the largest works, as anchors for ships, &c. which usually weigh several thousand pounds. For the lighter works, a single man serves to hold, heat, and turn with one hand, while he hammers with the other.

Each purpose the work is designed for requires its proper heat; for if it be too cold, it will not feel the weight of the hammer, as the smiths call it when it will not batter under the hammer; and if it be too hot, it will red sear, that is, break or crack under the hammer.

The several degrees of heat the smiths give their irons, are, first, a blood-red heat; secondly, a white-flame heat; and thirdly, a sparkling or welding heat.

**FORISFAMILIATION**, in *Law*. When a child, upon receiving a portion from his father, or otherwise, renounces his legal title to any further share of his father's succession, he is said to be *forisfamiliarized*.

**FORK**, a well known instrument, consisting of a handle and blade, divided at the end into two or more points or prongs.

The *pitch-fork* is a large utensil of this construction, employed in hay-making, &c.

The *table fork*, an instrument now so indispensable, did not come into use in England till the reign of James I. as we learn from a remarkable passage in *Coryat*. The reader will probably smile at the solemn manner in which this important discovery or innovation is related: "Here I will mention a thing that might have been spoken of before in discourse of the first Italian townes. I observed a custom in all those Italian cities and townes through the which I passed, that is not used in any other country that I saw in my travels, neither do I think that any other nation of Christen-

dome

Forli  
||  
Form.

Form.

dome doth use it, but only Italy. The Italians and also most strangers that are commorant in Italy, doe always at their meals use a little forke when they eat their meate; for while with their knife which they hold in one hand they cut the meate out of the dish, they fasten the forke which they hold in the other hand upon the same dish, so that whatsoever he be that sitting in the company of any others at meale shall unadvisedly touch the dish of meat with his fingers from which all the table doe cut, he will give occasion of offence unto the company as having transgressed the lawes of good manners, infomuch that for his error he shall be at least brow-beaten if not reprehended in wordes. This form of feeding I understand is generally used in all parts of Italy, their forkes for the most part being made of yronn, steele, and some of silver, but those are used only by gentlemen. The reason of this their curiosity is, because the Italian cannot by any means indure to have his dish touched with fingers, seeing all men's fingers are not alike cleane. Hereupon I myself thought good to imitate the Italian fashion by this forked cutting of meate, not only while I was in Italy, but also in Germany, and often times in England since I came home: being once quipped for that frequently using my forke, by a certain learned gentleman, a familiar friend of mine, Mr Lawrence Whitaker; who in his merry humour doubted not to call me a table *furcifer*, only for using a forke at feeding, but for no other cause."

FORLI, an ancient and considerable town of Italy, and capital of a territory of the same name, in Romagna, with a bishop's see. The public structures are very handsome; and it is seated in a fertile, healthy, and pleasant country, 10 miles south-east of Faenza, and 45 north-east of Florence. E. Long. 12. 1. N. Lat. 44. 28.

FORLORN-HOPE, in the military art, signifies men detached from several regiments, or otherwise appointed, to make the first attack in day of battle; or, at a siege, to storm the counterescarp, mount the breach, or the like. They are so called from the great danger they are unavoidably exposed to; but the word is old, and begins to be obsolete.

FORM, in *Physics*, denotes the manner of being peculiar to each body; or that which constitutes it such a particular body, and distinguishes it from every other.

Mr Harris uses the term *form* likewise in another sense, as an efficient animating principle; to which he supposes Ovid to refer in the first lines of his *Metamorphosis*,

*In nova fert animus mutatas dicere formas,  
Corpora.*——

These animating forms are of themselves no objects either of the ear or of the eye; but their nature or character is understood in this, that were they never to exert their proper energies on their proper subjects, the marble on which the sculptor exercises his art would remain for ever shapeless, and the harp from which the harper calls forth sounds would remain for ever silent.

Thus, also, the animating form of a natural body is neither its organization nor its figure, nor any other of those inferior forms which make up the system of

its visible qualities: but it is the power, which is yet able to produce, preserve, and employ these. It is the power, which first moves, and then conducts that latent process, by which the acorn becomes an oak, and the embryo becomes a man; by which digestion is performed in plants and animals, and, which departing, the body ceases to live, and its members putrefy: and by which every being produces another like itself, and every species is continued. In animals, it is that higher faculty, which by employing the organs of sense, peculiar to them as animals, distinguishes them as sensitive beings from vegetables; and it is also that more noble faculty, which by its own divine vigour, unassisted perhaps with organs, makes and denominates him a being intellectual and rational. So that Mr Harris reckons two sorts of forms, those which are passive elements, and those which are efficient causes. And all of them agree in this, that they give to every being its peculiar and distinctive character: and on the whole he concludes, that form appears in part, to be an element, and in part an efficient cause, i. e. a cause which associates the constituent elements of natural substances, and which employs them, when associated, according to their various and peculiar characters.

The philosophers generally allow two principles of bodies: *matter*, as the common basis or substratum of all; and *form*, as that which specifies and distinguishes each; and which added to a quantity of common matter, determines or denominates it this or that; wood, or fire, or ashes, &c.

Substantial forms seem to have been first broached by the followers of Aristotle, who thought matter, under different modes or modifications, not sufficient to constitute different bodies; but that something substantial was necessary to set them at a greater distance: and thus introduced substantial forms, on the footing of souls, which specify and distinguish animals. What led to this erroneous notion were the circumstances of life and death: For observing, that, as soon as the soul was departed out of a man, all motion, respiration, nutrition, &c. immediately ceased, they concluded, that all these functions depended on the soul, and consequently that the soul was the form of the animal body, or that which constituted it such: that the soul was a substance, independent of matter, no body doubted; and hence the forms of other bodies were concluded equally substantial. But to this it is answered, that though the soul be that by which a man is man, and consequently is the form of the human body, as human; yet it does not follow, that it is properly the form of this body of ours, as it is a body; nor of the several parts thereof, considered as distinct from each other: For those several parts have their proper forms so closely connected with their matter, that it remains inseparable therefrom long after the soul has quitted the body; thus flesh has the form of flesh, bone of bone, &c. long after the soul is removed as well as before. The truth is, the body does not become incapable of performing its accustomed functions because the soul has deserted it; but the soul takes its leave, because the body is not in a condition to perform its functions.

The ancient and modern corpufcular philosophers, therefore, with the Cartesians, exclude the notion of substantial forms; and show, by many arguments, that

Form.

the form is only the modus or manner of the body it is inherent in. And as there are only three primary modes of matter, viz. figure, rest, or motion, with two others arising therefrom, viz. magnitude and situation, the form of all bodies they hold to consist therein; and suppose the variations these modes are capable of, sufficient to present all the variety observable in bodies.

Forms are usually distinguished into *essential* and *accidental*.

*Essential*. Though the five modes above mentioned, generally taken, be adventitious; yet to this or that body, *e. gr.* to fire or water, they are essential: thus, it is *accidental* to iron, to have this or that magnitude, figure, or situation, since it might exist in different ones; yet to a knife or hammer, the figure, magnitude, and position of parts, which constitute it a hammer or knife, are essential; and they cannot exist or be conceived without them. Hence it is inferred, that though there be no substantial, there are essential, forms, whereby the several species of bodies become what they are, and are distinguished from all others.

*Accidental* forms, are those really inherent in bodies, but in such manner as that the body may exist in all its perfection without them. Such as whiteness in a wall, heat in water, a figure of a man in wax, &c.

FORM is also used, in a moral sense, for the manner of being or doing a thing according to rules: thus we say, a form of government, a form of argument, &c.

FORM, in *Law*, the rules established and requisite to be observed in legal proceedings.—The formal part of the law, or method of proceeding, cannot be altered but by parliament; for if once these outworks were demolished, there would be an inlet to all manner of innovation in the body of the law itself.

FORM, in carpentry, is used to denote the long seats or benches in the choirs of churches or in schools, for the priests, prebends, religious, or scholars, to sit on. Du Cange takes the name to be derived from hence, that the backs of the seats were anciently enriched with figures of painting and sculpture, called in Latin *formæ et typi*. In the life of St William of Roschild, we meet with *forma* as signifying a seat for an ecclesiastic, or religious, in a choir; and in that of St Lupicin, we have formula in the same sense. In the rule of the monastery of St Casarea, the man who presides over the choir is called *primiceria, vel formari*.

At schools, the word *form* is frequently applied to what is otherwise termed a *class*. See CLASS.

FORM also denotes the external appearance or surface of a body, or the disposition of its parts as to the length, breadth, and thickness.

FORM is also used among mechanics, for a sort of mould wherein any thing is fashioned or wrought.

*Printer's FORM*, an assemblage of letters, words, and lines, ranged in order, and so disposed into pages by the compositor; from which, by means of ink and a press, the printed sheets are drawn.

Every form is enclosed in an iron chafe, wherein it is firmly locked by a number of pieces of wood; some long and narrow, and others of the form of wedges. There are two forms required for every sheet, one for

each side; and each form consists of more or fewer pages according to the size of the book.

*Hatter's FORM*, is a large block or piece of wood, of a cylindrical figure; the top thereof rounded, and the bottom quite flat. Its use is, to mould or fashion the crown of the hat, after the matter thereof has been beaten and fulled.

*Papermaker's FORM*, is the frame or mould wherein the sheets are fashioned. See PAPER.

FORMA PAUPERIS, in *Law*, is when a person has just cause of suit, but is so poor that he cannot defray the usual charges of suing at law or in equity; in which case, on making oath that he is not worth 5*l.* in the world, on all his debts being paid, and producing a certificate from some lawyer that he has good cause of suit, the judge will admit him to sue in *forma pauperis*; that is, without paying any fee to counsellors, attorneys, or clerk: the statute 11 Hen. VII. c. 12. having enacted, that counsel and attorneys, &c. shall be assigned to such poor persons *gratis*. Where it appears that any pauper has sold or contracted for the benefit of his suit whilst it is depending in court, such cause shall be thenceforth totally dismissed; and a person suing in *forma pauperis* shall not have a new trial granted him, but is to acquiesce in the judgment of the court.

FORMAL, something belonging to or constituting the form of a thing. See FORM.

FORMALITY, the quality of a form, or formula; or that which constitutes and denominates them such.

FORMALITY, as defined in the schools, is any manner wherein a thing is conceived; or a manner in any object, importing a relation to the understanding, whereby it may be distinguished from another object. Thus, animality and rationality are formalities. The Scottists made great use of formalities, in opposition to the virtualities of the Thomists.

FORMALITIES, in matters of law, are frequently used for the formulas themselves, or the rules prescribed for judiciary proceedings. In contracts of strict law, all the formalities must be strictly observed: an omission of the least formality may ruin the whole convention.

The term is also used for a certain order or decorum to be observed.

FORMAN, ANDREW, archbishop of St Andrew's, earl of Pittenweem, and of Cottingham in England, one of the lords of the regency appointed by the states during the minority of King James V. of Scotland, legate à latere, primate of all the kingdom of Scotland, and archbishop of Bourges in France, was descended from the family of the Formans of Hutton in the shire of Berwick, and is considered to have been one of the best statesmen of the age in which he lived. He was employed in 1501, along with Robert Blackader archbishop of Glasgow and Patrick earl of Bothwell, to negotiate a match between Ja. IV. of Scotland and Margaret eldest daughter of Hen. VII. of England, which next year was ratified by the Scottish ambassadors. He was afterwards frequently employed as Scots ambassador to Rome, England, and France, upon the most important occasions. In 1514 he was translated from the see of Moray, to which he had been appointed in 1502, to that of St Andrew's. During the time of his

Form  
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Forman.

Forman.

his possessing the former, he was employed as mediator betwixt Pope Julius II. and Louis XII. of France, who were at that time at variance; and he happily succeeded in conciliating the difference. Having taken leave of the Pope, he passed through France on his return home, where he was kindly received by the king and queen, who bestowed upon him the bishopric of Bourges in France, which annually brought him in 400 tons of wine, 10,000 franks of gold, and other smaller articles. Besides all this, he was most liberally rewarded by Pope Julius, who promoted him to the archbishopric of St Andrew's, as has been already mentioned; conferred on him the two rich abbeys of Dunfermline and Aberbrothick; and made him his legate à latere. At that time, however, there were two other candidates for the archiepiscopal see. The learned Gavin Douglas, bishop of Dunkeld, having been nominated by the queen, had actually taken possession of it; but John Hepburn, a bold and factious man, having been preferred by the monks, drove out the officers of Gavin Douglas, and placed a strong garrison in the castle. So great was the power of this man, that when Forman was nominated by the Pope, no person could be found who durst proclaim the bulls for his election. At last Lord Home, at that time the most powerful nobleman in Scotland, was induced, by large promises, besides some gifts of great consequence, among which was the donation of the abbacy of Coldingham to his youngest brother David, to undertake the task. It was executed at Edinburgh and St Andrew's; to which places Lord Home's brother went with 10,000 men; though the doing of it, contrary to Forman's inclination, proved a source of much trouble to that nobleman afterwards. The quarrel betwixt Hepburn and Forman, however, was at last terminated by the latter surrendering the bishopric of Moray, as well as some years revenue of the archbishopric itself; paying Hepburn also 3000 French crowns annually out of his ecclesiastical revenues. On the appointment of the duke of Albany to the regency, Hepburn endeavoured to undermine the primate's credit with that nobleman, by representing him as one who had in a manner collected all the money in the country, and who consequently might endanger the tranquillity of the kingdom. These insinuations, however, were but little regarded by the regent; and Forman had the good fortune afterwards to make up a difference between him and the nobility, which was likely to be attended with much bloodshed. In 1517, the archbishop was appointed by the states one of the lords of the regency, on occasion of the duke of Albany's going to France. We have already mentioned his embassy to Pope Julius II. In M'Kenzie's Lives we are informed, that in the collection of the Letters of the Scottish Kings from the year 1505 till the year 1626, in the lawyers library, there is a letter from that pope to King James IV. wherein he not only highly commends Forman, but likewise promises that at the first creation of cardinals he should be made one. This letter is dated the 6th of May 1511: but the pope died before he had an opportunity of performing his promise. In the same collection there is a letter from the duke of Albany to Leo X. Julius's successor, wherein he presses the pope to advance him to the dignity of a cardinal promised him by his predecessor,

and to continue him his legate à latere. Archbishop Forman died in 1521, and was buried at Dunfermline. Dempster says that he wrote a book against Luther, a book concerning the Stoic Philosophy, and a Collection out of the Decretals.

FORMATION, in *Philosophy*, an act whereby something is formed or produced. For the formation of the fœtus in the womb, see ANATOMY, N° 109. 110.

FORMATION of Stones. See STONE.

FORMATION of Metals and Minerals. See METAL and MINERAL.

FORMATION, in *Grammar*, signifies the manner of forming one word from another; thus *accountant* / *ship* is formed from *accountant*, and this last from *account*.

FORMEDON, in *Law*, (*breve de forma donationis*), a writ that lies for a person who has a right to lands or tenements, by virtue of any entail, arising from the statute of Westm. 2. Ch. II.

This writ is of three kinds, viz. a descender, remainder, and reverter. Formedon in *descender*, lies where a tenant in tail infeoffs a stranger, or is disseised and dies, and the heir may bring this writ to recover the lands. Formedon in *remainder*, lies where a man gives lands, &c. to a person in tail, and for default of issue of his body, the remainder to another in tail: here if the tenant in tail die without issue, and a stranger abates and enters into the land, he in remainder shall have this writ. Formedon in *reverter*, lies where lands are entailed on certain persons and their issue, with remainder over for want of issue; and, on that remainder failing, then to revert to the donor and his heirs: in this case, if the tenant in tail dies without issue, and also he in remainder, the donor and his heirs, to whom the reversion returns, may have this writ for the recovery of the estate, though the same be alienated, &c.

FORMIÆ, or FORMIA, in *Ancient Geography*, a maritime town of the Adjected or New Latium, to the south-east of Cajeta; built by the Lacedæmonians, (Strabo); called originally *Hormiæ*, on account of its commodious harbour. An ancient municipium. *Formiani*, the people; who were admitted to the liberty of the city the very year in which Alexandria was built; but not to the right of suffrage till a long time after the second Punic war, (Livy). *Formiæ* at this day lies in ruins, near a place now called *Mola*.

FORMICA, the ANT, a genus of insects belonging to the order of hymenoptera. See ENTOMOLOGY Index.

The insects called *white ants*, which abound in Africa and the East Indies, belong to the genus *termes*, which see in ENTOMOLOGY Index.

FORMICA Leo, the *Ant lion*, so called from its devouring great numbers of ants. It is the caterpillar or worm of a fly much resembling the libellæ or dragon flies; and feeds chiefly upon ants.

FORMING is used for the act of giving being or birth to any thing.

The word is also simply used for giving the figure to any thing. The potter forms his vessels as he pleases. Geometry teaches how to form all kinds of figures.

It is likewise used for the producing of a thing; thus, the lineaments of the face began to be formed.

FORMING

Formation  
Formiæ

Forming,  
Formosa.

*FORMING of a Siege*, is the making lines of circumvallation to fortify the camp, and disposing things for the attack of a place in form.

They also say, to form a squadron or battalion; meaning to range the soldiers in form of a squadron, &c.

*FORMING the Line*, is drawing up infantry, cavalry, and artillery, into line of battle. See *LINE*.

*FORMING* is also used in grammar, in speaking of certain tenses of verbs, which are made from others by a change of certain letters. The present tense is formed from the infinitive. Compound and derivative words also, and even all that have any etymology, are said to be formed.

*FORMOSA*, an island in the Pacific ocean, between 119° and 122° of E. Long. and 22° and 25° N. Lat. about 100 miles east of Canton in China. It is subject to the Chinese; who, however, notwithstanding its vicinity, did not know of its existence until the year 1430. It is about 85 leagues in length, and 25 in breadth. A long chain of mountains, which runs from north to south, divides it into two parts, the eastern and western. The Dutch formed an establishment in the western part in 1634, and built the fort of Zealand, which secured to them the principal port of the island; but they were driven from thence in 1659 or 1661 by a celebrated Chinese pirate, who made himself master of all the western part, which afterwards submitted in 1682 to the authority of Kang-he emperor of China.

This western part of Formosa is divided into three distinct governments, all subordinate to the governor of TAI-OUAN, the capital of the island, who is himself subject to the viceroy of the province of FOKIEN.

This island presents extensive and fertile plains, watered by a great number of rivulets that fall from the eastern mountains. Its air is pure and wholesome; and the earth produces in abundance, corn, rice, and the greater part of other grains. Most of the Indian fruits are found here, such as oranges, bananas, pine-apples, guavas, papaws, cocoa nuts; and part of those of Europe, particularly peaches, apricots, figs, raisins, chestnuts, pomegranates, water melons, &c. Tobacco, sugar, pepper, camphire, and cinnamon, are also common. Horses, sheep, and goats, are very rare in this island: there are even few hogs, although these animals abound in China. Domestic poultry, such as fowls, geese, and ducks, are exceedingly plenty; pheasants also are sometimes seen; and monkeys and stags have multiplied so much, that they wander through the country in large flocks.

The inhabitants of Formosa rear a great number of oxen, which they use for riding, from a want of horses and mules. They accustom them early to this kind of service, and by daily exercise train them to go as well and as expeditiously as the best horses. These oxen are furnished with a bridle, saddle, and crupper. A Chinese looks as big and proud when mounted in this manner, as if he were carried by the finest Barbary courser.

Wholesome water fit for drinking is the only thing wanting in the island of Formosa. It is very extraordinary, that every kind of water in it is a deadly poison to strangers, for which no remedy has hitherto been found. "One of the governor's servants," says

Formosa,

Father de Mailla, "whom I had in my train (a strong and robust man), trusting too much to the force of his constitution, would not believe what had been told him concerning this water: he drank some of it; and died in less than five days, after every medicine and antidote had been administered without success. There is none but the water of the capital which can be drunk: the mandarins of the place therefore always took care to transport a sufficiency of it in carts for our use." Our author adds, that at the bottom of a mountain a league distant from Fong-kan-hien there is a spring that produces a stream, the water of which is of a whitish blue colour, and so noxious, that no one can approach it.

There are few mulberry trees in Formosa, consequently little silk is made in the country. Numerous manufactures, however, would soon be introduced into it, were the Chinese permitted indiscriminately to transport themselves thither, and to form establishments in the island. Those who go to it must be protected by passports from the Chinese mandarins, and these passports are sold at a dear rate; securities are besides required. This is not all: when they arrive, money must be given to the mandarins who are appointed to examine those who enter or quit the island, and who generally discharge this duty with the most rigid severity. If they give no present, or offer only a trifle, they meet with little mercy; and are sure to be sent back, whatever passport they may have. The Chinese, through policy, connive at these exactions, to prevent too great a number of people from emigrating to this island, which is rendered a place of great importance by its proximity to China. They fear, and with great reason (especially since Tartar emperors have been on the throne), that if any revolt should happen in Formosa, its influence might spread and occasion great disturbance in the whole empire. On this account, the Tartars kept a garrison there of 10,000 men: which they take care to change every three years, or even oftener if they judge it necessary.

Besides the capital, the Chinese have also two other cities, and some villages, where they inhabit alone; for they do not permit the Indians, who are their subjects, to live among them; they suffer none to remain but those who are either their slaves or domestics.—These Indians are united into 45 villages; 36 of which lie to the north, and 9 towards the south. The northern villages are very populous, and the houses are built almost after the Chinese manner. The habitations of the southern islanders are only heaps of huts or cottages of earth. In these huts they have neither chairs, benches, tables, beds, nor any piece of furniture; the middle part is occupied by a kind of hearth or chimney, raised two feet high, and constructed of earth, upon which they dress their victuals. Their ordinary food is rice, other small grain, and the game which they catch by coursing or kill with their arms. These islanders run with such surprising swiftness, that they can almost outstrip the fleetest greyhound. The Chinese attribute this agility to the precaution they take of confining their knees and reins by a close bandage until the age of 14 or 15. Their favourite arms are lances, which they dart to the distance of 60 or 80 feet with the greatest dexterity and precision. They use bows and arrows, and can kill a pheasant on wing with

*Formosa.* as much certainty as an European sportsman could wish a fusc. These people are very dirty in their manner of eating. They have neither plates, dishes, nor spoons, nor even the small sticks used in China. Whatever they dress is placed on a plain board or mat, and they make use of their fingers for conveying it to their mouths. They eat flesh half raw; and provided it has been only presented to the fire, it appears to them excellent. Their beds are formed of fresh gathered leaves. They go almost naked, and wear only a piece of cloth which hangs from their girdle to their knees. Those among them, who, according to the judgment of the chiefs of the village, have borne away the prize for agility in running or dexterity in the chase, obtain the honourable privilege of making on their skin, by a very painful operation, several fantastical figures of flowers, trees, and animals. All have the right of blackening their teeth, and of wearing ornaments of bracelets and crowns made of shells and crystal.

The islanders who inhabit the northern part, where the climate is something colder, clothe themselves with the skins of the stags which they kill in hunting. They make a kind of dress of them without sleeves, that pretty much resembles a dalmatic, or vestment worn at the altar by the Roman clergy. They wear on their heads caps in the form of a cylinder, made of palm leaves, and ornamented with several crowns placed one above another, on the top of which they fix plumes composed of the feathers of a cock or pheasant.

The marriage ceremonies of the inhabitants of Formosa approach near to the simple laws of nature. They neither purchase, as in China, the women whom they espouse, nor does interest ever preside over their unions. Fathers and mothers are scarcely ever consulted. If a young man has a mind to marry, and has fixed his affection on a young girl, he appears for several days following near the place where she lives with a musical instrument in his hand. If the young woman is satisfied with the figure of her gallant, she comes forth and joins him: they then agree and settle the marriage contract. After this they give notice to their parents, who prepare a wedding dinner, which is always given in the house where the young woman resides, and where the bridegroom remains without returning again to his father. The young man afterwards considers the house of his father-in-law as his own. He becomes the whole support of it, and he has no farther connection with that of his father; like married women in Europe, who generally quit their paternal home in order to live with their husbands. These islanders therefore seldom offer up vows for obtaining male children: they prefer daughters, because they procure them sons-in-law, who become the supports of their old-age.

Although the Formosans are entirely subjected to the Chinese, they still preserve some remains of their ancient government. Each village chooses three or four old men from among those who have the greatest reputation for probity. By this choice they become the rulers and judges of the rest of the hamlet. They have the power of finally determining all differences; and if any one should refuse to abide by their judgment, he would be immediately banished from the vil-

lage, without hopes of ever being able to re-enter it, and none of the inhabitants would afterwards dare to receive him. *Formosa.*

The natives pay in grain the tribute imposed on them by the Chinese. To regulate every thing that concerns the laying on and collecting of this impost, government has established a Chinese in every village, who is obliged to learn the language and act as interpreter to the mandarins. These interpreters are most cruel extortioners to the miserable people, whom they ought rather to protect: they are such insatiable leeches, that they can scarcely ever be satisfied. This daily and domestic tyranny has already caused the defection of three villages in the southern part of the island, where formerly there were twelve. The inhabitants of these villages revolted, expelled their interpreters, refused to pay tribute any longer to the Chinese, and have united themselves to the independent nation in the eastern part of the island.

It was in the island of Formosa that John Struys affirms to have seen with his own eyes a man who had a tail more than a foot in length, covered with red hair, and greatly resembling that of an ox. This man with a tail said, that his deformity, if it was one, proceeded from the climate, and that all those of the southern part of the island were born with tails like his.—But John Struys is the only author who attests the existence of this extraordinary race of men; no other writer who has spoken of Formosa makes the least mention of them. Another circumstance, no less singular, and which appears to be little better authenticated, is, that in this island women are not permitted to bring forth children before they are 35, although they are at liberty to marry long before that age. Rechteren \* thus expresses himself concerning this strange custom:

“When women are first married, they bring no children into the world: they must, before that is permitted, have attained the age of 35 or 37. When they are big with child, their priestesses pay them a visit, and tread on their bellies with their feet, if it be necessary, and make them miscarry, with perhaps greater pains than they would have in being brought to bed. It would be not only a shame, but an enormous crime, to bring forth a child before the term prescribed. I have seen some females who had already destroyed the fruit of their womb 15 or 16 times, and who were big for the 17th when it was lawful for them to bring forth a living child.”

To our description of Formosa we shall add the following account of the dreadful disaster that lately befel this unhappy island. The details were conveyed by a letter from Peking, addressed to M. Bertin, and dated the 14th of July 1782.

“The waters of the ocean have well nigh deprived China of one of its most valuable maritime possessions. The island of Tay-ouan, known in Europe by the name of Formosa, has been almost swallowed up by them. It has been reported here, that part of the mountain which divides the island has sunk and disappeared; that the rest has been overturned; and that the greater part of the inhabitants have perished. Such have been for some days the popular reports in this capital. Government, however, has put a stop to them, by informing the public of the real truth; such as it is

has

\* *Dutch East India Company Voyages*, vol. v. p. 96.

Formosa. has been announced to the emperor by the officers who have this small portion of his territories under their jurisdiction. I cannot do better than transcribe what they have written. The despatches of the Chinese officers, addressed to the emperor, run thus :

“ Bechen, governor-general of the provinces of Fokien and Tche-Kyang-ya, viceroy of Fokien, and others, make known to your majesty the disaster that has lately befallen the island of Tay-ouan. Mon-ha-hon, and other principal officers of this island, have acquainted us, that on the 21st of the fourth moon (May 22. 1782), a most furious wind, accompanied with heavy rain and a swell of the sea greater than ever remembered, had kept them under continual apprehension of being swallowed up by the waves, or buried in the bowels of the earth, from the hour of *yn* until the hour *ouei* (A). This dreadful tempest seemed to blow at the same time from the four cardinal points of the compass, and continued with equal violence during the above-mentioned time. The buildings where the tribunals were held, the public granaries, the barracks, salt warehouses, and works, have been totally destroyed, and every thing they contained is lost : warehouses and work shops, as well as private houses, for the most part, present nothing but ruins and heaps of rubbish. Of 27 ships of war which were in the harbour, 12 have disappeared ; two others have been dashed to pieces, and 10 are shattered in such a manner that they are rendered entirely unfit for service ; other smaller vessels of different sizes, above 100 in number, have shared the same fate ; eighty have been swallowed up ; five others, which had just taken in a lading of rice for Fokien, have sunk, and their cargoes, which amounted to 100,000 bushels, are wholly lost. With regard to other vessels, whether small or great, which had not entered the harbour, 10 or 12 of the largest are reckoned to have been swallowed up ; those of inferior size, as well as a prodigious number of barks, boats, and other small vessels of different kinds, have disappeared, without leaving the least piece of wreck behind them. As the whole island has been covered with water, the provisions have been either swept away, or spoilt so as to render them prejudicial to the health of those who use them in their present state. The crops are entirely lost. When we shall have been informed of particulars, we shall not fail to give your majesty the earliest intelligence of them.—After having received this letter from Mon-ha-hon, and the other principal officers residing at Tay-ouan, I employed the utmost diligence to give every assistance in my power to this unfortunate island ; and I ordered the travelling commissary, and Trey-ouer, general of the province, to get particular information of the number of those who have perished, of the houses destroyed, and of the quantity of salt and other provisions that has been lost : I have likewise enjoined them to rebuild with the utmost expedition the tribunals, granaries, and other public edifices ; to despatch proper persons to search for the vessels and ships that have disappeared ; to repair those which are not altoge-

Formosa. Formula. ther unfit for service, and to send immediately to the neighbouring countries for salt and other necessary provisions : but above all, to ascertain in the most accurate manner the different losses sustained by the inhabitants, and the precise number of people that have perished, in order that I may be able to give the fullest information to your majesty.”

“ The emperor of China caused a particular detail of these losses to be published, together with the following letter :

“ Tchang-yu, &c. Tchem-hosi-Thon-Tsong-tou of Fokien, and others, have informed me of the dismal event that hath taken place in the island of Tay-ouan, which is a district of the province of Fokien. They have written to me, that on the 21st of the fourth moon. [Here the emperor repeats what is contained in the preceding letter, and continues thus] : I command Tsong-tou to get the best information he can of the different losses sustained by the inhabitants of the island, and to transmit the particulars to me, in order that I may give them every assistance to repair them. My intention is, that all the houses which have been thrown down shall be rebuilt entirely at my expence ; that those be repaired which are only damaged ; and that provisions, and every thing which the people stand in immediate want of, be supplied them. I should feel much pain, were even one among them to be neglected : I therefore recommend the utmost diligence and strictest inquiry, as I am desirous that none of my subjects should entertain the least doubt of the tender affection which I have for them ; and that they should know that they are all under my eyes, and that I myself will provide for their wants. With regard to my ships of war, tribunals, and public edifices, let them be restored to their former state with money taken from the public treasury, and let the general account of the whole expence be laid before me.”

The missionary who sent this account farther says, From these letters it evidently appears, that this disaster happened in consequence of an earthquake ; but he adds, that the volcano which occasioned it must be at a prodigious depth below the sea. He does not pretend to give an explanation of it ; he is contented with observing, that the same scene seems to have passed at the island of Formosa as at Lima and Lisbon.

FORMULA, or FORMULARY, a rule or model, or certain terms prescribed or decreed by authority, for the form and manner of an act, instrument, proceeding, or the like.

FORMULA, in *Church-History* and *Theology*, signifies a profession of faith.

FORMULA, in *Medicine*, imports the constitution of medicines, either simple or compound, both with respect to their prescription and consistence.

FORMULA, a theorem or general rule, or expression, for solving certain particular cases of some problem, &c.

so  $\frac{1}{2}s + \frac{1}{2}d$  is a general formula for the greater of

two

(A) The hours of the Chinese are double ours : the hour *yn* begins at three in the morning and ends at five ; *ouei* begins at three in the afternoon and ends at five.

Formulary two quantities whose sum is  $s$ , and difference  $d$ ; and  
 Formica-  
 tion.  $\frac{1}{2}s - \frac{1}{2}d$  is the formula, or general value, for the less  
 quantity. Also  $\sqrt{dx - x^2}$ , is the formula, or general  
 value, of the ordinate to a circle, whose diameter is  $d$ ,  
 and absciss  $x$ .

FORMULARY, a writing, containing the form or  
 formula of an oath, declaration, attestation, or abjura-  
 tion, &c. to be made on certain occasions.

There are also formularies of devotion, of prayers,  
 &c. Liturgies are formularies of the public service in  
 most churches.

FORNACALIA, or FORNICALIA, in Roman an-  
 tiquity, a festival instituted by Numa, in honour,  
 of Fornax, the goddess of ovens; wherein certain  
 cakes were made, and offered in sacrifice before the  
 ovens.

FORNICATION (*Fornicatio*, from the *fornices* in  
 Rome, where the lewd women prostituted themselves  
 for money), is whoredom, or the act of incontinency,  
 between single persons; for if either of the parties is  
 married, it is *adultery*. Formerly courts leets had power  
 to inquire of and punish fornication and adultery; in  
 which courts the king had a fine assessed on the offend-  
 ers, as appears by the book of Domesday.

In the year 1650, when the ruling powers found it  
 for their interest to put on the semblance of a very ex-  
 traordinary strictness and purity of morals, not only  
 incest and wilful adultery were made capital crimes,  
 but also the repeated act of keeping a brothel, or com-  
 mitting fornication, were, upon a second conviction,  
 made felony without benefit of clergy. But, at the  
 Restoration, when men, from an abhorrence of the hy-  
 pocriety of the late times, fell into a contrary extreme  
 of licentiousness, it was not thought proper to renew  
 a law of such unfashionable rigour. And these offen-  
 ces have been ever since left to the feeble coercion of  
 the spiritual court, according to the rules of the canon  
 law; a law which has treated the offence of inconti-  
 nence, nay, even adultery itself, with a great degree of  
 tenderness and lenity; owing perhaps to the constrain-  
 ed celibacy of its first compilers. The temporal courts  
 therefore take no cognizance even of the crime of adul-  
 tery otherwise than as a private injury. See ADUL-  
 TERY.

The evils of fornication, which too many wish to  
 consider as no sin, may be judged of from the following  
 particulars.

1. The malignity and moral quality of each crime is  
 not to be estimated by the particular effect of one of-  
 fence, or of one person's offending, but by the general  
 tendency and consequence of crimes of the same nature.  
 In the present case, let the libertine consider and say,  
 what would be the consequence, if the same licentious-  
 ness in which he indulges were universal? or what  
 should hinder its becoming universal, if it be innocent  
 or allowable in him?

2. Fornication supposes prostitution; and by pro-  
 stitution the victims of it are brought to almost cer-  
 tain misery. It is no small quantity of misery in the  
 aggregate, which, between want, disease, and insult,  
 is suffered by those outcasts of human society who in-  
 fest populous cities; the whole of which is a general  
 consequence of fornication, and to the increase and

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continuance of which every act and instance of fornication  
 contributes.

3. Fornication produces habits of ungovernable lewd-  
 nesses, which introduce the more aggravated crimes of  
 seduction, adultery, violation, &c. The criminal in-  
 dulgences between the sexes prepare an easy admission  
 for every sin that seeks it: they are, in low life, usual-  
 ly the first stage in men's progress to the most desperate  
 villainies; and in high life, to that lamented dissolute-  
 ness of principle, which manifests itself in a profligacy  
 of public conduct, and a contempt of the obligations of  
 religion and moral probity.

4. Fornication perpetuates a disease, which may be  
 accounted one of the worst maladies of human nature,  
 and the effects of which are said to visit the constitution  
 of even distant generations.

The passion being natural, proves that it was in-  
 tended to be gratified; but under what restrictions, or  
 whether without any, must be collected from different  
 considerations.

In the Scriptures, fornication is absolutely and pe-  
 remptorily condemned. 'Out of the heart proceed  
 evil thoughts, murders, adulteries, fornication, thefts,  
 false witness, blasphemies; these are the things which  
 defile a man.' These are Christ's own words; and one  
 word from him upon the subject is final. The apostles  
 are more full upon this topic. One well-known pas-  
 sage in the Epistle to the Hebrews may stand in the  
 place of all others; because, admitting the authority  
 by which the apostles of Christ spoke and wrote, it is  
 decisive. 'Marriage and the bed undefiled is honour-  
 able amongst all men, but whoremongers and adulter-  
 ers God will judge;' which was a great deal to say, at  
 a time when it was not agreed even amongst philoso-  
 phers that fornication was a crime.

Upon this subject Mr Paley adds the following ob-  
 servations\*.

"The Scriptures give no sanction to those austerities  
 which have been since imposed upon the world under  
 the name of Christ's religion, as the celibacy of the  
 clergy, the praise of perpetual virginity, the *prohibitio  
 concubitus cum gravida uxore*; but with a just know-  
 ledge of, and regard to the condition and interest of the  
 human species, have provided in the marriage of one  
 man with one woman an adequate gratification for the  
 propensities of their nature, and have restrained them  
 to that gratification.

"The avowed toleration, and in some countries the  
 licensing, taxing, and regulating of public brothels, has  
 appeared to the people an authorizing of fornication,  
 and has contributed, with other causes, so far to vitiate  
 the public opinion, that there is no practice of which  
 the immorality is so little thought of or acknowledged,  
 although there are few in which it can more plainly  
 be made out. The legislators who have patronized re-  
 ceptacles of prostitution ought to have foreseen this  
 effect, as well as considered, that whatever facilitates  
 fornication, diminishes marriages. And as to the usual  
 apology for this relaxed discipline, the danger of great-  
 er enormities if access to prostitutes were too strictly  
 watched and prohibited; it will be time enough to look  
 to that, after the laws and the magistrates have done  
 their utmost. The greatest vigilance of both will do  
 no more, than oppose some bounds and some difficul-  
 ties to this intercourse. And after all, these pretended

Fornica-  
 tion.

\* *Moral and  
 Political  
 Philosophy,*  
 p. 246.

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||  
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fears are without foundation in experience. The men are in all respects the most virtuous in countries where the women are most chaste.

"If fornication be criminal, all those incentives which lead to it are accessaries to the crime: as lascivious conversation, whether expressed in obscene or disguised under modest phrases; also wanton songs, pictures, books; the writing, publishing, and circulating of which, whether out of frolic or for some pitiful profit, is productive of so extensive a mischief from fo mean a temptation, that few crimes within the reach of private wickedness have more to answer for, or less to plead in their excuse.

"Indecent conversation, and by parity of reason all the rest, are forbidden by St Paul, Eph. iv. 29. 'Let no corrupt communication proceed out of your mouth;' and again, Col. iii. 8. 'Put filthy communication out of your mouth.'

"The invitation or voluntary admission of impure thoughts, or the suffering them to get possession of the imagination, falls within the same description, and is condemned by Christ, Matt. v. 28. 'Whosoever looketh on a woman to lust after her, hath committed adultery with her already in his heart.' Christ, by thus enjoining a regulation of the thought, strikes at the root of the evil."

FORNIX, in *Anatomy*, is part of the corpus callosum in the brain; so called, on account of a distant resemblance to the arches of ancient vaults when viewed in a particular manner.

FORRAGE, in the military art, denotes hay, oats, barley, wheat, grass, clover, &c. brought into the camp by the troopers, for the sustenance of their horses.

It is the business of the quartermaster general to appoint the method of forrage, and post proper guards for the security of the forragers.

FORRES, a parliament town of Scotland in the county of Murray, clasing with Inverness, Fortrose, and Nairn. It is a small well built town, pleasantly situated on an eminence near the river Findhorn. The country about it has a cheerful appearance, having a few gentlemen's seats, with some plantations about them. On a hill west of the town are the remains of a castle; and a melancholy view of a number of sandhills, that now cover that tract of land which was formerly the estate of a Mr Cowben in the parish of Dyke. This inundation was occasioned by the influx of the sea and the violence of the wind. It had been the custom to pull up the bent, a long spiry grass near the shore, for litter for horses, by which means the sand was loosened, and gave way to the violence of the sea and wind, which carried it over several thousand acres of land. The people having been prevented from pulling up any more of the grass, the progress of the sand is now nearly stopped, and the sea has retired; but the wind has blown some of the sand from the hills over Colonel Grant's land, and destroyed near 100 acres. A sand bank, which is all dry at low water, runs out from this place for several miles into the Murray Frith. Some of the land, which has been long forsaken by the water, is now beginning to be useful again, and is turned into grazing land. At Forres, coarse linen and sewing thread are made. East from the town, and on the left hand side of the road, is a remarkable obelisk,

said to be the most stately monument of the Gothic kind to be seen in Europe. It has been the subject of many able pens; but totally overlooked by Dr Johnson, who says, "At Forres we found good accommodation, but nothing worthy of particular remark."—It is thus described by Mr Cordiner, in a letter to Mr Pennant: "In the first division, underneath the Gothic ornaments at the top, are nine horses with their riders marching forth in order: in the next is a line of warriors on foot, brandishing their weapons, and appear to be shouting for the battle. The import of the attitudes in the third division is very dubious, their expression indefinite. The figures which form a square in the middle of the column are pretty complex but distinct; four serjeants with their halberts guard a canopy, under which are placed several human heads which have belonged to the dead bodies piled up at the left of the division; one appears in the character of executioner severing the head from another body; behind him are three trumpeters sounding their trumpets, and before him two pair of combatants fighting with sword and target. A troop of horse next appears, put to flight by infantry, whose first line have bows and arrows; the three following, swords and targets. In the lowermost division now visible, the horses seem to be seized by the victorious party, their riders beheaded, and the head of their chief hung in chains or placed in a frame; the others being thrown together beside the dead bodies under an arched cover. The greatest part of the other side of the obelisk, occupied by a sumptuous cross, is covered over with a uniform figure, elaborately raised, and interwoven with great mathematical exactness. Under the cross are two august personages, with some attendants, much obliterated, but evidently in an attitude of reconciliation; and if the monument was erected in memory of the peace concluded between Malcolm and Canute, upon the final retreat of the Danes, these large figures may represent the reconciled monarchs. On the edge below the fretwork are some rows of figures joined hand in hand, which may also imply the new degree of confidence and security which took place, after the feuds were composed, which are characterized on the front of the pillar. But to whatever particular transaction it may allude, it can hardly be imagined, that in so early an age of the arts in Scotland as it must have been raised, so elaborate a performance would have been undertaken but in consequence of an event of the most general importance; it is therefore surprising, that no distinct traditions of it arrived at the era when letters were known. The height of this monument (called *King Sueno's Stone*) above the ground is 23 feet; besides 12 or 15 feet under ground. Its breadth is 3 feet 10 inches by 1 foot 3 inches in thickness."

FORSKOHLEA, a genus of plants belonging to the decandria class. See *BOTANY Index*.

FORSTERA, a genus of plants belonging to the gynandria class. See *BOTANY Index*.

FORT, in the military art, a small fortified place, environed on all sides with a moat, rampart, and parapet. Its use is to secure some high ground, or the passage of a river, to make good an advantageous post, to defend the lines and quarters of a siege, &c.

Forts are made of different figures and extents, according

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||  
Fort.

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ording as the ground requires. Some are fortified with bastions, others with demibastions. Some again are in form of a square, others of a pentagon. A fort differs from a citadel, as this last is built to command some town.

*Royal Fort*, is one whose line of defence is at least 26 fathoms long.

*Star Fort*, is a sconce or redoubt, constituted by re-entering and salient angles, having commonly from five to eight points, and the sides flanking each other.

*Vitrified Forts*, a very singular kind of structures found in the highlands and northern parts of Scotland, in which the walls have the appearance of being melted into a solid mass, so as to resemble the lava of a volcano, for which indeed they have been taken by several persons who have visited them.

These walls were taken notice of by Mr Williams an engineer, who wrote a treatise upon the subject, and was the first who supposed them to be works of art; other naturalists having attributed them to a volcanic origin. These works are commonly situated on the tops of small hills, commanding an extensive view of the adjacent valley or low country. The area on the summit, varying, as is supposed, according to the number of cattle the proprietor had to protect, or the dependents he was obliged to accommodate, is surrounded with a high and strong wall, of which the stones are melted, most of them entirely; while others, in which the fusion has not been so complete, are sunk in the vitrified matter in such a manner as to be quite enclosed with it; and in some places the fusion has been so perfect, that the ruins appear like masses of coarse glass. Mr Williams has not only absolutely determined the walls in question to be the works of art, but has even hazarded a conjecture as to the manner in which they were constructed, and which, according to him, was as follows. Two parallel dikes of earth or sod being raised, in the direction of the intended wall, with a space between them sufficient for its thickness, the fuel was put in, and set on fire. The stones best adapted for the purpose, called the *plum-pudding stone*, are everywhere to be found in the neighbourhood. These were laid on the fuel, and when melted, were kept by the frame of earth from running off; and by repeating the operation, the wall was raised to a sufficient height. This opinion of the stones being thrown in without any order, is thought to be confirmed by the circumstance of there not being anywhere a large one to be seen, nor a stone laid in any particular direction, nor one piece which has not in some degree been affected by the fire. Mr Williams mentions a fact tending to confirm his hypothesis, viz. of a brick kiln situated on the declivity of an eminence, so as to be exposed to the wind, which happening to rise briskly one time when the kiln was burning, so increased the heat, that the bricks were melted, and ran, like a lava, for a considerable way down the hill.

The opinion of Mr Williams has been embraced by several other authors; particularly Mr Freebairn and Dr Anderson, the latter having published two treatises upon these buildings in the *Archæologia*. In the same work, however, we meet with a paper by the Hon. Daines Barrington, in which the author expresses quite different sentiments. He observes, that Mr Williams,

and the other antiquaries, who suppose the walls in question to be works of art, imagine that the reason of their being constructed in this manner was the ignorance of cement, which in these remote ages prevailed in Scotland: but with respect to this circumstance, he says, that if one side of the wall only was heated, and that to any considerable height, the matter in fusion would in all likelihood drop down to the bottom, without operating as any cement to the loose stones thrown in amongst it. This circumstance of the walls being vitrified only on one side, is indeed remarkable, and takes place in most of the forts of this kind to be met with at present: but with regard to it, Mr Barrington observes, that he himself has been twice in the Highlands of Scotland, and has found very few hills of any height which were clothed with wood; the trouble therefore of carrying it up to the top of such a mountain would be very considerable. But to this it might easily be replied, that we cannot by any means argue from the present state of the hills in the Highlands to their state in a very remote period of antiquity. At that time, it is neither impossible, nor in the least improbable, that most of the hills in Scotland were overgrown with wood; or at any rate, there undoubtedly was plenty of peat, which is still used as fuel in Scotland, and which affords such a strong heat as to be advantageously employed in smelting iron, as we are informed by M. Magellan. A third particular mentioned by Mr Williams is, that these enclosures were intended as places of defence; and in support of this opinion he alleges, that there are dried wells found within most of them. But on this Mr Barrington observes, that shelter from the weather was also necessary, "upon the top of a bleak Scotch hill, whilst whisky (or a succedaneum for it) would be often in greater request than the bare element of water." This objection, however, as well as the last, is evidently very frivolous; for these buildings might have roofs as well as any other; and whatever necessity there might be for whisky occasionally, water was certainly an indispensable requisite.

Mr Barrington having thus given his reasons for dissenting from the opinion of Mr Williams and the antiquaries just mentioned, proceeds to state his own. He tells us, that having travelled for 21 years the most mountainous circuit in Wales, he has frequently observed enclosures of dry stones, particularly a long tract in the western part of Merionethshire, called in the language of the country *Duffryn*, i. e. *the vale*. On first viewing these small enclosures made with walls of thick stones, he was at a loss to imagine how it could be worth while to construct such strong fences for so inconsiderable a piece of ground as they enclosed; but, on examining the adjacent country, he found it almost entirely covered with stones of a similar kind; and, of consequence, the smaller the space to be cleared, the less expensive would be the removal. "For the same reason (says he), such dry walls are often of a great thickness, and sometimes the corners of the enclosures are filled with stones to a great width, this being the only possible means of procuring pasture." To a practice of the same kind our author would ascribe the origin of the works in question: but the objection occurs very strongly, that the walls in Scotland are vitrified, and it is not to be supposed that such trouble

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would be taken with fences made in such a fortuitous manner. This objection, our author owns, would indeed be unanswerable, on the supposition that the vitrification was made on purpose to strengthen the walls of the fortrefs; but (says he) may not the vitrification have been occasioned by volcanoes, or by what are called *bloomeries*? The same effect may be produced likewise on dry walls of stone by lightning passing along them. The loose stones in either case would not be rejected because they were glassy, and would be piled up in the fence of the enclosure: as the great point upon these occasions is to clear the ground, and remove the encumbering stones to the smallest distance. One of the advocates for the designed and not fortuitous vitrification, says, that the pieces he had procured did not resemble what is called *lava*. But every volcano is not necessarily an Etna or a Vesuvius; and consequently the matter disgorged from the crater must perpetually vary both in substance and form. Vitrified masses, larger or smaller, will likewise be produced by the same means. It may be contended, indeed, that pasture thus procured, by clearing the ground, would be more convenient at the bottom or on the sides, than on the top of the hill: but to this I answer, that in rocky countries you must get what pittance you can of soil, and often it will happen that the only detached and removeable stones are on the summit. When such enclosures have been made, they became very convenient for putting cattle into; and hence perhaps some of the wells which Mr Williams hath mentioned."

Our author concludes his dissertation on this subject by observing, that if vitrification answered the purpose of cement, it is very extraordinary that the ancient inhabitants of Scotland did not apply it to the houses or huts in which they constantly lived, but reserved this troublesome and expensive process merely for a fortification, which might not perhaps be used in half a century against an enemy. On this it is almost superfluous to observe, that in the ages of barbarity and bloodshed, in which these enclosures, whether natural or artificial, were supposed to be used as fortresses, war was so frequent, that a defence against an enemy might seem to be necessary every day, instead of once in half a century. Before we proceed further in the argument, however, it will be necessary to give some account of the situation and appearance of these fortresses.

According to Mr Cardonnell, the largest of them is situated on the hill of Knockfarrill, to the south of the valley of Strathpeffer, two miles west from Dingwall in Ross-shire. The enclosure is 120 feet long and 40 broad within the walls; strengthened on the outside with works at each end. A range of habitations seems to have been erected against, or under, the shade of the outward wall; of which those on the south side seem to have been higher and larger than those on the north. There are two wells in the middle, which, on being cleared out, filled with water. On the skirts of the hill to the south are many detached buildings; which, from the stratum of dung found on removing the ruins, appear plainly to have been used for securing the cattle. This place seems to have been anciently of consequence, and the residence of some powerful chief, from a road which leads through the hills to the north-west sea. To the east of the works

are a number of vitrified ruins, extending for a considerable way along the ridge of the hill. The end next the fort seems to have joined the outer wall, and consisted either of two parallel walls, closed above, with a passage between them under cover, or a high wall broad enough to walk on. In this wall there is the vestige of a break about the middle, over which a bridge has been laid, to be drawn up or removed as occasion might require.

The fort next in consequence to that of Knockfarril is situated on the hill of Craig-Phadrick near Inverness, "which (says Mr Cardonnell) has this peculiar circumstance, that there appears to have been two vitrified walls quite round the area. The inner one seems to have been very high and strong; the outer wall but low: probably the space between was intended for securing their cattle, as there are no remains of dry-stone buildings, such as are found near the rest. Several parts of this outer wall appear quite entire, sticking to the firm bare rock, where it was first run. The area within the inner wall is near 80 paces long and 27 broad." Of this we have an account † by

Alexander Fraser-Tytler, Esq. professor of civil history in the university of Edinburgh, who visited it in the year 1782. The hill itself is a small conical eminence, forming the eastern extremity of that ridge of mountains which bounds Loch Ness on the north-west side. It is situated about a mile to the north of Inverness, and is accessible on two different quarters, viz. the west and south-east; the former affording entrance by a narrow level ridge joining the hills on Loch Ness, and the latter by an easy ascent from the high ground above Inverness. On approaching the hill from the west, we first meet with a road cut through the rock from the bottom to the top, in most places 10 feet broad and nearly as deep; winding; for about 70 feet, with an easy serpentine direction, by which we gain an ascent over a steep rock otherwise quite inaccessible from that quarter. This road, in our author's opinion, is undoubtedly the work of art, and the vitrified matter on the top is the only thing which indicates the effect of fire; there being neither an appearance of pumice-stone, lava, nor basaltes, about the hill otherwise. There is indeed plenty of plum-pudding stone; which some have supposed to be of the nature of volcanic tufa; but this opinion is rejected by our author as erroneous. "But the circumstance (says he) which in my apprehension evinces, in the most satisfactory manner, that these appearances of the effect of fire on the summit of this hill are not the operation of nature but of art, is the regular order and disposition of those materials, the form of the ground, and the various traces of skill and contrivance which are yet discernible, though considerably defaced either by external violence or the obliterating hand of time." To investigate this matter regularly, he begins with the winding road already mentioned, and which is evidently cut through the rock for the purpose of gaining an easy ascent from the level ridge to the summit, which would otherwise have been impracticable. In ascending by this road, there appears, towards the middle, on the right hand, a small platform overhanging the passage, and inclining by a very gentle declivity to the very edge of the rock. Four enormous stones are placed upon the platform, and on the edge and

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Forts.† *Edin. Phil.  
Transact.*  
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Class II.  
Art. 11.

extremity

extremity of it, which have evidently been guided by art into that position; it being impossible that they could have rested there, had they been rolled down from the higher parts. The obvious reason for placing them in such a position has been, that on an alarm of danger they might be projected into the path below, which could be done by the efforts of a very few men: and when this was done, the passage would be entirely obstructed, or at least rendered so difficult that it could be defended by a few against any number of assailants. Some other large stones are placed on an eminence to the left, probably with a view to block up a hollow channel, by which an enemy might have attempted to ascend. When we come to the top of the hill, a few feet below the rampart which crowns the whole, there appears an outward wall, approaching on the sides of the hill so near the upper rampart, as to have only a trench of 10 or 12 feet wide between them. This outward wall is in some places so low as to be almost level with the rock, though in other places it rises to the height of two or three feet; but even where lowest, it may be traced by a line of vitrified matter sticking fast to the rock all along, and nearly of the same breadth, which is about nine feet. The remains of this wall are strongly vitrified, except in one place on the north side, where, for about 70 yards, the rampart is formed only of dry stones and earth. At the east side, where the hill is more accessible, there is a prodigious mound of vitrified matter, extending itself to the thickness of above 40 feet. At the south-east corner, and adjoining to this immense mound, is an outwork, consisting of two semicircular vitrified walls, with a narrow pass cut through them in the middle; which appears to have been another, and perhaps the principal, entry to the fort.

The inner wall, surrounding the summit of the hill, encloses an oblong level area of about 75 yards long and 30 broad, rounded at each of the ends like the outward wall. It is of considerable height, and nearly of the same thickness with the outward one.—It has some appearance of having been defended with four turrets or bastions: but the traces are so imperfect, that Mr Tytler does not lay much stress on his observations in this respect; a number of small tumuli of earth, with a stone in the centre, were more discernible. On the east side a portion of the internal space appears separated from the rest by two ranges of stones fixed strongly in the earth, and forming a right-angled parallelogram. “This separation (says our author) is immediately discernible by the eye, from this circumstance, that the whole of the enclosed summit has been most carefully cleared from stones, of which there is not one to be seen, unless those that form this division, and the single one in the middle of the circle of tumuli above mentioned. What has been the design of this separated space, it is difficult to conjecture. It might perhaps have marked the residence of those of a higher rank, or served as a temple for the purposes of devotion.” On the east end of the large area on the summit is a well of about six feet in diameter, which has probably been sunk very deep in the rock, though now it is filled up with rubbish to within a yard of the top.

The other fortified hills mentioned by Mr Cardonnel are those of Dun-Evan in the shire of Nairn; Tor-

dun castle, near Fort Augustus; and another on the west side of Gleneves in Lochaber, three miles to the south of Fort William. The Castle hill of Finhaven, in the county of Angus, has likewise some considerable ruins of the same kind.

Dun-Evan and the hill of Finhaven have likewise been visited by Mr Tytler, who gives an account of them in the paper already quoted; of which the following is an abstract. “On the summit of the hill of Dun-Evan, whose name implies that it had been originally a place of defence, are the remains of two walls surrounding an oblong space like that of Craig Phadrick already described, but somewhat smaller in size. [Mr Cardonnel says that it is about 70 paces long and 30 broad]. There are likewise the traces of a well in the enclosed area; and at the east end are the remains of a prodigious mass of building, much more extensive than that on Craig Phadrick.” Here, however, our author could not perceive any marks of fire; and Mr Williams owns that the vitrified ruins here are more wasted than on Knockfarril or Craig Phadrick. But with regard to the vitrifications here, our author is inclined to suppose Mr Williams to have been entirely in a mistake. On the Castle hill of Finhaven, however, the vitrified remains are very visible all round the summit, which is cleared of stones and levelled, unless at one end, where there is a great hollow space separated from the rest of the area, and probably destined exclusively for the keeping of cattle. The enclosed area is about 140 yards long, and upwards of 40 broad.

Besides these fortifications, the hill of Noth affords a remarkable appearance of the same kind: of which Mr Cordiner gives the following description, not from his own observation, but those of a gentleman of credit who visited the place. “On the top of the hill there is an oblong hollow, as I could guess, of about an English acre, covered with a fine sward of grass: in the middle toward the east end of this hollow is a large and deep well. The hollow is surrounded on all sides with a thick rampart of stones. On three sides of this rampart, from 8 to 12 feet thick, is one compact body of stones and minerals which have been in a state of fusion, resembling a mixture of stone and iron-ore, all vitrified, calcined, and incorporated. On the north side, the rampart consists of broken pieces of rock, which have the appearance of having been torn to pieces by some extraordinary violence. If the calcined compact wall exists under them, it is not at present visible.”

Such are the descriptions of the most remarkable of these curious fortifications, which of late seem to have engaged the attention of the learned in a considerable degree. We have already taken notice, that by some they are supposed to be the works of art, by others the productions of a volcano. Mr Cardonnel adopts the opinion of Mr Williams as the most probable, both with respect to their use and manner of construction. Mr Tytler takes notice of the remarkable difference of opinion among those who have viewed the places in question. “It is curious to remark (says he) how the same appearances, to different observers, lead to the most opposite opinions and conclusions. The two gentlemen above mentioned (Mr Williams and Dr Anderson) seem not to have entertained the small-

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est doubt, that the vitrified materials on the tops of these hills were the vestiges of works of art, and the remains of structures reared for the purposes of security and defence. The bishop of Derry, when on a tour to the north of Scotland, visited the hill of Craig Phadrick near Inverness, and expressed his opinion, that the mounds of vitrified matter were not the remains of any artificial work, but the traces of an ancient volcano. In the Phil. Transf. of the Royal Society of London for 1777, Part II. N<sup>o</sup> 20. is an account of *Creck Faterick*, there termed a *Volcanic hill near Inverness*, in a letter from Thomas West, Esq. to Mr Law, F. R. S. in which the writer does not hesitate to pronounce this hill an extinguished volcano; and having sent specimens of the burnt matter for the inspection of the Royal Society, the secretary subjoins a note to the paper, intimating, that these specimens having been examined by some of the members well acquainted with volcanic productions, were by them judged to be real lava. Such was likewise the opinion of the late Andrew Crosbie, Esq. who, in an account which he gave to the Philosophical Society of Edinburgh in 1780, offered some very curious conjectures with regard to the process of nature, by which he supposed the whole of this hill to have been thrown up from the bottom of the sea by the operation of intestine fire.

Mr Tytler agrees with those who think the vitrified structures to be artificial works: but he differs from Mr Williams and others, who think that they were vitrified on purpose for cementing the materials together. His reason for this is, that the number of forts that show marks of vitrification, is considerable when compared with those that do not. He therefore considers the vitrification as accidental; and that it must have been accomplished in the following manner. In the rude state in which we must suppose Scotland to have been in early times, it is very probable that their buildings, both for habitation and defence, would be frequently constructed of loose stones of an irregular shape; of which, by themselves, it would scarce be possible to fabricate a wall of any tolerable strength. Hence it became necessary to use wood as well as stone in their construction. This kind of building, then, in our author's opinion, was begun by raising a double row of pallisades or strong stakes in the form of the intended structure, in the same way as in that ancient mode of building described by Palladio under the name of *riempita à cassa*, or coffer-work. These stakes were probably warped across by boughs of trees laid very closely together, so as to form two fences running parallel to each other at the distance of some feet, and so close as to confine all the materials of whatever size that were thrown in between them. Into this intermediate space Mr Tytler supposes were thrown boughs and trunks of trees, earth and stones of all sizes, large or small as they could quarry or collect them. Very little care would be necessary in the disposition of these materials, as the outward fence would keep the mound in form. In this way it is easy to conceive that a very strong bulwark might be reared with great despatch; which, joined to the natural advantage of a very inaccessible situation, and that improved by artful contrivances for increasing the difficulty of access, would form a structure capable of answering every purpose of

security or defence. The most formidable attack against such a building would be fire, which would no doubt be always attempted, and often with success, by an enemy who undertook the siege. If the besiegers prevailed in gaining an approach to the ramparts, and, surrounding the external wall, set fire to it in several places, the conflagration must speedily have become universal, and the effect may be easily imagined. If there happened to be any wind at the time to increase the heat, the stony parts could not fail to come into fusion; and as the wood burnt away, sinking by their own weight into a solid mass, there would remain a wreck of vitrified matter tracking the spot where the ancient rampart had stood; irregular, and of unequal height, from the fortuitous and unequal distribution of the stony materials of which it had been composed. This conjecture appears very probable from their appearance at this day. They do not seem to have ever been much higher than they are at present, as the fragments that have fallen from them, even where the wall is lowest, are very inconsiderable. The durable nature of the materials would prevent them from suffering any changes by time; though from the gradual increase of the soil, they must in some places have lost considerably of their apparent height, and in others been quite covered. Mr Williams, in making a cut through the ramparts at Knockfarril, found in many places the vitrified matter covered with peat moss half a foot thick.

In confirmation of this opinion, our author likewise urges that in the fortification on Craig Phadrick, a large portion of the outward rampart bears no marks of vitrification. The reason of this seems to be, that the steepness of the hill on that side renders a low fence of stones and turf sufficient; and no wood had probably been employed in its construction. "It appears therefore highly probable (concludes our author), that the effect of fire upon these hill fortifications has been entirely accidental; or to speak more properly, that fire has been employed not in the construction, but towards the demolition of such buildings: and for the latter purpose it would certainly prove much more efficacious than for the former. It is much to be doubted, whether it would be at all possible, even in the present day, by the utmost combination of labour and of skill, to surround a large space of ground with a double rampart of stones compacted by fire, of such height and solidity as to answer any purpose of security or defence against an enemy. Any structure of this kind must have been irregular, low, fragile, easily scaled, and quite insecure; a much weaker rampart, in short, than a simple wall of turf or wooden pallisade. The vestiges yet remaining, as I have already observed, give no room to suppose that the vitrified mound has ever been much more entire than it is at present. The effect of fire upon structures reared in the manner I have supposed them to have been, will account most perfectly for their present appearance. It was from necessity that the builders of these fortifications betook themselves to a mode of structure so liable to be destroyed by fire. In those parts where stones could be easily quarried, of such size and form as to rear a rampart by themselves of sufficient strength and solidity, there was no occasion to employ wood or turf in its construction; and it was therefore proof against all assaults

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Forts.

faults by fire. Such are the ramparts which appear on the hill of Dun-Jardel, Dun-Evan, and many others, on which there is not the smallest appearance of vitrification. But on Craig Phadrick, and the other hills above described, where, from the nature of the rock, the stones could be procured only in irregular and generally small fragments, it was necessary to employ some such mode of construction as I have supposed; and these ramparts, though solid and well calculated for defence against every attack by force or stratagem, were not proof against an assault by fire."

Mr Cordiner is of opinion, that the vitrifications in question cannot have been the works of art, and ridicules the contrary hypothesis; though without adducing any argument against it. The Hill of Noth is by him supposed to have been a volcano. He describes it as "a most majestic mountain, in general brown, with moss and heath, interspersed with bare rock, in many places crumbling down. The highest part of it is a circular hill, whose verdure, as well as height, distinguishes it from the rest of the mountain. This is called the *Top of Noth*; and bears the strongest resemblance to every description of a volcanic mount. At the distance of many miles, one can distinguish those ridges which are the boundaries of the crater, indicating the hollow in the top." The gentleman from whom Mr Cordiner received the account of the vitrifications on the summit, informs us, that on first seeing specimens of them, he imagined that they had been pieces of stone calcined by the burning down of a castle; as he had found something very like them on the castle-hill at Cullen, in parts where the sward of grass was broken; but on reaching the top, and viewing the appearances on it already described, he altered his opinion. "That men hardly beset (says he) might climb up with some provisions to this as a place of refuge, is probable: but that, on a barren mountain top, far from cultivated ground, half a day's journey from the plain; that there, in any period of society, man should have been tempted to build that amazing rampart, is not to be imagined: they have found it a natural and extensive fortress, and in critical circumstances have made use of it accordingly. That it has been occupied as a place of strength and of refuge, is very evident; for, some hundred yards lower down on the hill, there are the remains of another rampart or wall, consisting of loose stones piled together without any cement, carried quite round the hill. This last has been built for an additional defence to those who made their abode on the top. The top of Noth, for two-thirds downwards, is covered with a green sward; below that, it is brown with heath: this is the very reverse of the adjacent mountains; and the greater verdure of the upper part I imputed to a new soil created by the ashes of the volcano. The opening, called a *well*, I suppose to have been the latest crater. About a mile south, down towards the lower grounds of the *Cabrock*, there is a very pretty regular green hill, which I ascribe to a later eruption than those which may have formed the contiguous hills now covered with heath. There is an extraordinary luxuriant spring of water rushes out at once from the side of the hill of Noth; which is likewise some confirmation of the opinion that a volcano has some time existed there,

which has occasioned great hollows and reservoirs of water in the heart of the mountain. And the wild irregularities of nature through all the *Cabrock*, the hideous and strange projection of rocks from the sides of the hills, would seem to indicate some vast convulsions which the earth must have suffered in these parts.

"The traces of ancient volcanoes (says Mr Cordiner) are far from being unfrequent in Scotland. The hill of Finhaven is one instance; and not only abundant in this species of lava, but with *tarras*, or the *pulvis puteolanus*, an *amalgama*, as Coudamine calls it, of calcined stones mixed with scorias and iron rust reduced to powder. The hill of Beregonium, near Dunstaffnage castle, is another, yielding vast quantities of pumice or scoria of different kinds; many of which are of the same species with those of the volcanic Iceland. The noble assemblage of basaltic columns at Staffa, those in the Isle of Sky, and the rock Humble, are but so many evidences of the ancient volcanoes of this country. And finally, the immense stratum of pumex vitreus or Iceland agate, on the hill of Dun-fuin in Arran, is the last proof I shall bring in support of the question."

On this dispute we can only observe, that whatever side we embrace, the difficulties seem to be very great, nay almost insurmountable. When we consider the great thickness of the walls on the top of Noth, from 8 to 12 feet, and the vast mound of vitrified matter, no less than 40 feet in breadth, mentioned by Mr Tytler, we can scarce conceive it possible that less than a volcanic fire could be able to form them. We may easily allow, that, in the way this gentleman mentions, there might be considerable vitrifications formed; but that such immense masses should be brought into perfect fusion by the small quantity of fuel which could be put round them in palliades, or intermixed with the materials themselves, will be incredible to every one acquainted with the extreme difficulty with which stones of any magnitude are brought into complete fusion. We see even in the insides of furnaces, though sometimes built of no more infusible materials than common brick, no such effects follow. There is a slight vitrification indeed, but it scarcely ever penetrates to the depth of an inch or two, though very violent fires are kept up for a much longer time than we could suppose the wood surrounding those walls to require for its being consumed. In conflagrations, where houses are consumed, which are the only similar examples we have, no such effect is perceived. Even in the great fire at London in 1666, where so many buildings were destroyed, we do not hear of their walls being vitrified, though the materials of many of them were undoubtedly as fusible as the rocks and stones of Craig Phadrick, or the Top of Noth. If, on the other hand, we reject this, and adhere to the volcanic hypothesis, our difficulties are equally great. For where shall we find, in any other part of the world, an example of volcanoes ejecting lava in the form of walls enclosing a regular area? This would be attributing such a singularity to the volcanoes of Scotland as the most extravagant imagination cannot admit. We must therefore conclude, that though these ruins are certainly the works of art, we have not yet sufficient data

Verified  
Forts  
||  
Fortescue.

to decide the question with respect to their construction, but that the subject requires a farther investigation.

In the paper already quoted, Mr Tytler observes, that "these ancient fortifications present a more curious and interesting object of speculation, than those uncertain and indeed fruitless conjectures as to the mode in which they have been reared." This, he justly observes, must have been before the use of mortar was known; for as the country abounded in limestone, and the builders certainly would exert all their powers in giving them a proper degree of strength, it would undoubtedly have been used. Hence we are led to ascribe to these a very considerable degree of antiquity; for as the Britons were taught the use of mortar by the Romans, it is probable that we must date the origin of the structures in question before the time of the invasion of that people, or at least soon after it; so that we must look upon them to be more than 1650 years old; but how far beyond that period we are to search for their origin, does not appear. "All that we can conclude with certainty (says our author) is, that they belong to a period of extreme barbarism. They must have been constructed by a people scarcely removed from the state of savages, who lived under no impression of fixed or regulated property in land; whose only appropriated goods were their cattle; and whose sole security, in a life of constant depredation, was the retreat to the summits of those hills of difficult access, which they had fortified in the best manner they could. As the space enclosed was incapable of containing a great number of men, especially if occupied in part by cattle, it is presumable, that these retreats were formed chiefly for the security of the women and children of the canton, and of their herds. They could be defended by a few men, while the rest of the tribe were engaged with their enemies in the field."

Our author concludes his dissertation with a conjecture, that the forts in question were constructed, not only before the Roman invasion, but before the introduction of the rites of the Druids into Britain; as "there appears no probability that the inhabitants either lived under such a government as we know to have prevailed under the influence of the Druids, or had any acquaintance with those arts which it is certain they cultivated."

FORTALICE, in *Scots Law*, signified anciently a small place of strength, originally built for the defence of the country; and which on that account was formerly reckoned *inter regalia*, and did not go along with the lands upon which it was situated without a special grant from the crown. Now, fortalices are carried by a general grant of the lands; and the word is become synonymous with manor-place, messuage, &c.

FORTESCUE SIR JOHN, lord chief justice of the King's Bench, and lord high chancellor of England, in the reign of King Henry VI. was descended from the ancient family of Fortescue, in the county of Devon. He studied the municipal laws of England in Lincoln's Inn, of which he was made one of the governors in the fourth and seventh years of the reign of King Henry VI. In 1430 he was called to the degree of a serjeant at law, and in 1441 was constituted the king's serjeant. The following year he was made lord chief justice of the King's Bench; in which honourable

station he continued till near the end of that king's reign, who showed him many particular marks of his favour, and advanced him to the post of lord high chancellor of England. During the reign of King Edward IV. he followed the fortunes of the house of Lancaster, and was many years in exile with Queen Margaret and Prince Edward her son. At length, they having a prospect of retrieving their desperate fortunes, the queen and prince returned to England, and Sir John Fortescue, with many others, accompanied them: but soon after the decisive battle of Tewkesbury, he was thrown into prison and attainted, with other Lancastrians; but found means to procure his pardon from Edward IV. He wrote, 1. A learned commentary on the politic laws of England, for the use of Prince Edward; to one edition of which Mr Selden wrote notes. 2. The difference between an absolute and limited monarchy, as it more particularly regards the English constitution (which was published, with some remarks, by John Fortescue, afterwards Lord Fortescue, in 8vo, in 1714; and a second edition was published, with amendments, in 1719): And several works, which still remain in manuscript. He died near 90 years of age; and was buried in the parish church of Ebburton, where a monument was erected to his memory, in 1677, by one of his descendants.

FORTH, one of the most noble and commodious rivers in Scotland. It takes its rise near the bottom of Ben-Lomond; and running from west to east, receives in its passage many considerable streams, deriving their waters from the eminences in the midland counties of North Britain. Between Stirling and Alloa, the Forth winds in a most beautiful and surprising manner; so that, though it is but four miles by land, it is 24 by water between those two places. Below Alloa the river expands itself to a great breadth between the counties of Lothian and Fife, till at Queens-ferry it is contracted by promontories shooting into it from both coasts; so that, from being four or five, there it is not above two miles broad. In the middle of the channel lies a small island called *Inchgarvy*, which has a spring of fresh water: upon the island there is an ancient fort, which has been lately repaired; and if there were either forts or blockhouses on the opposite promontories, that part of the river which lies between Alloa and Queens-ferry would be as secure and convenient a harbour as could be desired. A little below this, near the north shore, lies Inchcolm, on which are the remains of an ancient monastery of considerable extent; and opposite to Leith stands the island of Inchkeith, formerly fortified, but now in ruins. Below Queens-ferry the north and south shores receding, the body of the water gradually enlarges till it becomes two or three leagues broad, affording several safe harbours on both sides, and excellent roads throughout, unembarrassed with latent rocks, shoals, or sands; and allowing secure anchorage to the largest ships within a league of the coast in almost any part of the Frith, and to vessels of a smaller size within a mile or less. The Firth, or (as it is commonly written) the *Frith*, of Forth, is, at the mouth of it, from North Berwick to Fifeness, full five leagues broad; having the little island of May (on which there is a lighthouse, and there might also be a fort) in the middle of it, and to the west of this the rocky island of Bass; notwithstanding

Forth.

Forth.

standing which, the largest fleet may enter and sail up it many miles with the utmost facility and in the greatest safety. In 1781, Admiral Parker's fleet lay some weeks opposite to Edinburgh, accompanied by 500 sail of merchantmen, the whole in full view of the city and castle.

The Forth was known to the ancients by the name of *Bodotria*, or (as Ptolemy calls it *Boderia*, and has been ever famous for the number of its havens: some of which are, indeed, in their present condition, scarce worthy of that name. It is navigable for merchantmen as high as Alloa, 50 miles from the sea; and for coasters as far as Stirling, 24 miles further by water, though only four by land in a direct line, as already observed. The tide flows only a full mile above Stirling to a place called *Craigforth*, where the proprietor intercepts the passage of the salmon by a cruive or wear, very injurious to the large tract of country which stretches as far as Lomond westward. The river from Stirling to the bridge of Aberfoil, at the entrance into the West Highlands, is only passable for man or horse at few places, and these in dry seasons. It glides gently through a dead flat, from Gartmore eastward; "and on these accounts (says Mr Knox \*) it might be made navigable for barges, at a trifling expence to the proprietors of the lands, an improvement much wanted in a rich, extensive, and populous valley, without market towns, coal and lime. Supposing this work to be executed, of which there is some probability, the whole extent of navigation on the Forth, will, including all its windings, exceed 200 miles, through a coast of nearly 100 miles; fertile, populous, industrious; and from Stirling eastward, almost lined with towns, anciently the seats of commerce and navigation, till they were ruined by the English depredations; in which miserable state some of them still remain, while others begin to resume the appearance of business. The principal object of these towns was the fisheries; which

\* *View of the British Empire*, vol. ii. p. 518.

they prosecuted with great vigour as far as Iceland, till the time of the Union, from which period the eastern fisheries gradually dwindled away; and the poor fishermen, unable to subsist themselves upon air and water, took up the trade of smuggling; but so soon as the fishery laws shall be amended, the salt duties abolished, and an adequate bounty extended to boats as well as busses, these people will readily fall into the track of their ancestors, live by honest industry, and add new vigour to our naval strength. Many of the ports are nearly choked up, others want repairs, which neither the individuals nor the corporations of those decayed places can accomplish. Though the harbours on the Forth are in general small, the depth of water might be made sufficient for vessels of 200 tons burden, which fully answers the purposes of their coasting and Baltic trade; but to obtain this, or even a less depth of water, an aid of 50,000*l.* would be requisite."

Forth.

By this river and the Clyde, Scotland is almost divided into two parts. The Forth falls into the east sea below Edinburgh, and has an easy communication with the whole eastern coast of Great Britain; with France, Ostend, Holland, Hamburgh, Prussia, Dantzic, Russia, Sweden, Denmark, Norway, and Greenland. The Clyde falls into the Atlantic ocean below Glasgow, and communicates with the western coast of Great Britain; with Ireland, the south of France, Portugal, Spain, the Mediterranean, America, and the West Indies. These two rivers, thus falling in opposite directions into the two seas which environ our island, and the neck of land between them amounting scarcely to 24 miles, gave rise to the idea of a junction, so as to open a communication across the kingdom, and thereby cut off the long dangerous navigation by the Land's End and the Pentland Frith: an object of vast utility, and which has been happily accomplished. See CANAL.

## FORTIFICATION;

THE art of fortifying a town, or other place; or of putting it in such a posture of defence, that every one of its parts defends, and is defended by, some other parts, by means of ramparts, parapets, moats, and other bulwarks; to the end that a small number of men within may be able to defend themselves for a considerable time against the assaults of a numerous army without, so that the enemy in attacking them must of necessity suffer great loss.

The origin and rise of fortification is undoubtedly owing to the degeneracy of mankind. In the first ages of the world, men were dispersed up and down the countries in separate families, as we are told in the histories of the Jews and Scythians, who wandered from one place to another, for the sake of finding pasture for their cattle. These families became in time so numerous as to form large communities, which settled all together in a place; from whence villages and towns had their origin and rise: but they found it was necessary, for the common security, to surround those towns with walls and ditches, to prevent all violences

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from their neighbours, and sudden surprises. This was sufficient for some time, till offensive weapons were invented, and conquering became a fashion. Then walls with loop holes were made at proper distances, in order to screen the defenders against the arrows of the assailants: but finding that, as soon as the enemy got once close to the walls, they could from no part be discovered or repulsed; for this reason they added square towers at proper distances from each other, so that every part of the wall might be defended by the adjacent sides of the towers. This manner of enclosing towns, however, was found to be imperfect, because there remained still one of the faces of the towers which fronted the field that could not be seen from any other point, and therefore could not be defended. To remedy this, they made the towers round instead of square, imagining this figure to be the strongest to resist the battering engines, as likewise to be better defended from the other parts of the wall.

Notwithstanding the superiority of this method above the former, there remained yet a part of these

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towers

Vauban's  
Method.

towers unseen and incapable of being defended; which made them change the figure of the towers again; that is, they made them square as before; but, instead of presenting a face to the field as formerly, they presented an angle; by this means they effectually found out such a disposition of their works that no part could be attacked without being seen or defended by some other part.

This last method was in use a long while; and would in all probability have continued to this day, if gunpowder had not been found out; but the violence of the guns and mortars soon convinced the world, that such towers and walls were but a weak defence against these thundering engines; and besides, as the nature of the attack was entirely changed, it was also necessary to change that of fortifying likewise.

From that time ramparts were added to the walls, the towers enlarged into bastions, and all sorts of outworks have been added, such as ravelins, counter-guards, horn and crown works, and others of the like nature, in order to render the defence in some measure equivalent to the attack.

Notwithstanding all the improvements which have been made in the art of fortifying since the invention of gunpowder, that of attacking is still superior to it; engineers have tried in vain to render the advantages of a fortification equal to those of the attack; the superiority of the besiegers fire, together with the greater number of men, obliges generally, sooner or later, the besieged to submit.

The greatest improvement made in the art of attacking happened in the year 1697, when M. Vauban made first use of ricochet firing at the siege of Ath, whereby the besieged placed behind the parapets were as much exposed to the fire of the besiegers as if there had been none; whereas, before, they had been secure as long as the parapet was not demolished; and the worst is, that there can be no remedy found to prevent this enflading, without falling into inconveniences almost as bad as those which we endeavour to avoid.

FORTIFICATION is either regular or irregular. *Regular* fortification, is that built in a regular polygon, the sides and angles of which are all equal, being commonly about a musket shot from each other. *Irregular* fortification, on the contrary, is that where the sides and angles are not uniform, equidistant, or equal; which is owing to the irregularity of the ground, valleys, rivers, hills, and the like.

### SECT. I. Of Regular Fortification.

ALTHOUGH authors agree as to the general form in the present manner of fortifying, yet they mostly differ in particular constructions of the parts. As it would be both needless and superfluous to treat of all the different methods hitherto proposed, we shall content ourselves with explaining those only which are most esteemed by the best judges, and have been mostly put in practice.

#### Construction of M. VAUBAN'S Method.

This method is divided into little, mean, and great; the *little* is chiefly used in the construction of citadels,

the *mean* in that of all forts of towns, and the *great* in particular cases only.

We shall give the construction of the mean, as being most useful; and refer the reader to the table hereafter, for those dimensions which are different in these several fortifications.

Inscribe in a circle a polygon of as many sides as the fortification is designed to have fronts; let AB (fig. 1.) be one of the sides of half an hexagon, which bisect by the perpendicular CD; divide half AC of it into nine equal parts, and one of these into ten others; then these divisions will serve as a scale to construct all the parts of the fortification, and each of them is supposed to be a toise or fathom, that is, six French feet; and therefore the whole side AB is supposed to be 180 toises.

As the dividing a line into so many equal parts is troublesome and tedious, it is more convenient to have a scale of equal parts by which the works may be constructed.

If therefore, in this case, the radius is taken equal to 180 toises, and the circle described with that radius being divided into six equal parts, or the radius being carried six times round, you will have a hexagon inscribed; AB being bisected by the perpendicular CD as before, set off 30 toises from C to D, and draw the indefinite lines ADG, BDF; in which take the parts AE, BH, each equal to 50 toises: from the centre E describe an arc through the point H, meeting AD in G, and from the centre H describe an arc through the point E, meeting BD in F; or which is the same, make each of the lines EG, HF, equal to the distance EH; then the lines joining the points A, E, F, G, H, B, will be the principal or outline of the front.

If the same construction be performed on the other sides of the polygon, you will have the principal or outline of the whole fortification.

If, with a radius of 20 toises, there be described circular arcs, from the angular points B, A, M, T, and lines are drawn from the opposite angles, E, H, &c. so as to touch these arcs, their parts, *a b, b c, &c.* together with these arcs, will represent the outline of the ditch.

#### DEFINITIONS.

1. The part FEALN, is called the bastion.
2. AE, AL, the faces of the bastion.
3. EF, LN, the flanks.
4. FG, the curtain.
5. FN, the gorge of the bastion.
6. AG, BF, the lines of defence.
7. AB, the exterior side of the polygon.
8. CD, the perpendicular.
9. Any line which divides a work into two equal parts, is called the capital of that work.
10. *a b c*, the counterscarp of the ditch.
11. A, M, the flanked angles.
12. H, E, L, the angles of the shoulder, or shoulder only.
13. G, F, N, the angles of the flank.
14. Any angle whose point turns from the place is called a *salient angle*, such as A, M; and any angle whose

Vauban's  
Method.

Plate  
CCXXI.

Of Orillons.  
Plate CCXXI.

whose point turns towards the place, a *re-entering angle*, such as *b, F, N*.

15. If there be drawn two lines parallel to the principal or outline, the one at 3 toises distance, and the other at 8 from it; then the space *y x* included between the principal one and that farthest distant, is called the *rampart*.

And the space *x x*, contained by the principal line, and that near to it, and which is generally stained black, is called the *parapet*.

16. There is a fine line drawn within four feet of the parapet, which expresses a step called *banquette*.

N. B. All works have a parapet of three toises thick, and a rampart of 8 to 10, besides their slopes. The rampart is elevated more or less above the level of the place from 10 to 20 feet, according to the na-

ture of the ground and the particular constructions of engineers.

The parapet is a part of the rampart elevated from 6 to 7½ feet above the rest, in order to cover the troops which are drawn up there from the fire of the enemy in a siege; and the banquette is two or three feet higher than the rampart, or about four feet lower than the parapet; so that when the troops stand upon it they may just be able to fire over the parapet.

17. The body of the place, is all that which is contained within this first rampart: for which reason, it is often said to construct the body of the place; which means properly, the construction of the bastions and curtains.

18. All the works which are constructed beyond the ditch before the body of the place are called *outworks*.

Of Ravelins.  
Plate CCXXI.

T A B L E.

Side of Polyg.	Forts.						Little Fortif.				Mean.		Great.	
	80	90	100	110	120	130	140	150	160	170	180	190	200	260
Perpendicular.	10	11	12½	14	15	16	20	21	23	25	30	31	25	22
Faces bast.	22	25	28	30	33	35	40	42	45	47	50	53	55	60
Cape of ravel.	25	28	30	35	38	40	54	50	50	52	55	55	60	50

In the first vertical column are the numbers expressing the lengths of the exterior sides from 80 to 260. In the second, the perpendiculars answering to these sides. In the third, the lengths of the faces of bastions: and in the fourth, the lengths of the capitals of the ravelins.

The forts are mostly, if not always, squares: for which reason, the perpendiculars are made one-eighth of the exterior sides; because if they were more, the gorges of the bastions would become too narrow.

The little fortification is chiefly designed for citadels, and are commonly pentagons; the perpendiculars are made one-seventh of the exterior side: the mean is used in all kinds of fortifications from an hexagon upwards to any number of sides; and the great is seldom used but in an irregular fortification, where there are some sides that cannot be made less without much expence or in a town which lies near a great river, where the side next the river is made from 200 to 260 toises; and as that side is less exposed to be attacked than any other, the perpendicular is made shorter, which saves much expence.

The faces of the bastions are all ¾ths of the exterior sides, or nearly so, because the fractions are neglected.

It may be observed in general, that in all squares the perpendicular is ¼th of the exterior side, and all pentagons ⅓th, and in all the rest upward ½th.

1. Construction of Orillons and retired Flanks.

Describe the front MPQRST as before, and divide the flank into three equal parts, of which suppose *S r* to be one: from the opposite flanked angle *M* draw a line *M r*, in which take the part *m r* of 5 toises; take likewise *R n* in the line of defence *MR*, produced, equal to 5 toises, and join *n m*, upon which as a base describe the equilateral triangle *n p m*, and from the

angle *p*, opposite to the base as centre, is described the circular flank *n m*.

And if *S r* be bisected by the perpendicular *1, 2*, and another be erected upon the face *ST*, at *S*; the intersection *2* of these two perpendiculars will be the centre of the arc which forms the orillon.

The orillons are very useful in covering the retired flanks, which cannot be seen but directly in the front; and as these orillons are round, they cannot be so easily destroyed as they would be if they were of any other figure.

2. Construction of Ravelins or Half-moons.

Fig. 2. Set off 55 toises, from the re-entering angle *O* of the counterscarp, on the capital *OL* or on the perpendicular produced, and from the point *L* draw lines to the shoulders *AB*; whose parts *LM, LN*, terminated by the counterscarp, will be the faces, and *MO, ON*, the semi-gorges, of the ravelin required.

This is *M. Vauban's* method of constructing ravelins, according to some authors: and others will have the faces of the ravelin to terminate on those of the bastions within 3 toises of the shoulders; which seems to be the best way, for these ravelins cover the flanks much better than the others.

The ditch before the ravelin is 12 toises, its counterscarp parallel to the faces of the ravelins; and is made in a circular arc, before the salient angle; as likewise all ditches are in general.

When the ravelins are made with flanks, as in fig. 3. the faces should terminate on those of the bastions, at least 5 toises from the shoulders.

The flanks are made by setting off 10 toises from the extremities of the faces, from *f* to *h*, and from *m* to *l*; and from the points *h, l*, the flanks *h, k, l, p*, are drawn parallel to the capital *LO* of the ravelin.

There are sometimes redoubts made in the ravelin, such as in fig. 2. which is done by setting off 16 toises from the extremities of the faces on the semi-gorges from N to *b*, and from M to *a*; and from the points *b*, *a*, the faces are drawn parallel to those of the ravelin: the ditch before the redoubt is 6 toises, and its counterescarp parallel to the faces.

### 3. Construction of Tenailles.

A tenaille is a work made in the ditch before the curtains, the parapet of which is only 2 or 3 feet higher than the level ground of the ravelin. There are three different forts: the first are those as in fig. 4. which are made in the direction of the lines of defence, leaving a passage of 3 toises between their extremities and the flanks of the bastions, as likewise another of 2 in the middle for a bridge of communication to the ravelin.

The second fort are those as in fig. 5. Their faces are in the lines of defence, and 16 toises long, besides the passage of 3 toises between them and the flanks of the bastions; their flanks are found by describing arcs from one shoulder of the tenaille as centre through the other, on which are set off 10 toises for the flanks desired.

And the third fort are those as in fig. 6. Their faces are 16 toises, as in the second fort, and the flanks are parallel to those of the bastions.

The use in general of tenailles is to defend the bottom of the ditch by a grazing fire, as likewise the level ground of the ravelin, and especially the ditch before the redoubt within the ravelin, which can be defended from nowhere else so well as from them.

The first fort do not defend the ditch so well as the others, as being too oblique a defence; but as they are not subject to be enfiladed, M. Vauban has generally preferred them in the fortifying of places, as may be seen in the citadel of Lille, at Landau, New Brisac, and in a great many other places.

The second fort defend the ditch much better than the first, and add a low flank to those of the bastion: but as these flanks are liable to be enfiladed, they have not been much put in practice. This defect might however be remedied, by making them so as to be covered by the extremities of the parapets of the opposite ravelins, or by some other work.

As to the third fort, they have the same advantage as the second, and are likewise liable to the same objections; for which reason, they may be used with the same precautions which have been mentioned in the second.

Tenailles are esteemed so necessary, that there is hardly any place fortified without them: and it is not without reason. For when the ditch is dry, the part behind the tenailles serves as a place of arms, from which the troops may sally, destroy the works of the enemy in the ditch, oppose their descent, and retire with safety; and the communication from the body of the place to the ravelin becomes easy and secure: which is a great advantage; for by that means the ravelin may be a much better defence, as it can be supplied with troops and necessaries at any time. And if the ditch is wet, they serve as harbours for boats, which may carry out armed men to oppose the pas-

sage over the ditch whenever they please; and the communication from the tenailles to the ravelin becomes likewise much easier than it would be without them.

### 4. Construction of Lunettes.

Fig. 7. Lunettes are placed on both sides of the ravelin, such as B, to increase the strength of a place: they are constructed, by bisecting the faces of the ravelin with the perpendicular LN; on which is set off 30 toises from the counterescarp of the ditch, for one of its faces; the other face, PN, is found by making the semi-gorge TP of 25 toises; the ditch before the lunettes is 12 toises, the parapet 3, and the rampart 8, as in the ravelin.

There is sometimes another work made to cover the salient angle of the ravelin, such as A, called *bonnet*, whose faces are parallel to those of the ravelin, and when produced bisect those of the lunettes; the ditch before it is 10 toises.

There are likewise lunettes, such as D in fig. 8. whose faces are drawn perpendicular to those of the ravelin, within a third part from the salient angle; and their semi-gorges are only 20 toises.

These kinds of works may make a good defence, and cost no very great expence; for as they are so near the ravelin, the communication with it is very easy, and one cannot well be maintained till they are all three taken.

### 5. Construction of Tenaillons.

Fig. 9. Produce the faces of the ravelin beyond the counterescarp of the ditch, at a distance MN of 30 toises, and take on the counterescarp of the great ditch 15 toises from the re-entering angle *p* to *q*, and draw N*q*; then *q*NM*p* will be the tenailles required; its ditch is 12 toises, that is, the same as that of the ravelin. Sometimes there is made a retired battery in the front of the tenaillons, as in B; this battery is 10 toises from the front to which it is parallel, and 15 toises long.

There are commonly retrenchments made in the tenaillons, such as O; their parapets are parallel to the fronts MN, and bisect the side *q*N; the ditch before this retrenchment is 3 toises; and there is a banquette before the parapet next to the ditch of about 8 feet, called *berm*; which serves to prevent the earth of the parapet (which seldom has any revetment) from falling into the ditch.

It is to be observed, that the ravelin, before which tenaillons are constructed, must have its salient angles much greater than the former construction makes them; otherwise the salient angles of the tenaillons become too acute; for which reason we made the capital of this ravelin 45 toises, and the faces terminate within 3 toises of the shoulders.

### 6. Construction of Counterguards.

Fig. 10, 11. When the counterguard is placed before the ravelin, set off 40 toises on the capital of the ravelin from the salient angle A to the salient angle B, of the counterguard; and 10 from C to D, on the counterescarp of the ditch.

When the counterguard is before the bastion, such as in

Of in fig. 2. its salient angle F is 50 toises from the salient angle E of the bastion, and the breadth near the ditch of the ravelin 10 toises as before.

The ditch before the counterguards is 12 toises, and its counterscarp parallel to the faces.

Counterguards are made before the ravelin on some particular occasions only; but are frequently constructed before the bastions, as covering the flanks wonderfully well. Some authors, as Mr Blondel and Mr Coehorn, will have them much narrower than they are here.

#### 7. Construction of Hornworks.

Fig. 12. Produce the capital of the ravelin beyond the salient angle A, at a distance AB of about 80 toises; draw DBE at right angles to AB; in which take BD, BE, each equal to 55 toises; and on the exterior side DE, trace a front of a polygon in the same manner as that of the body of the place, making the perpendicular BF 10 toises, and the faces 30.

The branches Da, Eb, of the hornwork, when produced, terminate on the faces of the bastions, within 5 toises of the shoulders. The ditch of the hornwork is 12 toises, and its counterscarp parallel to the branches; and in the front terminates at the shoulders, in the same manner as the great ditch before the bastions.

The capital of the ravelin before the front of the hornwork is 35 toises, and the faces terminate on the shoulders, or rather 2 or 3 toises beyond them: and the ditch before the ravelin is 8 toises.

There are sometimes retranchments, made within the hornwork, such as S, S; which are constructed by erecting perpendiculars to the faces of the ravelins, within 25 toises of their extremities. This retranchment, like all others, has a parapet turfed only with a berm of 8 feet before it; as likewise a ditch from 3 to 5 toises broad.

Fig. 13. When a hornwork is made before the bastion, the distance DL of the front from the salient angle of the bastion is 100 toises, and the branches terminate on the faces of the adjacent ravelins within 5 toises from their extremities; all the rest is the same as before.

#### 8. Construction of Crownworks.

From the salient angle, A (fig. 14.) of the ravelin; as a centre, describe an arc of a circle with a radius of about 120 toises, cutting the capital of the ravelin produced at C; from the point C, set off the cords CB, CF, each of them equal to 110 toises; and on each of which, as an exterior side, construct a front of a polygon of the same dimensions as in the hornwork; that is, the perpendicular should be 18 toises, the faces 30, and the branches terminate on the faces of the bastions within 25 toises of the shoulders.

The ditch is 12 toises, the capital of the ravelin 35, and its ditch 8; that is, the same as in the hornwork.

Sometimes the crownwork is made before the bastion, as in fig. 15. The arc is described from the salient angle A of the bastion, with a radius of 120 toises, as before; and the branches terminate on the faces of the adjacent ravelins within 25 toises of their extremi-

ties; the rest of the dimensions and constructions are the same as before.

Hornworks, as well as crownworks, are never made but when a large spot of ground falls beyond the fortification, which might be advantageous to an enemy in a siege, or to cover some gate or entrance into a town.

#### 9. Construction of Covert-ways and Glacis.

Although we have not hitherto mentioned the covert-way, nevertheless all fortifications whatsoever have one; for they are esteemed to be one of the most essential parts of a modern fortification; and it is certain, the taking the covert-way, when it is in a good condition and well defended, is generally the most bloody action of the siege.

After having constructed the body of the place, and all the outworks which are thought necessary, lines are drawn parallel to the outmost counterscarp of the ditches, at 6 toises distant from it; and the face mn, mn, included between that line and the counterscarp, will be the covert way required.

Fig. 16. There is in every re-entering angle of the counterscarp a place of arms m; which is found by setting off 20 toises from the re-entering angle a, on both sides from a to b, and from a to c; and from the points b, c, as centres, arcs are described with a radius of 25 toises, so as to intersect each other in d; then the lines drawn from this intersection to the points b, c, will be the faces of the places of arms.

If lines are drawn parallel to the lines which terminate the covert-way, and the places of arms, at 20 toises distant from them, the space x, x, x, between these lines and those which terminate the covert-way will be the glacis.

At the extremities of the places of arms, are traverses made, such as v, v, which serve to enclose them; these traverses are 3 toises thick, and as long as the covert-way is broad; and a passage is cut in the glacis round them, of about 6 or 8 feet, in order to have a free communication with the rest of the covert-way.

There are also traverses of the same dimensions before every salient angle of the bastion and outworks, and are in the same direction as the faces of those works produced; and the thickness lies at the same side as the parapets.

The passages round these last traverses are likewise from 6 to 8 feet wide.

In each place of arms are two sally ports  $\approx \approx$ , which are 10 or 12 feet wide, for the troops to sally out; in time of a siege they are shut up with barriers or gates.

#### 10. Construction of Arrows and Detached Redoubts.

An arrow is a work made before the salient angles of the glacis, such as A, fig. 16. It is composed of a parapet of 3 toises thick, and 40 long; and the ditch before it 5 toises, terminating in a slope at both ends. The communication from the covert-way into these arrows is 4 or 5 toises wide; and there is a traverse, r, at the entrance, of 3 toises thick, with a passage of 6 or 8 feet round it.

A detached redoubt is a kind of work much like a ravelin, with flanks placed beyond the glacis; such as B; they are made in order to occupy some spot of ground

Of  
Covert-  
ways, &c.

Plate  
GCXXII.

ground which might be advantageous to the besiegers; likewise to oblige the enemy to open their trenches farther off than they would do otherwise.

Their distance from the covert-way ought not to exceed 120 toises, that it may be defended by musket shot from thence.

The gorge *ab* is 40 toises; the flanks *ac*, *bf*, which are perpendicular to the gorge, 10; and the faces *cd*, *fd*, 30: the ditch before it is 6 toises, ending in slopes at both ends; the covert-way 4; the branches of the covert-way are 42 toises long, or thereabouts; the faces of the places of arms *y*, *y*, which are perpendicular to the branches, 10; and the other, which is parallel to them, 14.

The communication from the covert-way into the redoubt, is 5 or 6 toises wide; and there is a traverse made just at the entrance, and another in the middle when it is pretty long. The parapets of this communication terminate in a slope or glacis.

If these redoubts are above 50 toises distant from the covert-way, the besiegers carry their trenches round, and enter through the gorge; by which the troops that are in them are made prisoners of war, if they do not retire betimes; to prevent which, some other outworks should be made to support them.

#### 11. Construction of Second Ditches and Covert-ways.

Fig. 17. When the ground is low, and water to be found, there is often a ditch about 10 or 12 toises made round the glacis; and opposite to the places of arms are constructed lunettes, beyond the ditch: such as *D*, whose breadth on the counterscarp of the ditch is 10 toises, from *b* to *a*, and from *c* to *d*; and the faces *aL*, *dL*, are parallel to those of the places of arms; the ditch before them is from 8 to 10 toises wide.

The second covert-way is 4 toises, the semi-gorges of the places of arms, *m*, about 15, and the faces perpendicular to the counterscarp; the second glacis is from 15 to 18 toises broad.

This second covert-way has traverses everywhere, in the same manner as the first.

#### 12. Construction of Profiles.

A profile is the representation of a vertical section of a work; it serves to show those dimensions which cannot be represented in plans, and is necessary in the building of a fortification. Profiles are generally constructed upon a scale of 30 feet to an inch. It would be endless to describe all their particular dimensions; we shall therefore lay down the principal rules only, given by M. Vauban, on this subject.

1. Every work ought to be at least 6 feet higher than that before it, so that it may command those before it: that is, that the garrison may fire from all the works at the same time, with great and small arms, at the besiegers in their approaches. Notwithstanding this specious pretence, there are several authors who object against it. For, say they, if you can discover the enemy from all the works, they can discover, by the same reason, all the works from their batteries; so that they may destroy them without being obliged to change their situation, and thereby dismount all the guns of the place before they come near it.

But if all the works were of the same height, those

within cannot be destroyed, till such time as those before them are taken: guns might be placed in the covert-way and outworks to obstruct the enemy's approach; and when they come near the place, they might be transported into the inner works: and as the body of the place would be much lower, the expence would be considerably diminished.

But when works are low, they are easily enfiladed by the ricochet batteries, which is a kind of firing with a small quantity of powder, by giving the gun an elevation of 10 or 12 degrees: this might however be partly prevented, by making the parapets near the fallient angles, for the space of 8 toises on each side, 5 or 6 feet higher than the rest of the works.

2. The covert-way should be lower than the level ground, otherwise the body of the place must be raised very high, especially where there are several outworks: this is to be understood only when the works exceed each other in height, otherwise it need not be below the level.

3. The bases of all inward slopes of earth should be at least equal to the height, if not more.

4. The bases of all outward slopes of earth, two-thirds of their heights.

5. The slopes of all walls, or revetments, should be one-fifth of their height; or one-sixth might perhaps be sufficient: the height of a wall is estimated from the bottom of the ditch, and not from the beginning of its foundation.

6. The slopes of all parapets and traverses are one-sixth of their breadth; that is, 3 feet towards the field; or the inside, where the banquettes should be 3 feet higher than the outside.

7. When the revetment of a rampart goes quite up to the top, 4 feet of the upper part is a vertical wall of 3 feet thick, with a square stone at the top of it projecting 6 inches; and a circular one below, or where the slope begins, of 8 or 10 inches diameter: they go quite round the rampart, and the circular projection is called the *cordons*.

Where the straight part of the wall ends and the slope begins, the wall is always made 5 feet thick; and the counterforts or buttresses reach no higher than that place.

8. When the rampart is partly walled and partly turfed, then one-fifth of the height which is turfed must be added to 5 feet, to get the thickness of the wall above.

And having the thickness of any wall above, by adding one-fifth of its height from the bottom of the ditch, the sum will be the thickness of the wall at the bottom; but if a sixth part is only taken for the slope, then a sixth part must be added.

For instance, suppose a rampart of 30 feet high from the bottom of the ditch, and that 10 of which are to be turfed; then the fifth part of 10, which is 2, added to 5, gives 7 for the wall above; and as this wall is 20 feet high, the fifth of which is 4, and 4 added to the thickness 7 above, gives 11 for the thickness near the foundation.

Fig. 18. Represents (in military perspective) the profiles of the body of a place, the ravelin, and covert-way; which gives a clear idea of what is meant by a profile, and from which those of all other works may be easily conceived.

Of  
Profiles.

Plate  
GCXXIII.

Plate  
GCXXIII.

Of  
Irregular  
Fortifica-  
tion.

SECT. II. *Of Irregular Fortification.*

Plate  
CCXXXIII.

THE most essential principle in fortification consists in making all the fronts of a place equally strong, so that the enemy may find no advantage in attacking either of the sides. This can happen no otherwise in a regular fortification situated in a plain or even ground: but as there are but few places which are not irregular either in their works or situations, and the nature of the ground may be such as makes it impracticable to build them regular without too great expence; it is so much the more necessary to show in what consists the strength or weakness of a town irregularly fortified, so that the weakest part may be made stronger by additional outworks; as likewise, if such a place is to be attacked, to know which is the strongest or weakest part.

1. *Construction of an Irregular Place situated in an open country.*

If the place to be fortified is an old town enclosed by a wall or rampart, as it most frequently happens, the engineer is to consider well all the different circumstances of the figure, situation, and nature of the ground; and to regulate his plan accordingly, so as to avoid the disadvantages, and gain all the advantages possible: he should examine, whether by cutting off some parts of the old wall or rampart, and taking in some ground, the place can be reduced into a regular figure, or nearly so; for if that can be done without increasing the expence considerably, it should by no means be omitted. Old towns have often towers placed from distance to distance, as Douay, Tournay, and many other places, which are generally made use of, and mended when it may be done. If there is a rampart without bastions or towers, it must be well considered whether bastions may not be added, or if it is not better to make only some outworks: if the ditch about this rampart is not too wide and deep, it would be advantageous to make detached bastions; otherwise ravelins and counterguards must be constructed. Special care must be taken to make all the sides of the polygon as nearly equal as possible, and that the length of the lines of defence do not exceed the reach of musket-shot; but if that cannot be done, those sides which are on the narrowest part should be made the longest.

If it should happen that some of the sides are inaccessible or of very difficult approach, either on account of some precipice, marshy ground, or inundation, they may be made much longer than the others which are of easy access, and the flanks need not be so large as the rest; by doing so, there will be some expences saved, which may be used in making the other sides stronger by adding more outworks.

There are few situations but what are more advantageous in some parts than in others; it is therefore the business of an engineer to distinguish them, and to render those sides strong by art which are not so by nature.

If the situation is low and watery, lunettes or tenailons, and such other small outworks, should be constructed; because they are not of any great expence, and may make a very good defence. But if one side of the place only is low, and running water is to be had, a se-

cond ditch and covert-way with lunettes may be made, by observing, that if the first glacis is made to slope, so as to become even with the level of the water in the second ditch; or if the water can be swelled by means of dikes or sluices, so as to overflow the best part of the first glacis, it should be done: for by so doing these works will be able to make a very good defence, since the besiegers will find it a difficult matter to lodge themselves upon this glacis; which cannot be done but within a few toises of the first covert-way, where the besieged are ready to receive them, and to destroy their works with great advantage; whereas the enemy cannot support their workmen but from the second covert-way, which is too far off to be of any great service to them.

But if the situation is of a dry nature, without any water upon it, caponiers should be made in the great ditch, from the curtains to the ravelin, and batteries raised in the entrance of the ditch before the ravelin, whose parapet must slope off into a glacis so as to afford no cover for the enemy behind them. Arrows and detached redoubts are likewise very proper to be used in such a case; and sometimes horn or crownworks, if it should be thought convenient: but these works should never be constructed without an absolute necessity, either to occupy a spot of ground which might be advantageous to the enemy, or to cover some gate or entrance into the town; for they are of great expence, and their defence seems not to be answerable to it.

Most of the places in Flanders are fortified with hornworks, such as Ypres, Tournay, Lisle, and others.

If the place to be fortified is new, and the situation will not admit of a regular construction, particular care must be taken in choosing such a spot of ground as is most advantageous, and least liable to any disadvantages either in the building or in the maintaining of it. All hills or rising grounds should be avoided, which might command any part of the works; marshy grounds, because such situations are unwholesome; or lakes and standing waters for the same reason, excepting a lake is or may be made navigable. Good water should be had either within the place or near it, for it is absolutely necessary for men and cattle: the air should be wholesome; otherwise the continual sickness that may reign in such a place might prevent people to come and live in it, and the garrison would not be in a condition to defend themselves as they ought to do. In short, all the different circumstances attending such an undertaking should be maturely considered before a resolution is taken to fortify any place.

When a situation is fixed upon, the next thing to be considered is, the bigness of the town and the number of its outworks; which must absolutely depend upon the consequence such a place is of to a nation. If it is only to guard a pass or entrance into a country, it need not be so large: but if it is to be a place either to promote or to protect trade, it should be large and commodious; the streets should be wide, and the buildings regular and convenient. As to what regards the fortification, its construction should depend on the nature of the situation, and the number of works, on the funds or expence a prince or a nation will be at; which, however, ought to be according to the benefit arising from:

Of  
Irregular  
Fortifica-  
tion.

Plate  
CCXXXIII.

from such a place; for as such undertakings are of very great expence, an engineer cannot be too sparing in his works; on the contrary, the greatest economy should be used both in regard to the number of works and to their construction. The body of the place may have (A) revetments quite up to the top, or only in part and the rest turfed; but as to the outworks, they should have half revetments, or they may be made with turf only; as being not so necessary to prevent the place from being surpris'd, which may nevertheless make a good defence.

Fig. 19. is the plan of an octagon, one half of which is similar and equal to the other half; it being supposed, that the situation would not admit of fortification quite regular. The exterior sides are each 180 toises, and the works are constructed according to our method: but because the sides AB, EF, are weaker than the rest, as has been proved before, we have added tenailles, redoubts in the ravelins, and lunettes, to render them nearly equal in strength with the others; and if counterguards were made before the bastions A and B, it would effectually secure that front. Instead of lunettes, any other works may be made, as may be thought convenient and according to the nature of the ground. If it should be judged necessary to add other outworks to the ravelins all around the place, care must be taken to add likewise more to the fronts AB, EF, in order to render the advantages and disadvantages of attacking on either side equal.

### 2. Construction of an Irregular Place situated on a hill or rock.

In the construction of such places, care must be taken that no neighbouring hill commands any part of the works. The town should always be built on the highest part; but if it should be thought more convenient to place it lower, then the upper part must be fortified with a fort. The situation should be made level as near as possible, by removing the earth from some places to fill up others; and if it cannot well be levelled without extraordinary expence, works must be made on the highest part, so as to command and protect the lower. The works ought to occupy all the upper part of the hill; but if it should be too extensive to be all enclosed, or so irregular as not to be fortified without great inconvenience, the parts which fall without should be fortified with some detached works, and a communication with the place must be made either above or under ground. There should be no cavity or hollow roads within cannon shot round about the place, where the enemy might be able to approach under cover. If there should happen to be a spring near the top of the hill, it should be enclosed in the fortification, or if that cannot be done, by some work or other; for there is nothing more necessary, and at the same time scarcer, in such situations, than water; for which reason there cannot be too much care in providing it: several cisterns are to be made to receive the rain water, and to preserve it; wells should be dug likewise, though

ever so deep, the water of which will serve for common use.

Places built on hills or rocks should never be large; for their use is generally to guard passes or inlets into a country, and are seldom useful in traffic; and it is a difficult matter to provide for a large garrison in such situations: neither should any such place be built without some very material reasons; but when it is absolutely necessary, great care and precaution should be taken to render the works as perfect as the situation will admit of, and at the same time to be as frugal in the expence as possible.

### 3. Construction of Irregular Fortifications situated near rivers, lakes, or the sea.

As the intent of building these kind of places is chiefly to facilitate and protect trade, they are of more importance than any other kind, especially in maritime countries, where the principal strength and power depends on them: for which reason, we shall treat of this construction more largely than of any other.

The first thing to be considered is their situation, which ought to be such as to afford a good harbour for shipping, or a safe and easy entrance in stormy weather; but as it is hardly possible to find any where ships may go in and lie secure with all winds, care should be taken to make them safe to enter with those winds which are most dangerous: but it is not sufficient that the harbour is safe against stormy weather, it should likewise be so against an enemy both by land and water, for it often happens, that ships are destroyed where it was imagined they were secure, which is of too great consequence not to be provided against; for which reason, forts or batteries must be built in the most convenient places, to prevent the enemy's ships from coming too near, so as to be able to cannonade those in the harbour, or sling shells amongst them; and if there is any danger of an enemy's approach by land, high ramparts and edifices must be built, so as to cover them.

When a river is pretty large, and it is not convenient for making a harbour without great expence, the ships may ride along the shore; which for that reason, must be made accessible for ships of burden: this may be done by advancing the quay into the river if the water is too shallow, or by digging the river sufficiently deep for that purpose.

And to prevent an enemy from coming up the river, forts must be built on both sides, especially when there are any turnings or windings. Antwerp is such a place; for the Scheldt is sufficiently deep to carry ships of great burden which may come quite near the town-wall; and several forts are built below it on both sides, so that it would not be an easy matter for an enemy to come up the river.

When the river is but small, so that no ships of burden can come through it, it is sufficient to make it run through some of the works, where proper landing-places are contrived, from whence the goods may be carried into

(A) Revetments are chiefly made to prevent a place from being surpris'd: outworks do not want to be made so; the taking them by surpris'e is of no great consequence, except in a siege, when other cautions are used to prevent it.

Fig. 10.

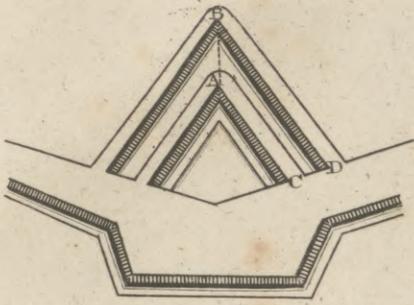


Fig. 3.

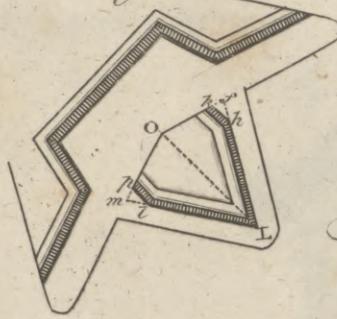


Fig. 2.

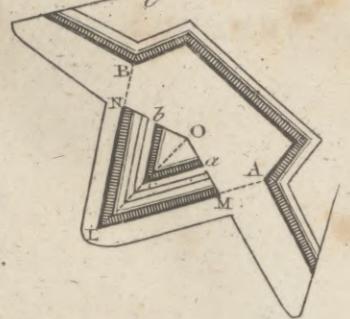


Fig. 11.

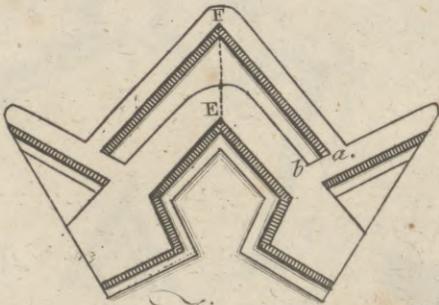


Fig. 1.

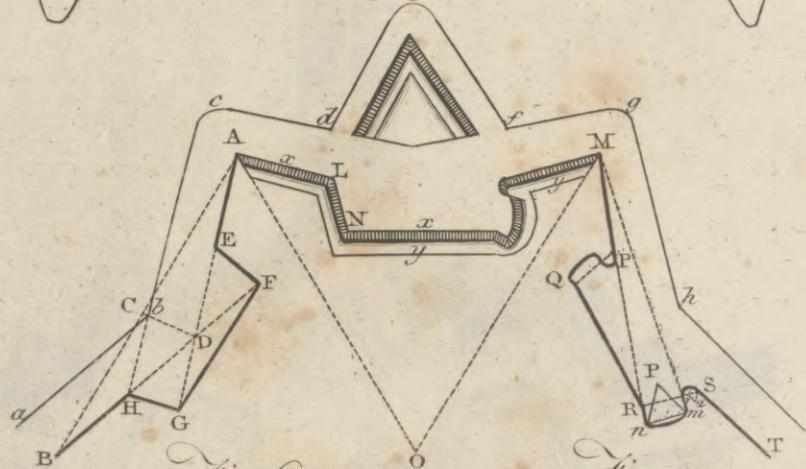


Fig. 12.

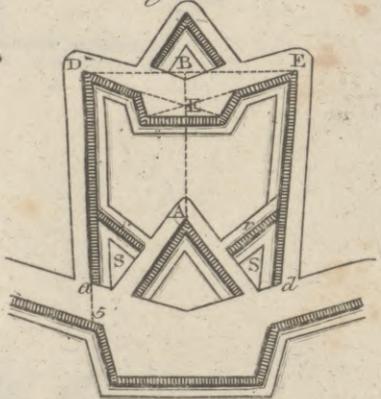


Fig. 6.

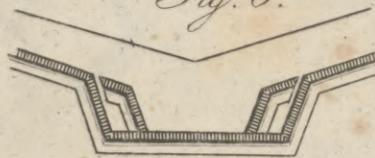


Fig. 9.

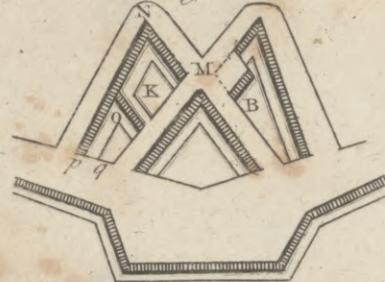


Fig. 13.



Fig. 7.

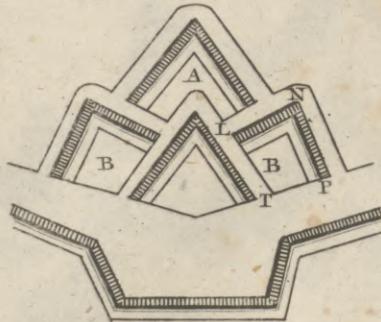


Fig. 8.

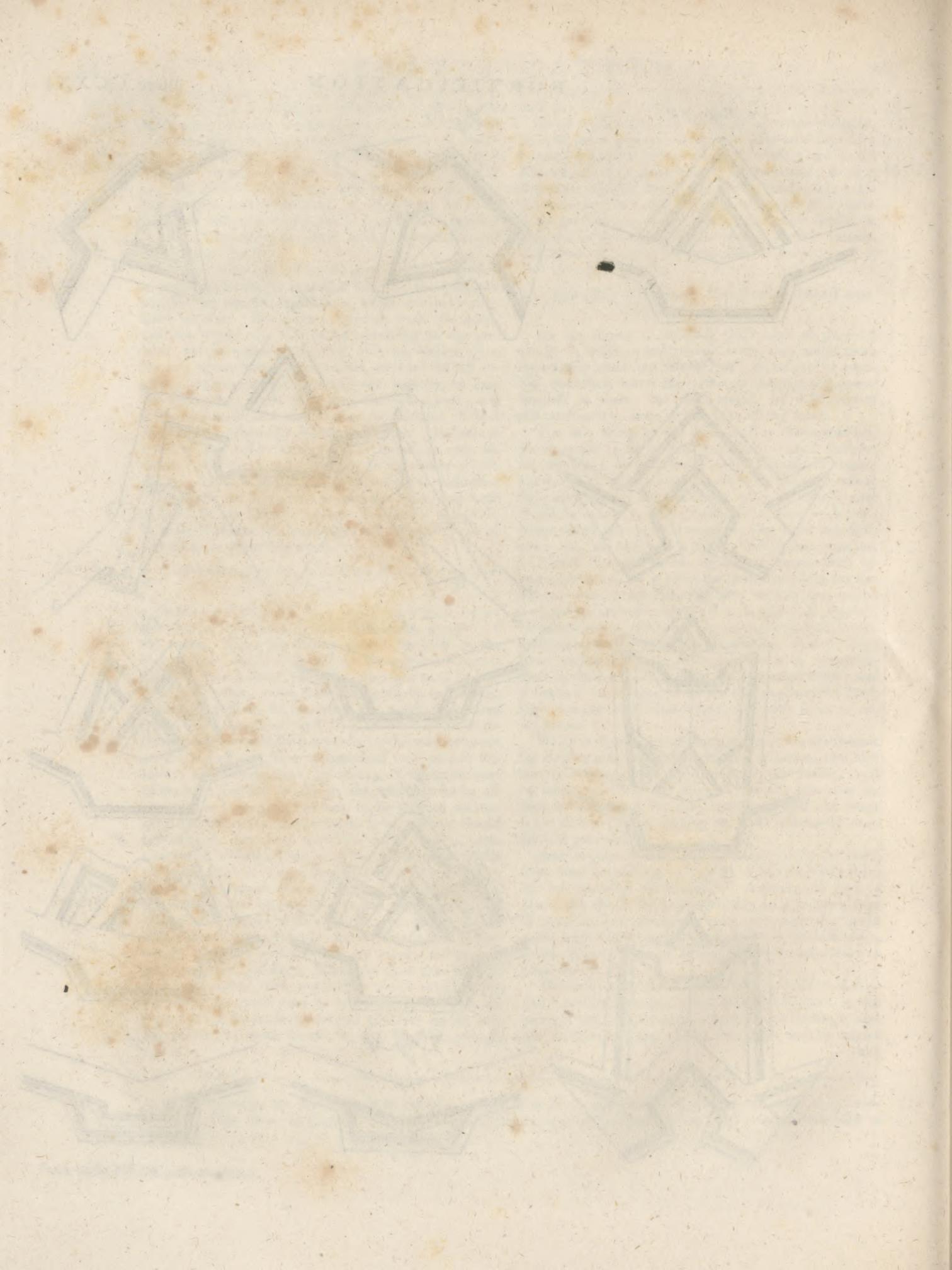


Fig. 4.

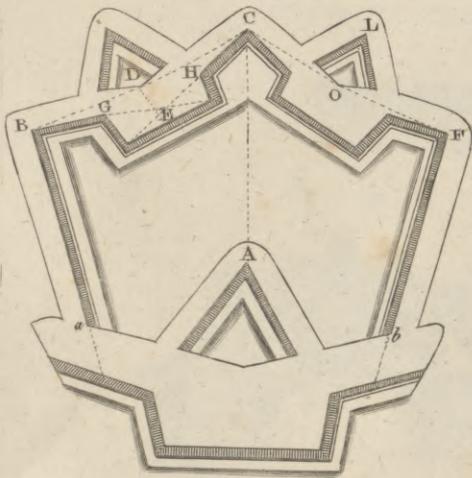


Fig. 5.

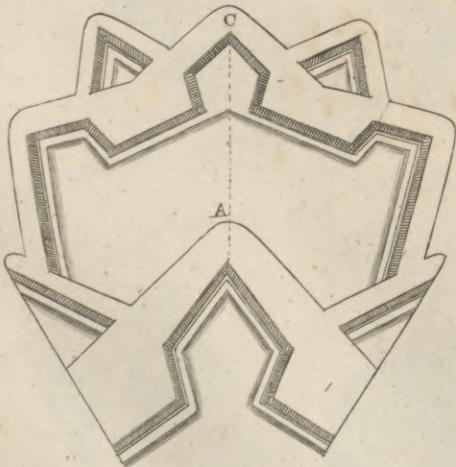




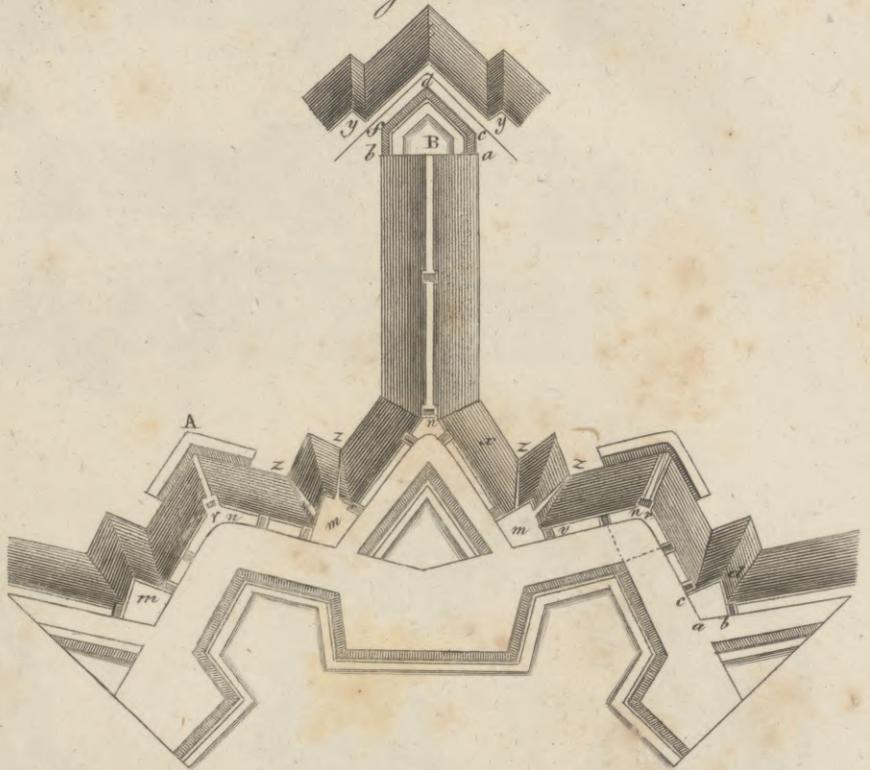
*Fig. 14.*



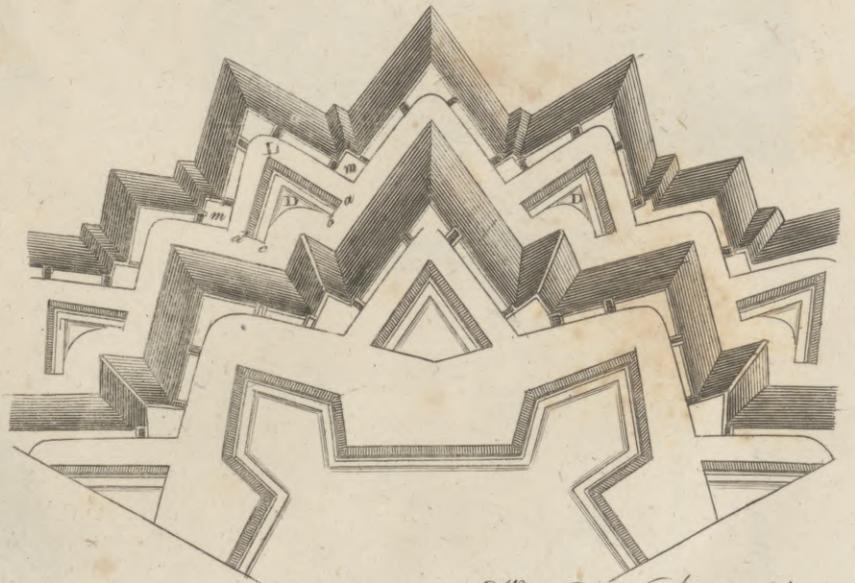
*Fig. 15.*



*Fig. 16.*



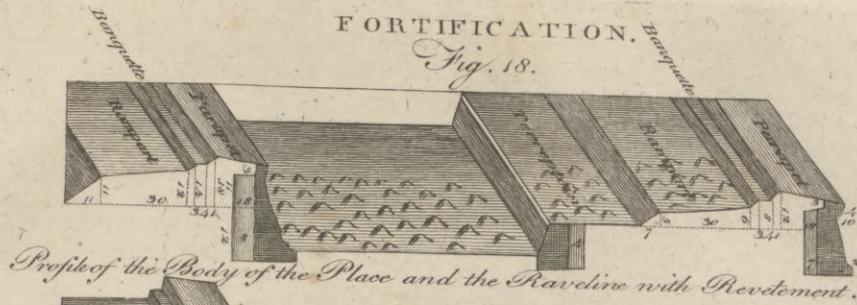
*Fig. 17.*



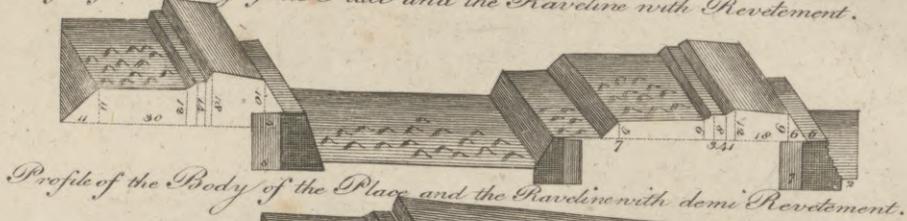
*Abdell Prim. Val. Sculptor fecit.*



Fig. 18.



Profile of the Body of the Place and the Raveline with Revêtement.

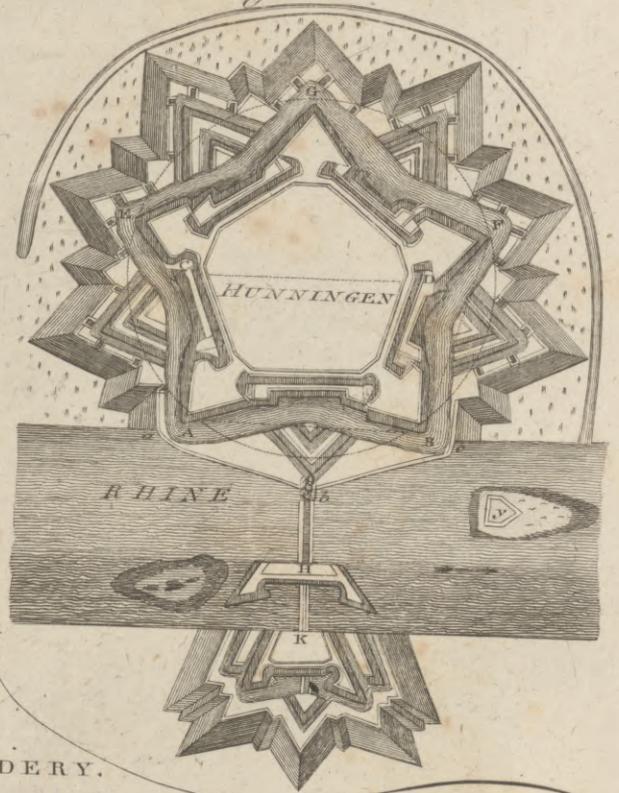
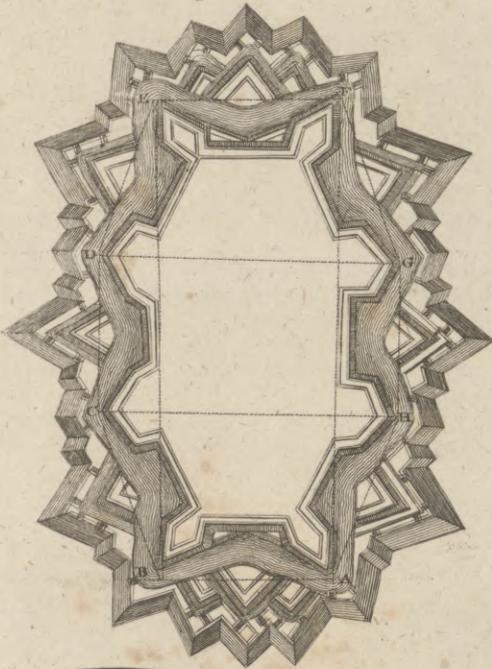


Profile of the Body of the Place and the Raveline with demi Revêtement.



Fig. 20.

Fig. 19.



FOUNDERY.

Letter Foundry.

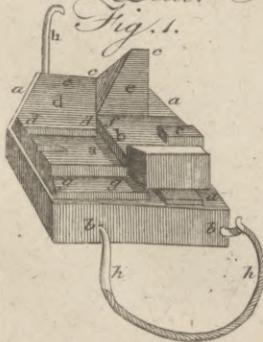


Fig. 1.

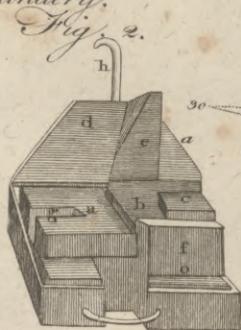
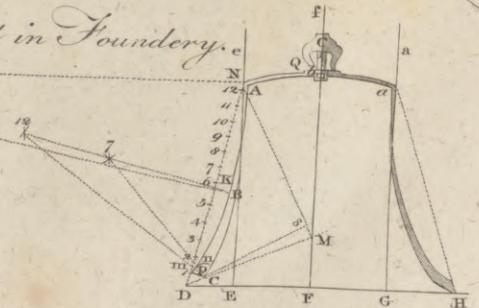


Fig. 2.

Profile of a Bell in Foundry.



A Bell Prin. Wal. Sculptor. feet.



Of  
Irregular  
Fortifica-  
tion.Plate  
CCXXXIII.

into the place; as at Sarrelouis, where a hornwork is built beyond the Sarre, in the gorge of which the goods are landed.

If the breadth of the river does not exceed 200 yards, it commonly passes through the middle of the town, and proper quays are made on each side; in such a case, the fortification is so contrived, as that the river passes through the curtain, in order to have a bastion on each side to defend the coming in and going out.

When M. Vauban fortified near rivers, he made always the exterior side near the water much longer than any of the others; such as Hunninghen on the Rhine, and Sarrelouis on the Sarre; but for what reason he fortified these places in that manner, has not been told by any author.

But it is plain that the sides which terminate at the river are the weakest; because the besiegers trenches being secured by the river, they may draw most of their troops off, and act therefore with more vigour and strength on the other side: besides, as the strength of a side increases in proportion as the angle of the polygon is greater, by making the side next the river longer, the angles at the extremities become wider, and consequently the adjacent sides stronger.

There are other advantages, besides those mentioned already, which arise from the lengthening that side: for if the river is pretty deep, so as not to be fordable, that side is not liable to be attacked; and by increasing its length, the capacity of the place increases much more in proportion to the expence, than if more sides were made; the centre of the place will be likewise nearer the river, which makes it more convenient for transporting the goods from the water side to any part of the town.

Fig. 20.

To illustrate this method of M. Vauban's, we shall give the plan of Hunninghen: this place was built for the sake of having a bridge over the Rhine, for which reason, he made it only a pentagon; the side AB next to the river is 200 toises, and each of the others but 180.

About the space  $abc$ , which lies before the front

AB, is a stone wall; and the passages  $xv$  are shut up with sluices, to retain the water in the ditches in dry seasons: and to prevent an enemy from destroying the sluice near the point  $c$ , whereby the water would run out and leave the ditches dry, the redoubt  $y$  was built in the little island hard by, in order to cover that sluice; without which precaution the place might be insulted from the river side, where the water is shallow in dry seasons.

The hornwork K beyond the Rhine was built to cover the bridge; but as this work cannot be well defended across the river, the hornwork H was made to support the other.

Before finishing the description of this plan, we shall show how to find the long side AB.

After having inscribed the two sides GE, GF, in a circle, draw the diameter CD, so as to be equally distant from the line joining the points EF that is parallel to it. On this diameter set off 100 toises on each side of the centre; from these points draw two indefinite perpendiculars to the diameter; then if from the points EF, as centres, two arcs are described with a radius of 180 toises, their intersections A and B, with the said perpendiculars, will determine the long side AB, as likewise the other two FB and EA. In like manner may be found the long or short side of any polygon whatsoever.

When a place near a river is to be fortified for the safety of commerce, particular care should be taken in leaving a good space between the houses and the water side, to have a quay or landing place for goods brought by water; it should also be contrived to have proper places for ships and boats to lie secure in stormy weather, and in time of a siege; and as water-carriage is very advantageous for transporting goods from one place to another, as likewise for bringing the necessary materials, not only for building the fortifications, but also the place itself, the expences will be lessened considerably when this convenience can be had; for which reason, places should never be built anywhere else but near rivers, lakes, or the sea; excepting in extraordinary cases, where it cannot be avoided.

Of  
Irregular  
Fortifica-  
tion.Plate  
CCXXXIII.

## F O R

Fortin  
||  
Fortitude.

FORTIN, FORTELER, or *Field-fort*, a sconce or little fort, whose flanked angles are generally 120 fathoms distant from one another.

The extent and figure of fortins are different, according to the situation and nature of the ground; some of them having whole bastions, and others demi-bastions. They are made use of only for a time, either to defend the lines of circumvallation, or to guard some passage or dangerous post.

FORTISSIMO, in *Music*, sometimes denoted by FFF, or *fff*, signifies, to sing or play very loud or strong.

FORTITUDE, a virtue or quality of the mind, generally considered as the same with COURAGE; though in a more accurate sense they seem to be distinguishable. Courage may be a virtue or a vice, according

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## F O R

Fortitude.

to circumstances; *fortitude* is always a virtue: we speak of desperate courage, but not of desperate fortitude. A contempt or neglect of danger, without regard to consequences, may be called *courage*; and this some brutes have as well as we: in them it is the effect of natural instinct chiefly; in man it depends partly on habit, partly on strength of nerves, and partly on want of consideration. But fortitude is the virtue of a rational and considerate mind, and is founded in a sense of honour and a regard to duty. There may be courage in fighting a duel, though that folly is more frequently the effect of cowardice; there may be courage in an act of piracy or robbery: but there can be no fortitude in perpetrating a crime. Fortitude implies a love of equity and of public good; for, as Plato and Cicero observe, courage exerted for a selfish purpose, or

E

without

Fortitude. without a regard to justice, ought to be called audacity rather than fortitude.

This virtue takes different names, according as it acts in opposition to different sorts of evil; but some of those names are applied with considerable latitude. With respect to danger in general, fortitude may be termed *intrepidity*; with respect to the dangers of war, *valour*; with respect to pain of body or distress of mind, *patience*; with respect to labour, *activity*; with respect to injury, *forbearance*; with respect to our condition in general, *magnanimity*.

Fortitude is very becoming in both sexes; but courage is not so suitable to the female character; for in women, on ordinary occasions of danger, a certain degree of timidity is not unseemly, because it betokens gentleness of disposition. Yet from those of very high rank, from a queen or an empress, courage in emergencies of great public danger would be expected, and the want of it blamed; we should overlook the sex, and consider the duties of the station. In general, however, masculine boldness in a woman is disagreeable; the term *virago* conveys an offensive idea. The female warriors of antiquity, whether real or fabulous, Camilla, Thalestris, and the whole community of AMAZONS, were unamiable personages. But female courage exerted in defence of a child, a husband, or a near relation, would be true fortitude, and deserve the highest encomiums.

The motives to fortitude are many and powerful. This virtue tends greatly to the happiness of the individual, by giving composure and presence of mind, and keeping the other passions in due subordination. To public good it is essential; for without it, the independence and liberty of nations would be impossible. It gives to a character that elevation which poets, orators, and historians, have in all ages vied with one another to celebrate. Nothing so effectually inspires it as rational piety; the fear of God is the best security against every other fear. A true estimate of human life; its shortness and uncertainty; the numberless evils and temptations to which by a long continuance in this world we must unavoidably be exposed; ought by no means to discourage or to throw any gloom on our future prospects: they should teach us, that many things are more formidable than death; and that nothing is lost, but much gained, when, by the appointment of Providence, a well spent life is brought to a conclusion.

Let it be considered too, that pusillanimity and fearfulness can never avail us any thing. On the contrary, they debase our nature, poison all our comforts, and make us despicable in the eyes of others; they darken our reason, disconcert our schemes, enfeeble our efforts, extinguish our hopes, and add tenfold poignancy to all the evils of life. In battle, the brave soldier is in less danger than the coward; in less danger even of death and wounds, because better prepared to defend himself; in far less danger of infelicity; and has before him the animating hope of victory and honour. So in life, the man of true fortitude is in less danger of disappointment than others are, because his understanding is clear, and his mind disencumbered; he is prepared to meet calamity without the fear of sinking under it; and he has before him the near pro-

spect of another life, in which they who piously bear the evils of this will obtain a glorious reward.

FORTUNA, a goddess worshipped with great devotion by the ancient Greeks and Romans; who believed her to preside over human affairs, and to distribute wealth and honour at her pleasure. See FORTUNE.

FORTUNATE ISLANDS, in *Ancient Geography*, certain islands (concerning the situation of which authors are not agreed) famous for the golden apples of the HESPERIDES.—The common opinion is, that they are the *CANARY Islands*.

FORTUNE (*Τύχη*), a name which among the ancients seems to have denoted a principle of fortuity, whereby things came to pass, without being necessitated thereto: but what and whence that principle is, they do not seem to have ever precisely thought. Hence their philosophers are often intimating, that men only framed the phantom *Fortune* to hide their ignorance; and that they call *Fortune* whatever befalls a man without his knowing for what purpose. Hence Juvenal (sat. x. ver. 366.) affirms, they were men who made a deity of fortune.

*Nullum numen adest, si sit prudentia; sed te  
Nos facimus, Fortuna, deam, caeloque locamus.*

The ingenious Mr Spence gives another reading of this passage:

*Nullum numen habes, si sit prudentia; sed te  
Nos facimus, Fortuna, deam, caeloque locamus.*

This reading, he thinks agrees best with the context; Juvenal says, ver. 356, that the two things we should pray for are good health and good sense; that we might be the authors of our own happiness if we pleased, ver. 363; that virtue is the only way to true happiness, ver. 364; that if we ourselves are prudent, Fortune has no power over us; and that, in truth, she is no goddess at all, and has only usurped a seat in heaven from the folly of mankind, ver. 366. Fortune was not considered as a deity by the old Romans, but was made so by the devotion and folly of the vulgar; and Mr Spence says, that he has seen an ancient gem, in which Cybele, the mother of the gods, is represented as turning away her head from Fortune, in an attitude of disowning and rejecting her; (Polymetis, p. 150, 154, &c.)

According to the opinion of the heathens, therefore, fortune in reality was only the arrival of things in a sudden and unexpected manner, without any apparent cause or reason: so that the philosophical sense of the word coincides with what is vulgarly called *chance*.

But in religion it had a farther force; altars and temples in great numbers were consecrated to this Fortune, as a deity. This intimates, that the heathens had personified, and even deified, their chance; and conceived her as a sort of goddess, who disposed of the fate of men at her pleasure. Hence that invocation of Horace, *O diva, gratum quæ regis Antium*, in the 35th ode of the first book, where he recommends Augustus, then preparing for a visit to Britain, to her protection. From these different sentiments it may be inferred, that the ancients at one time took Fortune for a peremptory cause, bent upon doing good to some,

Fortune, some, and persecuting others; and sometimes for a blind inconstant cause, without any view or determination at all.  
Forty.

If then the word *fortune* had no certain idea in the mouth of those who erected altars to her, much less can it be ascertained what it denotes in the mind of those who now use the word in their writings. They who would substitute the name *Providence* in lieu of that of *Fortune*, cannot give any tolerable sense to half the phrases wherein the word occurs.

Horace paints the goddess, preceded by Necessity, holding nails and wedges in her hands, with a cramp-iron, and melted lead to fasten it; rarely accompanied with Fidelity, unless when she abandons a family; for in that case Fidelity never fails to depart with her, as well as friends.

She is disrespectfully spoken of by most of the Roman writers, and represented as blind, inconstant, unjust, and delighting in mischief, (*Ovid. ad Liv. ver. 52, ver. 374. Hor. lib. i. od. 34. ver. 26. lib. iii. od. 29. ver. 15. Statius, Theb. xii. ver. 505.*) However they had a good as well as a bad Fortune, a constant and inconstant Fortune; the latter of which was represented with wings, and a wheel by her, (*Hor. lib. iii. od. 29. ver. 56.*) Juvenal alludes to a statue of Fortune, which exhibited her under a very good character, as the patroness of the poor infants that were exposed by their parents in the streets, (*Sat. vi. ver. 605.*)

The painters represent her in a woman's habit, with a bandage before her eyes, to show that she acts without discernment; and standing on a wheel, to express her instability. The Romans, says Lactantius, represented her with a cornucopia, and the helm of a ship, to show that she distributes riches, and directs the affairs of the world. In effect, it is with such characters that we see her represented on so many medals, with the inscription, FORTVNA AVG. FORTUNA REDVX, FORTVNE AVG. or REDVCIS, &c. Sometimes she is seen pointing at a globe before her feet, with a sceptre in one hand, and holding the cornucopia in the other.

The Romans had a virile as well as a muliebrian Fortune, for the objects of their adoration: the *Fortuna virilis* was honoured by the men, and the *Fortuna muliebris* by the women. They honoured Fortune also under a variety of other appellations.

The Romans derived the worship of Fortune from the Greeks, under the reign of Servius Tullius, who dedicated the first temple to her in the public market. Nero also built a temple to Fortune. The Fortune worshipped at Antium was probably of the most exalted character of any among the Romans; if we may judge by the account which Horace gives us of the great solemn processions that were made to her, (*Hor. lib. i. od. 35. ver. 22.* But the most celebrated temple of Fortune was at Præneste. Statius speaks of several Fortunes there, and calls them the *Prænestinæ sorores*, (*lib. i. Sylv. iii. ver. 80.*)

*FORTUNE-Tellers.* Persons pretending to tell fortunes are to be punished with a year's imprisonment, and standing four times on the pillory. Stat. ix. Geo. II. c. 5.

*FORTY DAYS Court*, the court of attachment or woodmote, held before the verderors of the forest once every forty days, to inquire concerning all offenders against vert and venison. See ATTACHMENT.

FORUM, in Roman antiquity, a public standing place within the city of Rome, where causes were judicially tried, and orations delivered to the people.

Forum.

FORUM was also used for a place of traffic, answering to our market-place. These were generally called *fora venalia*; in contradistinction to the former, which were called *fora civilia*.

The *fora civilia* were public courts of justice, very magnificent in themselves, and surrounded with porticoes and stately edifices; of these there were six very remarkable: 1. *Forum Romanum*. 2. *Julianum*. 3. *Augustum*. 4. *Palladium*. 5. *Forum Trajani*. 6. *Forum Augustii*. The *Forum Romanum* was the most noted, and is often called simply *Forum*, by way of eminence. Here was the pleading place called *Rostra*, the *Comitium*, the sanctuary of *Saturn*, temple of *Castor*, &c. See ROSTRA, COMITIUM, &c.

The *fora venalia*, or market-places, were very numerous. The chief of them were the *forum boarium* for oxen or beef; *suarium* for swine; *pisorium* for bread; *cupedinarium* for dainties; *olitorium* for garden stuff.

The Grecian *Αγοραι* exactly correspond with the Roman *fora*, being places where courts and markets were held. At Athens they had many *fora*, but the chief of them were the *old* and the *new*.

*FORUM Indicere*, was the act of the prætor appointing the place in Rome where causes were to be tried. *Agere forum* denoted the bringing on causes out of Rome, in a Roman province (Cicero, Suetonius); the same with *agere conventum* (Florus).

The term *forum* added to a proper name, denoted some market town or borough; as,

*FORUM Allieni*, a place mentioned only by Tacitus; and, from what he says of it, thought to be *Ferrara*, capital of the duchy of that name in Italy. E. Long. 12. 5. N. Lat. 44. 46.

*FORUM Appii* (Cicero, Luke); a town of the Volsci, in Latium, on the Via Appia, a little beyond the Tres Tabernæ; set down in the Jerusalem Itinerary as situated near the river Nymphæus: now entirely extinct.

*FORUM Cornelii*, a town of the Cispadana, built by Sylla: Now *Imola*, a city in Romagna, and territory of the Pope. E. Long. 12. 12. N. Lat. 44. 30.

*FORUM Domitii*, a town of Gallia Narbonensis: probably built by Domitius Ahenobarbus, who commanded in those parts: Now *Frontignan*, or *Frontigniac*, in Languedoc, near the Mediterranean. E. Long. 3. 30. N. Lat. 43. 30.

*FORUM Fulvii*, a town of Liguria, surnamed *Valentinum*: from which it is conjectured that it is now *Valenza*, in the duchy of Milan; which is confirmed by Peutinger's distances. E. Long. 9°. N. Lat. 45°.

*FORUM Gallorum*, a small town of the Cispadana, on the Via Æmilia, eight miles from Mutina, beyond the river Scultenna. Here Antony defeated Panfa, and was in his turn defeated by Hirtius: Now *Castelfranco*, in the territory of Bologna.—Another *Forum Gallorum*, a town of the Vascones in the Hither Spain: Now *Gurrea*, a small town of Arragon.

*FORUM Julium*. There are several towns of this name; as a *Forum Julium* of Gallia Narbonensis; or *Forojulium*: Now *Frejus*, or *Frejules*, in Provence, at

Forum  
||  
Fossarii.

the mouth of the Argens. *Forum Julium Carnorum*, to the north of Aquileia, in the Tranpadana: Now *Cividal di Friuli*, formerly *Cividal d' Austria*, in the territory of Venice.

*Forum Jutuntorum*, a town of the Infubres, in the Tranpadana: Now *Crema*, capital of the Cremasco, in the territory of Venice. E. Long. 10. 15. N. Lat. 45. 20.

*Forum Livii*, a town of the Semnones, in the Cispadana: Now *Forli*, in Romagna. E. Long. 12. 45. N. Lat. 44. 25.

*Forum Segusianorum*, situated on the east side of the *Liger*, in Gallia Celtica: now *Feurs*, on the Loire, in the Lyonnais, capital of the territory of Forez. E. Long. 4. 15. N. Lat. 45. 44.

*Forum Tiberii*, a town of the Pagus Tigurinus, in Belgica, on the left or south side of the Rhine: Now *Kayserfull*; literally the tribunal of Tiberius, which he held there when commander in the Rhetian war.

*Forum Volcani* (Strabo); the *Campi Phlegræi* of Pliny: a place in Campania encompassed with rocky eminences, near Puteoli, and distant from it two miles towards Naples, emitting smoke, and in some places flame, like a large extensive furnace, and yielding sulphur: Now called *Solfataras*, in the Terra di Lavoro.

FORUM is also used, among casuists, &c. for jurisdiction; thus they say, *In foro legis*, &c.

FOSS, or FOSSE, in *Fortification*, &c. a ditch or moat. The word is French, formed of the Latin participle *fossim*, of the verb *fodio*, "I dig."

Foss, *Fossa*, in *Anatomy*, a kind of cavity in a bone, with a large aperture, but no exit or perforation: When the aperture is very narrow, it is called a *sinus*.

Foss is particularly used for the cavity or denture in the back part of the neck.

FOSSA MAGNA, or NAVICULARIS, is an oblong cavity, forming the inside of the *pubendum muliebre*, and which presents itself upon opening the labia; and in the middle whereof are the *caruncule myrtiformes*. See ANATOMY.

FOSSA, in our ancient customs, was a ditch full of water, where women committing felony were drowned; as men were hanged: *Nam et ipsi in omnibus tenementis suis omnem ab antiquo legalem habuere justitiam, videlicet ferrum, fossam, furcas, et similia*. In another sense it is taken for a grave, as appears by these old verses:

*Hic jacent in fossa Bedæ venerabilis ossa:  
Hic est fossatus, qui bis erat hic cathedratus.*

*Foss Way* was anciently one of the four great Roman highways of England: so called, according to Camden, because it was ditched on both sides, which was the Roman method of making highways.

FOSSARII, in antiquity, a kind of officers in the eastern church, whose business was to inter the dead.

Ciaconius relates, that Constantine created 950 fossaries, whom he took out of the divers colleges or companies of tradesmen: he adds, that they were exempted from taxes, services, burdensome offices, &c.

F. Goar, in his notes on the Greek Euchologion, insinuates that the fossarii were established in the times of the apostles; and that the young men, who carried off the body of Ananias, and those persons full of the

fear of God who interred St Stephen, were of the number.

St Jerome assures us, that the rank of fossarii held the first place among the clerks; but he is to be understood of those clerks only who had the direction and intendance of the interment of the devout.

FOSSE, the Roman military way in South Britain, begins at Totness, and passes through Exeter, Ivelchester, Shepton Mallet, Bath, Cirencester, Leicester, the Vale of Belvoir, Newark, Lincoln, to Barton upon the Humber, being still visible in several parts, though of 1400 years standing. It had the name from the fosses or ditches made by the sides of it.

FOSSIL, in *Natural History*, denotes, in general, every thing dug out of the earth, whether it be a native thereof, as metals, stones, salts, earths, and other minerals; or extraneous, reposit in the bowels of the earth by some extraordinary means, as earthquakes, the deluge, &c.

*Native* fossils are substances found in the earth, or on its surface, of a simple structure, exhibiting no appearances of organization; and these are included under the general names of simple and compound, earthy or metallic minerals. See MINERALOGY.

*Extraneous* fossils are bodies of the vegetable or animal kingdoms accidentally buried in the earth. Of the vegetable kingdom, there are principally three kinds; trees or parts of them, herbaceous plants, and corals: and of the animal kingdom there are four kinds; sea shells, the teeth or bony palates and bones of fishes, complete fishes, and the bones of land animals. See GEOLOGY.

These adventitious or *extraneous* fossils, thus found buried in great abundance in divers parts of the earth, have employed the curiosity of several of our latest naturalists, who have each their several system to account for the surprising appearances of petrified sea fishes, in places far remote from the sea, and on the tops of mountains; shells in the middle of quarries of stone; and of elephants teeth, and bones of divers animals, peculiar to the southern climates, and plants only growing in the east, found fossil in our northern and western parts.

Some will have these shells, &c. to be real stones, and stone plants, formed after the usual manner of other figured stones; of which opinion is the learned Dr Lister.

Another opinion is, that these fossil shells, with all the foreign bodies found within the earth, as bones, trees, plants, &c. were buried therein at the time of the universal deluge; and that, having been penetrated either by the bituminous matter abounding chiefly in watery places, or by the salts of the earth, they have been preserved entire, and sometimes petrified.

Others think, that those shells, found at the tops of the highest mountains, could never have been carried thither by the waters, even of the deluge; inasmuch as most of these aquatic animals, on account of the weight of their shells, always remain at the bottom of the water, and never move but close along the ground. They imagine, that a year's continuance of the waters of the deluge, intermixed with the salt waters of the sea, upon the surface of the earth, might well give occasion to the production of shells of divers kinds in different climates;

Fosse.

Foster.

Foster.

climates; and that the universal saltness of the water was the real cause of their resemblance to the sea shells, as the lakes formed daily by the retention of rain or spring water produce different kinds.

Others think, that the waters of the sea, and the rivers, with those which fell from heaven, turned the whole surface of the earth upside down; after the same manner as the waters of the Loire, and other rivers, which roll on a sandy bottom, overturn all their sands, and even the earth itself, in their swellings and inundations; and that in this general subversion, the shells came to be interred here, fishes there, trees there, &c. See DELUGE.

Dr Woodward, in his Natural History of the Earth, pursuing and improving the hypothesis of Dr Burnet, maintains the whole mass of earth, with every thing belonging thereto, to have been so broken and dissolved at the time of the deluge, that a new earth was then formed on the bosom of the water, consisting of different strata or beds of terrestrial matter, ranged over each other usually according to the order of their specific gravities. By this means, plants, animals, and especially fishes and shells, not yet dissolved among the rest, remained mixed and blended among the mineral and fossil matters; which preserved them, or at least assumed and retained their figures and impressions either indentedly or in relievó. See GEOLOGY.

*Fossil Pitch.* See PETROLEUM, MINERALOGY *Index.*

FOSTER JAMES, a nonconformist divine, very highly celebrated for his pulpit eloquence and erudition, was born at Exeter in the year 1697. At the age of five years he was put to the free school of that city, where his progress in the acquisition of grammar was so rapid, that his master boasted of him as the most eminent genius in his school. From this seminary he went to the academy where young men designed for clergymen in the dissenting interest were educated, where his progress and applause were equally great. His apprehension was remarkably quick, his judgment solid, memory retentive, eloquence commanding, and his talents for argumentation were truly admirable; but above all, his piety was genuine, and few men possessed candour, modesty, liberality, integrity, tenderness and benevolence, in such a remarkable degree. He commenced preacher at the age of 21, and was much admired where he occasionally officiated. About this time the doctrine of the trinity was much agitated in the west of England, which was not consonant to the notions of Mr Foster, and the honesty and openness of his heart would not allow him to conceal these, which brought so much odium upon him from the orthodox party, that he retired to another scene of action. He became pastor of a congregation at Milborne-port, in Somersetshire; but as soon as his hearers became zealously attached to what was deemed the orthodox opinion, he retired to Ashwick under the hills of Mendip, in the same county. In this asylum he preached to two congregations at a little distance from each other, as poor as they were plain, the united contributions of which did not amount to 151. per annum. In this humble poverty and obscurity he lived for some years, honourable, however, as it was occasioned by his determined uprightness and sincerity. In the year 1720, he gave the world his "Essay on

Fundamentals, with a particular regard to the doctrine of the ever-blessed Trinity," &c. The design of this work was to check an uncharitable and intolerant spirit, at that time extremely prevalent, by showing that the trinitarian notion is not a fundamental article of Christianity, or made an express condition of salvation in the sacred scriptures. A sermon accompanied this essay, entitled "The resurrection of Christ proved, and vindicated against the most important objections of the ancient Jews, or modern Deists, and his disciples shown to be sufficient witnesses of the fact." From Ashwick he removed to Trowbridge in Wiltshire, where his congregation did not usually exceed 20 or 30 people.

By reading Dr Gale's treatise on infant baptism, he became a convert to the doctrine, that immersion is the true scriptural rite, and was accordingly soon after baptised in London in conformity to that mode. This unreserved manner of adopting whatever his conscience believed to be truth, excluded him from almost every religious party among whom he might otherwise have expected preferment. But while he deliberated with himself whether he should abandon the ministry, and acquire the knowledge of some mechanical employment, Robert Houlston, Esq. took him to his house in the capacity of chaplain, where his circle of acquaintances became wider and more respectable. In 1724, he was appointed to succeed Dr Gale in the baptist congregation in Barbican, London. In the year 1728 he commenced a Sunday evening lecture in the Old Jewry, which he continued till within a short time of his death, with such a degree of popularity as few dissenters at that time experienced. In 1731 appeared his valuable work, entitled "The usefulness, truth, and excellency of the Christian revelation, defended against the objections contained in a late book, called Christianity as old as the Creation," &c. In this reply Mr Foster exhibited no ordinary share of talents and ingenuity, and it was admired by the candid and judicious of every description. Dr Tindal, against whom it was written, is said to have spoken of it always with great respect. He published a volume of sermons in the year 1734, followed by other three volumes, the last of which appeared in 1744. At this time he was appointed successor to Dr Jeremiah Hunt, in the protestant congregation at Pinner's-hall. In 1746, he attended the earl of Kilmarnock when under sentence of death for high-treason, after which he published an octavo pamphlet, with the title of "An account of the behaviour of the late earl of Kilmarnock after his sentence, and on the day of his execution."

He received from the Marischal college of Aberdeen the degree of doctor in divinity, accompanied with handsome letters from the principal and Professor Fordyce, the latter of whom thus addressed him. "We beg that you will be so good as to accept of the diploma, as a small mark of the sincere veneration we have for you, and of the sense we entertain of the eminent services you have done to the cause of liberty, religion, and virtue, by your writings as well as public instructions." The first volume in quarto of his 'Discourses on all the Principal Branches of Natural Religion and Social Virtue,' was published in the year 1749, and the second appeared in 1752. They were published by subscription; and to evince the high estimation in which

his.

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Fothergill.

his talents and virtue were held, 2000 names were contained in the list, many of them distinguished by their dignified rank and literary abilities.

In the month of April 1750, he was seized with a violent distemper, from the effects of which he never thoroughly recovered; yet while at all able to officiate, he continued to preach till the beginning of 1752, when he had another attack, which seems to have been of a paralytic nature. After declining for some time, he expired like a genuine Christian on the 5th of November, in the 55th year of his age. His private and public life were alike irreproachable. Such was the wonderful extent of his beneficence, that he must have died in indigent circumstances, had it not been for the numerous subscriptions to his discourses on natural religion. Mr Rider gives him the following eulogium. "His voice was naturally sweet, strong, distinct, harmonious, always adapted to his matter, always varied as his method changed; as expressive of the sense as the most judicious recitative. Monotony was a fault he was never guilty of. His action, the soul of eloquence, was grave, expressive, free from distortions, animated without being theatrical; in short, such as became the pulpit. He reminded us of Paul at Athens, arresting the attention of his auditors." It was no doubt such rare accomplishments which induced Mr Pope to be an occasional hearer, and to pay him the following compliment:

Let modest Foster, if he will, excel  
Ten metropolitans in preaching well.

In a poem describing the respective merits of dissenting ministers at that period, and supposed to have been the work of Mr Savage, we find the following lines upon Dr Foster.

But see th' accomplish'd orator appear,  
Refin'd his language, and his reasoning clear;  
Thou only, Foster, hast the pleasing art,  
At once to charm the ear, and mend the heart.

Besides the works formerly taken notice of, Dr Foster published three funeral sermons, one of which was intended for that celebrated confessor Mr Emlin; together with a number of essays in the Old Whig.

FOSTER, *Samuel*, an ingenious English mathematician of the last century, and astronomical professor in Gresham college, was one of that learned association which met for cultivating the new philosophy during the political confusions, and which Charles II. established into the Royal Society. Mr Foster, however, died in 1652, before this incorporation took place; but wrote a number of mathematical and astronomical treatises, too many to particularize. There were two other mathematical students of this name; William Foster, a disciple of Mr Oughtred, who taught in London; and Mark Foster, author of a treatise on trigonometry, who lived later than the former two.

FOTHER, or FODDER, is a weight of lead, containing eight pigs, and every pig one and twenty stone and a half; so that it is about a ton or common cart load. Among the plumbers in London, it is nineteen hundred and a half; and at the mines it is two and twenty hundred and a half. The word is of Teutonic origin, from *fuder*.

FOTHERGILL, DR GEORGE, was born in West-

morland in 1705, where his family had been long seated on a competent estate that had descended regularly for several generations. After an academical education in Queen's college, Oxford, of which he became a fellow, he was, in 1751, elected principal of St Edmund's hall, and presented to the vicarage of Brumley in Hampshire. Having been long afflicted with an asthma, he died in 1760. He was the author of a collection of much esteemed sermons, in 2 vols, 8vo. The first volume consists of occasional discourses, published by himself; the second printed from his MSS.

FOTHERGILL, *Dr John*, a late eminent physician, son of John and Margaret, Quakers, was born in 1712, at Carr End in Yorkshire, where his father, who had been a brewer at Knaresborough (after having travelled from one end of America to the other), lived retired on a small estate which he cultivated. The Doctor was the second of five children (four sons and a daughter), and received his education under the care of his grandfather Thomas Hough, a person of fortune in Cheshire, which gave him a predilection for that county, and at Sedbergh in Yorkshire. He afterwards served his time to one Mr Bartlett an apothecary at Bradford. From thence he removed to London, and became a pupil of Dr (afterwards Sir Edward) Wilmot, at St Thomas's Hospital. He then went to the university of Edinburgh to study physic, and took his doctor's degree there. From Edinburgh he went to Leyden; whence, after a short stay, he returned to London, and began to practise about the year 1740, in a house in White-hart Court, Lombard-street, where he resided during the greatest part of his life, and acquired most of his fortune. In 1746, he was admitted a licentiate of the College of Physicians in London; and in 1754 a fellow of that of Edinburgh, to which he was a considerable benefactor. He afterwards became a member of the Royal Medical Society at Paris, and a member both of the Royal and Antiquarian Societies. He continued his practice with uninterrupted success till within the last two years of his life, when the illness which he had brought on himself by unremitting attention, obliged him to give up a considerable part of it. Besides his application to medical science, he had imbibed an early taste for natural history, improved by his friend Peter Collinson, and employed himself on coquillage and smaller objects of botany. He was for many years a valuable contributor to the Gentleman's Magazine; where his observations on the weather and diseases were begun in April 1751, and discontinued in the beginning of 1756, being disappointed in his views of exciting other experienced physicians in different parts to imitate the example. He had very extensive practice, but he did not add to his art any great or various improvements. His pamphlet on the ulcerous sore throat is, on every account, the best of his publications; but owes much of its merit to the information of the late Dr Letherland. It was first printed in 1748, on the re-appearance of that fatal disorder which in 1739 had carried off the two only sons of Mr Pelham. In 1762 Dr Fothergill purchased an estate at Upton in Essex; and formed a botanic garden there, the second in Europe; Kew is the first. In 1766 he began regularly to withdraw, from Midsummer to Michaelmas, from the excessive fatigue of his profession, to Lee-Hall, near Middlewich, in Cheshire; which, though he only rented

**Fothergill.** ed it by the year, he had spared no expence to improve. He took no fees during this recess, but attended to prescribe gratis at an inn at Middlewich once a week. In 1767, after he found himself obliged to relax his attention to business, he removed from his house in the city, to reside in Harpur-street, Red-Lion Square. Some time before his death he had been industrious to contrive a method of generating and preserving ice in the West Indies. He was the patron of Sidney Parkinson, and drew up the preface prefixed to his account of the voyage to the South Seas. At his expence also was made and printed an entire new translation of the whole Bible, from the Hebrew and Greek originals, by Anthony Purver, a Quaker, in two volumes, 1764, folio, and also, in 1780, an edition of Bishop Percy's "Key to the New Testament," adapted to the use of a seminary of young Quakers, at Acworth, near Leeds in Yorkshire, founded in 1778 by the Society, who purchased, by a subscription in which Dr Fothergill stood foremost, the house and an estate of thirty acres which the Foundling Hospital held there, but which they found inconvenient for their purpose on account of distance. The Doctor himself first projected this on the plan of a smaller institution of the same kind at Gildersomes. He also endowed it handsomely by his will. It now contains above 300 children of both sexes, who are clothed and instructed. Among the other beneficent schemes suggested by Dr Fothergill were those of bringing fish to London by land carriage, which, though it did not in every respect succeed, tended to destroy a supposed combination: and of rendering bread much cheaper, though equally wholesome, to the poor, by making it with one part of potatoes and three parts of household flour. But his public benefactions, his encouragements of science, the instances of his attention to the health, the police, the convenience of the metropolis, &c. we cannot pretend to specify. The fortune which Dr Fothergill had acquired was immense; and, taking all things together, the house and moveables in Harpur-street, the property in Essex, and the estate in Cheshire (which he held on a lease), and his ready money, amounted to 80,000l. His business when he was in full practice was calculated at near 7000l. per annum. In the influenza of 1775 and 1776, he is said to have had 60 patients on his list daily, and his profit was estimated at 8000l. per annum.

The disorder which hastened his death was a scirrhous of the prostata, and an obstruction in the bladder (in which were found after his death two quarts of water), which had been gradually coming on him for six years past, occasioned by a delicacy, which made him unwilling to alight from his carriage, and when, after his temporary recovery from it the year before he died, he submitted to use relief in his carriage, it was too late. He died at his house in Harpur-street, December 26. 1780; and his remains were interred, January 5. in the Quakers burying-ground at Winchmore-hill, whither they were accompanied by more than 70 coaches and post-chaises, notwithstanding the intention of the executors to have the funeral private. The Doctor by his will appointed, that his shells and other pieces of natural history should be offered to the late Dr Hunter at 500l. under the valuation he or-

dered to be taken of them. Accordingly Dr Hunter bought them for 1200l. The drawings and collections in natural history were also to be offered to Mr (now Sir Joseph) Banks at a valuation. His English portraits and prints, which had been collected by Mr John Nickolls of Ware, and purchased by him for 80 guineas, were bought for 200 guineas by Mr Thane. His books were sold by auction, April 30. 1781, and the eight following days. His house and garden at Upton, in which 15 men were constantly employed, were valued at 10,000l. He spared no expence to augment this as well as his other collections. He had an ingenious artist qualified to collect for him at the Cape of Good Hope, and another on the Alps, and employed for several years before his death a painter in natural history at Leeds.

Dr Fothergill's character was excellent. A transaction, indeed, with regard to one Dr Leeds, gave occasion to some of his enemies to blame him; but how unjustly, has been abundantly shown by his biographers Dr Elliott and Dr Lettome. Besides the pamphlet already mentioned, Dr Fothergill wrote a considerable number of Tracts, which are now collected into one volume 8vo, by Dr Elliott. He sometimes wrote in the newspapers, and is said to have been the author of more than 100 letters in the Gazetteer, concerning the New Pavement.

**FOTHERGILLA**, a genus of plants, belonging to the polyandria class. See *BOTANY Index*.

**FOTHERING**, a peculiar method of endeavouring to stop a leak in the bottom of a ship while she is afloat, either under sail or at anchor. It is usually performed in the following manner: A basket is filled with ashes, cinders, and chopped rope yarns, and loosely covered with a piece of canvas; to this is fastened a long pole, by which it is plunged repeatedly in the water, as close as possible to the place where the leak is conjectured to lie. The oakum or chopped rope yarns being thus gradually shaken through the twigs, or over the top of the basket, are frequently sucked into the hole along with the water, so that the leak becomes immediately choked; and the future entrance of the water is thereby prevented.

**FOTHERINGAY**, a town of Northamptonshire, about four miles from Staneford, situated on the river Avon or Nen, and consisting of one street. Edward duke of York in the reign of Henry V. founded and endowed a fine collegiate church here, in which he was interred. At the dissolution, the college and the choir were pulled down, and the bodies of the founder and his family left exposed till Queen Elizabeth's time, who ordered them to be interred, and the present monuments to be erected. On the north side of the church is a free school, founded by Henry VII. or Edward VI. endowed with 20l. per annum for a master, payable out of the exchequer by the receiver of the county. The bridge over the river here was first built by Queen Elizabeth, 1573, of timber, with three pillars upon the foundation. Daniel, first earl of Nottingham, and the other trustees for William Saville, marquis of Halifax, rebuilt it, in 1722, of freestone from King's Cliffe. On the south-east side of the cliffe stood the castle; which was of great antiquity and considerable strength. Mary queen of Scots, who had been in the custody of Sir Amias-

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Amias Powlet here, was tried and beheaded in the hall; and her son afterwards, forgiving and even taking into favour her greatest enemy Cecil, only took the childish revenge of beating down the castle; which he so completely demolished, that no more than the earthworks now remain. Within the first work is a farm-house with some carved stones wrought into it, and at the fourth-west corner of the inner trench are some masses of stone walls. Sir Robert Cotton carried the waincot of the hall to Connington.

FOU-TCHEOU, a city of China, in the province of FO-KIEN. It carries on a considerable trade; but is chiefly remarkable for the magnificence of its principal bridge, which has more than 100 arches, constructed of white stone, and ornamented with a double balustrade throughout. This city is the residence of a viceroy, and has under its jurisdiction nine cities of the third class.

FOUGADE, or FOUASSE, in the art of war, a little mine, about 8 or 10 feet wide, and 10 or 12 deep, dug under some work or post, which is in danger of falling into the enemy's hands; and charged with sacks of powder, covered with stones, earth, and whatever else can make great destruction. It is set on fire like other mines, with a faucisse. See MINE.

FOUL, or FOULE, in the sea language, is used when a ship has been long untrimmed, so that the grass weeds, or barnacles, grow to her sides under water. A rope is also foul when it is either tangled in itself, or hindered by another, so that it cannot run or be overhauled.

FOUL imports, also, the running of one ship against another. This happens sometimes by the violence of the wind, and sometimes by the carelessness of the people on board, to ships in the same convoy, and to ships in port by means of others coming in. The damages occasioned by running foul, are of the nature of those in which both parties must bear a share. They are usually made half to fall upon the sufferer, and half upon the vessel which did the injury; but in cases where it is evidently the fault of the master of the vessel, he alone is to bear the damage.

*Foul-Water.* A ship is said to make foul water, when, being under sail, she comes into such shoal water, that though her keel do not touch the ground, yet it comes so near it, that the motion of the water under her raises the mud from the bottom.

FOUL is also a disease in cattle, proceeding from blood, and a waterish rheum that falls down into the legs, and makes them swell.

*Foul or Pimpled Face.* See *GUTTA Rosacea*.

FOULA, or *Foul Island*, one of the Shetland isles, lying between six and seven leagues west from the main land. It is about three miles long, narrow, and full of rough, steep, and bare rocks; one of which is so large, and runs up to such a height, that it may be clearly seen from Orkney. This, it is probable, is the Thule of Tacitus. It has scarcely any pasturage, and but little arable land. The only commodities exported are stock fish, train oil, and feathers.

FOULAHS, a people of Africa, which inhabit the confines of the great desert Sahara. The principal of the Foulah states is that within Sierra Leona, and of which Teembo is the capital. See SIERRA LEONA.

FOUMART, a species of MUSTELA. See MAMMALIA *Index*.

FOUNDATION, in *Architecture*, is that part of a building which is under ground. See ARCHITECTURE, N<sup>o</sup> 104.

Palladio allows a sixth part of the height of the whole building for the hollowing or under-digging; unless there be cellars under ground, in which case he would have it somewhat lower.

FOUNDATION, denotes also a donation or legacy, either in money or lands, for the maintenance and support of some community, hospital, school, &c.

The king only can found a college, but there may be a college in reputation founded by others. If it cannot appear by inquisition who it was that founded a church or college, it shall be intended that it was the king, who has power to found a new church, &c. The king may found and erect an hospital, and give a name to the house upon the inheritance of another, or license another person to do it upon his own lands; and the words *fundo, creo*, &c. are not necessary in every foundation, either of a college or hospital, made by the king; but it is sufficient if there be words equivalent: the incorporation of a college or hospital is the very foundation; but he who endows it with lands is the founder; and to the erection of an hospital, nothing more is requisite but the incorporation and foundation. Persons seized of estates in fee simple, may erect and found hospitals for the poor by deed enrolled in chancery, &c. which shall be incorporated, and subject to such visitors as the founder shall appoint, &c. stat. 39. Eliz. c. 5.

FOUNDER, in a general sense, the person who lays a foundation, or endows a church, school, religious house, or other charitable institution. See FOUNDATION.

FOUNDER, also implies an artist who casts metals, in various forms, for different uses, as guns, bells, statues, printing characters, candlesticks, buckles, &c. whence they are denominated gun-founders, bell-founders, figure-founders, letter-founders, founders of small works, &c. See FOUNDERY.

FOUNDER, in the sea language: A ship is said to founder, when by an extraordinary leak, or by a great sea breaking in upon her, she is so filled with water, that she cannot be freed of it; so that she can neither veer nor steer, but lie like a log; and not being able to swim long, will at last sink.

FOUNDERED, in *Ferriery*. See there, § xli.

FOUNDERY, or FOUNDRY, the art of casting all sorts of metals into different forms. It likewise signifies the workhouse or smelting hut wherein these operations are performed.

*Foundery of Small Works, or casting in Sand.* The sand used for casting small works is at first of a pretty soft, yellowish, and clammy nature; but it being necessary to strew charcoal dust in the mould, it at length becomes of a quite black colour. This sand is worked over and over, on a board, with a roller, and a sort of knife; being placed over a trough to receive it, after it is by these means sufficiently prepared.

This done, they take a wooden board of a length and breadth proportional to the things to be cast, and putting a ledge round it they fill it with sand, a little moistened,

*Foundery.* moistened, to make it duly cohere. Then they take either wood or metal models of what they intend to cast, and apply them so to the mould, and press them into the sand, as to leave their impression there. Along the middle of the mould is laid half a small brass cylinder, as the chief canal for the metal to run through, when melted, into the models or patterns; and from this chief canal are placed several others, which extend to each model or pattern placed in the frame. After this frame is finished, they take out the patterns, by first loosening them all round, that the sand may not give way.

Then they proceed to work the other half of the mould with the same patterns in just such another frame; only that it has pins, which, entering into holes that correspond to it in the other, make the two cavities of the pattern fall exactly on each other.

The frame, thus moulded, is carried to the melter; who, after extending the chief canal of the counter-part, and adding the cross canals to the several moulds in both, and strewing mill dust over them, dries them in a kind of oven for that purpose.

Both parts of the mould being dry, they are joined together by means of the pins: and to prevent them giving way, by reason of the melted metal passing through the chief cylindrical canal, they are screwed or wedged up like a kind of press.

While the moulds are thus preparing, the metal is fusing in a crucible of a size proportionate to the quantity of metal intended to be cast.

When the moulds are coolish, the frames are unscrewed or unwedged, and the cast work taken out of the sand, which sand is worked over again for other casting.

*FOUNDERY of Statues.* The casting of statues depends on the due preparation of the pit, the core, the wax, the outer mould, the inferior furnace to melt off the wax, and the upper to fuse the metal. The pit is a hole dug in a dry place something deeper than the intended figure, and made according to the prominence of certain parts thereof. The inside of the pit is commonly lined with stone or brick; or when the figure is very large, they sometimes work on the ground, and raise a proper fence to resist the impulsion of the melted metal.

The inner mould, or core, is a rude mass to which is given the intended attitude and contours. It is raised on an iron grate, strong enough to sustain it, and is strengthened within by several bars of iron. It is generally made either of potters clay, mixed with hair and horse dung; or of plaster of Paris mixed with brick dust. The use of the core is to support the wax, the shell, and lessen the weight of the metal. The iron bars and the core are taken out of the brass figure through an aperture left in it for that purpose, which is soldered up afterwards. It is necessary to leave some of the iron bars of the core, that contribute to the steadiness of the projecting part, within the brass figure.

The wax is a representation of the intended statue. If it be a piece of sculpture, the wax should be all of the sculptor's own hand, who usually forms it on the core: Though it may be wrought separately in cavities, moulded on a model, and afterwards arranged on the

*Foundery.* ribs of iron over the grate; filling the vacant space in the middle with liquid plaster and brick dust, whereby the inner core is proportioned as the sculptor carries on the wax.

When the wax, which is the intended thickness of the metal, is finished, they fill small waxen tubes perpendicular to it from top to bottom, to serve both as canals for the conveyance of the metal to all parts of the work; and as vent holes, to give passage to the air, which would otherwise occasion great disorder when the hot metal came to encompass it.

The work being brought thus far, must be covered with its shell, which is a kind of crust laid over the wax, and which being of a soft matter, easily receives the impression of every part, which is afterwards communicated to the metal upon its taking the place of the wax, between the shell and the mould. The matter of this outer mould is varied according as different layers are applied. The first is generally a composition of clay, and old white crucibles well ground and sifted, and mixed up with water to the consistence of a colour fit for painting: accordingly they apply it with a pencil, laying it seven or eight times over, and letting it dry between whites. For the second impression they add horse dung and natural earth to the former composition. The third impression is only horse dung and earth. Lastly, The shell is finished by laying on several more impressions of this last matter, made very thick with the hand.

The shell, thus finished, is secured by several iron girths, bound round it, at about half a foot distance from each other, and fastened at the bottom to the grate under the statue, and at top to a circle of iron where they all terminate.

If the statue be so big that it would not be easy to move the moulds with safety, they must be wrought on the spot where it is to be cast. This is performed two ways: in the first, a square hole is dug under ground, much bigger than the mould to be made therein, and its inside lined with walls of free-stone or brick. At the bottom is made a hole of the same materials, with a kind of furnace, having its aperture outwards: in this is a fire made to dry the mould, and afterwards melt the wax. Over this furnace is placed the grate, and upon this the mould, &c. formed as above. Lastly, At one of the edges of the square pit, is made another large furnace to melt the metal. In the other way, it is sufficient to work the mould above ground, but with the like precaution of a furnace and grate underneath. When finished, four walls are to be run around it, and by the side thereof a massive made for a melting furnace. For the rest, the method is the same in both. The mould being finished, and enclosed as described, whether under ground or above it, a moderate fire is lighted in the furnace under it, and the whole covered with planks, that the wax may melt gently down, and run out at pipes contrived for that purpose, at the foot of the mould, which are afterwards exactly closed with earth, so soon as the wax is carried off. This done, the hole is filled up with bricks thrown in at random, and the fire in the furnace augmented, till such time as both the bricks and mould become red hot. After this, the fire being extinguished, and every thing cold again, they

**Foundery.** they take out the bricks, and fill up their place with earth moistened, and a little beaten to the top of the mould, in order to make it the more firm and steady. These preparatory measures being duly taken, there remains nothing but to melt the metal, and run it into the mould. This is the office of the furnace above described, which is commonly made in the form of an oven with three apertures, one to put in the wood, another for a vent, and a third to run the metal out at. From this last aperture, which is kept very close while the metal is in fusion, a small tube is laid, whereby the melted metal is conveyed into a large earthen basin, over the mould, into the bottom of which all the big branches of the jets, or casts, which are to convey the metal into all the parts of the mould, are inserted.

These casts or jets are all terminated with a kind of plugs, which are kept close, that, upon opening the furnace, the brass, which gushes out with violence, may not enter any of them, till the basin be full enough of matter to run into them all at once. Upon which occasion they pull out the plugs, which are long iron rods with a head at one end, capable of filling the whole diameter of each tube. The whole of the furnace is opened with a long piece of iron fitted at the end of each pole, and the mould filled in an instant. This completes the work in relation to the casting part; the rest being the sculptor's or carver's business, who, taking the figure out of the mould and earth wherewith it is encompassed, saws off the jets with which it appears covered over, and repairs it with chisels, graters, punchcons, &c.

**FOUNDERY of Bells.** The metal, it is to be observed, is different for bells from what it is for statues; there being no tin in the statue metal; but there is a fifth, and sometimes more, in the bell metal.

The dimensions of the core and the wax for bells, if a chime of bells especially, are not left to chance, but must be measured on a scale, or diapason, which gives the height, aperture, and thickness, necessary for the several tones required.

It is on the wax that the several mouldings and other ornaments and inscriptions, to be represented in relief on the outside of the bell, are formed. The clapper or tongue is not properly a part of the bell, but is furnished from other hands. In Europe, it is usually of iron, with a large knob at the extreme; and is suspended in the middle of the bell. In China, it is only a huge wooden mallet, struck by force of arm against the bell; whence they can have but little of that consonancy so much admired in some of our chimes of bells. The Chinese have an extraordinary way of increasing the sound of their bells, viz. by leaving a hole under the cannon; which our bell-founders would reckon a defect.

The proportions of our bells differ very much from those of the Chinese. In ours, the modern proportions are, to make the diameter 15 times the thickness of the brim, and the height 12 times. The parts of a bell are, 1. The sounding bow, terminated by an inferior circle, which grows thinner and thinner. 2. The brim or that part of a bell whereon the clapper strikes, and which is thicker than the rest. 3. The outward

sinking of the middle of the bell, or the point under which it grows wider to the brim. 4. The waist or furniture, and the part that grows wider and thicker quite to the brim. 5. The upper vase, or that part which is above the waist. 6. The pallet which supports the staple of the clapper within. 7. The bent and hollowed branches of metal uniting with the cannons, to receive the iron keys, whereby the bell is hung up to the beam, which is its support and counterpoise when rung out.

The business of bell foundery is reducible to three particulars. 1. The proportion of a bell. 2. The forming of the mould. And, 3. The melting of the metal. There are two kinds of proportions, viz. the simple and the relative; the former are those proportions only that are between the several parts of a bell to render it sonorous; the relative proportions establish a requisite harmony between several bells.

The method of forming the profile of a bell, previous to its being cast, in which the proportion of the several parts may be seen, is as follows: the thickness of the brim, C 1 (Plate CCXXXIII.) is the foundation of every other measure, and is divided into three equal parts. First, draw the line HD, which represents the diameter of the bell; bisect it in F and erect the perpendicular Ff; let DF and HF be also bisected in E and G, and two other perpendiculars Ee, Gg, be erected at E and G: GE will be the diameter of the top or upper vase, i. e. the diameter of the top will be half that of the bell; and it will, therefore, be the diameter of a bell which will sound an octave to the other. Divide the diameter of the bell or the line HD into 15 equal parts, and one of these will give C 1 the thickness of the brim; divide again each of these 15 equal parts into three other equal parts, and then form a scale. From this scale take 12 of the larger divisions or  $\frac{1}{3}$  of the whole scale in the compass, and setting one leg in D describe an arc to cut the line Ee in N; draw ND, and divide this line into 12 equal parts; at the point 1 erect the perpendicular 1C=10, and C 1 will be the thickness of the brim =  $\frac{1}{15}$  of the diameter: draw the line CD; bisect DN; and at the point of bisection 6 erect the perpendicular 6K=12 of the larger divisions on the scale. With an opening of the compass equal to twice the length of the scale or 30 brims, setting one leg in N, describe an arc of a circle, and with the same leg in K and the same opening describe another arc to intersect the former: on this point of intersection as a centre, and with a radius equal to 30 brims, describe the arc NK; in 6 K produced take KB= $\frac{1}{3}$  of the larger measure of the scale or  $\frac{1}{3}$  of the brim, and on the same centre with the radius 30 of brims describe an arc AB parallel to NK. For the arc BC, take 12 divisions of the scale or 12 brims in the compass; find a centre, and from that centre, with this opening, describe the arc BC, in the same manner as NK or AB were described. There are various ways of describing the arc Kp; some describe it on a centre at the distance of nine brims from the points p and K; others, as it is done in the figure, on a centre at the distance only of seven brims from those points. But it is necessary first to find the point p, and to determine the rounding of the

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the bell  $\rho$  I. For this purpose, on the point C as a centre, and with the radius C I, describe the arc  $1 \rho n$ ; bisect the part 1, 2 of the line D n, and erecting the perpendicular  $\rho m$ , this perpendicular will cut the arc  $1 \rho n$  in  $m$ , which terminates the rounding  $1 \rho$ . Some founders make the bendings K a third of a brim lower than the middle of the line DN; others make the part C I D more acute, and instead of making C I perpendicular to DN at I, draw it  $\frac{1}{2}$ th of a brim higher, making it still equal to one brim; so that the line I D is longer than the brim C I. In order to trace out the top part N a, take in the compass eight divisions of the scale or eight brims, and on the points N and D as centres, describe arcs to intersect each other in 8: on this point 8, with a radius of eight brims, describe the arc N b; this arc will be the exterior curve of the top or crown: on the same point 8 as a centre, and with a radius equal to  $7\frac{2}{3}$  brims, describe the arc A e, and this will be the interior curve of the crown, and its whole thickness will be one third of the brim. As the point 8 does not fall in the axis of the bell, a centre M may be found in the axis by describing, with the interval of eight brims on the centres D and H, arcs which will intersect in M; and this point may be made the centre of the inner and outer curves of the crown as before. The thickness of the cap which strengthens the crown at Q is about one-third of the thickness of the brim; and the hollow branches or ears about one sixth of the diameter of the bell. The height of the bell is in proportion to its diameter as 12 to 15, or in the proportion of the fundamental found to its third major: whence it follows, that the found of a bell is principally composed of the found of its extremity or brim as a fundamental, of the found of the crown which is an octave to it, and of that of the height which is a third.

The particulars necessary for making the mould of a bell are, 1. The earth: the most cohesive is the best; it must be well ground and sifted, to prevent any chinks. 2. Brick stone; which must be used for the mine, mould, or core, and for the furnace. 3. Horse dung, hair, and hemp, mixed with the earth, to render the cement more binding. 4. The wax for inscriptions, coats of arms, &c. 5. The tallow equally mixed with the wax, in order to put a slight lay of it upon the outer mould, before any letters are applied to it. 6. The coals to dry the mould.

For making the mould, they have a scaffold consisting of four boards ranged upon tressels. Upon this they carry the earth, grossly diluted, to mix it with horse dung, beating the whole with a large spatula.

The compasses of construction is the chief instrument for making the mould, which consist of two different legs joined by a third piece. And, last of all the founders shelves, on which are the engravings of the letters, cartridges, coats of arms, &c.

They first dig a hole of a sufficient depth to contain the mould of the bell, together with the case or cannon under ground; and about six inches lower than the terreplain, where the work is performed. The hole must be wide enough for a free passage between the mould and walls of the hole, or between one mould and another, when several bells are to be cast. At

Foundry.

the centre of the hole is a stake erected, that is strongly fastened in the ground. This supports an iron peg, on which the pivot of the second branch of the compasses turns. The stake is encompassed with a solid brick-work, perfectly round, about half a foot high, and of the proposed bell's diameter. This they call a *millstone*. The parts of the mould are, the core, the model of the bell, and the shell. When the outer surface of the core is formed, they begin to raise the core, which is made of bricks that are laid in courses of equal height upon a lay of plain earth. At the laying of each brick, they bring near it the branch of the compasses, on which the curve of the core is shaped, so as that there may remain between it and the curve the distance of a line, to be afterwards filled up with layers of cement. The work is continued to the top, only leaving an opening for the coals to bake the core. This work is covered with a layer of cement, made of earth and horse dung; on which they move the compasses of construction, to make it of an even smoothness everywhere.

The first layer being finished, they put the fire to the core, by filling it half with coals, through an opening that is kept shut, during the baking, with a cake of earth that has been separately baked. The first fire consumes the stake, and the fire is left in the core half or sometimes a whole day: the first layer being thoroughly dry, they cover it with a second, third, and fourth; each being smoothed by the board of the compasses, and thoroughly dried before they proceed to another.

The core being completed, they take the compasses to pieces, with intent to cut off the thickness of the model, and the compasses are immediately put in their place to begin a second piece of the mould. It consists of a mixture of earth and hair, applied with the hand on the core, in several cakes that close together. This work is finished by several layers of a thinner cement of the same matter, smoothed by the compasses, and thoroughly dried before another is laid on. The first layer of the model is a mixture of wax and grease spread over the whole. After which are applied the inscriptions, coats of arms, &c. besmeared with a pencil dipped in a vessel of wax in a chafing dish: this is done for every letter. Before the shell is begun, the compasses are taken to pieces, to cut off all the wood that fills the place of the thickness to be given to the shell.

The first layer is the same earth with the rest, sifted very fine: while it is tempering in water, it is mixed with cows hair to make it cohere. The whole being a thin cullis, is gently poured on the model, that fills exactly all the sinuosities of the figures, &c. and this is repeated till the whole is two lines thick over the model. When this layer is thoroughly dried, they cover it with a second of the same matter, but somewhat thicker; when this second layer becomes of some consistence, they apply the compasses again, and light a fire in the core, so as to melt off the wax of the inscriptions, &c.

After this, they go on with other layers of the shell, by means of the compasses. Here they add to the cows hair a quantity of hemp, spread upon the layers, and afterwards smoothed by the board of the compasses.

Foundery. pañes. The thickneſs of the ſhell comes to four or five inches lower than the millſtone before obſerved, and ſurrounds it quite cloſe, which prevents the extravafation of the metal. The wax ſhould be taken out before the melting of the metal.

The ear of the bell requires a ſeparate work, which is done during the drying of the ſeveral incruſtations of the cement. It has ſeven rings: the ſeventh is called the *bridge*, and unites the others, being a perpendicular ſupport to ſtrengthen the curves. It has an aperture at the top, to admit a large iron peg, bent at the bottom; and this is introduced into two holes in the beam, faſtened with two ſtrong iron keys. There are models made of the rings, with maſſes of beaten earth, that are dried in the fire in order to have the hollow of them. Theſe rings are gently preſſed upon a layer of earth and cows hair, one half of its depth; and then taken out, without breaking the mould. This operation is repeated 12 times for 12 half moulds, that two and two united may make the hollows of the fix rings: the ſame they do for the hollow of the bridge, and bake them all to unite them together.

Upon the open place left for the coals to be put in are placed the rings that conſtitute the ear. They firſt put into this open place the iron ring to ſupport the clapper of the bell; then they make a round cake of clay, to fill up the diameter of the thickneſs of the core. This cake, after baking, is clapt upon the opening, and foldered with a thin mortar ſpread over it, which binds the cover cloſe to the core.

The hollow of the model is filled with an earth, ſufficiently moiſt to fix on the place, which is ſtrewed at ſeveral times upon the cover of the core; and they beat it gently with a peſtle, to a proper height; and a workman ſmooths the earth at top with a wooden trowel dipped in water.

Upon this cover, to be taken off afterwards, they aſſemble the hollows of the rings. When every thing is in its proper place, they ſtrengthen the outside of the hollows with mortar, in order to bind them with the bridge, and keep them ſteady at the bottom, by means of a cake of the ſame mortar, which fills up the whole aperture of the ſhell. This they let dry, that it may be removed without breaking. To make room for the metal, they pull off the hollows of the rings, through which the metal is to paſs, before it enters into the vacancy of the mould. The ſhell being unloaded of its ear, they range under the millſtone five or ſix pieces of wood, about two feet long, and thick enough to reach almoſt the lower part of the ſhell; between theſe and the mould, they drive in wooden wedges with a mallet, to ſhake the ſhell of the model whereon it reſts, ſo as to be pulled up and got out of the pit.

When this and the wax are removed, they break the model and the layer of earth, through which the metal muſt run, from the hollow of the rings, between the ſhell and the core. They ſmoke the inſide of the ſhell, by burning ſtraw under it, that helps to ſmooth the ſurface of the bell. Then they put the ſhell in the place, ſo as to leave the ſame interval between that and the core; and before the hollows of the rings or the cap are put on again, they add two vents, that are united to the rings, and to each other, by a maſs of baked cement. After which they put on this maſs of

the cap, the rings, and the vent, over the ſhell, and folder it with thin cement, which is dried gradually by covering it with burning coals. Then they fill up the pit with earth, beating it ſtrongly all the time round the mould.

The furnace has a place for the fire, and another for the metal. The fire-place has a large chimney with a ſpacious aſh-hole. The furnace which contains the metal is vaulted, whoſe bottom is made of earth, rammed down; the reſt is built with brick. It has four apertures; the firſt, through which the flame re- vibrates; the ſecond is cloſed with a ſtopple that is opened for the metal to run; the others are to ſeparate the droſs or ſcoriæ of the metal by wooden rakes: through theſe laſt apertures paſſes the thick ſmoke. The ground of the furnace is built ſloping, for the metal to run down.

*Foundery of Great Guns and Mortar Pieces.* The method of caſting theſe pieces is little different from that of bells; they are run maſſy, without any core, being determined by the hollow of the ſhell; and they are afterwards bored with a ſteel trepan, that is worked either by horſes or a water mill.

For the metal, parts, proportions, &c. of theſe pieces, ſee GUNNERY.

*Letter Foundery, or Caſting of Printing Letters.*

In the buſineſs of cutting, caſting, &c. letters for printing, the letter-cutter muſt be provided with a vice, hand-vice, hammers, and files of all ſorts for watch-makers uſe; as alſo gravers and ſculptors of all ſorts, and an oil ſtone, &c. ſuitable and ſizeable to the ſeveral letters to be cut: a flat gage made of box to hold a rod of ſteel, or the body of a mould, &c. exactly perpendicular to the flat of the uſing file: a ſliding gage, whoſe uſe is to meaſure and ſet off diſtances between the ſhoulder and the tooth, and to mark it off from the end, or from the edge of the work; a face gage, which is a ſquare notch cut with a file into the edge of a thin plate of ſteel, iron, or braſs, of the thickneſs of a piece of common tin, whoſe uſe is to proportion the face of each ſort of letter, viz. long letters, aſcending letters, and ſhort letters. So there muſt be three gages; and the gage for the long letters is the length of the whole body ſuppoſed to be divided into 42 equal parts. The gage for the aſcending letters Roman and Italic are  $\frac{7}{8}$ , or 30 parts of 42, and 33 parts for the Engliſh face. The gage for the ſhort letters is  $\frac{3}{4}$ , or 18 parts of 42 of the whole body for the Roman and Italic, and 22 parts for the Engliſh face.

The Italic and other ſtanding gages are to meaſure the ſcope of the Italic ſtems, by applying the top and bottom of the gage to the top and bottom lines of the letters, and the other ſide of the gage to the ſtem; for when the letter complies with theſe three ſides of the gage, that letter has its true ſhape.

The next care of the letter-cutter is to prepare good ſteel punches, well tempered, and quite free from all veins of iron; on the face of which he draws or marks the exact ſhape of the letter with pen and ink if the letter be large, or with a ſmooth blunted point of a needle if it be ſmall; and then with ſizeable and proper ſhaped and pointed gravers and ſculptors, digs or ſculps out the ſteel between the ſtrokes or marks he made on the face of the punch, and leaves the marks

ſtanding

Foundery. standing on the face. Having well shaped the inside strokes of his letter, he deepens the hollows with the same tools; for if a letter be not deep in proportion to its width, it will, when used at press, print black, and be good for nothing. This work is generally regulated by the depth of the counter-punch. Then he works the outside with proper files till it be fit for the matrice.

But before we proceed to the sinking and justifying of the matrices, we must provide a mould to justify them by, of which there is a draught in Plate CCXXIII. fig. 1. 2.

Every mould is composed of an upper and an under part. The under part is delineated in fig. 1. The upper part is marked fig. 2. and is in all respects made like the under part, excepting the stool behind, and the bow or spring also behind; and excepting a small roundish wire between the body and carriage, near the break, where the under part hath a small rounding groove made in the body. This wire, or rather half wire, in the upper part makes the nick in the shank of the letter, when part of it is received into the groove in the under part. These two parts are so exactly fitted and gaged into one another (viz. the male gage marked *c* in fig. 2. into the female marked *g* in fig. 1.), that when the upper part of the mould is properly placed on, and in the under part of the mould, both together make the entire mould, and may be slid backwards for use so far, till the edge of either of the bodies on the middle of either carriage comes just to the edge of the female gages cut in each carriage; and they may be slid forward so far, till the bodies on either carriage touch each other: and the sliding of these two parts of the mould backwards makes the shank of the letter thicker, because the bodies on each part stand wider asunder; and the sliding them forwards makes the shank of the letter thinner, because the bodies on each part of the mould stand closer together. The parts of the mould are as follow: viz. *a*, The carriage. *b*, The body. *c*, The male gage. *d e*, The mouth-piece. *f i*, The register. *g*, The female gage. *h*, The hag, *aaaa*, The bottom-plate. *bbb*, The wood on which the bottom-plate lies. *ccc*, The mouth. *ddd*, The throat. *edd*, The pallet. *f*, The nick. *gg*, The stool. *hh*, The spring or bow.

Then the mould must be justified: and first the founder justifies the body, by casting about 20 proofs or samples of letters; which are set up in a composing stick, with all their nicks towards the right hand; and then by comparing these with the pattern letters, set up in the same manner, he finds the exact measure of the body to be cast. He also tries if the two sides of the body are parallel, or that the body be no bigger at the head than at the foot, by taking half the number of his proofs and turning them with their heads to the feet of the other half; and if then the heads and the feet be found exactly even upon each other, and neither to drive out nor get in, the two sides may be pronounced parallel. He farther tries whether the two sides of the thickness of the letter be parallel, by first setting his proofs in the composing stick with their nicks upwards, and then turning one-half with their heads to the feet of the other half; and if the heads and feet lie exactly upon each other, and neither drive

out nor get in, the two sides of the thickness are parallel. Foundery.

The mould thus justified, the next business is to prepare the matrices. A matrice is a piece of brass or copper of about an inch and a half long, and of a thickness in proportion to the size of the letter it is to contain. In this metal is sunk the face of the letter intended to be cast, by striking the letter punch about the depth of an *n*. After this the sides and face of the matrice must be justified and cleared with files of all bunnings made by sinking the punch.

Every thing thus prepared, it is brought to the furnace; which is built of brick upright, with four square sides, and a stone on the top, in which stone is a wide round hole for the pan to stand in. A foundery of any consequence has several of these furnaces in it.

As to the metal of which the types are to be cast, this, in extensive founderies, is always prepared in large quantities; but cast into small bars, of about 20 pounds weight, to be delivered out to the workmen as occasion requires. In the letter foundery which has been long carried on with reputation under the direction of Mess. Wilson and Sons at Glasgow, we are informed, that a stock of metal is made up at two different times of the year, sufficient to serve the casters at the furnace for six months each time. For this purpose, a large furnace is built under a shade, furnished with a wheel vent, in order the more equally to heat the sides of a strong pot of cast iron, which holds when full 15 hundred weight of the metal. The fire being kindled below, the bars of lead are let softly down into the pot, and their fusion promoted by throwing in some pitch and tallow, which soon inflame. An outer chimney, which is built so as to project about a foot over the farthest lip of the pot, catches hold of the flame by a strong draught, and makes it act very powerfully in melting lead; whilst it serves at the same time to convey away all the fumes, &c. from the workmen, to whom this laborious part of the business is committed. When the lead is thoroughly melted, a due proportion of the regulus of antimony and other ingredients are put in, and some more tallow is inflamed to make the whole incorporate sooner. The workmen now having mixed the contents of the pot very thoroughly by stirring long with a large iron ladle, next proceed to draw the metal off into the small troughs of cast iron, which are ranged to the number of four-score upon a level platform faced with stone, built towards the right hand. In the course of a day 15 hundred weight of metal can be easily prepared in this manner; and the operation is continued for as many days as are necessary to prepare a stock of metal of all the various degrees of hardness. After this, the whole is disposed into presses according to its quality, to be delivered out occasionally to the workmen.

The founder must now be provided with a ladle, which differs nothing from other iron ladles but in its size; and he is provided always with ladles of several sizes, which he uses according to the size of the letters he is to cast. Before the caster begins to cast, he must kindle his fire in the furnace to melt the metal in the pan. Therefore he takes the pan out of the hole in the stone, and there lays in coals and kindles them; and, when they are well kindled, he sets the pan in again,

Foundery. again, and puts in metal into it to melt : if it be a small-bodied letter he casts, or a thin letter of great bodies, his letter must be very hot, nay sometimes red-hot, to make the letter come. Then having chosen a ladle that will hold about so much as the letter and break is, he lays it at the stoking hole, where the flame bursts out, to heat. Then he ties a thin leather, cut with its narrow end against the face to the leather groove of the matrice, by whipping a brown thread twice about the leather groove, and fastening the thread with a knot. Then he puts both halves of the mould together, and puts the matrice into the matrice-cheek, and places the foot of the matrice on the stool of the mould, and the broad end of the leather upon the wood of the upper half of the mould, but not tight up, lest it might hinder the foot of the matrice from sinking close down upon the stool in a train of work. Then laying a little rosin on the upper wood of the mould, and having his casting ladle hot, he with the boiling side of it melts the rosin : and, when it is yet melted, presses the broad end of the leather hard down on the wood, and so fastens it to the wood ; all this is the preparation.

Now he comes to casting. Wherefore, placing the under half of the mould in his left hand, with the hook or hag forward, he clutches the ends of its wood between the lower part of the ball of his thumb and his three hind fingers ; then he lays the upper half of the mould upon the under half, so that the male gages may fall into the female gages, and at the same time the foot of the matrice places itself upon the stool ; and, clasping his left hand thumb strong over the upper half of the mould, he nimbly catches hold of the bow or spring with his right hand fingers at the top of it, and his thumb under it, and places the point of it against the middle of the notch in the backside of the matrice, pressing it as well forwards towards the mould, as downwards by the shoulder of the notch close upon the stool, while at the same time with his hinder fingers, as aforesaid, he draws the under half of the mould towards the ball of his thumb, and thrusts by the ball of his thumb the upper part towards his fingers, that both the registers of the mould may press against both sides of the matrice, and his thumb and fingers press both halves of the mould close together.

Then he takes the handle of his ladle in his right hand, and with the boll of it gives a stroke, two or three, outwards upon the surface of the melted metal, to scum or clear it from the film or dust that may swim upon it ; then takes up the ladle full of metal, and having his mould, as aforesaid, in his left hand, he a little twists the left side of his body from the furnace, and brings the geat of his ladle (full of metal) to the mouth of the mould, and twists the upper part of his right hand towards him to turn the metal into it, while at the same moment of time he jilts the mould in his left hand forwards, to receive the metal with a strong shake (as it is called), not only into the body of the mould, but while the metal is yet hot running, swift and strongly, into the very face of the matrice, to receive its perfect form there, as well as in the shank.

Then he takes the upper half of the mould off the under half, by placing his right hand thumb, on the end of the wood next his left hand thumb, and his

two middle fingers at the other end of the wood ; and finding the letter and break lie in the under half of the mould (as most commonly by reason of its weight it does), he throws or tosses the letter, break and all, upon a sheet of waite paper laid for that purpose on the bench, just a little beyond his left hand, and is then ready to cast another letter as before ; and also, the whole number that is to be cast with that matrice. A workman will ordinarily cast about 3000 of these letters in a day.

When the casters at the furnace have got a sufficient number of types upon the tables, a set of boys come and nimbly break away the jets from them : the jets are thrown into the pots, and the types are carried away in parcels to other boys, who pass them swiftly under their fingers, defended by leather, upon smooth flat stones, in order to polish their broadsides. This is a very dexterous operation, and is a remarkable instance of what may be effected by the power of habit and long practice ; for these boys, in turning up the other side of the type, do it so quickly by a mere touch of the fingers of the left hand, as not to require the least perceptible intermission in the motion of the right hand upon the stone. The types, thus finely smoothed and flattened on the broad sides, are next carried to another set of boys, who sit at a square table, two on each side, and there are ranged upon long rulers or sticks, fitted with a small projection, to hinder them from sliding off backwards. When these sticks are so filled, they are placed, two and two, upon a set of wooden pins fixed into the wall, near the dresser, sometimes to the amount of an hundred, in order to undergo the finishing operations. This workman, who is always the most expert and skilful in all the different branches carried on at the foundery, begins by taking one of these sticks, and, with a peculiar address, slides the whole column of types off upon the dressing-stick : this is made of well-seasoned mahogany, and furnished with two end-pieces of steel, a little lower than the body of the types, one of which is moveable, so as to approach the other by means of a long screw-pin, inserted in the end of the stick. The types are put into the stick with their faces next to the back or projection ; and after they are adjusted to one another so as to stand even, they are then bound up, by screwing home the moveable end-piece. It is here where the great and requisite accuracy of the moulds comes to be perceived ; for in this case the whole column, so bound up, lies flat and true upon the stick, the two extreme types being quite parallel, and the whole has the appearance of one solid continuous plate of metal. The least inaccuracy in the exact parallelism of the individual type, when multiplied so many times, would render it impossible to bind them up in this manner, by disposing them to rise or spring from the stick by the smallest pressure from the screw. Now, when lying so conveniently with the narrow edges uppermost, which cannot possibly be smoothed in the manner before mentioned by the stones, the workman does this more effectually by scraping the surface of the column with a thick-edged but sharp razor, which at every stroke brings on a very fine smooth skin, like to polished silver : and thus he proceeds till in about half a minute he comes to the farther end of the stick. The other edges

Foundery.

Foundery, of the types are next turned upwards, and polished in the same manner. It is whilst the types thus lie in the dressing-stick that the operation of bearding or barbing is performed, which is effected by running a plane, faced with steel, along the shoulder of the body next to the face, which takes more or less off the corner, as occasion may require. Whilst in the dressing-stick, they are also grooved, which is a very material operation. In order to understand this, it must be remembered, that when the types are first broken off from the jets, some superfluous metal always remains, which would make them bear very unequally against the paper whilst under the printing press, and effectually mar the impression. That all these inequalities may, therefore, be taken away, and that the bearings of every type may be regulated by the shoulders imparted to them all alike from the mould, the workman or dresser proceeds in the following manner: The types being screwed up in the stick, as before mentioned, with the jet end outermost, and projecting beyond the wood about one-eighth of an inch, the stick is put into an open press, so as to present the jet end uppermost, and then every thing is made fast by driving a long wedge, which bears upon a slip of wood, which lies close to the types the whole length: then a plough or plane is applied, which is so constructed as to embrace the projecting part of the types betwixt its long sides, which are made of polished iron. When the plane is thus applied, the steel cutter bearing upon that part between the shoulders of the types, where the inequalities lie, the dresser dexterously glides it along, and by this means strips off every irregular part that comes in the way, and so makes an uniform groove the whole length, and leaves the two shoulders standing; by which means every type becomes precisely like to another, as to the height against paper. The types being now finished, the stick is taken out of the press, and the whole column replaced upon the other stick; and after the whole are so dressed, he proceeds to pick out the bad letters, previous to putting them up into pages and papers. In doing this he takes the stick into his left hand, and turning the faces near to the light, he examines them carefully, and whenever an imperfect or damaged letter occurs, he nimbly plucks it out with a sharp bodkin, which he holds in the right hand for that purpose. Those letters which, from their form, project over the body of the type, and which cannot on this account be rubbed on the stones, are scraped on the broadsides with a knife or file, and some of the metal next the face pared away with a penknife, in order to allow the type to come close to any other. This operation is called  *kerning* .

The excellence of printing types consists not only in the due performance of all the operations above described, but also in the hardness of the metal, form, and fine proportion of the character, and in the exact bearing and ranging of the letters in relation to one another.

**FOUNT**, or **FONT**, among printers, &c. a set or quantity of characters or letters of each kind, cast by a letter-founder, and sorted.—We say, a founder has cast a fount of pica, of english, of pearl, &c. meaning that he has cast a set of characters of these kinds.

A complete fount not only includes the running

letters, but also large and small capitals, single letters, double letters, points, commas, lines, and numeral characters.

Founts are large or small, according to the demand of the printer, who orders them by the hundred weight, or by sheets. When the printer orders a fount of 500, he means that the fount should weigh 500lb. When he demands a fount of 10 sheets, it is understood, that with that fount he shall be able to compose 10 sheets, or 20 forms, without being obliged to distribute. The founder takes his measures accordingly; he reckons 120 pounds for a sheet, including the quadrates, &c. or 60 pounds for a form, which is half a sheet: not that the sheet always weighs 120 pounds, or the form 60 pounds; on the contrary, it varies according to the size of the form; besides, it is always supposed that there are letters left in the cases.

The letter-founders have a kind of list, or tariff, whereby they regulate their founts: the occasion thereof is, that some letters being in much more use, and oftener repeated than others, their cells or cases should be better filled and stored than those of the letters which do not return so frequently. Thus the *o* and *i*, for instance, are always in greater quantity than the *k* or *z*.

This difference will be best perceived from a proportional comparison of those letters with themselves, or some others. Suppose a fount of 100,000 characters, which is a common fount; here the *a* should have 5000, the *c* 3000, the *e* 11,000, the *i* 6000, the *m* 3000, the *k* only 30, and the *x*, *y* and *z*, not many more. But this is only to be understood of the letters of the lower case; those of the upper having other proportions, which it would be, here, too long to insist on.

**FOUNTAIN**, a spring or source of water rising out of the earth. Among the ancients, fountains were generally esteemed as sacred; but some were held to be so in a more particular manner. The good effects received from cold baths gave springs and rivers this high reputation; for their salutary influence was supposed to proceed from some presiding deity. Particular reasons might occasion some to be held in greater veneration than others. It was customary to throw little pieces of money into those springs, lakes, or rivers, which were esteemed sacred; to render the presiding divinities propitious; as the touch of a naked body was supposed to pollute their hallowed waters. For the phenomena, theory, and origin of fountains or springs, see **SPRING**.

*Artificial FOUNTAIN*, called also a *jet d'eau*, is a contrivance by which water is violently spouted upwards. See **HYDRAULICS**.

*Boiling FOUNTAIN*. See **ICELAND**.

*Fountain-TREE*, a very extraordinary vegetable growing in one of the Canary islands, and likewise said to exist in some other places, which distils water from its leaves in such plenty as to answer all the purposes of the inhabitants who live near it. Of this tree we have the following account in Glasse's history of the Canary islands.—“There are only three fountains of water in the whole island of Hierro, wherein the fountain-tree grows. One of these fountains is called *Acof*, which, in the language of the ancient inhabitants, signifies *river*; a name, however, which does not seem

Fountain. to have been given it on account of its yielding much water, for in that respect it hardly deserves the name of a fountain. More to the northward is another called *Hapio*; and in the middle of the island is a spring, yielding a stream about the thickness of a man's finger. This last was discovered in the year 1565, and is called the *fountain of Anton. Hernandez*. On account of the scarcity of water, the sheep, goats, and swine, here do not drink in the summer, but are taught to dig up the roots of fern, and chew them to quench their thirst. The great cattle are watered at those fountains, and at a place where water distills from the leaves of a tree. Many writers have made mention of this famous tree, some in such a manner as to make it appear miraculous: others again deny the existence of any such tree: among whom is Father Feyjoo, a modern Spanish author, in his *Theatro Critico*. But he, and those who agree with him in this matter, are as much mistaken as those who would make it appear to be miraculous. This is the only island of all the Canaries which I have not been in; but I have failed with natives of Hierro, who, when questioned about the existence of this tree, answered in the affirmative.

"The author of the *History of the discovery and conquest* has given us a particular account of it, which I shall here relate at large.

"The district in which this tree stands is called *Tigulaha*; near to which, and in the cliff or steep rocky ascent that surrounds the whole island, is a narrow gutter or gully, which commences at the sea, and continues to the summit of the cliff, where it joins or coincides with a valley, which is terminated by the steep front of a rock. On the top of this rock grows a tree, called in the language of the ancient inhabitants, *Garfe*, "Sacred or Holy Tree," which for many years has been preserved sound, entire, and fresh. Its leaves constantly distil such a quantity of water as is sufficient to furnish drink to every living creature in Hierro; nature having provided this remedy for the drought of the island. It is situated about a league and a half from the sea. It is not certainly known of what species it is, only that it is called *Til*. It is distinct from other trees, and stands by itself; the circumference of the trunk is about 12 spans, the diameter four, and in height, from the ground to the top of the highest branch, 40 spans: the circumference of all the branches together is 120 feet. The branches are thick and extended; the lowest commence about the height of an ell from the ground. Its fruit resembles the acorn, and tastes something like the kernel of a pine apple, but is softer and more aromatic. The leaves of this tree resemble those of the laurel, but are larger, wider, and more curved; they come forth, in a perpetual succession, so that the tree always remains green. Near to it grows a thorn which it fastens on many of its branches, and interweaves with them; and at a small distance from the garfe are some beech trees, bresos, and thorns. On the north side of the trunk are two large tanks or cisterns, of rough stone, or rather one cistern divided, each half being 20 feet square, and 16 spans in depth. One of these contains water for the drinking of the inhabitants: and the other that which they use for their cattle, washing, and such like purposes. Every morning, near this part of the island, a cloud or mist arises from the sea, which the south and easterly winds force

against the fore-mentioned steep cliff; so that the cloud having no vent but by the gutter, gradually ascends it, and from thence advances slowly to the extremity of the valley, where it is stopped and checked by the front of the rock which terminates the valley, and then rests upon the thick leaves and wide-spreading branches of the tree, from whence it distills in drops during the remainder of the day, until it is at length exhausted, in the same manner that we see water drip from the leaves of trees after a heavy shower of rain. This distillation is not peculiar to the garfe or til; for the bresos, which grow near it, likewise drop water; but their leaves being but few and narrow, the quantity is so trifling, that though the natives save some of it, yet they make little or no account of any but what distills from the til, which, together with the water of some fountains, and what is saved in the winter season, is sufficient to serve them and their flocks. This tree yields most water in those years when the Levant or easterly winds have prevailed for a continuance; for, by these winds only the clouds or mists are drawn hither from the sea. A person lives on the spot near which this tree grows, who is appointed by the council to take care of it and its water; and is allowed a house to live in, with a certain salary. He every day distributes to each family of the district seven pots or vessels full of water, besides what he gives to the principal people of the island."

"Whether the tree which yields water at this present time be the same as that mentioned in the above description, I cannot pretend to determine: but it is probable there has been a succession of them; for Pliny, describing the Fortunate islands, says, "In the mountains of Ombrion are trees resembling the plant ferula, from which water may be procured by pressure. What comes from the black kind is bitter, but that which the white yields is sweet and potable."

Trees yielding water are not peculiar to the island of Hierro; for travellers inform us of one of the same kind in the island of St Thomas, in the bight or gulf of Guinea. In Cockburn's voyages we find the following account of a dropping tree, near the mountains of Vera Paz, in America.

"On the morning of the fourth day, we came out on a large plain, where were great numbers of fine deer, and in the middle stood a tree of unusual size, spreading its branches over a vast compass of ground. Curiosity led us up to it. We had perceived, at some distance off, the ground about it to be wet; at which we began to be somewhat surprised, as well knowing there had no rain fallen for near six months past, according to the certain course of the season in that latitude: that it was impossible to be occasioned by the fall of dew on the tree, we were convinced, by the sun's having power to exhale away all moisture of that nature a few minutes after its rising. At last, to our great amazement as well as joy, we saw water dropping, or as it were distilling, fast from the end of every leaf of this wonderful (nor had it been amiss if I had said *miraculous*) tree; at least it was so with respect to us, who had been labouring four days through extreme heat, without receiving the least moisture, and were now almost expiring for want of it.

"We could not help looking on this as liquor sent from heaven to comfort us under great extremity. We caught

Fouquieres  
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Fournels

Fourth.

caught what we could of it in our hands, and drank very plentifully of it; and liked it so well, that we could hardly prevail with ourselves to give over. A matter of this nature could not but incite us to make the strictest observations concerning it; and accordingly we staid under the tree near three hours, and found we could not fathom its body in five times. We observed the soil where it grew to be very strong; and upon the nicest inquiry we could afterwards make, both of the natives of the country and the Spanish inhabitants, we could not learn there was any such tree known throughout New Spain, nor perhaps all America over: but I do not relate this as a prodigy in nature, because I am not a philosopher enough to describe any natural cause for it; the learned may perhaps give substantial reasons in nature for what appeared to us a great and marvellous secret."

**FOUQUIERES, JAMES**, an eminent painter, was born at Antwerp in 1580, and received his chief instructions from Velvet Breughel. He applied himself to the study of landscapes, and went to Italy to improve himself in colouring. He succeeded so happily, that his works are said to be nearly equal to those of Titian.—He was engaged and much caressed at the court of the elector Palatine, and afterwards spent several years of his life in France; where his works met with universal approbation. By some misconduct, however, he sunk into poverty, and died in 1659 in the house of an inconsiderable painter. He had resided for several years at Rome and Venice, where he acquired that excellent style of colouring and design for which his works have been deservedly distinguished.

**FOURCHEE, or FOURCHY**, in *Heraldry*, an appellation given to a cross forked at the end. See **HERALDRY**.

**FOURMONT, STEPHEN**, professor of the Arabic and Chinese languages, and one of the most learned men of his time, was born at Herbelai, a village four leagues from Paris, in 1683. He studied in Mazarine college, and afterwards in the Seminary of Thirty-three. He was at length professor of Arabic in the Royal College, and was made a member of the Academy of Inscriptions. In 1738 he was chosen a member of the Royal Society of London, and of that of Berlin in 1741. He was often consulted by the duke of Orleans, first prince of the blood; who had a particular esteem for him, and made him one of his secretaries. He wrote a great number of books; the most considerable of those which have been printed are, 1. *The Roots of the Latin Tongue*, in verse. 2. *Critical Reflections on the Histories of ancient Nations*, 2 vols. 4to. 3. *Meditationes Sinicae*, folio. 4. *A Chinese Grammar*, in Latin, folio. 5. Several dissertations printed in the *Memoirs of the Academy of Inscriptions*, &c. He died at Paris in 1744.

He ought not to be confounded with *Michael Fourmont*, his youngest brother; who took orders, was professor of the Syriac language in the Royal College, and a member of the Academy of Inscriptions. He died in 1746.

**FOURNESS**, in Loynsdale, Lancashire, is a tract, between the Kent, Leven, and Dudden-sands, which runs north parallel with the west sides of Cumberland and Westmorland; and on the south runs out into

the sea as a promontory. Here, as Mr Camden expresses it, "the sea, as if enraged at it, lashes it more furiously, and in high tides has even devoured the shore, and made three large bays; viz. Kentland, into which the river Ken empties itself; Levensand and Duddensand, between which the land projects in such a manner that it has its name hence; Forenels and Foreland, signifying the same with us as *promontorium anterius* in Latin." Bishop Gibson, however, derives the name of *Fournels* or *Furnels*, from the numerous furnaces that were there anciently, the rents and services of which (called *Bloomsmithly rents*) are still paid. This whole tract, except on the coast, rises in high hills and vast piles of rocks called *Fornels-Fells*; among which the Britons found a secure retreat, trusting to these natural fortresses, though nothing was inaccessible to the victorious Saxons; for we find the Britons settled here 228 years after the arrival of the Saxons: because at that time Egfrid king of Northumberland gave St Cuthbert the land called *Carthmell*, and all the Britons in it, as is related in his life. In these mountainous parts are found quarries of a fine durable blue slate to cover buildings with, which are made use of in many other parts of the kingdom. Here are several cotton mills lately erected; and if fuel for fire were more plentiful, the trade of this country would much increase: but there being no coals nearer than Wigton or Whitehaven, and the coast duties high, firing is rather scarce, the country people using only turf or peat, and that begins to be more scarce than formerly. In the mosses of Fournels much fir is found, but more oak: the trunks in general lie with their heads to the east, the high winds having been from the west. High Furnels has ever had great quantities of sheep, which browse upon the hollies left in great numbers for them; and produces charcoal for melting iron ore, and oak bark for tanners use, in great abundance. The forests abound with deer and wild boars, and the *legh* or *scote*, or large stags, whose horns are frequently found underground here. The low or plain part of Fournels, which is so called to distinguish it from the woody or mountainous part, produces all sorts of grain, but principally oats, whereof the bread eaten in this country is generally made; and there are found here veins of a very rich iron ore, which is not only melted and wrought here, but great quantities are exported to other parts to mix with poorer ores. The three sands above mentioned are very dangerous to travellers, by the tides and the many quicksands. There is a guide on horseback appointed to Kent or Lancaster sands at 10l. per ann. to Leven at 6l. per ann. out of the public revenue; but to Dudden, which are most dangerous, none; and it is no uncommon thing for persons to pass over in parties of 100 at a time like caravans, under the direction of the carriers, who go to or from every day. The sands are less dangerous than formerly, being more used and better known, and travellers never going without the carriers or guides. "Furnis abbey up in the mountains," was begun at Tulket in Amounderness 1124, by Stephen earl of Boulogne, afterwards king of England, for the monks of Savigni in France, and three years after removed to this valley, then called *Bekangessill*, or, "the vale of nightshade." It was of the Cistercian order, endowed with

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Fowl.

above 800l. per ann. Out of the monks of this abbey, Mr Camden informs us, the bishops of the Isle of Man, which lies over against it, used to be chosen by ancient custom; it being as it were the mother of many monasteries in Man and Ireland. Some ruins, and part of the fosse which surrounded the monastery, are still to be seen at Tulket. The remains at Fournels breathe that plain simplicity of the Cistercian abbey; the chapter-house was the only piece of elegant Gothic about it, and its roof has lately fallen in. Part of the painted glass from the east window, representing the crucifixion, &c. is preserved at Windermere church in Bowlness, Westmorland. The church (except the north side of the nave), the chapter-house, refectory, &c. remain, only unroofed.

FOURTH REDUNDANT, in *Musie*. See INTERVAL.

FOWEY, or FOY, a town of Cornwall in England, 240 miles from London, with a commodious haven on the Channel. It is a populous place, extending above one mile on the east side of a river of its own name; and has a great share in the fishing trade, especially pilchards. It rose so much formerly by naval wars and piracies, that in the reign of Edward III. its ships refusing to strike when required as they sailed by Rye and Winchelsea, were attacked by the ships of those ports, but defeated them; whereupon they bore their arms mixed with the arms of those two cinque-ports, which gave rise to the name of the "Gallants of Fowey." And we learn from Camden, that this town quartered a part of the arms of every one of the cinque ports with their own; intimating, that they had at times triumphed over them all: and indeed once they were so powerful, that they took several of the French men of war. In the reign of Edward III. they rescued certain ships of Rye from distress, for which this town was made a member of the cinque-ports. Edward IV. favoured Fowey so much, that when the French threatened to come up the river to burn it, he caused two towers, the ruins of which are yet visible, to be built at the public charge for its security: but he was afterwards so disgusted with the inhabitants for attacking the French after a truce proclaimed with Louis XI. that he took away all their ships and naval stores, together with a chain drawn across the river between the two forts above mentioned, which was carried to Dartmouth. It is said they were so insolent, that they cut off the ears of the king's pursuivants; for which some lives were forfeited as well as estates. The corporation consists of a mayor, recorder, 8 aldermen, a town clerk, and 2 assistants. The market is on Saturday, the fairs May-day and Sept. 10. Here are a fine old church, a free school, and an hospital. The toll of the market and fairs, and keyage of the harbour, were vested in the corporation on the payment of a fee-farm rent of about 40s. It does not appear to have sent members to parliament before the 13th of Queen Elizabeth. Here is a coinage for the tin; of which a great quantity is dug in the country to the north and west of it. The river Foy, or Foath, is very broad and deep here, and was formerly navigable as high as Lestwithiel. W. Long. 5°. N. Lat. 50. 27.

FOWL, among zoologists, denotes the larger sorts of birds, whether domestic or wild: such as geese, pheasants, partridges, turkeys, ducks, &c.

Tame fowl make a necessary part of the stock of a country farm. See POULTRY.

Fowls are again distinguished into two kinds, viz. *land* and *water* fowl, these last being so called from their living much in and about water: also into those which are accounted *game*, and those which are not. See GAME.

FOWLING, the art of catching birds by means of bird-lime, decoys, and other devices, or the killing of them by the gun. See *BIRD-Catching*, *BIRD-Lime*, *DECOY*, *SHOOTING*, and the names of the different birds in the order of the alphabet.

FOWLING, is also used for the pursuing and taking birds with hawks, more properly called *FALCONRY* or *HAWKING*. See these articles.

*FOWLING Piece*, a light gun for shooting birds. That piece is always reckoned best which has the longest barrel, from 5½ to 6 feet, with a moderate bore; though every fowler should have them of different sizes, suitable to the game he designs to kill. The barrel should be well polished and smooth within, and the bore of an equal bigness from one end to the other; which may be proved, by putting in a piece of paste-board, cut of the exact roundness of the top: for if this goes down without stops or slipping, you may conclude the bore good. The bridge-pan must be somewhat above the touch-hole, and ought to have a notch to let down a little powder: this will prevent the piece from recoiling, which it would otherwise be apt to do. As to the locks, choose such as are well filled with true work, whose springs must be neither too strong nor too weak. The hammer ought to be well hardened, and pliable to go down to the pan with a quick motion.

FOX, in *Zoology*. See *CANIS*, *MAMMALIA Index*.

The fox is a great nuisance to the husbandman, by taking away and destroying his lambs, geese, poultry, &c. The common way to catch him is by gins; which being baited, and a train made by drawing raw flesh across in his usual paths or haunts to the gin, it proves an inducement to bring him to the place of destruction.

The fox is also a beast of chase, and is taken with greyhounds, terriers, &c. See *HUNTING*.

Fox, *John*, the martyrologist, was born at Boston in Lincolnshire in the year 1517. At the age of 16 he was entered a student of Brazen-Nose college in Oxford; and in 1543 he proceeded master of arts, and was chosen fellow of Magdalen college. He discovered an early genius for poetry, and wrote several Latin comedies, the subjects taken from Scripture, which his son assures us were written in an elegant style. Forsaking the muses, he now applied himself with uncommon assiduity to the study of divinity, particularly church-history; and, discovering a premature propensity to the doctrine of reformation, he was expelled the college as an heretic. His distress on this occasion was very great; but it was not long before he found an asylum in the house of Sir Thomas Lucy of Warwickshire, who employed him as a tutor to his children. Here he married the daughter of a citizen of Coventry. Sir Thomas's children being now grown up, after residing a short time with his wife's father, he came to London; where finding no immediate means of subsistence, he was reduced to the utmost degree of want; but was at length

Fowling,  
Fox.

**Fox,** length (as his son relates) miraculously relieved in the following manner: As he was one day sitting in St Paul's church, emaciated with hunger, a stranger accosted him familiarly, and, bidding him be of good cheer, put a sum of money into his hand; telling him at the same time, that in a few days new hopes were at hand. He was soon after taken into the family of the duchess of Richmond, as tutor to the earl of Surrey's children, who, when their father was sent to the Tower, were committed to her care. In this family he lived, at Ryegate in Surrey, during the latter part of the reign of Henry VIII. the entire reign of Edward VI. and part of that of Queen Mary: but at length, persecuted by his implacable enemy Bishop Gardiner, he was obliged to seek refuge abroad. Basil in Switzerland was the place of his retreat, where he subsisted by correcting for the press. On the death of Queen Mary he returned to England; where he was graciously received by his former pupil the duke of Norfolk, who retained him in his family as long as he lived, and bequeathed him a pension at his death. Mr Secretary Cecil also obtained for him the rectory of Shipton near Salisbury; and we are assured that he might have had considerable church preferment, had it not been for his unwillingness to subscribe to the canons. He died in the year 1587, in the 70th year of his age; and was buried in the chancel of St Giles's, Cripplegate. He was a man of great industry, and considerable learning; a zealous, but not a violent reformer; a nonconformist, but not an enemy to the church of England. He left two sons; one of whom was bred a divine, the other a physician. He wrote many pieces; but his principal work is, the Acts and Monuments of the Church, &c. commonly called *Fox's Book of Martyrs*. His facts are not always to be depended on, and he often loses his temper; which, considering the subject, is not much to be wondered at.

**Fox, George,** the founder of the sect of English Quakers, was a shoemaker in Nottingham. The accounts of those times tell us, that as he wrought at his trade, he used to meditate much on the Scriptures; which, with his solitary course of life, improving his natural melancholy, he began at length to fancy himself inspired; and in consequence thereof set up for a preacher.

He proposed but few articles of faith; insisting chiefly on moral virtue, mutual charity, the love of God, and a deep attention to the inward motions and secret operations of the Spirit; he required a plain simple worship, and a religion without ceremonies, making it a principal point to wait in profound silence the directions of the Holy Spirit. Fox met with much rough treatment for his zeal, was often imprisoned, and several times in danger of being knocked on the head. But all discouragements notwithstanding, his sect prevailed much, and many considerable men were drawn over to them; among whom were BARCLAY and PENN. He died in 1681. His followers were called *Quakers*, in derision of some unusual shakings and convulsions with which they were seized at their first meetings. See **QUAKERS**.

*Fox-Glove.* See **DIGITALIS**, **BOTANY** and **MATERIA MEDICA Index**.

**Fox-Islands,** the name of a group of islands, 16 in number, situated between the eastern coast of Kamtschatka and the western coast of the continent of America. Each island has a particular name; but the general name *Fox-Islands* is given to the whole group, on account of the great number of black, gray, and red foxes with which they abound. The dress of the inhabitants consists of a cap, and a fur coat which reaches down to the knee. Some of them wear common caps of a party-coloured bird skin, upon which they leave part of the wings and tail. On the fore part of their hunting and fishing caps, they place a small board like a skreen, adorned with the jaw bones of sea bears, and ornamented with glass beads, which they receive in barter from the Russians. At their festivals and dancing parties they use a much more showy sort of caps. They feed upon the flesh of all sorts of sea animals, and generally eat it raw. But if at any time they choose to dress their victuals, they make use of a hollow stone; having placed the fish or flesh therein, they cover it with another, and close the interstices with lime or clay. They then lay it horizontally upon two stones, and light a fire under it. The provision intended for keeping is dried without salt in the open air. Their weapons consist of bows, arrows, and darts; and for defence they use wooden shields. The most perfect equality reigns among these islanders. They have neither chiefs nor superiors, neither laws nor punishments. They live together in families, and societies of several families united, which form what they call a *race*, who, in case of an attack or defence, mutually help and support each other. The inhabitants of the same island always pretend to be of the same race; and every person looks upon his island as a possession, the property of which is common to all the individuals of the same society. Feasts are very common among them, and more particularly when the inhabitants of one island are visited by those of the others. The men of the village meet their guests beating drums, and preceded by the women, who sing and dance. At the conclusion of the dance, the hosts serve up their best provisions, and invite their guests to partake of the feast. They feed their children when very young with the coarsest flesh, and for the most part raw. If an infant cries, the mother immediately carries it to the seaside, and whether it be summer or winter, holds it naked in the water until it is quiet. This custom is so far from doing the children any harm, that it hardens them against the cold, and they accordingly go barefooted through the winter without the least inconvenience. They seldom heat their dwellings; but when they are desirous of warming themselves, they light a bundle of hay, and stand over it; or else they set fire to train-oil, which they pour into a hollow stone. They have a good share of plain natural sense, but are rather slow of understanding. They seem cold and indifferent in most of their actions; but let an injury, or even a suspicion only, rouse them from this phlegmatic state, and they become inflexible and furious, taking the most violent revenge without any regard to the consequences. The least affliction prompts them to suicide; the apprehension of even an uncertain evil often leads them to despair; and they

Fracastor  
||  
Fraction.

they put an end to their days with great apparent insensibility.

FRACASTOR, JEROME, an eminent Italian poet and physician, was born at Verona in the year 1482. Two singularities are related of him in his infancy: one is, that his lips adhered so closely to each other when he came into the world, that a surgeon was obliged to divide them with his incision knife; the other, that his mother was killed with lightning, while he, though in her arms at the very moment, escaped unhurt. Fracastor was of parts so exquisite, and made such progress in every thing he undertook, that he became eminently skilled not only in the belles lettres, but in all arts and sciences. He was a poet, a philosopher, a physician, an astronomer, and a mathematician. He was a man of vast consequence in his time; as appears from Pope Paul III's making use of his authority to remove the council of Trent to Boulogne, under the pretext of a contagious distemper, which, as Fracastor deposed, made it no longer safe to continue at Trent. He was intimately acquainted with Cardinal Bembo, Julius Scaliger, and all the great men of his time. He died of an apoplexy at Cast near Verona, in 1553: and in 1559, the town of Verona erected a statue in honour of him.

He was the author of many performances, both as a poet and as a physician: yet never man was more disinterested in both these capacities than he: evidently so as a physician, for he practised without fees; and as a poet, whose usual reward is glory, nothing could be more indifferent. It is owing to this indifference, that we have so little of his poetry, in comparison of what he wrote; and that, among other compositions, his Odes and Epigrams, which were read in manuscript with infinite admiration, yet, never passing the press, were lost. What we have now of his, are the three books of "Siphilis, or of the French disease;" a book of Miscellaneous Poems; and two books of his poem, entitled, *Joseph*, which he began at the latter end of his life, but did not live to finish. And these works, it is said, would have perished with the rest, if his friends had not taken care to preserve and communicate copies of them: For Fracastor, writing merely for amusement, never troubled himself in the least about what became of his works after they once got out of his hands. Fracastor composed also a poem, called *Alcon, sive de cura canum venaticorum*. His poems as well as his other works are all written in Latin. His medical pieces are, *De Sympathia et Antipathia*,—*De contagione et contagiosis morbis*,—*De causis criticorum dierum*,—*De vini temperatura*, &c. His works have been printed separately and collectively. The best edition of them is that of Padua 1735, in 2 vols, 4to.

FRACHES, in the glass trade, are the flat iron pans into which the glass vessels already formed are put when in the tower over the working furnace, and by means of which they are drawn out through the leers, that they may be taken gradually from the fire, and cool by degrees.

FRACTION, in *Arithmetic* and *Algebra*, a part or division of an unit or integer; or a number which stands to an unit in the relation of a part to its whole. The word literally imports a broken number.

Fractions are usually divided into decimal, sexa-

gesimal, and vulgar. See ALGEBRA and ARITHMETIC.

FRACTURE, in *Surgery*, a rupture of a bone or a solution of continuity in a bone when it is crushed or broken by some external cause. See SURGERY *Index*.

FRÆNUM, or FRENUM, *Bridle*, in *Anatomy*, a name given to divers ligaments, from their office in retaining and curbing the motions of the parts they are fitted to.

FRÆNUM *Linguae*, or *Bridle of the Tongue*; a membranous ligament, which ties the tongue to the os hyoides, larynx, fauces, and lower parts of the mouth. In some subjects the frænum runs the whole length of the tongue to the very tip; in which cases, if it were not cut, it would take away all possibility of speech. See TONGUE-TIED.

FRÆNUM *Penis*, a slender ligament, whereby the prepuce is tied to the lower part of the glans of the penis. Nature varies in the make of this part; it being so short in some, that unless divided it would not admit of perfect erection. There is also a kind of little frænum, fastened to the lower part of the clitoris.

FRAGA, a strong town with a handsome castle, in the kingdom of Arragon in Spain. It is strong by situation among the mountains; having the river Cinca before it, whose high banks are difficult of access; and at its back a hill, which cannot easily be approached with large cannon. Alphonso VII. king of Arragon, and the first of that name of Castile, was killed by the Moors in 1134, when he besieged this town. E. Long. 0. 23. N. Lat. 41. 28.

FRAGARIA, the STRAWBERRY, a genus of plants belonging to the icofandria class; and in the natural method ranking under the 35th order, *Senticosæ*. See BOTANY *Index*, and for an account of the varieties and culture, see GARDENING *Index*.

FRAIL, a basket made of rushes or the like, in which are packed up figs, raisins, &c. It signifies also a certain quantity of raisins, about 75 pounds.

FRAISE, in *Fortification*, a kind of defence consisting of pointed stakes, six or seven feet long, driven parallel to the horizon into the retrenchments of a camp, a half moon, or the like, to prevent any approach or scalade.

Fraises differ from pallisades chiefly in this, that the latter stand perpendicular to the horizon, and the former jet out parallel to the horizon, or nearly so, being usually made a little sloping, or with the points hanging down. Fraises are chiefly used in retrenchments and other works thrown up of earth; sometimes they are found under the parapet of a rampart, serving instead of the cordon of stone used in stone works.

To *Fraiser a Battalion*, is to line the musqueteers round with pikes, that in case they should be charged with a body of horse, the pikes being presented, may cover the musqueteers from the shock, and serve as a barricade.

FRAME, in *Joinery*, a kind of case, wherein a thing is set or enclosed, or even supported; as a window frame, a picture frame, &c.

FRAME is also a machine used in divers arts; as,

FRAME, among printers, is the stand which supports the cases. See CASE.

Fracture  
||  
Frame.

Frame  
||  
France.

FRAME, among founders, a kind of ledge enclosing a board; which, being filled with wetted sand, serves as a mould to cast their works in. See FOUNDERY.

FRAME is more particularly used for a sort of loom, whereon artificers stretch their linens, silks, stuffs, &c. to be embroidered, quilted, or the like.

FRAME, among painters, a kind of square, consisting of four long slips of wood joined together, whose intermediate space is divided by threads into several little squares like a net; and hence sometimes called *reticula*. It serves to reduce figures from great to small; or, on the contrary, to augment their size from small to great.

FRAMLINGHAM, a town of Suffex, 88 miles from London. It is a large old place, with a castle, supposed to have been built by some of the first kings of the East Angles; the walls, yet standing, are 44 feet high, 8 thick, with 13 towers 14 feet above them, 2 of which are watch-towers. To this castle the princess, afterwards Queen Mary I. retired, when the Lady Jane Grey was her competitor for the crown. The town is pleasantly situated, though but indifferently built, upon a clay hill, in a fruitful soil and healthy air, near the source of the river Ore, by some called *Wincknel*, which runs through it to Orford. It has a spacious place for the market which is held on Saturday; and a large stately church built all of black flint, with a steeple 100 feet high; two good almshouses; and a free-school.

FRANC. See FRANK.

FRANCE, a large kingdom of Europe, situated between 5° W. and 7° E. Long. and between 43° and 51° N. Lat. being bounded by the English channel and the Austrian Netherlands on the north; by Germany, Switzerland, Savoy, and Piedmont, in Italy, on the east; by the Mediterranean sea, and the Pyrenean mountains, which separate it from Spain, on the south; and by the bay of Biscay on the west.

1  
First subdued by Julius Cæsar.

The kingdom of France was originally possessed by the *Celts* or *Gauls*. They were a very warlike people, and often checked the progress of the Roman arms: nor did they yield till the time of Julius Cæsar, who totally subdued their country, and reduced it to

\* See *Gaul*, the form of a Roman province\*. The Romans continued in quiet possession of Gaul, as long as their empire retained its strength, and they were in a condition to repress the incursions of the German nations, whom even in the zenith of their power they had not been able to subdue. But in the reign of the emperor Valerian, the ancient Roman valour and discipline had begun to decline, and the same care was not taken to defend the provinces as formerly. The barbarous nations, therefore, began to make much more frequent incursions; and among the rest the *Franks*, a German nation, inhabiting the banks of the Rhine, proved particularly troublesome. Their origin is variously accounted for; but the most probable supposition is, that about the time of the emperor Gordian, the people inhabiting the banks of the Lower Rhine, entered into a confederacy with those who dwelt on the Weser, and both together assumed the name of *Franks* or *Freemen*. Their first irruption, we are told by Valerian, happened in the year 254, the second of Valerian's reign. At this time they were but few in number; and were repulsed by Aurelian, afterwards emperor.

2  
Invaded by the Franks.

Not discouraged by this check, they returned two years after in far greater numbers; but were again defeated by Gallienus, whom Valerian had chosen for his partner in the empire. Others, however, continued to pour in from their native country in such multitudes, that Gallienus, no longer able to drive them out by force of arms, made advantageous proposals to one of their chiefs, whom he engaged to defend the frontiers against his countrymen as well as other invaders.

France.

This expedient did not long answer the purpose. In 260 the Franks, taking advantage of the defeat and captivity of Valerian in Persia, broke into Gaul, and afterwards into Italy, committing everywhere dreadful ravages. Five years afterwards they invaded Spain; which they possessed, or rather plundered, for the space of 12 years: nor could they be driven out of Gaul till the year 275, when the emperor Probus not only gave them a total overthrow in that country, but pursued them into their own, where he built several forts to keep them in awe. This intimidated them so much, that nine of their kings submitted to the emperor and promised an annual tribute.—They continued quiet till the year 287; when, in conjunction with the Saxon pirates, they plundered the coasts of Gaul, carrying off an immense booty. To revenge this insult, the emperor Maximian entered the country of the Franks the following year, where he committed such ravages that two of their kings submitted to him; and to many of the common people who chose to remain in Gaul, he allowed lands in the neighbourhood of Treves and Cambrai.

The restless disposition of the Franks, however, did not allow them to remain long in quiet. About the year 293, they made themselves masters of Batavia and part of Flanders; but were entirely defeated, and forced to surrender at discretion, by Constantius the father of Constantine the Great, who transplanted them into Gaul. Their countrymen in Germany continued quiet till the year 306, when they renewed their depredations; but being overtaken by Constantine the Great, two of their kings were taken prisoners, and thrown to the wild beasts in the shows exhibited on that occasion.

All these victories, however, as well as many others said to have been gained by the Romans, were not sufficient to prevent the incursions of this restless and turbulent nation: insomuch that, in the year 355, they had made themselves masters of 40 cities in the province of Gaul. Soon after, they were totally defeated by the emperor Julian, and again by Count Theodosius, father to the emperor of that name; but in the year 388, they ravaged the province with more fury than ever, and cut off a whole Roman army that was sent against them. As the western empire was at this time in a very low state, they for some time found more interruption from other barbarians than from the Romans, till their progress was checked by Aetius.

3  
When the war with Aetius broke out, the Franks were governed by one *Pharamond*, the first of their kings of whom we have any distinct account. He is supposed to have reigned from the year 417 or 418, to 428; and is thought by Archbishop Usher to have been killed in the war with Aetius. By some he is supposed.

<sup>France.</sup> supposed to have compiled the Salic laws, with the assistance of four sages named *Wisegast*, *Lozegast*, *Widegast*, and *Solegast*. But Valefius is of opinion that the Franks had no written laws till the time of Clovis.

<sup>4</sup> Clodio. Pharamond was succeeded by his son Clodio, who likewise carried on a war against the Romans. He is said to have received a terrible overthrow from Actius near the city of Lens; notwithstanding which, he advanced to Cambray, and made himself master of that city, where for some time he took up his residence. After this he extended his conquests as far as the river Somme, and destroyed the cities of Treves and Cologne, Tournay and Amiens. He died in the year 448, and was succeeded by Merovæus.

<sup>5</sup> Merovæus. Authors are not agreed whether the new king was brother, or son, or any relation at all, to Clodio. It seems probable indeed, that he was of a different family; as from him the first race of French kings were styled *Merovingian*. He was honoured and respected by his people, but did not greatly enlarge the boundaries of his kingdom. He died in 458.

<sup>6</sup> Childeric. Merovæus was succeeded by his son Childeric; who being no longer kept in awe by Actius, made war on the Romans, and extended his conquests as far as the river Loire. He is said to have taken the city of Paris after a siege of five years, according to some, and of ten, according to others. The Roman power was now totally destroyed in Italy; and therefore *Clodovæus*, *Clovis*, or *Louis*, for his name is differently written, who succeeded Childeric, set himself about making an entire conquest of Gaul. Part of the province was still retained by a Roman named *Syagrius*, who probably had become sovereign of the country on the downfall of the western empire in 476. He was defeated and taken prisoner by Clovis, who afterwards caused him to be beheaded, and soon after totally reduced his dominions.

<sup>7</sup> French monarchy established by Clovis. This was the French monarchy established by Clovis in the year 487. He now possessed all the country lying between the Rhine and the Loire; which, though a very extensive dominion, was yet considerably inferior to what it is at present.

Clovis had been educated in the Pagan religion, and continued in that profession till the 30th year of his age; notwithstanding which, he allowed his subjects full liberty of conscience. Having married, however, Clotilda, daughter of the duke of Burgundy; this princess, who was a zealous Christian, used all her influence with her husband to persuade him to embrace her religion. For some time he continued to waver: but happening to gain a battle, where, being in great danger, he had invoked the god of Clotilda and the Christians, he afterwards gave such a favourable ear to the discourses of Remigius bishop of Rheims, that he soon declared himself a convert, and was baptized in the year 496. His acknowledgment of the truths of the gospel was not followed by any amendment of life; on the contrary, he employed the remainder of his life in the aggrandizement of himself and extension of his dominions by the most abominable treachery, fraud, and violence. In his attacks on Armorica he proved unsuccessful. The inhabitants of this country, which comprehended the maritime part of ancient Gaul lying between the rivers Seine and Loire, had united for their defence; and though abandoned by the Ro-

<sup>France.</sup> mans, made a powerful defence against the barbarians who assaulted them on all sides. Clovis, finding them too powerful to be subdued by force, proposed an union with his people, which they readily accepted, and this the more easily on account of his professing the Christian religion. Thus the Christianity of Clovis in several instances proved subservient to the purposes of his ambition, and his power became gradually very formidable. The Burgundians at this time possessed all the country from the forest of Vosges to the sea of Marseilles, under Gondebaud the uncle of Clotilda; who to secure his own authority, had put to death two of his brothers, one of whom was the father of the French queen. The third brother, *Godagesil*, whom he had spared and allowed to possess the principality of Geneva, conspired with Clovis to drive him from his dominions. A war having commenced between the French and Burgundian monarchs, the latter was defeated in a battle by Godagesil, and obliged to fly to Avignon, leaving his antagonist master of the cities of Lyons and Vienne. The victor next laid siege to Avignon; but it was defended with such vigour, that Clovis at last thought proper to accept of a sum of money and an annual tribute from Gondebaud; who was likewise obliged to cede to Godagesil the city of Vienne, and several other places taken during the war.

Gondebaud no sooner found himself at liberty from his enemies, than he assembled a powerful army; with which he advanced towards Vienne, where Godagesil himself resided at that time. The place was garrisoned by 5000 Franks, and might have made considerable resistance; but Gondebaud being admitted through the subterraneous passage of an aqueduct, massacred most of the Franks, sent the rest prisoners to the king of the Visigoths, and put Godagesil to death. This was quickly followed by the submission of all the other places which had owned the authority of Godagesil: and Gondebaud, now thinking himself able to resist the power of Clovis, sent a message to inform him, that he must no longer expect the promised tribute; and though Clovis was very much mortified with this defection, he found himself obliged for the present to put up with the injury, and accept of the alliance and military service of the king of Burgundy.

His next expedition was against the Visigoths, who possessed considerable territories on both sides of the Pyrenean mountains. His motives for this undertaking were expressed in the following speech to his nobility when assembled in the city of Paris, which he considered as the capital of his dominions. "It is with concern (said the religious monarch) that I suffer the Arians to possess the most fertile part of Gaul: let us, with the aid of God, march against them; and having conquered them, annex their kingdom to our dominions." The nobility approved of the scheme; and Clovis marched against a prince for whom he had but lately professed the greatest regard, vowing to erect a church in honour of the holy apostles, if he succeeded in his enterprize. Alaric the king of the Visigoths was a young man destitute of military experience, though personally brave. He did not therefore hesitate at engaging his antagonist; but unable to contend with the veteran troops of Clovis, his army was utterly defeated on the banks of the Clain, 10 miles

France. miles south of Poitiers, in the year 507. Alaric, perceiving the ruin of his troops, rushed against Clovis in person, by whom he was killed, and the remainder of the army pursued for some time with great slaughter. After this victory the province of Aquitaine submitted, and Clovis established his winter quarters at Bourdeaux. Thoulouse surrendered next spring; and the royal treasures of the Visigoths were transported to Paris. Angouleme was next reduced, and the city of Arles invested. But here the victorious career of Clovis was stopped by Theodoric king of the Ostrogoths, who had overturned the dominion of Odoacer in Italy. He had married Abolfeda the sister of Clovis, but had also given his own daughter in marriage to the king of the Visigoths, and had endeavoured, as much as was in his power, to preserve a good understanding between the two sovereigns. Finding this impossible however, and that no bounds could be set to the ambition of Clovis, he sent one of his generals with a powerful army against him; by whom the French monarch was defeated with the loss of 30,000 men. By this misfortune Clovis was obliged to raise the siege of Arles with precipitation: however, the Franks still retained the greatest part of their conquests, and the province of Aquitaine was indissolubly annexed to their empire.

8

Is honour-  
ed with the  
title of Ro-  
man consul.

In 509, Clovis had the title of Roman consul; by which means the people of Rome were insensibly led to pay a peculiar regard to the French monarchs: and Clovis was now supposed to be invested with a just title to all his conquests in whatever manner they had been acquired. He was solemnly invested with his new dignity in the church of St Martin in the city of Tours; after which he entered the cathedral clothed in a purple tunic and mantle, the badges of his office.

Clovis now proceeded to augment his power by the murder of his kinsmen the princes of the Merovingian race. Among those who perished on this occasion were Siebert king of Cologne, with his son Cloderic; Cararic, another prince whose dominions have not been accurately pointed out by historians; Ranacaire, who governed the present diocese of Cambrai; and Renner, king of the territory of Maine. All these murders, however, were expiated, according to the views of the clergy of those times, by the great zeal he expressed in the cause of Christianity, and his liberality to the church.

Clovis died in the year 511, after having reformed and published the Salic laws: a few lines of which, debarring women from inheriting any part of the Salic lands, have been extended so far as to deprive the females of the royal family of France of their right of succession to the throne of that kingdom.

9  
His domi-  
nions divi-  
ded among  
his chil-  
dren.

Clovis was buried in the church of St Peter and St Paul, now Genevieve, in the city of Paris, where his tomb is still to be seen. His dominions were divided among his four sons. Thieri, or Theodoric, the eldest, had the eastern part of the empire: and, from his making the city of Metz his capital, is commonly called the *king of Metz*. Clodomir, the eldest son by Clotilda, had the kingdom of Orleans; Childebert, and Clotaire, who were both infants, had the kingdoms of Paris and Soissons, under the tutelage of their mother. The prudence of Clotilda kept matters quiet in all the parts of the empire for eight years; but

France. about the year 520, a numerous fleet of Danes arrived at the mouth of the Meuse; and their king Cochiliac, having landed his forces, began to destroy the country with fire and sword. Against him Thieri sent his son Theodobert, who defeated the Danish army and navy, and killed their king, forcing the rest to retire with precipitation.

In 522, Hermanfroi king of Thuringia, having destroyed one of his brethren named *Berthaire*, and seized on his dominions, applied to Thieri for assistance against his other brother Balderic, whom he intended to treat in the same manner. In this infamous enterprise Thieri embarked, on condition that he should have one half of Balderic's dominions; but after the unhappy prince was overcome and killed in battle, Hermanfroi seized all his dominions. Thieri had no opportunity of revenging himself till the year 531; when perceiving the power of the Ostrogoths, whom he much dreaded, to be considerably lessened by the death of King Theodoric, he engaged his brother Clotaire to assist him: and they accordingly entered Thuringia with two powerful armies. They joined their forces as soon as they had passed the Rhine, and were quickly after reinforced by a considerable body of troops under the command of Theodobert. The allies attacked the army of Hermanfroi, which was advantageously posted; and having totally defeated it, he was forced to fly from place to place in disguise. Soon after this the capital was taken, and Hermanfroi himself being invited to a conference by Thieri, was treacherously murdered; after which his extensive dominions became feudatory to Thieri.

In the mean time, Clotilda had excited her children to make war on the Burgundians, in order to revenge the death of her father Chilperic, whom Gondebaud king of Burgundy had caused to be murdered. Gondebaud was now dead, and had left his dominions to his sons Sigismund and Godemar. Sigismund's forces were quickly defeated; and he himself was soon after delivered up by his own subjects to Clodomir, who caused him to be thrown into a pit where he perished miserably. By his death Godemar became sole master of Burgundy. Clodomir marched against him, and defeated him; but pursuing his victory too eagerly, was surrounded by his enemies and slain. After the reduction of Thuringia, however, Childebert and Clotaire entered the kingdom of Burgundy at the head of a powerful army, and in 534 completed the conquest of it; in which, according to some, Godemar was killed; according to others, he retired into Spain, and from thence into Africa.

10  
He Clotaire be-  
comes sole  
monarch.

In 560 Clotaire became sole monarch of France. He had murdered the sons of Clodomir, who was killed in Burgundy as above related. Thieri and his children were dead, as was also Childebert; so that Clotaire was sole heir to all the dominions of Clovis. He had five sons; and the eldest of them, named *Chramnes*, had some time before rebelled against his father in Auvergne. As long as Childebert lived, he supported the young prince; but on his death, Chramnes was obliged to implore his father's clemency. He was at this time pardoned; but he soon began to cabal afresh, and engaged the count of Bretagne to assist him in another rebellion. The Bretons, however, were defeated, and Chramnes determined to make his escape; but perceiv-  
ing

France. ing that his wife and children were surrounded by his father's troops, he attempted to rescue them. In this attempt he was taken prisoner, and with his family was thrust into a thatched cottage near the field of battle; of which the king was no sooner informed, than he commanded the cottage to be set on fire, and all that were in it perished in the flames.

11 The empire again divided. Clotaire did not long survive this cruel execution of his son, but died in 562; and after his death the French empire was divided among his four remaining sons, Caribert, Gontran, Sigebert, and Chilperic.—The old king made no division of his dominions before he died, which perhaps caused the young princes to fall out sooner than they would otherwise have done. After his death, however, they divided the kingdom by lot; when Caribert, the eldest, had the kingdom of Paris; Gontran, the second, had Orleans; Sigebert, had Metz (or the kingdom of Austrasia); and Chilperic had Soissons. Provence and Aquitaine were possessed by all of them in common. The peace of the empire was first disturbed in 563 by an invasion of the Abares; a barbarous nation, said to be the remains of the Huns. They entered Thuringia, which belonged to the dominions of Sigebert: but by him they were totally defeated, and obliged to repass the Elbe with precipitation. Sigebert pursued them close, but readily concluded a peace with them on their first proposals. To this he was induced, by hearing that his brother Chilperic had invaded his dominions, and taken Rheims and some other places in the neighbourhood. Against him, therefore, Sigebert marched with his victorious army, made himself master of Soissons his capital, and of the person of his eldest son Theodobert. He then defeated Chilperic in battle; and not only recovered the places which he had seized, but conquered the greater part of his dominions: nevertheless, on the mediation of the other two brothers, Sigebert abandoned all his conquests, set Theodobert at liberty, and thus restored peace to the empire.

12 Infamous conduct of Chilperic. Soon after this, Sigebert married Brunehaut daughter to Athanagilde king of the Visigoths in Spain; and in a little time after the marriage, died Caribert king of Paris, whose dominions were divided among his three brethren. In 567 Chilperic married Galswintha, Brunehaut's eldest sister, whom he did not obtain without some difficulty. Before her arrival, he dismissed his mistress called *Fredegonde*, a woman of great abilities and firmness of mind, but ambitious to the highest degree, and capable of committing the blackest crimes in order to gratify her ambition. The queen, who brought with her immense treasures from Spain, and made it her whole study to please the king, was for some time entirely acceptable. By degrees, however, Chilperic suffered *Fredegonde* to appear again at court, and was suspected of having renewed his intercourse with her; which gave such umbrage to the queen, that she desired leave to return to her own country, promising to leave behind her all the wealth she had brought. The king, knowing that this would render him extremely odious, found means to dissipate his wife's suspicions, and soon after caused her to be privately strangled, upon which he publicly married *Fredegonde*.

Such an atrocious action could not fail of exciting the greatest indignation against Chilperic. His domi-

France. nions were immediately invaded by Sigebert and Gontran, who conquered the greatest part of them; after which, they suddenly made peace, Chilperic consenting that Brunehaut should enjoy those places which on his marriage he had bestowed upon Galswintha, viz. Bourdeaux, Limoges, Cahors, Bigorre, and the town of Bear, now called *Lescar*.

The French princes, however, did not long continue at peace among themselves. A war quickly ensued, in which Gontran and Chilperic allied themselves against Sigebert. The latter prevailed; and having forced Gontran to a separate peace, seemed determined to make Chilperic pay dear for his repeated perfidy and infamous conduct; when he was assassinated by a con-<sup>13</sup>trivance of *Fredegonde*, who thus saved herself and Chilperic from the most imminent danger. Immediately on his death, Brunehaut fell into the hands of Chilperic; but *Gondebaud*, one of Sigebert's best generals, made his escape into Austrasia with *Childebert*, the only son of Sigebert, an infant of about five years of age, who was immediately proclaimed king in room of his father. In a short time, however, *Meroveus*, eldest son to Chilperic, fell in love with Brunehaut, and married her without acquainting his father. Chilperic, on this news, immediately went to Rouen, where *Meroveus* and his consort were; and having seized them, sent Brunehaut and her two daughters to Metz, and carried *Meroveus* to Soissons. Soon after, one of his generals being defeated by Gontran, who espoused Brunehaut's cause, Chilperic, in a fit of rage, caused *Meroveus* to be shaved and confined in a monastery. From hence he found means to make his escape, and with great difficulty arrived in Austrasia, where Brunehaut would gladly have protected him; but the jealousy of the nobles was so strong, that he was forced to leave that country; and being betrayed into the hands of his father's forces, was murdered at the instigation of *Fredegonde*, as was generally believed.

The French empire was at this time divided between Gontran king of Orleans, called also king of Burgundy, Chilperic king of Soissons, and *Childebert* king of Austrasia. Chilperic found his affairs in a very disagreeable situation. In 579, he had a dispute with *Varoc* count of Bretagne, who refused to do him homage. Chilperic dispatched a body of troops against him; who were defeated, and he was then forced to submit to a dishonourable peace. His brother and nephew lived in strict union, and had no reason to be very well pleased with him. His own subjects, being oppressed with heavy taxes, were miserably poor and discontented. His son *Clovis*, by a former queen named *Andovera*, hated *Fredegonde*, and made no secret of his aversion. To add to his embarrassment, the seasons were for a long time so unfavourable, that the country was threatened with famine and pestilence at the same time. The king and queen were both attacked by an epidemic disease which then raged. They recovered; but their three sons *Clodobert*, *Samson*, and *Dagobert*, died; after which, the sight of *Clovis* became so disagreeable to *Fredegonde*, that she caused him to be murdered, and likewise his mother *Andovera*, lest Chilperic's affection for her should return after the tragical death of her son.

14 In 583 Chilperic himself was murdered by some un-<sup>and like</sup>known assassins, when his dominions were on the point of being lost to Chilperic.

France. of being conquered by Gontran and Childebert, who had entered into a league for that purpose. After his death Fredegonde implored the protection of Gontran for herself and her infant son Clotaire; which he very readily granted, and obliged Childebert to put an end to the war. He found himself, however, greatly diffculted to keep Fredegonde and Brunehaut in awe; for these two princesses having been long rivals and implacable enemies, were continually plotting the destruction of each other. This, however, he accomplished, by favouring sometimes Brunehaut and sometimes Fredegonde; so that, during his life, neither of them durst undertake any thing against the other.

15  
Death of  
Gontran;

On the 28th of March 593, died Gontran, having lived upwards of 60, and reigned 32 years. Childebert succeeded to the kingdom without opposition, but did not long enjoy it; he himself dying in the year 596, and his queen shortly after. His dominions were divided between his two sons Theodobert and Thierry; the first of whom was declared king of Austrasia, and the latter king of Burgundy. As Theodobert was only in the 11th year of his age, and Thierry in his 10th, Brunehaut governed both kingdoms with an absolute sway. Fredegonde, however, took care not to let slip such a favourable opportunity as was offered her by the death of Childebert, and therefore made herself mistress of Paris and some other places on the Seine. Upon this Brunehaut sent against her the best part of the forces in Austrasia, who were totally defeated; but Fredegonde died before she had time to improve her victory, leaving her son Clotaire heir to all her dominions.

16  
and Fredegonde.

For some time Brunehaut preserved her kingdom in peace; but in the end her own ambition proved her ruin. Instead of instructing Theodobert in what was necessary for a prince to know, she took care rather to keep him in ignorance, and even suffered him to marry a young and handsome slave of his father's. The new queen was possessed of a great deal of affability and good nature; by which means she in a short time gained the affection of her husband so much, that he readily consented to the banishment of Brunehaut. Upon this disgrace she fled to Thierry king of Burgundy, in the year 599. By him she was very kindly received; and instead of exciting jealousies or misunderstandings between the two brothers, she engaged Thierry to attempt the recovery of Paris and the other places which had been wrested from their family by Fredegonde, procuring at the same time a considerable body of auxiliaries from the Visigoths. This measure was so acceptable to Theodobert, that he likewise raised a numerous army, and invaded Clotaire's dominions in conjunction with his brother. A battle ensued, in which the forces of Clotaire were totally defeated, and himself obliged soon after to sue for peace: which was not granted, but on condition of his yielding up the best part of his dominions.

17  
Brunehaut  
banished.

This treaty was concluded in the year 600; but three years afterwards, it was broken by Clotaire. He was again attacked by the two brothers, and the war carried on with great vigour till the next spring. At this time Thierry having forced Landri, Clotaire's general, to a battle, gave him a total overthrow, in which the king's infant son Meroveus, whom he had sent along with Landri, was massacred; to gratify, as Clo-

taire pretended, the malice of Brunehaut. After this victory, Thierry marched directly to Paris; fully bent on the destruction of his cousin, which now seemed inevitable. This, however, was prevented by Theodobert; who no sooner heard of the victory gained by Thierry, than he became jealous of his success, and offered Clotaire such terms of peace as he gladly accepted. The latter having then nothing to fear on the side of Austrasia, quickly compelled Thierry to listen to terms of accommodation also.

France.

This behaviour of Theodobert greatly provoked his brother; and his resentment was highly inflamed by Brunehaut, who never forgot her disgrace in being banished from his court. A war was therefore commenced between the two brothers in 605; but it was so highly disapproved of by the nobility, that Thierry found himself obliged to put an end to it. The tranquillity which now took place was again disturbed in 607, by Theodobert's sending an embassy to demand some part of Childebert's dominions, which had been added, by the will of that monarch, to those of Burgundy. The nobility of both kingdoms were so much averse to war, that they constrained their kings to consent to a conference, attended by an equal number of troops; but Theodobert, by a scandalous breach of his faith, brought double the number, and compelled his brother to submit to what terms he pleased. This piece of treachery instantly brought on a war; for Thierry was bent on revenge, and his nobility no longer opposed him. It was necessary, however, to secure Clotaire by a negotiation; and accordingly a promise was made of restoring those parts of his dominions which had formerly been taken from him, provided he would remain quiet. This treaty being finished, Thierry entered Theodobert's dominions, defeated him in two battles, took him prisoner, used him with the utmost indignity; and having caused an infant son of his to be put to death, sent him to his grandmother Brunehaut. By her orders he was first shaved and confined in a monastery; but afterwards, fearing lest he should make his escape, she caused him to be put to death.— Clotaire, in the mean time, thought that the best method of making Thierry keep his word was to seize on those places which he had promised to restore to him, before his return from the war with Theodobert. This he accordingly did; and Thierry no sooner heard of his having done so, than he sent him a message requiring him to withdraw his forces, and, in case of his refusal, declared war. Clotaire was prepared for this; and accordingly assembled all the forces in his dominions, in order to give him a proper reception. But before Thierry could reach his enemies, he was seized with a dysentery; of which he died in the year 612, having lived 26 years, and reigned 17.

18  
Death of  
Thierry.

On the death of Thierry, Brunehaut immediately caused his eldest son, named *Sigibert*, then in the 10th year of his age, to be proclaimed king. It is probable that she intended to have governed in his name with an absolute sway; but Clotaire did not give her time to discover her intentions. Having great intelligence in Austrasia and Burgundy, and knowing that the nobility in both kingdoms were disaffected to Brunehaut, he declared war against her; and she being betrayed by her generals, fell into the hands of her enemies. Clotaire gave her up to the nobles; who generally

H hated

France.  
19  
Brunehaut  
put to a  
cruel  
death.

hated her, and who used her in the most cruel manner. After having led her about the camp, exposed to the insults of all who had the meanness to insult her, she was tied by the leg and arm to the tail of an untamed horse, which, setting off at full speed, quickly dashed out her brains. After this her mangled body was reduced to ashes, which were afterwards interred in the abbey of St Martin at Autun.

Thus in the year 613, Clotaire became sole monarch of France; and quietly enjoyed his kingdom till his death, which happened in 628. He was succeeded by Dagobert; who proved a great and powerful prince, and raised the kingdom of France to a high degree of splendour. Dagobert was succeeded by his sons Sigebert and Clovis; the former of whom had the kingdom of Austrasia, and the latter that of Burgundy. Both the kings were minors at the time of their accession to the throne, which gave an opportunity to the mayors of the palace (the highest officers under the crown) to usurp the whole authority. Sigebert died in 640, after a short reign of one year; leaving behind him an infant son named *Dagobert*, whom he strongly recommended to the care of Grimoalde his mayor of the palace. The minister caused Dagobert to be immediately proclaimed king, but did not long suffer him to enjoy that honour. He had not the cruelty, however, to put him to death; but sent him to a monastery in one of the Western islands of Scotland; and then, giving out that he was dead, advanced his own son Childobert to the throne. Childobert was expelled by Clovis king of Burgundy; who placed on the throne Childeric, the second son of Sigebert. Clovis died soon after the revolution, and was succeeded in his dominions by his son Clotaire; who died in a short time, without issue. He was succeeded by his brother Childeric; who, after a short reign, was murdered with his queen, at that time big with child, and an infant son named *Dagobert*; though another, named *Daniel*, had the good luck to escape.

20  
Miserable  
situation of  
France.

The affairs of the French were now in the most deplorable situation. The princes of the Merovingian race had been for some time entirely deprived of their power by their officers called *mayors of the palace*. In Austrasia the administration had been totally engrossed by Pepin and his son Grimaulde; while Archaubaud and Ebroin did the same in Neustria and Burgundy. On the reunion of Neustria and Burgundy to the rest of the French dominions, this minister ruled with such a despotic sway, that the nobility of Austrasia were provoked to a revolt; electing for their dukes two chiefs named *Martin* and *Pepin*. The forces of the confederates, however, were defeated by Ebroin; and Martin having surrendered on a promise of safety, was treacherously put to death. Pepin lost no time in recruiting his shattered forces; but before he had any occasion to try his fortune a second time in the field of battle, the assassination of Ebroin delivered him from all apprehensions from that quarter. After his death, Pepin carried every thing before him, overthrew the royal army under the command of the new minister Bertaire; and, having got possession of the capital, caused himself to be declared mayor of the palace; in which station he continued to govern with an absolute sway during the remainder of his life.

Pepin (who had got the surname of *Heristal* from

his palace on the Meuse) died in the year 714, having enjoyed unlimited power for 26 years. He appointed his grandson Theudobalde, then only six years of age, to succeed him in his post of mayor of the palace. This happened during the reign of Dagobert already mentioned; but this prince had too much spirit to suffer himself to be deprived of his authority by an infant. The adherents of the young mayor were defeated in battle, and this defeat was soon followed by his death. Charles, however, the illegitimate son of Pepin, was now raised to the dignity of duke by the Austrasians, and by his great qualities seemed every way worthy of that honour. The murder of Dagobert freed him from a powerful opponent; and the young king Chilperic, who after Dagobert's death was brought from a cloister to the throne, could by no means cope with such an experienced antagonist. On the 19th of March 717, Charles had the good fortune to surprize the royal camp as he passed through the forest of Arden; and soon after a battle ensued, in which the king's forces were entirely defeated. On this Chilperic entered into an alliance with Eudes duke of Aquitain, whose friendship he purchased by the final cession of all the country which Eudes had seized for himself. Charles, however, having placed on the throne another of the royal family named *Clotaire*, advanced against Chilperic and his associate, whom he entirely defeated near Soissons. After this disaster, Eudes, despairing of success, delivered up Chilperic into the hands of his antagonist: after having stipulated for himself the same terms which had been formerly granted him by the captive monarch.

France.  
21  
Exploits of  
Charles  
Martel.

Charles now advanced to the summit of power, treated Chilperic with great respect; and, on the death of Clotaire, caused him to be proclaimed king of Austrasia; by which, however, his own power was not in the least diminished; and from this time the authority of the kings of France became merely nominal; and so inactive and indolent were they accounted, that historians have bestowed upon them the epithet of *faineans*, i. e. "lazy or idle." Charles, however, had still one competitor to contend with. This was Rainfroy, who had been appointed mayor of the palace; and who made such a vigorous resistance, that Charles was obliged to allow him the peaceable possession of the country of Anjou. No sooner, however, had Charles thus set himself at liberty from domestic enemies, than he was threatened with destruction from foreign nations. The Suevians, Frisons, and Alemanni, were successively encountered and defeated. Eudes also, who had perfidiously broken the treaties to which he had bound himself, was twice repulsed; after which Charles invaded Aquitain, and obliged the treacherous duke to hearken to reason. This was scarce accomplished, when he found himself engaged with a more formidable enemy than any he had yet encountered. The Saracens having overrun great part of Asia, now turned their victorious arms westward, and threatened Europe with total subjection. Spain had already received the yoke; and having passed the Pyrenees, they next invaded France, appearing in vast numbers under the walls of Thouloufe. Here they were encountered and defeated by Eudes; but this proved only a partial check. The barbarians once more passing the Pyrenees, entered France with such a powerful army, that Eudes was no longer able to

to resist. He encountered them indeed with his accustomed valour; but being forced to yield to superior power, he solicited the protection and assistance of Charles. On this occasion the latter, on account of his valour and personal strength, acquired the name of *Martel*, i. e. "the hammer," alluding to the violence of the strokes he bestowed on his enemies. Three hundred and seventy-five thousand of the Infidels, among whom was the commander Abdelrahman himself, are said to have perished in the battle; notwithstanding which they soon made another irruption: but in this they were attended with no better success, being again defeated by Charles; who by so many victories established his power on the most solid foundation. Having again defeated the Frisians, and with his own hand killed their duke, he assumed the sovereignty of the dominions of Eudes after his decease, reserving to himself the claim of homage, which he ought to have yielded to Thierris his lawful sovereign. At last his fame grew so great, that he was chosen by Pope Gregory III. for his protector. He offered to shake off the yoke of the Greek emperor, and to invest Charles with the dignity of Roman consul; sending him at the same time the keys of the tomb of St Peter; but while this negotiation was going on successfully, the pope, the emperor, and Charles Martel himself, died. After his death, which happened in the year 741, his dominions were divided among his three sons, Carloman, Pepin, and Grippon, according to the dispositions he had made in his lifetime. By this Carloman, the eldest, had Austrasia; Pepin, the second, Neustria and Burgundy; while Grippon, the third, had only some lands assigned him in France; by which he was so much displeas'd, that the tranquillity of the empire was soon disturb'd. With the assistance of his mother Sonnehilde he seized on the city of Laon, where he endured a violent siege. In the end, however, he was obliged to submit; Sonnehilde was put into a monastery, and Grippon imprison'd in a castle at Arden. The two brothers, having thus freed themselves from their domestic enemy, continued to govern the empire with uninterrupted harmony; but their tranquillity was soon disturb'd by the intrigues of Sonnehilde. That enterprising and ambitious woman had negotiated a marriage between Odilon duke of Bavaria and Hiltrude the sister of the two princes. This was no sooner accomplished than Odilon, instigated by Sonnehilde, and alarmed at the growing power of the two princes, entered into an alliance with Theodobald duke of the Alemanni and Theodoric duke of the Saxons; who having assembled a formidable army, advanced directly against the princes. They posted themselves in an advantageous manner, with the river Lech in their front; but Carloman and Pepin, passing the river at different fords in the night time, attacked the camp of the allies with great vigour. The engagement continued doubtful for five hours; but at last the intrenchments were forced on all sides, the Bavarians and Saxons entirely routed, and the vanquish'd dukes obliged to submit to the clemency of the victors. During their absence on this expedition, Hunalde, whom Charles Martel had appointed duke of Aquitain, having likewise entered into a confederacy with Odilon, pass'd the Loire, ravaged the open country, and burnt the magnificent cathedral of the city of Chartres. The two princes, however, having returned with their vic-

torious army, Hunalde found himself obliged to retreat: and even this availed him but little: for the Franks entering the duchy of Aquitain, committed such devastations, that Hunalde in despair resign'd his dominions to his son, and retired into a convent. This event was soon followed by a similar resignation of Carloman, notwithstanding the uninterrupted success he had met with. He suddenly took the resolution of retiring into a convent, and persisted in his design notwithstanding the entreaties of Pepin, who, to appearance at least, did all he could to dissuade him.

By the resignation of Carloman, which happened in the year 746, Pepin was left sole master of France; and in this exalted station he acquitted himself in such a manner as has justly rendered his name famous to posterity. One of the first acts of his new administration was to release his brother Grippon from prison: but that treacherous prince had no sooner regain'd his liberty, than he again excited the Saxons to take up arms. His enterprise, however, proved unsuccessful: the Saxons were defeated, their duke Theodoric taken, and his subjects obliged to submit to the will of the conqueror; who upon this occasion caus'd them make a profession of the Christian religion. Grippon then fled to Hiltrude, his half sister, whose husband Odilon was now dead, and had left an infant son named *Tassilon*. He met with a favourable reception from her; but, with his usual treachery, seiz'd both her and her son by the assistance of an army of malecontent Franks, whom he had persuad'd to join him. His next step was to assume the sovereignty and title of duke of Bavaria; but being driven from the throne by Pepin, he was obliged to implore his clemency, which was once more granted. All these misfortunes, however, were not yet sufficient to cure Grippon of his turbulence and ambition: He once more endeavour'd to excite disturbances in the court of Pepin; but being finally detect'd and baffled, he was obliged to take refuge in Aquitain.

Pepin having now subdu'd all his foes both foreign and domestic, began to think of assuming the title of *king*, after having so long enjoy'd the regal power. His wishes in this respect were quite agreeable to those of the nation in general. The nobility, however, were bound by an oath of allegiance to Childeric the nominal monarch at that time: and this oath could not be dispens'd with but by the authority of the pope. Ambassadors for this purpose were therefore despatch'd both from Pepin and the nobility to Pope Zachary, the reigning pontiff. His holiness replied, that it was lawful to transfer the regal dignity from hands incapable of maintaining it to those who had so successfully preserv'd it; and that the nation might unite in the same person the authority and title of *king*. On this the unfortunate Childeric was degrad'd from his dignity, shaved, and confin'd in a monastery for life; Pepin assum'd the title of *king of France*, and the line of Clovis was finally set aside.

This revolution took place in the year 751. The attention of the new monarch was first claim'd by a revolt of the Saxons; but they were soon reduc'd to subjection, and oblig'd to pay an additional tribute: and during his expedition against them, the king had the satisfaction of getting rid of his restless and treacherous competitor Grippon. This turbulent prince,

France.

France.

† See *Ara-*  
*bia*, N<sup>o</sup>  
174.

22  
France di-  
vid'd a-  
mong the  
sons of  
Charles.

23  
Pepin be-  
comes sole  
master of  
the king-  
dom.

24  
Assumes  
the title of  
king.

France.

having soon become weary of residing at the court of Aquitain, determined to escape from thence, and put himself under the protection of Astolphus king of the Lombards; but he was killed in attempting to force a pass on the confines of Italy. Pepin in the mean time continued to push his good fortune. The submission of the Saxons was soon followed by the reduction of Brittany; and that by the recovery of Narbonne from the Infidels. His next exploit was the protection of Pope Stephen III. against Astolphus the king of the Lombards, who had seized on the exarchate of Ravenna, and insisted on being acknowledged king of Rome. The pope unable to contend with such a powerful rival, hastened to cross the Alps and implore the protection of Pepin, who received him with all the respect due to his character. He was lodged in the abbey of St Dennis, and attended by the king in person during a dangerous sickness with which he was seized. On his recovery, Stephen solemnly placed the diadem on the head of his benefactor, bestowed the regal unction on his sons Charles and Carloman, and conferred on the three princes the title of *patrician of Rome*. In return for these honours, Pepin accompanied the pontiff into Italy at the head of a powerful army. Astolphus, unable to withstand such a powerful antagonist, shut himself up in Pavia, where he was closely besieged by the Franks, and obliged to renounce all pretensions to the sovereignty of Rome, as well as to restore the city and exarchate of Ravenna, and swear to the observance of the treaty. No sooner was Pepin gone, however, than Astolphus broke the treaty he had just ratified with such solemnity. The pope was again reduced to distress, and again applied to Pepin. He now sent him a pompous epistle in the style and character of St Peter himself; which so much inflamed the zeal of Pepin, that he instantly set out for Italy and compelled Astolphus a second time to submit to his terms, which were now rendered more severe by the imposition of an annual tribute. Pepin next made a tour to Rome; but finding that his presence there gave great uneasiness both to the Greeks and to the pope himself, he thought proper to finish his visit in a short time. Soon after his return Astolphus died, and his dominions were usurped by his general Didier; who, however, obtained the papal sanction for what he had done, and was recognized as lawful sovereign of the Lombards in the year 756.

Pepin returned to France in triumph; but the peace of his dominions was soon disturbed by the revolt of the Saxons, who always bore the French yoke with the utmost impatience. Their present attempts, however, proved equally unsuccessful with those they had formerly made; being obliged to submit and purchase their pardon not only by a renewal of their tribute, but by an additional supply of 300 horse. But while the king was absent on this expedition, Vaisar duke of Aquitain took the opportunity of ravaging Burgundy, where he carried his devastations as far as Chalons. Pepin soon returned, and entering the dominions of Vaisar, committed similar devastations, and would probably have reduced the whole territory of Aquitain, had he not been interrupted by the hostile preparations of his nephew Tassilon the duke of Bavaria. The king, however, contented himself at present with securing his frontiers by a chain of posts, against any

invasion; after which he resumed his enterprize on the dominions of Vaisar. The latter at first attempted to impede the progress of his antagonist by burning and laying waste the country; but finding this to no purpose, he determined to try his fortune in an engagement. Victory declared in favour of Pepin; but he refused to grant a peace upon any terms. The French monarch advanced to the banks of the Garonne; while Vaisar was abandoned by his ally the duke of Bavaria, and even by his own subjects. In this distress he retired with a band of faithful followers into the country of Saintonge, where he defended himself as long as possible, but was at last deprived both of his crown and life by the victor.

Thus the duchy of Aquitain was once more annexed to the crown of France; but Pepin had scarce time to indulge himself with a view of his new conquest when he was seized with a slow fever, which put an end to his life in the year 768, the 54th of his age, and 17th of his reign. He was of a short stature, whence he had the surname of *Le Bref*, or *the Short*; but his great actions justly entitled him to the character of a hero; though under the succeeding reign his own fame seemed to have been entirely forgot, and on his tomb was only inscribed, "Here lies the father of Charlemagne."

Pepin was succeeded in his authority by his two sons Charles and Carloman; to whom with his dying breath he bequeathed his dominions. They continued to reign jointly for some time; but the active and enterprising spirit of Charles gave such umbrage to the weak and jealous Carloman, that he regarded him with envy, and was on the point of coming to an open rupture with him, when he himself was taken off by death, and thus the tranquillity of the empire was preserved.

The first military enterprize of Charles was against Hunalde, the old duke of Aquitain; who leaving the monastery where he had resided upwards of 20 years, assumed the royal title, and was joyfully received by his subjects, already weary of the French yoke.— Charles took the field with the utmost expedition, and with difficulty prevailed upon his brother Carloman, who was then alive, to join him with his forces. But the junction was scarce effected, when Carloman withdrew his forces again, and left his brother to carry on the war in the best manner he could. Charles, though thus deserted, did not hesitate at engaging the enemy; and having overthrown them in a great battle, Hunalde was obliged to fly to the territories of Lupus duke of Gascony. Charles quickly sent an embassy demanding the fugitive prince; and Lupus, not daring to disobey the orders of such a powerful monarch, yielded up the unfortunate Hunalde, who was instantly cast into prison, from which, however, he afterwards made his escape.

The death of Carloman, which happened in the year 771, left Charles sole master of France, but the revolt of the Saxons involved him in a series of wars from which he did not extricate himself for 33 years. These had long been tributaries to the French, but frequently revolted; and now, when freed from the terror of Pepin's arms, thought they had a right to shake off the yoke altogether. Charles entered their country with a powerful army; and having defeated them in a number

France.

25  
Death of  
Pepin.26  
Succeeded  
by his two  
sons.27  
Reign of  
Charles the  
Great.

France.

ber of small engagements, advanced towards Eresbourg near Paderborn, where they had their capital post, and where was the image of their god Irminful, represented as a man completely armed, and standing on a column. The Saxons made an obstinate defence, but were at last obliged to submit; and Charles employed his army three days in demolishing the monuments of idolatry in this place; which so much disheartened the whole nation, that for the present they submitted to such terms as he pleased to impose; and which were rendered easier than they probably would have been, by the news which Charles now received from Italy.— He had concluded a marriage with the daughter of Didier king of the Lombards; but this had been dissolved by the pope, who reproached the Lombards with the first stain of the leprosy. Thus all friendship was dissolved betwixt Didier and Charles; and as the Lombard monarchs seem to have had a kind of natural enmity towards the popes, it is not surprising that it should now break out with uncommon fury. Didier having seized and frighted to death Pope Stephen IV. used his utmost endeavours to reduce his successor Adrian I. to a state of entire dependence on himself. Adrian applied to the French monarch, the usual resource of the pontiffs in those days. Charles was very willing to grant the necessary assistance, but the nobility were averse to an Italian war; so that he was obliged to act with great circumspection. Several embassies were therefore sent to Didier, entreating him to restore to the Pope those places which he had taken from him, and at last even offering him a large sum of money if he would do so; but this proposal being rejected, he obtained the consent of his nobility to make war on the Lombards. Didier disposed his troops in such a manner, that the officers of Charles are said to have been unanimously of opinion that it would be impossible to force a passage. This, however, was accomplished, either through the superior skill of Charles, according to some historians, or a panic which seized the Lombard soldiers, according to others; after which, Didier, with the old duke of Aquitain, who had escaped from his prison, and taken refuge at his court, shut themselves up in Pavia. Adalgise, the only son of the Lombard monarch, with the widow and children of Carloman, fled to Verona. That city was immediately invested by the conqueror, and in a short time obliged to submit. Adalgise had the good luck to escape to Constantinople, but we are not informed what became of Carloman's widow and children.— Charles, after paying a short visit to Rome, returned to the siege of Pavia. The place was vigorously defended, until famine and pestilence obliged the inhabitants to implore the clemency of Charles. Hunald fell a sacrifice to his own obstinacy in opposing the intention of the people; Didier was taken prisoner and carried into France; but we are not informed of his fate afterwards. His kingdom, however, was totally dissolved, and Charles was crowned king of Lombardy at Milan in the year 774.

Having received the oaths of allegiance from his new subjects, Charles set out for Saxony, the inhabitants of which had again revolted, and recovered Eresbourg their capital. The king soon recovered this important post; but a detachment of his army being cut off, and new troubles arising in Italy, he was obliged

to accept of the proposals of the Saxons, though their sincerity was very doubtful. Having therefore only strengthened the fortifications of Eresbourg, and left a sufficient garrison in the place, he set out for Italy, which was all in commotion through the intrigues of the emperor of the East, and Adalgise the son of Didier. The presence of Charles restored tranquillity in that quarter; but in the mean time, the Saxons having taken Eresbourg and destroyed the fortifications, threatened to annihilate the French power in that quarter. On the king's return, he found them employed in the siege of Sigebourg. His sudden arrival struck the barbarians with such terror, that they instantly sued for peace; which the king once more granted, but took care to secure their obedience by a chain of forts along the river Lippe, and repairing the fortifications of Eresbourg. An assembly of the Saxon chiefs was held at Paderborn, and a promise was made, that the nation should embrace the Christian religion: after which the king set out on an expedition to Spain in the year 778.

This new enterprise was undertaken at the request of Irunala, the Moorish sovereign of Saragossa, who had been driven from his territory. He was restored however, by the prowess of Charles, who reduced the cities of Pampeluna and Saragossa. He reduced also the city of Barcelona, and the kingdoms of Navarre and Arragon; but, on his return, he met with a severe check from the Gascons, who attacked and defeated the rear-guard of his army with great slaughter as they passed the Pyrenean mountains. This engagement, which seems to imply some defect in the prudence or military skill of Charles, has been much celebrated among romance writers, on account of the death of Roland a famous warrior.

Next year, 779, he paid a visit to Italy with his two sons Carloman and Louis. Having passed the winter at Pavia, he entered Rome next spring amidst the acclamations of the inhabitants. Here, in the 39th year of his age, he divided his dominions in presence of the pope betwixt his two sons Carloman and Louis. The former, who now took the name of Pepin, had Lombardy; the latter Aquitain. Having then received the submission of Tassilon duke of Bavaria, he set out for Saxony, where he took a most severe revenge on the people of that country for the many treacheries they had been guilty of. The present revolt was chiefly owing to a chief named Witikind, who had twice before fled from the victorious arms of Charles, and taken refuge at the court of Denmark. Returning from thence, in the king's absence, he roused his countrymen to action, while the generals of Charles, disagreeing among themselves, neglected to take the proper methods for repelling the enemy. In consequence of this, they were entirely defeated on the banks of the Weser in the year 782. Charles arrived in time to prevent the total destruction of his people, and directly penetrated into the heart of the country. Witikind unable to resist his antagonist, once more fled into Denmark; but 4500 of his followers perished at once by the hands of the executioner. An universal insurrection was the consequence of this unheard of cruelty; and though during three years the French monarch was constantly successful in the field, he found it impossible by any force whatever to subdue the

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spirit

France. spirit of the people. At last therefore he was obliged to have recourse to negotiation. Witikind and several other chiefs were invited to an interview; where Charles represented to them in such strong colours the ruin which must necessarily ensue to their country by persisting obstinately in opposition to him, that they were induced not only to persuade their countrymen finally to submit, but to embrace the Christian religion.

Charles having thus brought his affairs in Saxony to a happy conclusion, turned his arms against Tassilon duke of Bavaria, who had underhand supported the Saxons in their revolt. Having entered his country with a powerful army in the year 1787, he made such rapid advances, that the total destruction of Tassilon seemed inevitable. Charles had advanced as far as the river Lech, when Tassilon privately entered his camp, and threw himself at his feet. The king had compassion on his faithless kinsman on seeing him in this abject posture; but no sooner did the traitor find himself at liberty, than he stirred up the Hunns, the Greek emperor, and the fugitive Adalgise, against the king. He fomented also the discontents of the factious nobles of Aquitain and Lombardy; but his subjects, fearing lest these intrigues should involve them in destruction, made a discovery of the whole to Charles. Tassilon, ignorant of this, entered the diet at Ingelheim, not suspecting any danger, but was instantly arrested by order of the French monarch. Being brought to a trial, the proofs of his guilt were so apparent, that he was condemned to lose his head: the punishment, however, was afterwards mitigated to perpetual confinement in a monastery, and the duchy of Bavaria was annexed to the dominions of Charles.

The Hunns and other enemies of the French monarch continued to prosecute their enterprises without regarding the fate of their associate Tassilon. Their attempts, however, only served to enhance the fame of Charles. He defeated the Hunns in Bavaria, and the Greek emperor in Italy; obliging the latter to renounce for ever the fortune of Adalgise. The Hunns, not disheartened by their defeat, continuing to infest the French dominions, Charles entered their country at the head of a formidable army; and having forced their intrenchments, penetrated as far as Raab on the Danube, but was compelled by an epidemic distemper to retire before he had finished his conquest. He was no sooner returned to his own dominions, than he had the mortification to be informed, that his eldest son Pepin had conspired against his sovereignty and life. The plot was discovered by a priest who had accidentally fallen asleep in a church where the conspirators were assembled. Being awakened by their voices, he overheard them consulting on the proper measures for completing their purpose; on which he instantly set out for the palace, and summoned the monarch from his bed to inform him of the guilt of his son. Pepin was seized, but had his life spared, though condemned to expiate his offences by spending the remainder of his days in a monastery.

Charles was no sooner freed from this danger than he was again called to arms by a revolt of the Saxons on the one hand, while a formidable invasion of the Moors distressed him on the other; the Hunns at the same time renewing their depredations on his domi-

nions. The king did not at present make war against the Moors; probably foreseeing that they would be called off by their Christian enemies in Spain. This accordingly happened; the victories of Alonso the Chaste obliged them to leave France; after which Charles marched in person to attack the Saxons and Hunns. The former consented again to receive the Christian religion, but were likewise obliged to deliver up a third part of their army to be disposed of at the king's pleasure; but the Hunns defended themselves with incredible vigour. Though often defeated, their love of liberty was altogether invincible; so that the war was not terminated but by the death of the king, and an almost total destruction of the people: only one tribe could be induced to acknowledge the authority of the French monarch.

France. These exploits were finished betwixt the years 793 and 798: after which Charles invaded and subdued the islands of Majorca and Minorca; which the dissensions of the Moorish chief gave him an opportunity of doing. The satisfaction he felt from this new conquest, however, was soon damped by the troubles which broke out in Italy. After the death of Pope Adrian, his nephew aspired to the papal dignity; but a priest named Leo being preferred, the disappointed candidate determined on revenge. He managed matters so well, that his designs were concealed for four years. At last, on the day of a procession, a furious assault was made on the person of Leo. The unfortunate pontiff was left for dead on the ground; but having with difficulty recovered, and made his escape to the Vatican, he was protected by the duke of Spoleto, at that time general of the French forces. His cause was warmly espoused by Charles, who invited him to his camp at Paderborn in Westphalia; whence he dispatched him with a numerous guard to Rome, promising soon after to visit that metropolis, and redress all grievances. His attention for the present, however, was called by the descents of the Normans on the maritime provinces of his dominions; so that he was obliged to defer the promised assistance for some time longer. Having constructed forts at the mouths of most of the navigable rivers, and further provided for the defence of his territories, by instituting a regular militia, and appointing proper squadrons to cruise against the invaders, he set out for the fourth and last time on a journey to Rome. Here he was received with the highest possible honours. Leo was allowed to clear himself by oath of the crimes laid to his charge by his enemies, while his accusers were sent into exile. On the festival of Christmas, in the year 800, after Charles had made his appearance in the cathedral of St Peter, and assisted devoutly at mass, the pope suddenly put a crown on his head; and the place instantly resounded with acclamations of "Long life to Charles the Au-crowned guft, crowned by the hand of God! Long life and victory to the great and pacific emperor of the Ro-<sup>28</sup> the west. mans!" His body was then consecrated and anointed with royal unction; and after being conducted to a throne, he was treated with all the respect usually paid to the ancient Cæsars; from this time also being honoured with the title of *Charlemagne*, or *Charles the Great*. In private conversation, however, he usually protested, that he was ignorant of the pope's intention at this time; and that, had he known it, he would have disapproved

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disappointed him by his absence: but these protestations were not generally believed; and the care he took to have his new title acknowledged by the eastern emperors, evidently showed how fond he was of it.

Charles, now raised to the supreme dignity in the west, proposed to unite in himself the whole power of the first Roman emperors, by marrying Irene the empress of the east. But in this he was disappointed by the marriage of that princess by Nicephorus; however, the latter acknowledged his new dignity of Augustus, and the boundaries of the two empires were amicably settled. Charles was further gratified by the respect paid him by the great Haroun Al-Rashid, caliph of the Saracens, who yielded to him the sacred city of Jerusalem, and holy sepulchre there. But in the mean time his empire was threatened with the invasion of a very formidable enemy, whom even the power of Charles would have found it hard to resist. These were the Normans, at this time under the government of Godfrey a celebrated warrior, and who by their adventurous spirit, and skill in maritime affairs, threatened all the western coasts of Europe with desolation. From motives of mutual convenience a transitory peace was established, and Charles made use of this interval to settle the final distribution of his dominions. Aquitaine and Gascony, with the Spanish Marche, were assigned to his son Louis; Pepin had Italy confirmed to him; and to this was added the greatest part of Bavaria, with the country now possessed by the Grisons. Charles the eldest had Neustria, Austrasia, and Thuringia. The donation was supposed to be rendered more authentic by the sanction of the pope. This division, however, had scarce taken place, when the princes were all obliged to defend their dominions by force of arms. Louis and Pepin were attacked by the Saracens, and Charles by the Slavonians. All these enemies were defeated; but while Charles hoped to spend the short remainder of his life in tranquillity, he was once more called forth to martial exertions by the hostile behaviour of Godfrey the Norman leader. Charles sent him a message of defiance, which was returned in the same style by Godfrey: but the former, by artfully fomenting divisions among the northern powers, prevented for a while the threatened danger; but, these disturbances being quelled, the Normans renewed their depredations, and Charles was obliged to face them in the field. An engagement, however, was prevented by the death of Godfrey, who was assassinated by a private soldier; on which the Norman army retreated, and the dominions of the empire still remained free from these invaders. Still the latter days of Charles were embittered by domestic misfortunes. His favourite daughter Rotrude died, as did also Pepin king of Italy; and these misfortunes were soon followed by the death of his eldest son Charles. The emperor then thought proper to associate his only surviving son Louis with him in the government; which was formally done at Aix-la Chapelle. Charles himself survived this transaction only a few months: his death happened on the 27th of January 814, in the 71st year of his age, and 47th of his reign.

<sup>29</sup>  
Death of Charles the Great.

<sup>30</sup>  
Extent of his territories.

By the martial achievements of this hero, the French monarchy was raised to its utmost pitch of splendour. He had added the province of Aquitaine to the territories of his ancestors; he had confined the inha-

bitants of Brittany to the shores of the ocean, and obliged them to submit to a disgraceful tribute. He had reduced under his dominion all that part of Spain which extends from the Pyrences to the river Ebro, and includes the kingdoms of Roussillon, Navarre, Aragon, and Catalonia. He possessed Italy from the Alps to the borders of Calabria; but the duchy of Beneventum, including most of the present kingdom of Naples, escaped the yoke after a transitory submission. Besides these extensive countries, Charles added to his territories the whole of Germany and Pannonia; so that the French now had the jurisdiction of all the country from east to west, from the Ebro in Spain to the Vistula; and from north to south, from the duchy of Beneventum to the river Eyder, the boundary between Germany and the dominions of Denmark. In acquiring these extensive dominions Charles had been guilty of horrid and repeated massacres, for which, however, he had been in some measure excusable by the barbarity and rebellious disposition of the people with whom he had to deal, upon whom no mild measures would probably have had any effect. His establishing of schools throughout the conquered provinces, showed also his inclination to govern his subjects in peace, and to take proper steps for their civilization; though indeed many parts of his private conduct showed no small inclination to cruelty; particularly the fate of the sons of Carloman, of whom no account could ever be obtained. His advice to his son Louis indeed was excellent; exhorting him to consider his people as his children; to be very mild and gentle in his administration, but firm in the execution of justice; to reward merit; promote his nobles gradually; choose ministers deliberately, but not remove them capriciously or without sufficient reason. All these prudent maxims, however, were not sufficient to enable Louis to govern dominions so extensive, and people so turbulent as he had to deal with. At the time of the decease of his father this prince was about 36 years of age, and had married Ermengarde, daughter of the count of Hesbai of the diocese of Liege, by whom he had three sons, Lothaire, Pepin, and Louis. Lothaire, the eldest, was associated with himself in the empire, and the two youngest were intrusted with the governments of Aquitaine and Bavaria. Every one of the princes proved unfaithful to their father, as well as enemies to one another. The death of Ermengarde, and the marriage of the emperor with Judith a princess of Bavaria, artful but accomplished, proved the first source of calamity to the empire. In the year 823, Charles, the emperor's youngest son, was born; and his pretensions became in time more fatal to the public tranquillity than the ambition and disobedience of all the rest. Various parts of the Imperial dominions were likewise assaulted by foreign enemies. The inhabitants of Brittany and Navarre revolted; the Moors invaded Catalonia; while the ambition of Judith produced a war amongst the brothers themselves.

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<sup>31</sup>  
Decline of his empire.

Charles at first had been appointed sovereign of that part of Germany bounded by the rivers Danube, the Maine, the Neckar, and the Rhine; the country of the Grisons and Burgundy, comprehending Geneva and the Swiss cantons; but this was opposed by the three elder sons. Pepin and Louis advanced with the united forces of Aquitaine and Bavaria, while the Imperial

<sup>32</sup>  
Civil wars among the sons of Louis the Gentle.

France. perial forces deserted their standard and joined the malcontents. The emperor was taken prisoner, and the empress retired to a monastery. Lothaire, the eldest of the young princes, to whom the rest found themselves obliged to submit, was the person who retained the emperor in his possession; but, notwithstanding his breach of duty, his heart was touched with remorse on account of the crimes he had committed. Dreading the reproach of the world at large, and being threatened with the censures of the church, he threw himself at his father's feet, and begged pardon for his guilt, consenting to relinquish the authority he had unjustly usurped. Thus Louis was re-established in his authority by the diet of the empire which had met to depose him. His first step was to recal his empress from the monastery to which she had retired; but this princess, implacable in her resentment, now persecuted Lothaire to such a degree, that he was obliged to join his two brothers Pepin and Louis in a confederacy against their father. The old emperor thought to check this rebellious disposition by revoking his grant of Aquitain to Pepin, and conferring it on his youngest son Charles, then only nine years of age; but Pope Gregory IV. conferred the Imperial dignity itself on Lothaire, deposing the unhappy monarch, and again sending the empress to a nunnery in the forest of Arden. The unnatural behaviour of his son, however, once more excited the compassion of his subjects. Dreux, the bishop of Mentz, used his interest with Louis king of Bavaria to arm his subjects in defence of his father and sovereign. In this enterprise the Bavarian monarch was joined by the French and Saxons; so that the aged emperor was once more restored, the empress released from her nunnery, and Charles from his prison, in the year 833.

The ambition of Judith now set matters once more in a flame. Taking advantage of the affection her husband bore her, she persuaded him to invest her son Charles with the sovereignty of Neustria as well as the dominions formerly assigned him. This was productive of great discontent on the part of Lothaire and Pepin; but their power was now too much broken to be able to accomplish any thing by force of arms. The death of Pepin, which happened soon after, produced a new division of the empire. The claims of young Pepin and Charles, sons of the deceased prince, were entirely disregarded, and his French dominions divided between the two brothers Charles and Lothaire, the latter being named guardian to his infant nephew. This enraged Louis of Bavaria, whose interest was entirely neglected in the partition, to such a degree, that he again revolted; but the unexpected appearance, with the hostile preparations of the Saxons, obliged him to submit and ask pardon for his offences. Still, however, the ambition of the empress kept matters in a continual ferment, and the empire was again threatened with all the calamities of civil war; but before these took place, the emperor died, in 841, after a most unfortunate reign of 27 years.

Louis was eminent for the mildness of his manners and peaceful virtues, which procured him the title of *Le Debonnaire*, or, "the gentle:" but such was the turbulence and excessive barbarity of the age in which he lived, that all his virtues, instead of procuring him

respect and esteem, were productive only of contempt and rebellion from those whom both duty and nature ought to have rendered the most submissive and obedient.

The decease of the emperor was followed by a civil war among his sons. The united forces of Lothaire and his nephew Pepin were defeated by those of Charles and Louis in a very bloody battle in the plains of Fontenoy, where 100,000 Franks perished, in the year 842. This victory, however, bloody as it was, did not decide the fortune of the war. The conquerors having, through motives of interest or jealousy, retired each into their own dominions, Lothaire found means not only to recruit his shattered forces, but pressed the other two princes so vigorously, that they were glad to consent to a new partition of the empire. By this Lothaire was allowed to possess the whole of Italy, with the whole tract of country between the rivers Rhone and Rhine, as well as that between the Meuse and Scheldt. Charles had Aquitaine, with the country lying between the Loire and the Meuse; while Louis had Bavaria, with the rest of Germany, from whence he was distinguished by the appellation of *Louis the German*.

By this partition, Germany and France were divided in such a manner as never afterwards to be united under one head. That part of France which was

allowed to Lothaire, was from him called *Lotharingia*, and now *Lorraine*, by the gradual corruption of the word. The sovereignty, however, which that prince had pursued at the expence of every filial duty, and purchased with so much blood, afforded him now but little satisfaction. Disgusted with the cares and anxieties of his situation, he sought relief in a monastery in the year 855. On his retreat from the throne, he

alleged to his eldest son Louis II. the sovereignty of Italy; to his second son Lothaire the territory of Lorraine, with the title of king; and to his youngest son Charles, furnished the *Bald*, Provence, Dauphiny, and part of the kingdom of Burgundy; so that he may be considered as properly the king of France.

From the year 845 to 857 the provinces subjected to his jurisdiction had been infested by the annual depredations of the Normans, from whom Charles was at last fain to purchase peace at a greater expence than might have carried on a successful war. The people of Brittany had also revolted; and though obliged by the appearance of Charles himself, at the head of a powerful army, to return to their allegiance, they no sooner perceived him again embarrassed by the incursions of the Normans, than they threw off the yoke, and under the conduct of their duke Louis subdued the neighbouring diocese of Rennes; after which exploit Louis assumed the title of king, which he transmitted to his son Herispee. By him Charles was totally defeated; and his subjects, perceiving the weakness of their monarch, put themselves under the protection of Louis the German. His ambition prompted him to give a ready ear to the proposal; and therefore, taking the opportunity of Charles's absence in repelling an invasion of the Danes, he marched with a formidable army into France, and was solemnly crowned by the archbishop of Sens in the year 857. Being too confident of success, however, and fancying himself already established on the throne, he was persuaded

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33  
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Reign of  
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France. to dismiss his German forces; which he had no sooner done, than Charles marched against him with an army, and Louis abandoned his new kingdom as easily as he had obtained it.

Notwithstanding this success, the kingdom of Charles continued still in a very tottering situation. The Normans harassed him in one quarter, and the king of Brittany in another. He marched against the latter in the year 860; but had the misfortune to receive a total defeat, after an engagement which lasted two days. The victory was chiefly owing to a noted warrior named Robert le Fort, or the Strong, who commanded the Bretons; but Charles found means to gain him over to his party, by investing him with the title of duke of France, including the country which lies between the rivers Seine and Loire.

For some time the abilities of Robert continued to support the tottering throne of Charles; but the difficulties returned on the death of that hero, who was killed in repelling an invasion of the Danes. Some amends was indeed made for his loss by the death of the king of Lorraine in the year 869; by which event the territories of Charles were augmented by the cities of Lyons, Vienne, Toul, Besançon, Verdun, Cambrai, Viviers and Urez, together with the territories of Hainault, Zealand, and Holland. Cologne, Utrecht, Treves, Mentz, Strasburg, with the rest of the territories of Lothaire, were assigned to Louis the German.

All this time the Normans still continued their incursions to such a degree, that Solomon king of Brittany was persuaded to join his forces to those of Charles, in order to repel the common enemy. The event proved unfortunate to the Normans; for their principal leaders were besieged in Angiers, and obliged to purchase leave to depart by relinquishing all the spoil they had taken. Charles thus freed from a formidable enemy, began to aspire to the Imperial crown, which about this time became vacant by the death of Louis. This belonged of right to Louis the German; but Charles, having instantly assembled a powerful army, marched with it into Italy before Louis could be apprised of his designs; and being favourably received at Rome, the Imperial crown was put on his head without any hesitation by the pope, in the year 873. Louis, enraged at his disappointment, discharged his fury on the defenceless country of Champagne; and though the approach of Charles obliged him for the present to retire, yet he continued his preparations with such vigour, that Charles would in all probability have found him a very formidable adversary, had he not been taken off by death in the year 877. Charles was no sooner informed of his brother's decease, than he invaded the dominions of his son Louis, who possessed Franconia, Thuringia, the Lower Lorraine, with some other territories in that quarter. The enterprise, however, proved unsuccessful. Charles, though superior in numbers, was defeated with great slaughter, and had scarcely time to reunite his scattered forces, when he was informed that the Normans had invaded his territories, laid waste part of that country, and taken possession of the city of Rouen. So many disasters affected him in such a manner that he fell dangerously ill, and was scarcely recovered of his sickness when he found himself called into Italy to the assistance of the pope against

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France. the Saracens, whose invasions were encouraged by the dukes of Beneventum and the Greek emperor. Charles passed into Italy with only a few followers; but when he came to Pavia, at which place the pontiff had appointed to meet him, he was informed that Carloman king of Bavaria, and son of Louis the German, was already in Italy with a powerful army, and laid claim to the imperial title in virtue of his father's right. Charles prepared to oppose him by force of arms; but his generals conspired against him, and the soldiers declared their resolution not to pass the Alps. On this he was obliged to retire to France, at the very moment that Carloman, dreading his power, prepared to return to Germany. This was the last of Charles's enterprises, His journey brought on a return of his indisposition, which was rendered fatal through the treachery of a Jewish physician named Zedechius, who administered poison to him under pretence of curing his malady. He expired in a miserable cottage upon Mount Cenis, in the 54th year of his age, and 38th of his reign over the kingdom of France.

The ambition of Charles had been productive of much distress both to himself and to his subjects. His son Louis, surnamed, from a defect in his speech, *the Stammerer*, was of a quite different disposition; but his feeble administration was ill calculated to retrieve matters in their present situation. He died on the 10th of April 879, while on a march to suppress some insurrections in Burgundy. He left his queen Adelaide pregnant; who some time after his decease was delivered of a son, named *Charles*. After his death followed an interregnum; during which a faction was formed for setting aside the children of Louis the Stammerer, in favour of the German princes, sons to Louis the brother of Charles the Bald. This scheme, however, proved abortive; and the two sons of the late king, Louis and Carloman, were crowned kings of France. Another kingdom was at that time erected by an assembly of the states, namely, the kingdom of Provence, which consisted of the countries now called *Lyonnois, Savoy, Dauphiny, Franche Comte*, and part of the duchy of Burgundy; and the kingdom was given to Duke Boson, brother-in-law to Charles the Bald. In 881, both kings of France died; Louis, as was suspected, by poison; and Carloman of a wound he received accidentally while hunting. This produced a second interregnum; which ended with the calling in of Charles the Great, emperor of Germany. His reign was more unfortunate than that of any of his predecessors. The Normans, to whom he had given leave to settle in Friesland, sailed up the Seine with a fleet of 700 ships, and laid siege to Paris. Charles, unable to force them to abandon their undertaking, prevailed on them to depart by a large sum of money. But as the king could not advance the money at once, he allowed them to remain in the neighbourhood of Paris during the winter; and they in return plundered the country, thus amassing vast wealth besides the sum which Charles had promised. After this ignominious transaction Charles returned to Germany, in a very declining state of health both as to body and mind. Here he quarrelled with his empress; and being abandoned by all his friends, he was deposed, and reduced to such distress, that he would not even have had bread to eat,

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had

France. had he not been supplied by the archbishop of Mentz, out of the principle of charity.

On the deposition of Charles the Gros, Eudes count of Paris was chosen king by the nobility during the minority of Charles the son of Adelaide, afterwards named *Charles the Simple*. He defeated the Normans, and repressed the power of the nobility; on which account a faction was formed in favour of Charles, who was sent for, with his mother, from England. Eudes did not enter into a civil war; but peaceably resigned the greatest part of the kingdom to him, and consented to do homage for the rest. He died soon after this agreement, in the year 898.

During the reign of Charles the Simple, the French government declined. By the introduction of fiefs, those noblemen who had got into the possession of governments, having these confirmed to them and their heirs for ever, became in a manner independent sovereigns: and as these great lords had others under them, and they in like manner had others under them, and even these again had their vassals; instead of the easy and equal government which prevailed before, a vast number of insupportable little tyrannies was erected. The Normans, too, ravaged the country in the most terrible manner, and desolated some of the finest provinces in France. At last Charles ceded to Rollo, the king or captain of these barbarians, the duchy of Neustria; who thereupon became a Christian, changed his own name to *Robert*, and that of his principality to *Normandy*.

During the remainder of the reign of Charles the Simple, and the entire reign of Louis IV. surnamed the *Stranger*, Lothaire, and Louis V. the power of the Carolingian race continually declined; till at last they were supplanted by Hugh Capet, who had been created duke of France by Lothaire. This revolution happened in the year 987, and was brought about much in the same manner as the former one had been by Pepin. He proved an active and prudent monarch, and possessed such other qualities as were requisite for keeping his tumultuous subjects in awe. He died on the 24th of October 997, leaving his dominions in perfect quiet to his son Robert.

The new king inherited the good qualities of his father. In his reign the kingdom was enlarged by the death of Henry duke of Burgundy, the king's uncle, to whom he fell heir. This new accession of territory, however, was not obtained without a war of several years continuance on account of some pretenders to the sovereignty of that duchy; and had it not been for the assistance of the duke of Normandy, it is doubtful whether the king would have succeeded.—As Robert was of opinion, that peace and tranquillity were preferable to wide extended dominions with a precarious tenure, he refused the kingdom of Italy and imperial crown of Germany, both which were offered him. He died on the 20th of July 1030; having reigned 33 years, and lived 60.

Robert was succeeded by his eldest son Henry I. who in the beginning of his reign met with great opposition from his mother. She had always hated him; and preferred his younger brother Robert, in whose favour she now raised an insurrection. By the assistance of Robert duke of Normandy, however, Henry overcame all his enemies, and established himself firmly up-

on the throne. In return for this, he supported William, Robert's natural son, and afterwards king of England, in the possession of the duchy of Normandy. Afterwards, however, growing jealous of his power, he not only supported the pretenders to the duchy of Normandy secretly, but invaded that country himself in their favour. This enterprize proved unsuccessful, and Henry was obliged to make peace: but no sincere reconciliation ever followed; for the king retained a deep sense of the disgrace he had met with, and the duke never forgave him for invading his dominions. The treaty between them, therefore, was quickly broken; and Henry once more invaded Normandy with two armies, one commanded by himself, and the other by his brother. The first was harassed by continual skirmishes, and the last totally defeated; after which Henry was obliged to agree to such terms as the duke thought proper: but the rancour between them never ceased, and was in reality the cause of that implacable aversion which for a long series of years produced perpetual quarrels between the kings of France and those of the Norman race in England.

Henry died in 1059, not without a suspicion of being poisoned; and was succeeded by his eldest son Philip, at that time in the eighth year of his age. Baldwin earl of Flanders was appointed his guardian; and died in the year 1066, about the time that William of Normandy became king of England. After the death of his tutor, Philip began to show a very insincere, haughty, and oppressive disposition. He engaged in a war with William the Conqueror, and supported his son Robert in his rebellion against him. But after the death of William, he assisted Robert's brothers against him; by which means he was forced to consent to a partition of his dominions.

In 1092, King Philip being wearied of his queen Bertha, procured a divorce from her under pretence of consanguinity, and afterwards demanded in marriage Emma daughter to Roger count of Calabria. The treaty of marriage was concluded; and the princess was sent over, richly adorned with jewels, and with a large portion in ready money; but the king, instead of espousing her, retained her fortune, and dismissed the princess herself, carrying off from her husband the countess of Anjou, who was esteemed the handsomest woman in France. With her he was so deeply enamoured, that not satisfied with the illegal possession of her person, he procured a divorce between her and her husband, and prevailed upon some Norman bishops to solemnize his own marriage with her. The whole of these transactions, however, were so scandalous, that the pope having caused them to be revised in a council at Autun, in the year 1094, pronounced sentence of excommunication against Philip in case he did not part with the countess. On his repentance, the censure was taken off; but as the king paid no regard to his promises, he was, in 1095, excommunicated a second time. He again professed repentance, and was absolved; but soon after, living with the countess of Anjou as formerly, he was excommunicated a third time. This conduct, so unworthy of a prince, exposed him to the contempt of the people. Too many of the nobility followed his example, and at the same time despised his authority; not only making war up-

on

38  
Family of  
Charles the  
Great sup-  
planted by  
Hugh Ca-  
pet.

39  
Robert.

40  
Henry I.

France.

41  
Philip.

See Eng-  
land, N<sup>o</sup> 89.

France. on each other, but spoiling and robbing his subjects with impunity.

In the year 1110, Philip prevailed on the court of Rome to have his affair reviewed in an assembly at Poitiers; where, notwithstanding his utmost efforts, sentence of excommunication was a fourth time pronounced against him. Yet, in spite of all these sentences, as Queen Bertha was dead, and the count of Anjou offered, for a large sum of money, to give whatever assistance was requisite for procuring a dispensation, Philip at last prevailed, and the countess was proclaimed queen of France. But though the king's domestic affairs were now in some measure quieted, his negligence in government had thrown the affairs of the nation into the greatest disorder. He therefore associated with him in the government his eldest son Louis. This prince was the very reverse of his father; and by his activity and resolution, keeping constantly in the field with a considerable body of forces, he reduced the rebellious nobility to subjection, and, according to the best historians, at this time saved the state from being utterly subverted.

For these services the queen looked upon the young prince with so jealous an eye, and gave him so much disturbance, that he found it necessary to retire for some time into England; where he was received by King Henry I. with the greatest kindness. He had not been long at court, before Henry received by an express a letter from Philip; telling him, that, for certain important reasons, he should be glad if he closely confined his son, or even despatched him altogether. The King of England, however, instead of complying with this infamous request, showed the letter to Louis, and sent him home with all imaginable marks of respect. Immediately on his return, he demanded justice; but the queen procured poison to be given him, which operated so violently that his life was despaired of. A stranger, however, undertook the cure, and succeeded; only a paleness remained in the prince's face ever afterwards, though he grew so fat that he was surnamed *the Gros*.

On his recovery, the prince was on the point of revenging his quarrel by force of arms; but his father having caused the queen to make the most humble submissions to him, his resentment was at length appeased, and a perfect reconciliation took place.

Nothing memorable happened in the reign of King Philip after this reconciliation. He died in the year 1108, and was succeeded by his son Louis the Gros. The first years of his reign were disturbed by insurrections of his lords in different places of the kingdom; and these insurrections were the more troublesome, as they were secretly fomented by Henry I. of England, that by weakening the power of France his duchy of Normandy might be the more secure. This quickly brought on a war; in which Henry was defeated, and his son William obliged to do homage to Louis for the duchy of Normandy. As the kings of England and France, however, were rivals, and exceedingly jealous of each other, the latter espoused the cause of William the son of Robert duke of Normandy, whom Henry had unjustly deprived of that duchy. This brought on a new war; in which Louis, receiving a great defeat from Henry, was obliged to make peace upon such terms as his antagonist thought

proper. The tranquillity, however, was but of short duration. Louis renewed his intrigues in favour of William, and endeavoured to form a confederacy against Henry; but the latter found means not only to dissipate this confederacy, but to prevail upon Henry V. emperor of Germany to invade France with the whole strength of the empire on one side, while he prepared to attack it on the other. But Louis having collected an army of 200,000 men, both of them thought proper to desist. Upon this the king of France would have marched into Normandy, in order to put William in possession of that duchy. His great vassals, however, told him they would do no such thing; that they had assembled in order to defend the territories of France from the invasion of a foreign prince, and not to enlarge his power by destroying that balance which arose from the king of England's possession of Normandy, and which they reckoned necessary for their own safety. This was followed by a peace with Henry; which, as both monarchs had now seen the extent of each other's power, was made on pretty equal terms, and kept during the life of Louis, who died in 1137, leaving the kingdom to his son Louis VII.

The young king was not endowed with any of those <sup>43</sup> Louis VII. qualities which constitute a great monarch. From a weak prince. he undertook an expedition into the Holy Land, from whence he returned without glory. In this expedition he took his queen Eleanor along with him; but was so much offended with her gallantries during her stay there, as well as her behaviour afterwards, that he divorced her, and returned the duchy of Guienne which he received with her as a portion. Six weeks after this she married Henry duke of Normandy, count of Anjou and Maine, and heir apparent to the crown of England. This marriage was a very great mortification to Louis; and procured him the surname of *the Young*, on account of the folly of his conduct. When Henry ascended the throne of England, some wars were carried on between him and Louis, with little advantage on either side: at last, however, a perfect reconciliation took place; and Louis took a voyage to England, in order to visit the shrine of St Thomas of Canterbury. On his return he was struck with an apoplexy; and though he recovered for that time, yet he continued ever after paralytic on the right side. After having languished for about a year under this malady, he died on the 18th of September 1180, leaving the kingdom to his son Philip.

This prince, surnamed *The Gift of God*, *The Magna-Philip: the* <sup>44</sup> *nimous*, and *The Conqueror*, during his lifetime; and, as Great. if all these titles had fallen short of his merit, styled *Augustus* after his death,—is reckoned one of the greatest princes that ever sat on the throne of France, or any other.—It doth not, however, appear that these titles were altogether well founded. In the beginning of his reign he was opposed by a strong faction excited by his mother. This indeed he suppressed with a vigour and spirit which did him honour; but his taking part with the children of Henry II. of England in their unnatural contests with their father, and his treacherous combination with John to seize his brother's kingdom when he was detained in prison by the emperor of Germany, must be indelible stains in his character,

France. character, and for ever exclude him from the title of *Magnanimous*. As to military skill and personal valour, he was evidently inferior to Richard I. of England; nor can his recovering of the provinces held by the English in France, from such a mean and dastardly prince as King John, entitle him with any justice to the surname of *Conqueror*. In politics he was evidently the dupe of the pope, who made use of him to intimidate John into a submission, by promising him the kingdom of England, which he never meant that he should enjoy. An account of these transactions, which are the principal ones of this reign, is given under the article ENGLAND, N<sup>o</sup> 121—141.

45  
Reign of  
Louis IX.

Philip died in 1223, and was succeeded by his son Louis VIII. and he, in 1226, by Louis IX. afterwards styled *St Louis*. This prince was certainly possessed of many good qualities, but deeply tainted with the superstition of the times. This induced him to engage in two croisades. The first was against the Saracens in Egypt: in which he was taken prisoner by the Infidels, and treated with great cruelty; but at last obtained his ransom, on condition of paying a million of pieces of gold, and surrendering the city of Damietta. He no sooner regained his liberty, than he entered Syria with a view of doing something worthy of his rank and character. From this expedition he was obliged to return sooner than he intended, by the news of the decease of his mother Queen Blanch, whom he had appointed regent in his absence, and who had managed the national affairs with the greatest prudence. The king, however, found many disorders in the kingdom upon his return; and these he set himself to reform with the utmost diligence. Having succeeded in this, he yielded to Henry III. of England, the Limousin, Querci, Perigord, and some other places; in consideration of Henry and his son Prince Edward their renouncing, in the fullest manner, all pretensions to Normandy and the other provinces of France which the English had formerly possessed.

The reputation of this monarch for candour and justice was so great, that the barons of England, as well as King Henry III. consented to make him umpire of the differences which subsisted between them. But though he decided this matter very justly, his decision was not productive of any good effect. At last the king, having settled every thing relating to his kingdom in a proper manner, set out on another croisade for Africa; where he died of the plague, on the 25th of August 1270.

46  
Philip the  
Hardy.

Notwithstanding the misfortunes of Louis, his successor Philip, surnamed *the Hardy*, continued the war against the Infidels with great vigour. Being reinforced by his uncle Charles king of Sicily, he brought the war to a more fortunate conclusion than his predecessor had been likely to do. The Saracens were defeated in two engagements, and the king of Tunis obliged to sue for peace; offering at the same time to double the tribute he formerly paid to the crown of Sicily; to reimburse the expences of the war; and to permit the Christian religion to be freely propagated throughout his dominions. Having accomplished this, the two princes set sail for Europe; but the seeds of the distemper which had infected the army in Africa not being eradicated, broke forth on their arrival in Sicily, and raged for some time with great violence.

France. Besides a vast number of common people, the king's brother John, his queen Isabella, with his brother and sister-in-law the king and queen of Navarre, and his uncle and aunt the count and countess of Poitiers, perished by this dreadful malady.

On his return to France, Philip took possession of the counties of Provence and Thoulouse; married his second son, though then very young, to the only daughter of the king of Navarre; while he himself espoused Mary the daughter of the duke of Brabant, reckoned one of the most beautiful princesses of the age. He steadily enforced the regulations of his predecessor, who had prohibited the barons from making private wars upon one another; procured the friendship of Edward I. of England by ceding to him the county of Agenois; and entered into a war with Spain in order to support the pretensions of his nephews, the Infants de la Cerda, to the throne of Castile.

The events of this war were of no great importance; and the king's attention was quickly called off from them by the death of his eldest son Louis at the age of twelve years. This disastrous event happened in the year 1275, not without a suspicion of poison; and the young queen, Mary, was accused by a surgeon named La Brosse as guilty of his death. Philip gave some credit to the accusation: but having applied to a nun, who pretended to be inspired, for full satisfaction, her answer proved fatal to La Brosse. The queen being cleared by this pretended prophetess, La Brosse was accused of a treasonable correspondence with the king of Castile, and condemned to death. The manner of his trial and execution, however, were such, that the tide of popular favour was turned; La Brosse was by the voice of the people declared to be innocent, and the king and queen themselves loudly condemned. During these unfavourable circumstances, the Sicilians, over whom Charles of Anjou had established his authority, instigated by John of Procida, a noble exile, came to a resolution of freeing themselves at once from the French yoke by a general massacre. This cruel French massacre in Sicily. resolution was accordingly put in execution; and the French, to the number of 8000, murdered in one night; after which Peter of Arragon, sailed to the island, where he was received by the inhabitants as their king and saviour. Charles was sensibly affected by this misfortune: and having laid siege to Messina, failed directly to Marseilles, where he obtained a powerful reinforcement. But during his absence on this occasion, his son, to whom he had intrusted the care of the siege, having rashly ventured an engagement with the Spanish fleet, was entirely defeated and taken prisoner; which so much affected the father that he died of grief, and Sicily was inseparably attached to the house of Arragon.

The misfortunes of Charles were followed by others equally great to Philip himself. Pope Martin IV. in the warmth of his zeal for the cause of the duke of Anjou, had excommunicated Pedro king of Arragon, and bestowed his kingdom on Charles of Valois, a younger son of the king of France. In attempting to defend himself against the execution of this unjust sentence, Pedro was mortally wounded; but, soon after, the French fleet being defeated by that of Arragon, the king was so much affected by the misfortune that he fell sick. His disease was augmented by the heat

France. heat of the climate and the fatigues of war; so that, quite worn out with grief and infirmities, he expired at Perpignan in the 41st year of his age, and 16th of his reign.

48  
Reign of  
Philip the  
Fair.

By the death of Philip the Hardy the French crown devolved on his second son, called also Philip, and from the beauty of his person furnished *the Fair*; who had espoused the princess of Navarre, and at the time of his accession was in his 17th year. By the marriage with this princess he had obtained the counties of Champagne and Brie; yet with all this increase of power he found himself unable to support the war in which his predecessor had engaged. For this reason he thought proper to abandon the interest of the Infants de la Cerda, and settle the differences with Castile. The treaty was concluded by the mediation of Edward I. of England; at whose intercession Charles the Lame, son to the duke of Anjou already mentioned, was released from his captivity; Edward himself paying part of his ransom. On this Charles consented to renounce his claim on Sicily; and Philip himself promised that his kinsman Philip of Valois should renounce all pretensions to the crown of Arragon. In return for this generosity, the latter obtained the eldest daughter of Charles, with the territories of Anjou and Maine as a dowry.

49  
Difference  
with Eng-  
land.

The tranquillity procured by this treaty, however, was soon interrupted by differences with Edward the promoter of it; Pope Boniface VIII. and Guy de Dampier, count of Flanders. The difference with England took place by a mere accident. A Norman and an English vessel having met off the coast of Bayonne, and having both occasion for water, the crews met and quarrelled at the same spring. A Norman was killed in the squabble by his own weapon, with which he assaulted an Englishman, as the latter pretended: but however the matter was, complaints were made by the Normans to Philip; who, without giving himself much trouble to inquire into the merits of the cause, instantly allowed them to redress their supposed injuries. On this a kind of piratical war commenced between the two nations, in which the two sovereigns for some time took no active part; though other nations interfered; the Irish and Dutch seamen siding with the English, and those of Flanders and Genoa with the French. Thus the powers on both sides were gradually augmented, till at last the affair became so serious, that in one engagement 15,000 French are said to have perished. Philip, alarmed at such a carnage, summoned the king of England as his vassal to attend; and, on his refusal, declared his estates in France to be forfeited. After a number of negotiations, Philip declared that he would be satisfied with the nominal cession of the province of Guienne, which he engaged instantly to restore to the king of England as soon as it should be put into his hands. Edward complied with his demand; but no sooner had the French monarch obtained possession of that country, than he persisted in the forfeiture of the English possessions in France; which treacherous proceeding instantly produced a war betwixt the two nations. Edward, that he might defend himself the better against such a formidable adversary, concluded a treaty with the emperor Adolphus, together with the counts of Brittany, Holland, Bar, Juliers, Gueldres, and Flan-

ders; while Philip strengthened himself by an alliance with John Baliol of Scotland; and thus laid the foundation of that strict union which took place between France and Scotland for two centuries. During this war the French made a descent on the coast of England, and destroyed the town of Dover; while Edward, in revenge, landed in Gascony with an army of 50,000 men. No great exploits, however, were performed with this mighty armament; and both parties finding themselves pretty equally matched, consented to a suspension of arms for two years; during which a peace was finally concluded by the mediation of Pope Boniface VIII. Guienne was restored: Edward espoused Margaret the sister of Philip; while his daughter Isabella was given in marriage to the prince of Wales.

France.

50  
Peace con-  
cluded.

Both Philip and Edward behaved to the allies whom they had engaged in their cause with equal perfidy. Baliol was abandoned by Philip to the resentment of Edward; while Guy, earl of Flanders, was left equally exposed to the resentment of Philip.

The reconciliation betwixt the French and English monarchs was soon followed by a difference with Pope Boniface, whom they had appointed mediator between them. Sensible of his assuming disposition, however, they had inserted in the reference made to him, that he was chosen as a private man, and not as the successor of St Peter. The haughty pontiff, however, soon showed, that he was not by any means to be treated as a private person, and a contest with Philip quickly ensued. Boniface began with forbidding the clergy to grant the king any subsidies without first obtaining the consent of the Holy See, under the pain of excommunication. Philip revenged himself by prohibiting any ecclesiastics from sending money out of the kingdom without his leave; and by protecting the Colonnas, who were the implacable enemies of Boniface. By this his holiness was so much irritated that he sent a most abusive letter to Philip; after which he summoned the clergy of France to a council at Rome; which Philip retaliated, by seizing the temporalities of those who obeyed the summons, and recalling his brother Charles of Valois, who had the title of the *Pope's General*. Sensible, however, of the danger that attended this contest, he despatched two emissaries, under pretence of conciliating the differences, to levy such a body of troops as might execute his hostile purposes against the holy father. With these he suddenly invested the pope in his native city of Anagnina; and while the bull was preparing for the excommunication of Philip, and releasing his subjects from their obedience, the pope himself was obliged to surrender prisoner to the troops of the prince whom he designed to anathematize.

51  
Difference  
with Pope  
Boniface.

Though Boniface had been at this time delivered up to the troops of Philip through the treachery of the people of Anagnina, yet he was no sooner taken prisoner and brought to distress, than they rescued him from his guards and conveyed him to Rome, where he soon after died of grief and shame. His successor Benedict revoked the excommunication of Boniface, and attempted to regain the allegiance of Philip by gentle means: but, before this could be effected, he himself was cut off by death, not without strong suspicions of poison. After his decease Philip offered to procure

52  
Death of  
Boniface.

the

France. the papal chair for Bertrand archbishop of Bourdeaux, provided he would condemn the memory of Boniface, restore the honours and estates of the Colonnas which had been forfeited, allow him, for five years, the tenths of the clergy of France, and comply with a request which at that time it was not proper to divulge.

53  
The Pope  
fixes his re-  
sidence at  
Avignon.

Bertrand having complied with the terms proposed by the king, ascended the papal throne by the name of *Charles V.* but narrowly escaped being killed on his return from the cathedral of Lyons, by the falling of a wall which had been overloaded by the number of people who came to see the procession; by which accident the duke of Brittany was killed, and the king and count of Valois considerably bruised. The new pope fixed his residence at Avignon, where he punctually complied with all the conditions of the treaty, except that of condemning the conduct of Boniface, which he absolutely refused to do; and, instead of doing so, vindicated it with much solemnity, after having inquired into the matter, or pretended to do so. The other condition, which Philip had at first concealed, was discovered by the death of the emperor Albert of Austria; after which event he desired Clement to assist him in placing his brother Charles of Valois on the Imperial throne. But his holiness, apprehensive of the danger which might accrue to himself from being surrounded with the powerful relations of Philip, urged the diet to proceed instantly to an election; recommending to them Henry of Luxemburg as a proper person to fill the Imperial throne. In this scheme he succeeded so well, that the election was over before Philip could arrive at Avignon; and the only consolation the French monarch could obtain for his disappointment was the possession of the city of Lyons, which had hitherto maintained an independency under its archbishop; but was now persuaded to submit to the authority of Philip.

54  
Expedition  
of Philip  
against the  
earl of  
Flanders.

In the mean time Guy, earl of Flanders, being abandoned by his ally Edward king of England, was obliged to throw himself on the mercy of the French monarch, who had sent his brother, Charles of Valois, with a powerful army to invade his dominions. From the latter indeed he had obtained a promise, that if he could not, within a year, compose the differences subsisting between him and Philip, he should be at liberty to retire, and pursue what measures he pleased. But Philip, in order to gratify the resentment which his queen entertained against the captive prince, detained him, with two of his sons, in close confinement, while he himself entering Flanders in triumph, was everywhere received as sovereign of the country; and at his departure appointed John de Chatillon, a relation of the queen, to govern those newly acquired territories.

The new governor took care to repair the fortifications which had been suffered to decay by reason of the assiduous application of the Flemings to trade; but being of a very haughty and tyrannical disposition, and the poverty of the times not allowing his master to keep regular garrisons, an insurrection quickly took place. This would have been effectually quelled by the diligence of the magistrates, had not Chatillon unluckily entered Bruges, and publicly displayed two hogheads of ropes, which he threatened to employ in the execution of the inhabitants. On this they flew

to arms, and massacred 1500 French; Chatillon himself being obliged to escape their fury by swimming over the town ditch. The insurgents, now daily gathering strength, soon amounted to an army of 60,000 men, who laid siege to Courtray. Here they were rashly attacked in their trenches by the count d'Artois, who met with the reward of his temerity, being cut off with 20,000 of his troops. Philip determined on revenge; though the raising another army obliged him to debase the coin of the kingdom. Thus, however, he was enabled to enter Flanders with such a force as, would probably have subdued the whole country, had not Edward artfully communicated to the queen of France, as a secret, a feigned correspondence between the French nobility and the court of Rome; by which false intelligence the king was induced to abandon the enterprise without performing any thing worthy of the armament he had fitted out. The war was continued for some time longer; but the attempts of Philip were constantly defeated by the steady valour of the Flemings; and the only recompense Philip obtained for all his trouble and expence was the city of Courtray.

53  
The con-  
quest of  
the coun-  
try pre-  
vented by  
Edward III.  
of England.

The other remarkable transactions of this reign were the expulsion and confiscation of the estates of the Templars, who at that time enjoyed immense possessions in France. The confiscations took place without any form of trial, and upwards of 50 of them were put to death in a cruel manner. The grand master, with three of his principal officers, were burnt by a slow fire in the presence of the king himself. The whole body of these unfortunate knights had been accused of the most gross and abominable sensualities. The particulars were revealed, or pretended to be so, by two criminals who received their pardon for the discoveries they made; and these discoveries were confirmed by the confession of the Templars themselves. But this confession was afterwards retracted, as being extorted from them by the fear of absolute destruction; and those who suffered, maintained their purity to the last: and on the whole, it was believed that Philip consulted his avarice rather than his justice by this cruel execution. The latter part of his life was embittered by domestic misfortunes. His three daughters-in-law, Margaret daughter of the duke, and Jean and Blanch of the count, of Burgundy, who had married his three sons, Louis, Philip, and Charles, were accused of infidelity to their husbands. After a severe examination, Margaret and Blanch were condemned to perpetual imprisonment; in which situation Margaret was afterwards strangled by order of her husband Louis. Their paramours, Philip and Walter de Launay, two brothers, were flayed alive, and afterwards hung upon a gibbet, with an usher of the chamber, who had been their confidant. The uneasiness of mind which Philip suffered on this account is supposed to have impaired his health, and he died of a consumption in the year 1395, the 47th of his age, and 30th of his reign.

54  
Expulsion  
of the  
knights  
Templars.

On the accession of Louis, surnamed the *Boisterous*, on account of his violent temper, he found his treasury so much exhausted, that he was obliged to delay for some time the ceremony of his coronation with his new queen Clemence, daughter of the king of Hungary. Finding the kingdom otherwise in a very distracted state, he applied himself very diligently to appease the discontents of his subjects, and conciliate their affection by

55  
Reign of  
Louis the  
Boisterous.

France. by every means in his power. In this he was assisted by his uncle Charles of Valois, on whom he at length entirely devolved the government of the kingdom. This regent, however, behaved with such cruelty as is supposed to have proved fatal to the king himself; for having put to death a nobleman named *Enguerrand de Poitiers de Marigni*, who enjoyed the confidence of the late king, this cruelty was so much resented, that his friends were thought to have administered poison to the king; who expired suddenly after drinking a glass of cold water, in the 26th year of his age, and second of his reign. Immediately after his death, Charles prepared to dispute the sovereignty with the brothers of the late sovereign. Philip count of Poitou, the eldest brother, was at that time at Rome assisting in the election of a new pope; and it was not until a month after the death of his brother that he was able to put an end to the intrigues which took place on that occasion: but on his arrival in France, the throne was assigned to him by the unanimous voice of the people. His prospects, however, were for a short time clouded by the queen dowager Clemence being delivered of a son, who has been enrolled among the kings of France under the name of *John I.* His death in three weeks secured the throne to Philip; who, on account of the tallness of his stature, was surnamed the *Long*. His conduct proved superior to that of his predecessor, who had unsuccessfully attempted to subdue the Flemings, and had even suffered himself to be duped by their count; but Philip, by his vigorous behaviour, so reduced them, that they compelled their sovereign to consent to a peace upon honourable terms. He summoned Edward II. of England to do homage for his possessions in France; but that monarch, finding himself involved in difficulties, which rendered the visit inconvenient, sent excuses to Philip, which he was pleased to accept. As the French monarch had formerly taken the cross during the lifetime of his father, he now proposed to put his vow in execution; but was dissuaded from this by the pope himself, at whose instance he sent an army into Italy to put an end to the contending factions of the Guelphs and Gibbelines, who for so long time filled the country with blood and slaughter. The event proved unfortunate; and the disgrace was rendered more mortifying by a contagious distemper, which swept off many thousands of French subjects. This was supposed by the superstitious people of those times to be occasioned by the Jews, who had conspired with the Saracens to poison the springs; and that the execution of the project was committed to some lepers who lived by themselves in hospitals richly endowed. On this a persecution was instantly commenced against these unfortunate men, and great numbers of them were burnt alive; while the Jews in general were abandoned to the rage of the populace, who insulted their persons, and plundered their houses without remorse.

56  
Reign of  
Philip the  
Long.

57  
Unfortu-  
nate expe-  
dition into  
Italy.

The remaining part of the reign of Philip was spent in attempting to regulate the internal concerns of his kingdom. A design had been formed by his predecessors of establishing a certain standard for the coin, weights, and measures, throughout France: and this was adopted by Philip; who, in order to carry it more effectually into execution, purchased from the counts of Valois, Clermont, and Bourbon, their right of

coinage within their own dominions. But notwithstanding all his endeavours for this purpose, he never could bring the scheme to bear: nor indeed could he in any degree conciliate the affection of his subjects. He died of a fever and dysentery in the year 1322, the 28th year of his age, and 6th of his reign.

By the death of Philip, the crown of France devolved on his brother Charles IV. who had obtained the surname of *Fair*. After settling some disputes with the duke of Burgundy, his next step was to dissolve his marriage with Blanch, who still continued in prison, and to espouse Mary the daughter of Henry emperor of Germany. This marriage was contracted with a view to the Imperial crown itself, which had been so long separated from that of France; and in 1325 an opportunity offered for Charles to gratify his ambition. At that time the Imperial dignity was disputed between Louis of Bavaria and Frederic of Austria; the latter of whom had been taken prisoner in a battle with Louis. But Pope John, who entertained an implacable hatred against Louis, fulminated the sentence of excommunication against him, intrusting the execution of it to Leopold the brother of Ferdinand. The king of France was induced to embark in the same cause, by a promise of the spoils of Bavaria; while Frederic himself consented to relinquish his pretensions to the empire which he had so unsuccessfully maintained. Louis, however, by instantly releasing his prisoner, and dismissing him in an honourable manner, engaged his friendship, and disarmed his most formidable antagonist. But the pope was not to be so disappointed. A considerable sum of money induced Leopold to persevere in his hostilities, while it was determined that a new council of electors should be held in order to transfer the Imperial crown to Charles. In pursuit of this visionary scheme, the king of France set out for the frontiers of Germany with a splendid army; but soon found that there was no possibility of accomplishing his wishes. Leopold alone, from motives of interest, remained his friend; the rest shewed the greatest indifference; and even his brother-in-law the king of Bohemia absented himself from the diet; while in a short time the death of the queen put an end to all connexions with that crown.

On the decease of Mary, Charles espoused Joanna daughter to the count of Evreux: and in order to avert the calamities to be feared from an infant succession, he entered into an alliance with Robert king of Scotland; by which it was provided, that should either of the sovereigns die without an heir apparent, the states of the kingdom should fill the vacant throne, and the survivor of the two kings should with his whole force support the legality of the nomination against any other competitor; though even this proved insufficient to avert the danger which now threatened the kingdom, as shall be explained in the sequel.

Charles died in the year 1328, in the 34th year of his age, leaving his queen pregnant; and as the succession depended on the fruit of the queen's pregnancy, a regent in the mean time was necessary; and two candidates instantly appeared for this important post, urging at the same time their right to the crown as well as to the regency. These were, Philip de Valois, cousin-german to the deceased king; the other, Edward III. king of England, who aspired to the throne

France.  
58  
Reign of  
Charles the  
Fair.

59  
Candidates  
for the re-  
gency and  
kingdom on  
the death  
of Charles.

France. in right of his mother, and the nephew of Charles the Fair. His pretensions, however, were easily set aside, and Philip was confirmed in the regency: from which he soon after stepped into the throne, on the queen being delivered of a daughter; from which circumstance he acquired the surname of *Fortunate*. But though the pretensions of Edward, both to the regency and crown, were unanimously rejected by the people, it was still impossible for Philip to think of the claims of such a formidable rival without uneasiness. He therefore summoned the English monarch to do homage for his possessions in France; and, upon his not answering his summons, forfeited them, and seized his revenues. This at last induced Edward to cross the sea and pay his homage; which Philip consented to receive in any form, upon condition of a proper explanation being afterwards given: but as this was studiously delayed after the return of the king of England, the province of Guienne was again seized by the French monarch. Edward, unwilling to lose his continental dominions, or involve himself in a war for the sake of a mere ceremony, sent over a formal deed, by which he acknowledged that he owed liege homage to France. Thus the flame was smothered for the present; and would perhaps have been entirely extinguished, had it not been for the intrigues of Robert of Artois, brother-in-law to the king of France himself, who had been expelled his country, and had taken refuge in England. By him he was persuaded to renew his pretensions to the crown of France, which of necessity produced a war.

60  
Disputes  
with Ed-  
ward III.  
of Eng-  
land.

For some time, indeed, neither party made any open declaration of hostility; but as both monarchs were possessed of great prudence and sagacity, they soon penetrated each other's designs. Philip, under pretence of taking the cross, began to make prodigious armaments, strengthening himself at the same time by alliances on every side; while Edward, determining to renew his claim to the crown of France, projected the conquest of Scotland. This, however, he could not accomplish; and in the mean time Philip, in order to favour the Scots, with whom he was in alliance, suffered his subjects to make irruptions into Guienne.

61  
Edward's  
first expe-  
dition.

In 1337, the war broke out openly. Philip having detached a squadron of his fleet against the Infidels, employed the rest, consisting chiefly of Genoese vessels, against the English. As in this war it was of great importance which side was taken by the Flemings, these people were courted by both parties. Louis count of Flanders declared for Philip, but his subjects were more inclined to King Edward. James Arteville a brewer, the most able and artful man in the country, governed them at that time as much as if he had been their prince; and the advantages arising from the English commerce determining him in favour of Edward, that prince, at his request, embarked for Sluys with a numerous army. Here he arrived in 1338; and on his first landing, it was resolved that the German princes in alliance with him should act against France. But for this a pretence was wanting. The vassals of the empire could not act by Edward's orders, or even as his allies, without directions from the emperor, and he was in league with France. This difficulty, however was soon overcome: the French had made themselves masters of Cambray, and the emperor resolved

France. that it should be retaken. With this view he created Edward *Vicar General of the Empire*; an empty title, but which seemed to give him a right of commanding the services of the princes of Germany. The Flemings, who were vassals of France, likewise pretended scruples at invading the territories of their liege lord. To quiet these, Edward, by the advice of Arteville, assumed the title of *King of France*; and by virtue of this right challenged their assistance for dethroning Philip de Valois, the usurper of his kingdom. This step, which he feared would beget endless animosities and jealousies, he did not take without hesitation; and, according to Mr Hume, from this time we may date the commencement of that great animosity which the English have always born to the French.

Edward's first attempt was upon the city of Cambay, to which he laid siege; but in a short time he was prevailed upon by Robert d'Artois to raise the siege and march into Picardy. This country he entered with an army of near 50,000 men, composed mostly of foreigners. Philip came within sight of him with an army of near 100,000, composed chiefly of native subjects; and it was daily expected that a battle would ensue. But the English monarch was averse to engage against so great a superiority: and Philip thought it sufficient if he eluded the attacks of his enemy, without running any unnecessary hazard. The two armies faced each other for several days; mutual defiance was sent; and Edward at last retired into Flanders, and dispersed his army.

Such was the fruitless, and almost ridiculous conclusion of Edward's first expedition, which had plunged him into the greatest difficulties. He had contracted near 300,000*l.* of debt; he had anticipated all his revenue; he had pawned every thing of value which belonged either to himself or his queen; nay, he was obliged in some measure even to pawn himself to his creditors, by desiring their permission to go over to England in order to procure supply, and by promising on his word of honour to return in person if he did not remit their money. On his arrival in England, however, he procured a large supply, sufficient to enable him to make all the necessary preparations for a new invasion; and so certain were the English that France would now be conquered, that the parliament, before Edward's departure, protested that they owed him no obedience as king of France, but that the two kingdoms must remain for ever distinct and independent.

The king of England set out on his second expedi- His second  
tion with a fleet of 240 vessels. Philip had prepared expedition.  
a fleet of 400 vessels, manned with 40,000 men; which he stationed off Sluys, in order to intercept him in his passage. The two fleets met on the 13th of June 1340; but the English, either by the superior abilities of Edward, or the greater dexterity of his seamen, The French  
gained the wind of the enemy, and had the sun in- entirely de-  
feated at  
their backs; and with these advantages began the ac- sea.  
tion. The battle was fierce and bloody: The English  
re-archers, whose force and address were now much ce-  
lebrated, galled the French on their approach; and  
when the ships grappled together, the example of the  
king and the nobility who were with him so animated  
the seamen and soldiers, that they maintained every-  
where a superiority over the enemy. The Flemings  
observing the battle, hurried out of their ports, and  
brought

62

63

France. brought a reinforcement to the English; which coming unexpectedly, had a greater effect than in proportion to its power and numbers. Two hundred and thirty ships were taken: and 30,000 Frenchmen were killed, with two of their admirals: the loss of the English was inconsiderable, compared to the greatness and importance of the victory. None of Philip's courtiers, it is said, dared to inform him of the event; till his fool or jester gave him a hint, by which he discovered the loss he had sustained.

After this great victory, Edward landed his forces and laid siege to Tournay. Philip marched to its relief with a very numerous army: but acted with so much caution, that Edward found himself in a manner blocked up in his camp: and the countess dowager of Hainault, sister to Philip, mother-in-law to Edward, and sister-in-law to Robert d'Artois, coming out of a convent, to which she had retired, interposed with so much spirit and address, that she engaged all parties to agree to a truce for a year, and might perhaps have brought about a peace if she had survived.

64 Edward in-  
vited into  
France a  
third time.

In 1341, however, Edward's ambition was once more excited by the invitation of the count de Mountfort, who had possessed himself of the province of Brittany, and applied to Edward to second his claims. An offer of this kind entirely coincided with Edward's most sanguine desires. He was happy in the promised assistance of Mountfort, an active and valiant prince, closely united to him by interest, and thus opening to him an entrance into the heart of France. These flattering prospects, however, were for a while damped by the imprisonment of Mountfort; whose aims being discovered, he was besieged in the city of Nantz and taken. But Jane of Flanders his wife soon made up for the loss of her husband. This lady courageously undertook to support the falling fortunes of her family. She assembled the inhabitants of Rennes, where she then resided; and carrying her infant son in her arms, deplored her misfortunes, and attempted to inspire the citizens with an affection for her cause. The inhabitants of Nantz instantly espoused her interests, and all the other fortresses of Brittany embraced the same resolution. The king of England was apprised of her efforts; and was entreated to send her succours with all possible expedition to the town of Hennebone, in which place she resolved to sustain the attacks of the enemy. Charles de Blois, Philip's general, anxious to make himself master of so important a fortress as Hennebone, and still more to take the countess a prisoner, sat down before the place with a large army, and conducted the siege with indefatigable industry. The defence was no less vigorous: several sallies were made by the garrison, in which the countess herself was still the most active, and led on the assault. Observing one day that their whole army had quitted the camp to join in a general storm, she sallied out by a postern at the head of 300 horse, set fire to the enemies tents and baggage, put their sutlers and servants to the sword, and occasioned such an alarm, that the French desisted from the assault, in order to cut off her communication with the town. Thus intercepted, she retired to Auray, where she continued five or six days; then returning at the head of 500 horse, she fought her way through one quarter of the French camp, and returned to her faithful citizens in triumph. But the besiegers had at

length made several breaches in the walls; and it was apprehended that a general assault, which was hourly expected, would be fatal. A capitulation was therefore proposed, and a conference was already begun, when the countess, who had mounted on a high tower, and was looking towards the sea with great impatience, descried some ships at a distance. She immediately exclaimed that succours were arrived, and forbade any further capitulation. She was not disappointed in her wishes; the fleet she discerned carried a body of English gentlemen, with 6000 archers, whom Edward had prepared for the relief of Hennebone, but who had been long detained by contrary winds. They entered the harbour under the conduct of Sir Walter Manny, one of the most valiant commanders of his time. This relief served to keep up the declining spirits of the Bretons until the time appointed by the late truce with Edward was expired, on which he was at liberty to renew the war in greater form.

The succours under Sir Walter Manny were quickly followed by a more considerable reinforcement commanded by Robert of Artois, who made himself master of the city of Vannes soon after his arrival: but the French soon recovered the city, and Robert was compelled to relinquish his prize after receiving a mortal wound. Edward himself, eager to revenge the death of his ally, soon landed at Morbion near Vannes with an army of 12,000 men. With this small number he undertook at once the siege of Vannes, Nantz, and Rennes: but by dividing his forces, he failed in every enterprise, and gave an opportunity to John duke of Normandy, the king of France's eldest son, to invest him in his camp. In this situation his provisions soon began to fail; and Edward, notwithstanding all his valour, would have been obliged to surrender, had he not, by a train of artful negotiations, induced Philip to relinquish the advantage he had obtained, and consent to a truce of three years. This was accomplished by the mediation of the court of Rome; and the French monarch was soon made sensible of the partiality of that court, and the imprudence of the step he himself had taken. Edward soon found a pretence to renew the war, from the execution of some nobles of Brittany, who, he said, were partisans of Mountfort, and chose to look upon their punishment as an infraction of the treaty.

Philip now endeavoured to secure himself against the power of his rival by alliances, and by purchasing the city of Montpellier from the king of Majorca: but in the mean time, the English, under the command of the earl of Derby, had invaded Guienne, twice defeated the French army commanded by the Count de Lisle, and made themselves masters of a great number of towns. Philip, by reason of the exhausted state of his treasury, was for some time incapable of making any opposition. To recruit his finances, he was obliged to lay a duty on salt; which gave such offence to his subjects as had almost excited a rebellion. When these discontents were assuaged, however, he soon raised an army of 100,000 men, whose courage was further raised by the presence of the dukes of Normandy and Burgundy. The English general was therefore compelled to stand upon the defensive. One fortress after another was surrendered to the French; till at length nothing appeared but a total extinction of the power

France. of England upon the continent. In this situation, Edward resolved to bring relief in person to his distressed subjects and allies; and accordingly embarked in 1346 at Southampton, on board a fleet of near 1000 sail, of all dimensions. He carried with him, besides all the chief nobility of England, his eldest son the prince of Wales (afterwards surnamed the *Black Prince*), a youth of about 15 years old, and already remarkable both for understanding and valour above his age. His army consisted of 4000 men at arms, 10,000 archers, 10,000 Welsh infantry, and 6000 Irish; all which he landed safely at La Hogue, a port in Normandy, which country he determined to make the seat of the war.

65  
He lands with an army in Normandy.

The intelligence of Edward's landing, and the devastation caused by his troops, who dispersed themselves over the whole face of the country, soon spread universal consternation through the French court. The rich city of Caen was taken and plundered by the English without mercy; the villages and towns, even up to Paris, shared the same fate; and the French had no other resource but by breaking down their bridges, to attempt putting a stop to the invader's career. In the mean time, Philip was not idle in making preparations to repels the enemy. He had stationed one of his generals, Godemar de Faye, with an army on the opposite side of the river Somme, over which Edward was to pass; while he himself, at the head of 120,000 fighting men, advanced to give the English battle. Edward, thus unexpectedly exposed to the danger of being enclosed and starved in an enemy's country, published a reward to any that should bring him intelligence of a passage over the river Somme. This was discovered by a peasant of the country, named Gobin Agace: and Edward hast just time to get his whole army over the river, when Philip appeared in his rear. Of the battle that ensued, in which the French were overthrown with great slaughter, an account is given under the article CRESSY.

66  
Calais taken.

Edward next laid siege to Calais, which was then defended by John de Vienne, an experienced commander, and supplied with every thing necessary for defence. It was at length taken, after a twelvemonth's siege, the defendants having been reduced to the last extremity by famine and fatigue; for the consequences of which, see the article CALAIS.

From the very beginning of this unfortunate war, Philip had invariably showed himself desirous of peace, and the victory of Cressy rendered him still more so. Edward also notwithstanding his successes, was unable to support the expences of the war any longer. The mediation of the court of Rome was therefore readily accepted, and a truce for three years concluded. At the same time, Philip met with some recompense for the losses he had sustained, by the acquisition of Dauphiny, which has ever since given the title of *Dauphin* to the eldest son of the king of France. It was obtained by the resignation of Hubert prince of Dauphiny; who, being disappointed in his hopes of marrying Joan, daughter of the duke of Bourbon, gave up his territories to Charles the grandson of Philip, who had married that lady; himself retiring into a convent. Soon after this event, the king himself, who had been some time a widower, was married to Blanch, the daughter of Philip count of Evreux, and Jane queen of Navarre; and his

son John to the countess of Boulogne. But the happiness occasioned by these marriages was soon interrupted by the death of the king; who expired in the year 1350, the 57th of his age, and 23d of his reign.

France.  
67  
Death of King Philip.

On the death of Philip his eldest son John took possession of the kingdom; but scarcely was he seated on the throne, when he disgusted his nobility by an unseasonable act of severity. Robert de Brienne, count of Eu and Guines, had been taken prisoner by the king of England at Caen; and under pretence of negotiating his ransom, had passed several times between France and England; but being accused of a treasonable correspondence with Edward, he was by order of his sovereign suddenly arrested, condemned, and beheaded, without any form of trial. At his death, it is said that he confessed his treasonable practices; but that has not been authenticated by any historian of credit. Having been constable of France, the sword, the badge of his office, was delivered to Charles de la Carda: but his fate was equally unfortunate with that of his predecessor, being soon after assassinated by Charles king of Navarre, surnamed *The Wicked*. This prince, celebrated for his personal qualifications, but detested for his crimes, was the son-in-law of John himself. He had demanded the duchy of Angouleme of the king: but as the latter had thought proper to bestow it upon Carda, he had taken the effectual method of revenging himself, by assassinating his rival. John did not fail to show a proper resentment; but such was the weakness of his government, that the king of Navarre set him at defiance, and would not even condescend to the ceremony of asking pardon until John had sent him his second son as an hostage for his personal security. To these offences the king of Navarre added another still more atrocious, viz. that of aspiring to the crown of France itself; to which he pretended a right derived from his mother, being grandson by the female side to Louis the Boisterous. But his more immediate demands were the countries of Champagne and Brie. To obviate all difficulties on this head, however, John bestowed the duchy of Normandy on his eldest son Charles; and commanded him to seize the estates of the king of Navarre. On this the latter soon made his appearance at Paris; but John found himself obliged to appease his murmurs at the expence of no less than 100,000 crowns.

68  
Infamous conduct of the king of Navarre.

All this time the truce with England had been very ill observed on both sides; the French had possessed themselves of the port of St Jean d'Angeli; and the English had surpris'd the town of Guines. The rival houses of Mountfort and Blois still continued their animosities; while Edward continued to threaten war. The king of Navarre went on with his intrigues; and even the dauphin was drawn into a confederacy against his father. John, however, being informed of their machinations, found means to defeat them effectually. The dauphin was reclaimed by pointing out to him the impropriety of his conduct, and the disadvantage which must unavoidably accrue to himself from the connexions which he had formed. The king of Navarre was invited, with his principal adherents, to an entertainment, where they were unexpectedly arrested: the former being sent prisoner to Chateau and Gaillard, and several of the most obnoxious of the latter put to death. The rest of the conspirators, instead

69  
He is taken and confined.

France. instead of being dismayed by this check, immediately showed themselves in open rebellion; and finding themselves unable, without farther assistance, to gain their point, they without delay invited over Edward from England.

<sup>70</sup> France again invaded by Edward. That warlike and enterprising monarch had never lost sight of the object he had originally embraced; and on the expiration of the truce had sent his son, the prince of Wales, from the colour of his armour furnished the *Black Prince*, with a fleet towards the coast of France. Young Edward had with this fleet entered the mouth of the river Garonne, burnt the towns and villages of Languedoc, and retired with the plunder into the country of Guienne. Edward himself, who had likewise passed over to the continent, wasted the country as far as St Omer; but the French king, notwithstanding all these provocations, determined to avoid a battle, and therefore prohibited his general, the constable of Bourbon, from coming to an engagement, though his army was much superior to that of the prince of Wales. With the flower of his troops, however, he pursued Edward from St Omer to Hesdin, where he desired him to a pitched battle; but the latter, without minding his bravadoes, continued his march to Calais, from whence he embarked for England. After his departure, John called an assembly of the states at Paris, where he explained the distressed situation of his finances, and showed so fully the necessity of assisting him in the defence of the kingdom, that they consented to maintain an army of 30,000 men during the war. To supply the other exigencies of government, they revived the duty on salt, and added a variety of other imposts; but at the same time appointed a committee of their own number to take care that the money was solely appropriated to the public service.

The satisfaction which John received from these grants, and the suppression of some disturbances which happened about this time, was soon overcast by the news that the prince of Wales had marched with an army of 12,000 men from Bourdeaux; and, after ravaging the Agenois, Quercy, and the Limousin, had entered the province of Berry. The young warrior had penetrated into the heart of France with this trifling body of forces, in hopes of joining the duke of Lancaster in Guienne. But he soon found that his scheme was impracticable: the country before him was too well guarded to permit his advancing further; and all the bridges behind were broken down, which effectually barred a retreat. In this embarrassing situation, his perplexity was increased, by being informed, that the king of France was actually marching at the head of 60,000 men to intercept him. He at first thought of retreating: but soon finding it impossible, he determined calmly to wait the approach of the enemy; and, notwithstanding the disparity of forces, to commit all to the hazard of a battle.

<sup>71</sup> Battle of Poitiers. It was at a place called *Maupertuis*, near Poitiers, that both armies came in sight of each other. The French king might very easily have starved the English into any terms he thought proper to impose; but such was the impatient valour of the French nobility, and such their certainty of success, that it might have been equally fatal to attempt repressing their ardour to engage. In the mean time, while both armies were

drawn out, and expecting the signal to begin, they were stopped by the appearance of the cardinal of Perigord, who attempted to be a mediator between them. However, John, who made himself sure of victory, would listen to no other terms than the restitution of Calais; with which the Black Prince refusing to comply, the onset was deferred till the next morning, for which both sides waited in anxious suspense.

During this interval, the young prince strengthened his post by new intrenchments; and placed 300 men in ambush, with as many archers, who were commanded to attack the enemy in flank during the heat of the engagement. Having taken these precautions, he ranged his army in three divisions; the van was commanded by the earl of Warwick, the rear by the earls of Salisbury and Suffolk, and the main body by himself. In like manner, the king of France arranged his forces in three divisions; the first commanded by the duke of Orleans; the second by the dauphin, attended by his younger brothers; while he himself led up the main body, seconded by his youngest and favourite son, then about 14 years of age. As the English were to be attacked only by marching up a long narrow lane, the French suffered greatly from their archers, who were posted on each side behind the hedges. Nor were they in a better situation upon emerging from this danger, being met by the Black Prince himself, at the head of a chosen body of troops, who made a furious onset upon their forces, already in great disorder. A dreadful overthrow ensued: those who were <sup>72</sup> as yet in the lane recoiled upon their own forces; <sup>French defeated.</sup> while the English troops who had been placed in ambush, took that opportunity to increase the confusion, and confirm the victory. The dauphin and the duke of Orleans were among the first that fled. The king of France himself made the utmost efforts to retrieve by his valour what his rashness had forfeited; but his single courage was unable to stop that consternation which had now become general through his army; and his cavalry soon flying, he found himself exposed to the enemy's fury. At length, spent with fatigue, and despairing of success, he thought of yielding himself a prisoner; and frequently cried out, that he was ready to deliver himself to his cousin the prince of Wales. The honour of taking him, however, was re- <sup>73</sup> King John taken prisoner. served for a much more ignoble hand; he was seized by Dennis de Morbec, a knight of Arras, who had been obliged to fly his country for murder.

In April following, the prince conducted his royal prisoner through London, attended by an infinite concourse of people of all ranks and stations. His modesty upon this occasion was very remarkable: the king of France was clad in royal apparel, and mounted on a white steed distinguished by its size and beauty; while the prince himself rode by his side upon a mean little horse, and in very plain attire.

This dreadful defeat, which happened in the year <sup>74</sup> 1356, almost entirely ruined the French affairs; and the miseries which ensued from this cause were greatly augmented by internal commotions. The dauphin, who had now assumed the government, was altogether unable to govern a turbulent and seditious people at such a crisis. An assembly of the states, which he called, took the opportunity to limit the power of the prince, impeach the former ministers, and demand the <sup>Miserable situation of France.</sup> liberty

France. liberty of the king of Navarre; the treasurer of the crown was murdered by one Marcel, a partizan of that worthless prince who had filled the city of Paris with confusion by his intrigues. The assassin whom Marcel employed was dragged, by order of the dauphin, from an altar where he had taken refuge, and instantly put to death. The bishop of Paris resented the indignity done to the church; and Marcel avenged the fate of his adherent, by murdering both the marshals who had seized him in the presence of the dauphin; and so near him, that his clothes were stained with their blood. The prince indignantly asked him, if he was to be involved in the same destruction? when Marcel affected to provide for his safety by putting upon him a blue hood, the badge of the adherents of Navarre. The public disorders were now also augmented by the escape of the king of Navarre from confinement; and though the dauphin was even assured that he had administered a dose of poison to him, he was obliged still to pay him some appearance of regard. A scheme was even formed by the chiefs of the sedition to change the government, to vest all the power in the commons, and leave the king no more than an empty title; but though this was favourably received by the city of Paris, it was entirely rejected by the other cities of the kingdom. The dauphin was likewise recognized as regent by the states general, and the inhabitants of Picardy and Champagne took up arms in his cause.

75  
The king of Navarre escapes from prison.

76  
Insurrections and tumults of the peasants.

77  
Peace between the dauphin and king of Navarre.

In this disastrous state of affairs, the miseries of the people were heightened by a new and unexpected evil. The peasants, who had been all along oppressed by the nobles, were now treated in such a manner, that they rose in great numbers to revenge themselves; the castles of the nobility were rased to the ground, their wives and daughters ravished, and themselves put to the most cruel torments. At last they were obliged to arm in their own defence. The duke of Orleans cut off 10,000 of them in the neighbourhood of Paris; 12,000 were massacred by the king of Navarre; 9000, who had laid siege to the town of Meaux, where the dauphiness and three other ladies of the first rank resided, were routed and pursued with dreadful slaughter by an officer in the service of Edward. Amidst these confusions, Marcel, the seditious leader already mentioned, perished in a tumult of his own raising; and the most virtuous and prudent people of the nation supported the pretensions of the dauphin. His most dangerous enemy was the king of Navarre, who had allured to his standard numbers of those Norman and English adventurers who had followed Edward into France, and there been left to seek their fortunes; where they associated themselves under the name of the *Companions*. By such a formidable competitor the dauphin was reduced almost to the last extremity, when his hopes were revived by an unexpected proposal from his rival, of peace upon equitable and moderate terms. Historians in general have ascribed this to the natural levity of the king of Navarre; but some have been of opinion that he acted from prudential motives, and that he justly supposed it would be more easy to deal with the dauphin who was his own kinsman, and humbled by so many misfortunes, than with a haughty and imperious conqueror like Edward.

On the expiration of the truce in 1359, Edward again set sail for France, and anchored before Calais

with a fleet of 1100 sail, assumed the title of *king of France*, and augmented his army to 100,000 men. The dauphin, finding himself unable to withstand so great a power, was obliged to act on the defensive; choosing the city of Paris for his station, and allowing the English to ravage all the open country. Thus they were allowed to penetrate through Picardy into Champagne; but the city of Rheims, where Edward designed to have been crowned king of France, baffled their utmost efforts. From Champagne, therefore, which was already laid waste, the English monarch marched into Burgundy; pillaging Tonnere, Gaillon, and Avalon. Burgundy was saved by the payment of 100,000 merks, and a like sum was paid for Nivernois. At last, after a long and destructive march, Edward arrived at the gates of Paris; but the prudence of the dauphin and citizens of that metropolis had rendered it impregnable to the attacks of famine as well as the assaults of an army. Thus the war went on till the year 1360, when the king of England was inclined to peace, as is said, by a dreadful tempest, to which his army was exposed while encamped in the fields round Chartres. His conduct, however, may more reasonably be derived from other motives. Notwithstanding all the victories he had gained, the French nation showed not the least favour to his claim of succession; the king of Navarre was a dangerous rival, and the caution of the dauphin in avoiding an engagement deprived him of the advantages he might expect from his valour and military skill. Thus conferences for a peace were opened at Bretigny in the Chartraise; and it was at last concluded on the following conditions, viz. That King John should pay for his ransom, at different periods, three millions of crowns of gold (about a million and a half of our money): Edward should for ever renounce all claim to the kingdom of France; and should remain possessed of the territories of Poitou, Xaintonge, l'Aginois, Perigord, the Limousin, Quercy, Rouvergne, l'Angoumois, and other districts in that quarter, together with Calais, Guines, Montreuil, and the county of Ponthieu on the other side of France. Some other stipulations were made in favour of the allies of England, as a security for the execution of these conditions.

Upon John's return to his dominions, he found himself very ill able to ratify those terms of peace that had been just concluded. He was without finances, at the head of an exhausted state; his soldiers without discipline, and his peasants without subordination. These had risen in great numbers; and one of the chiefs of the banditti assumed the title of *The Friend of God and the terror of Man*. A citizen of Sens, named *John Gouge*, also got himself, by means of his robberies, to be acknowledged king; and he soon caused as many calamities by his devastations, as the real king had brought on by his misfortunes. Such was the state of that wretched kingdom upon the return of its captive monarch: and yet such was his absurdity, that he immediately prepared for a croisade into the Holy Land, before he was well replaced on the throne. Had his exhausted subjects been able to equip him for this chimerical project, it is probable he would have gone through with it; but their miseries were such, that they were even too poor to pay his ransom. This was a breach of treaty that John would not submit to; and

France.  
78  
A new invasion of France by Edward.

79  
He concludes peace.

80  
John unable to pay his ransom, returns to England.

France. and he was heard to express himself in a very noble manner upon the occasion: "Though (says he) good faith should be banished from the rest of the earth, yet she ought still to retain her habitation in the breast of kings." In consequence of this declaration, he actually returned to England once more; and yielded himself a prisoner, since he could not be honourably free. It is said by some, that his passion for the counts of Salisbury was the real cause of his journey: but we want at this time the foundations for such an injurious report. He was lodged in the Savoy, the palace where he had resided during his captivity; and soon after he closed a long and unfortunate reign, by his death, which happened in the year 1384, about the 56th year of his age.

81  
Dies, and is  
succeeded by  
Charles  
the Wife.

Charles, surnamed *the Wise*, succeeded his father on the throne of France; and this monarch, merely by the force of a finely conducted policy, and even though suffering some defeats, restored his country once more to tranquillity and power. He quelled and dissipated a set of banditti, who had associated themselves under the name of *Companions*, and who had long been a terror to the peaceable inhabitants. He had them enrolled into a body, and led them into the kingdom of Castile against Peter, surnamed *the Cruel*, whom his subjects had dethroned, and who, by means of an alliance with the English, endeavoured to get himself re-instated upon the throne. In consequence of these alliances, the English and French again came to an engagement; their armies on the one side commanded by the Black Prince; on the other, by Henry of Trantamarre, and Bertrand du Guesclin, one of the most consummate generals and accomplished characters of the age in which he lived. However, the usual good fortune of the English prince prevailed; the French lost above 20,000 men, while only four knights and 40 private men on the side of the English were slain.

82  
Bad success  
of the Eng-  
lish.

Nevertheless, these victories were attended with very few good effects. The English, by their frequent levies, had been quite exhausted, and were unable to continue an army in the field. Charles, on the other hand, cautiously forbore coming to any decisive engagement; but was contented to let his enemies waste their strength in attempts to plunder a fortified country. When they were retired, he then was sure to fall forth, and possess himself of such places as they were not strong enough to defend. He first fell upon Ponthieu; the citizens of Abbeville opened their gates to him; those of St Valois, Rue, and Crottoy, imitated the example; and the whole country was in a little time, reduced to total submission. The southern provinces were, in the same manner, invaded by his generals with equal success; while the Black Prince, destitute of supplies from England, and wasted by a cruel and consumptive disorder, was obliged to return to his native country, leaving his affairs in the south of France in a desperate condition.

In this exigence, the resentment of the king of England was excited to the utmost pitch; and he seemed resolved to take signal vengeance on his enemies of the continent. But the fortunate occasion was now elapsed; and all his succeeding designs were marked with ill success. The earl of Pembroke and his whole army were intercepted at sea, and taken prisoners by Henry king of Castile. Sir Robert Knolles, one of

his generals on the continent, at the head of 30,000 men, was defeated by Bertrand du Guesclin; while the duke of Lancaster, at the head of 25,000 men, had the mortification of seeing his troops diminished one half by flying parties, without ever coming to a battle.

France.

At last, the English affairs were totally ruined by the death of the Black Prince and King Edward. On receiving this news, the armies of Charles attacked the English on all sides. One, under the command of the duke of Burgundy, entered Artois; another entered Auvergne, under the command of the duke of Berry; that which acted in Guienne was commanded by the duke of Anjou; and the forces in Bretagne were under the constable Guesclin: the king himself had a powerful body of troops, that he might be able to repair any accident which should happen through the chance of war. The constable joined the duke of Burgundy, who found it difficult to oppose Sir Thomas Felton and the seneschal of Bourdeaux. Soon after his arrival, the constable attacked and defeated them, making both the commanders prisoners of war. This victory was so well pursued, that, at the close of the campaign 1377, Bayonne and Bourdeaux, with the districts about them, and the fortrefs of Calais with its dependencies, were all the places left to England on the continent.

Thus Charles established once more the house of Valois on the throne of France, but did not long live to enjoy his good fortune. He died in the year 1379, at the age of 44, of the consequences of poison formerly given him by the king of Navarre, as has already been mentioned. The immediate operation of this poison had been suspended by the skill of a physician sent by the emperor Charles IV. He opened an issue in his arm, the running of which preserved his life; but the physician declared, that whenever it should dry up, the consequence would be fatal. Not long before his death, Charles had commenced a process against the king of Navarre for this crime. Several of the associates of the latter suffered on this occasion, and the king himself was deprived of his possessions in Normandy, as well as his lordship of Montpellier, which had been given him in lieu of the counties of Champagne and Brie, and the duchy of Burgundy which he had claimed. He did not long survive the death of the French monarch whom he destroyed. His death was singular and very terrible; for having been afflicted with the leprosy, he had been obliged to make use of some bandages dipped in sulphur, and afterwards steeped in brandy. These took fire by the carelessness of a page, and the unfortunate prince was burnt to death.

83  
Death of  
Charles;

84  
and of the  
king of Na-  
varre.

85  
Reign of  
Charles VI.

Charles V. was succeeded by his son Charles VI. surnamed the *Well-beloved*, who at the time of his accession to the throne was only 12 years of age. The duke of Anjou, eldest brother to the late king, had been appointed guardian during the minority of the prince; but he being totally unfit for the office, and distinguished only for his rapacity and ambition, readily resigned his charge to the dukes of Burgundy and Bourbon, the former uncle to the king by his father's side, the latter by his mother's. None of these tutors, however, proved faithful to the trust reposed in them. The duke of Anjou seized the plate and treasures of the late

late

France. late king, in order to support his ambitious enterprises. At that time Joan, infamous for her profligacy, reigned in Naples. She had appointed one Charles Durazzo, who was her relation, to succeed her in the throne; but the inhuman wretch murdered his benefactress, who with her last breath revoked her grant of the kingdom to him, and bestowed it upon the duke of Anjou. His influence at the French court enabled him to waste the treasures of the kingdom in support of his pretensions; though he proved ultimately unsuccessful, his forces being constantly defeated, and his designs frustrated by the superior skill of his adversary. The duke of Burgundy, instead of instructing his pupil in the ways of virtue, indulged him in every kind of vicious pleasure, hoping thereby to gain his favour afterwards. The citizens of Paris, oppressed by taxes, broke out into tumults, and were quelled with difficulty; while the mal-administration of Philip the duke of Burgundy soon involved the nation in hostilities with the Flemings. Philip invaded their country at the head of an army of 80,000 men, along with whom was the young king, accompanied by the principal nobility of France. The first operations of war were favourable to the Flemings; but they were at length totally defeated on the banks of the river Lis, where their leader, with 25,000 of his followers, perished. This victory was followed by the submission of the whole country; but the satisfaction of the king at this event was disturbed by new seditions and revolts in the city of Paris, and other great towns of the kingdom. His return, however, at the head of a victorious army, soon reduced them to their duty, and several of the revolted cities were severely punished; at the same time that the death of the duke of Anjou having freed him from the immediate dependence on his tutors, he assumed the reins of government into his own hands in the year 1384.

86  
Flanders  
invaded.

The genius which Charles began to display in his early years, raised the hopes of the nation; but these were soon overcast, and greater misfortunes than ever were now about to ensue. The young king, whose marriage began to be a subject of attention to the council, refused to comply with the forms in use among his predecessors, and insisted upon seeing the person designed for his consort. An interview was accordingly contrived betwixt him and Isabella daughter to the duke of Bavaria; where he fell in love with that princess, and afterwards married her. His administration was for some time prudent and vigorous. He conciliated the affections of his people by restoring their privileges, punishing their oppressors, and relieving them from the taxes which had been imposed in his minority. He reduced the Flemings to submit to the authority of his uncle the duke of Burgundy; detached 15,000 archers and 1500 men at arms to assist the Scots in their incursions into England; and in 1385 fitted out a prodigious armament against England. A vast fleet was assembled in the harbour of Sluys, and a very numerous army in the neighbourhood. According to some writers, the armament consisted of 1200 ships, 20,000 foot differently armed, 20,000 cavalry, and 20,000 cross-bow-men. There was besides a vast wooden edifice or floating town, which was contrived for the protection of the soldiers when landed: but all these preparations were at last

87  
Marries  
Isabella  
daughter to  
the duke of  
Bavaria.

brought to nothing through the obstinacy of the duke of Berry; who, having been originally against this measure, carried on his part of the armament so slowly, that he did not arrive at Sluys till the middle of September, when the season was so far advanced, that no invasion was practicable. A storm that happened soon after, drove the greatest part of the fleet on shore, and beat the wooden edifice all to pieces; the remains of which the king bestowed on the duke of Burgundy, to whom he gave also the port of Sluys, which was then very commodious, and of the utmost importance.

France.

The destruction of the French fleet was only a prelude to calamities of a more extraordinary nature. The Sieur de Craon, a profligate nobleman, had been instructed by the court of France with a considerable sum of money for the support of the duke of Anjou, at the time he was reduced to distress by his Italian expedition. This money he had dissipated at Venice; but, by the credit of the duke of Orleans, the king's brother, he had obtained his pardon, and returned to court. Here he attempted to gratify his private resentment by the assassination of Oliver Clifton the constable, whom he suspected of having promoted his disgrace. This veteran hero was attacked, on his return from the hotel de St Pol, by a band of 20 ruffians, against whom he defended himself with wonderful intrepidity, when at last he fell, after receiving more than 50 wounds. Happily, however, he recovered notwithstanding his being mangled in this manner; while the assassin, to screen himself from vengeance, fled for protection to the duke of Brittany. The king demanded the assassin to be given up to him in chains; but the duke answered, that he knew nothing of him: to which the king giving no credit, marched with all his forces into his territories. When the army arrived

at Mans, the king was seized with a slow fever; but could not be prevailed upon to rest or take physic. On the 5th of August 1391, having marched all day in the heat of the sun, a miserable, ragged, wild-looking fellow darted from behind a tree, and laying hold of the bridle of his horse, cried out, "Stop! where are you going, king? You are betrayed!" and immediately withdrew again into the wood. The king passed on not a little disturbed; and soon after one of the pages, who rode behind and carried his lance, overcome with heat, fell asleep, and let it fall upon the helmet which was carried by the other. The king, hearing the noise, looked about; and perceiving the page lifting the lance, killed him immediately: then riding furiously with his sword drawn, he struck on every side of him, and at every person, till he broke his sword; upon which one of his gentlemen leaped up behind him and held his arm. He fell soon after, and lay as if he had been dead; so that being taken up and bound in a waggon, he was carried back to Mans, where he lay two days in a lethargy, after which he came a little to himself, and expressed great concern at the blood he had shed in his delirium. The people who had expressed the greatest concern for his distemper, were equally rejoiced at the news of his recovery; but unfortunately it was soon discovered, that he no longer possessed that strength of judgment and understanding for which he had formerly been remarkable. Hence a regency became indispensably necessary; and

88  
Is seized  
with lunatic  
fits.

France.  
89  
Disturbances about a regency.

and the competition for it brought to light the characters of the queen and duke of Orleans, which had not hitherto been displayed to public view. The former of these was a most beautiful and accomplished princess; but vindictive, violent, and intriguing: insensible to natural affection, but easily accessible to flattery, and ready to yield to every impulse of lawless passion. The duke of Orleans was equally remarkable for his personal accomplishments, and had married Valentina daughter of the duke of Milan; but his engagements with that princess did not prevent him from engaging in a number of licentious amours, and among the rest, as was supposed, with his sister-in-law Isabella. During the king's illness he openly aspired at the regency; but his pretensions were overruled by the states, the administration of affairs being for the present conferred on the duke of Burgundy. In a few months indeed the health and understanding of the king seemed to be sufficiently restored: but in the year 1393 it was again disturbed by an accident no less extraordinary than the former had been. An entertainment had been given in honour of the marriage of one of the queen's attendant's. At this six masques entered the apartment, disguised like satyrs, in linen clothes covered with rosin, and while warm stuck over with down. These were the king and five of his lords. The duchess of Berri paid attention to the king, though she did not know him, and engaged in conversation with him. In the mean time the duke of Orleans ignorant of the consequence, out of diversion ran a lighted torch against one of them. His whole dress was instantly in a flame, and the fire was from him communicated to all the rest. The masques, notwithstanding the dreadful situation they were in, called out, "Save the king; save the king!" on which the duchess of Berri, recollecting that it must be him with whom she had engaged in conversation, wrapped him in her cloak, and preserved him from further danger. Only one of the rest escaped by jumping into a cistern of water; the other four perished in the flames. The terror which the king underwent by this accident instantly occasioned a relapse; and he continued delirious at intervals as long as he lived. During this state of insanity he was untractable by every person except Valentina duchess of Orleans; who seemed to have as great an influence over him as her husband the duke had over the mind of the queen. So great was the power indeed which she had over the king in this deplorable state, that in those superstitious times it was supposed by many to be the effect of magic. Others, with more probability, ascribed it to her superior charms as a woman; and this idea instantly produced her a number of enemies among her own sex, the duchess of Burgundy particularly; and the quarrel between the two ladies, soon extended itself to their husbands. Amidst their dissensions, however, they did not entirely neglect the administration of public affairs; they strove to conciliate the affection of the parliament by preserving the rights of the commons inviolate; and they endeavoured to check an inordinate passion for gaming which began to appear about this time, and to substitute manly and martial exercises in its place.

During the intervals of his reason, Charles frequently assumed the government into his own hands: and as the war still continued with England, though in

a languid manner, the French monarch, in one of these lucid intervals, had an interview with Richard king of England, in order to put an end to hostilities, of which both were equally weary. Still, however, their claims were so difficult to be adjusted, that they could do no more than conclude a truce for 25 years; during which space it was hoped that a lasting peace might take place. Richard gave up Cherburg to Charles, and Brest to the duke of Brittany: a marriage was also concluded betwixt the king of England and Isabella the daughter of Charles, though the latter was then only seven years of age; but by reason of the tender age of the princess, this marriage was never consummated.

During this unfortunate reign, France was still farther weakened by the succours sent to the Hungarians against the Turks. On this fatal expedition upwards of 1000 of the bravest and most experienced knights were sent under the conduct of John count of Nevers, eldest son of the duke of Burgundy; the count of Eu, constable of France; John de Vienne, admiral of France; and the count of Marche, a prince of the blood royal; together with De Courcy, one of the best and most experienced captains in Christendom. The prudent counsels of this veteran, however, were not obeyed by the youthful warriors by whom he was accompanied. Attacking the enemy therefore rashly, and while heated with wine, they were all either killed or taken prisoners. Notwithstanding this disaster, however, assistance was sent in the year 1400 to Wenceslaus emperor of Germany; and the duke of Orleans, who commanded the army on this occasion, acquitted himself so well that he acquired the duchy of Luxembourg for himself, and left his ally satisfied: but while the friendship of France was thus courted by foreign powers, the kingdom itself was in the most miserable situation. The king's distemper seemed daily to gain ground; while the discordant interests of the contending parties kept the whole nation in a ferment. The most violent animosity took place betwixt the dukes of Orleans and Burgundy. The former, by means of his own interest with the queen, and the ascendancy his duchess had over the king, for some time got the better of his rival, and was made lieutenant general and governor of the kingdom; but having presumed on his power to levy new imposts on the people, and oppressing also the churchmen, whom in that superstitious age he ought by all means to have let alone, he was deprived of his authority, and obliged to yield to the duke of Burgundy. For some time, however, these powerful rivals were kept within some bounds by the mediation of the duke of Bourbon, who seems to have been the only grandee who maintained a pure and unspotted character; but by his death in 1404, the unhappy nation was left totally exposed to their relentless fury. In 1405, the queen and duke of Orleans again seized the administration; but were soon deprived of it by the unanimous voice of the people. During this period Charles and his children were neglected and abandoned to distress; but they were relieved by the duke of Burgundy on his obtaining the regency; and Isabella, with the duke of Orleans, was obliged to retire from Milan. A sudden return of the king's reason and understanding for a much longer time than usual, now deprived both parties of their power; and the administration

90  
An accident occasions a relapse in the king.

France.  
91  
Interview betwixt the kings of France and England.

92  
Unhappy fate of the succours sent to the Hungarians.

93  
Violent commotions in France.

France. Administration was vested in the queen and a council composed of princes of the blood.

The two rival dukes, thus prohibited from interfering in public affairs, exercised themselves in committing hostilities against the English, with whom the truce had been lately concluded. They were encouraged to this infraction of the treaty by the unsettled situation of the affairs of Henry IV.: but their attempts proving unsuccessful, the truce was renewed after obtaining restoration of the princess, who had been married to Richard II. as has been already mentioned. The failure of their enterprises produced a new scene of discord betwixt the dukes, who mutually threw the blame upon each other. By the entreaties of the duke of Berry they were apparently reconciled; but the duke of Burgundy pretended friendship only in order to take the more signal vengeance. To this he was now further inflamed by jealousy. Having hired a band of ruffians to execute his bloody purpose, the duke was one evening attacked by eighteen of them while attended only by two pages. A Norman gentleman whom the duke had deprived of an employment, headed the assassins, and in person attacked the duke. At the first blow he cut off his hand, at the second he struck him from his mule, and at the third put an end to his life. His wife Valentina was so concerned at his death, that she died soon after. The duke of Burgundy escaped to Flanders; and the whole nation was rent into two factions, called the *Burgundians* and *Armagnacs*; the latter being the title of the party of the duke of Orleans, from Armagnac the father-in-law of that prince. A dreadful confusion ensued: the duke of Burgundy soon returned to France, and extorted a pardon from the unhappy king, who was now no longer able to resist him: and we may have some notion of the state of the kingdom in general from being told, that 2000 people perished in one tumult in the capital. The king himself was alternately the prisoner of each party, and alternately transferred the power from the one to the other as he happened to fall into their hands. This therefore was thought by Henry V. of England, a favourable opportunity to recover from France those grants that had been formerly given up by treaty. But previously, to give his intended expedition the appearance of justice, he sent over ambassadors to Paris, offering a perpetual peace and alliance, on condition of being put in possession of all those provinces which had been ravished from the English during some former reigns, and of espousing Catharine, the French king's daughter, in marriage, with a suitable dowry. Though the French court was at that time extremely averse to war, yet the exorbitance of these demands could not be complied with; and Henry very probably made them in hopes of a denial. He therefore assembled a great fleet and army at Southampton; and having allured all the military men of the kingdom to attend him, from the hopes of conquest, he put to sea, and landed at Harfleur, at the head of an army of 6000 men-at-arms, and 24,000 foot, mostly archers.

His first operations were upon Harfleur; which being pressed hard, promised at a certain day to surrender unless relieved before that time. The day arriving, and the garrison, unmindful of their engagement, still resolving to defend the place, Henry ordered an

assault to be made, took the town by storm, and put all the garrison to the sword. From thence the victor advanced farther into the country, which had been already rendered desolate by factions, and which he now totally laid waste. But although the enemy made a feeble resistance; yet the climate seemed to fight against the English; a contagious dysentery carrying off three parts of Henry's army. In this situation he had recourse to an expedient common enough in that barbarous age, to inspire his troops with confidence in their general. He challenged the dauphin, who commanded in the French army, to single combat, offering to stake his pretensions on the event. This challenge, as might naturally be expected, was rejected; and the French, though disagreeing internally, at last seemed to unite at the appearance of the common danger. A numerous army of 14,000 men at arms, and 40,000 foot, was by this time assembled under the command of Count Albert, and was now placed to intercept Henry's weakened forces on their return. The English monarch, when it was too late, began to repent of his rash inroad into a country where disease and a powerful army everywhere threatened destruction; he therefore thought of retiring into Calais. In this retreat, which was at once both painful and dangerous, Henry took every precaution to inspire his troops with patience and perseverance; and showed them in his own person the brightest example of fortitude and resignation. He was continually harassed on his march by flying parties of the enemy; and whenever he attempted to pass the river Somme, across which his march lay, he saw troops on the other side ready to oppose his passage. However, he was so fortunate as to seize by surprise a passage near St Quintin, which had not been sufficiently guarded; and there he safely carried over his army.

But the enemy was still resolved to intercept his retreat: and after he had passed the small river of Ternois at Blangi, he was surprised to observe from the heights the whole French army drawn up in the plains of Agincourt; and so posted, that it was impossible for him to proceed on his march, without coming to an engagement. A battle accordingly took place, in which the English gained a victory, the most remarkable perhaps of any recorded in history; an account of which is given under the article AGINCOURT.

This victory, gained on the 25th of October 1415, was however attended with no immediate effects. Henry still continued to retreat, after the battle of Agincourt, out of the kingdom; and carried his prisoners to Calais, and from thence to England. In 1417, he once more landed an army of 25,000 men in Normandy; and prepared to strike a decisive blow for the crown of France, to which the English monarchs had long made pretensions. That wretched country was now in a most deplorable situation. The whole kingdom appeared as one vast theatre of crimes, murders, injustice, and devastation. The duke of Orleans was assassinated by the duke of Burgundy; and the duke of Burgundy, in his turn, fell by the treachery of the dauphin. At the same time, the duke's son, desirous of revenging his father's death, entered into a secret treaty with the English; and a league was immediately concluded at Arras, between Henry and the young duke of Burgundy, in which the king promised

96  
Battle of  
Agincourt.

95  
Invasion by  
Henry V.  
of England.

97  
Henry  
lands again  
in Nor-  
mandy.

France. mised to revenge the murder of the late duke; and the son seemed to insist upon no further stipulations. Henry, therefore, proceeded in his conquests without much opposition from any quarter. Several towns and provinces submitted on his approach; the city of Rouen was besieged and taken: Pontoise and Gisors he soon became master of. He even threatened Paris by the terror of his power, and obliged the court to remove to Troyes. It was at this city that the duke of Burgundy, who had taken upon him the protection of the French king, met Henry in order to ratify that treaty which was formerly begun, and by which the crown of France was to be transferred to a stranger. The imbecility into which Charles had fallen, made him passive in this remarkable treaty; and Henry dictated the terms throughout the whole negotiation. The principal articles of this treaty were, That Henry should espouse the princess Catharine; that King Charles should enjoy the title and dignity of king for life; but that Henry should be declared heir to the crown, and should be intrusted with the present administration of the government; that France and England should for ever be united under one king, but should still retain their respective laws and privileges; that Henry should unite his arms with those of King Charles and the duke of Burgundy, to depress and subdue the dauphin and his partisans.

98  
He marries  
the Princess  
Catharine.

It was not long after this treaty, that Henry married the princess Catharine; after which he carried his father-in-law to Paris, and took a formal possession of that capital. There he obtained from the estates of the kingdom a ratification of the late compact; and then turned his arms with success against the adherents of the dauphin; who, in the mean time, wandered about a stranger in his own patrimony, and to his enemies successes only opposed fruitless expostulations.

Henry's supplies were not provided in such plenty as to enable him to carry on the war without returning in person to prevail upon his parliament for fresh succours; and, upon his arrival in England, though he found his subjects highly pleased with the splendour of his conquests, yet they seemed somewhat doubtful as to the advantage of them. A treaty, which in its consequences was likely to transfer the seat of empire from England, was not much relished by the parliament. They therefore, upon various pretences, refused him a supply equal to his exigencies or his demands; but he was resolved on pursuing his schemes; and, joining to the supplies granted at home, the contributions levied on the conquered provinces, he was able once more to assemble an army of 28,000 men, and with these he landed safely at Calais.

In the mean time, the dauphin, a prince of great prudence and activity, omitted no opportunity of repairing his ruined situation, and to take the advantage of Henry's absence from France. He prevailed upon the regent of Scotland to send him a body of 8000 men from that kingdom; and with these, and some few forces of his own, he attacked the duke of Clarence, who commanded the troops in Henry's absence, and gained a complete victory.

This was the first action which turned the tide of success against the English. But it was of short duration: for Henry soon after appearing with a consider-

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France. able army, the dauphin fled at his approach; while many of the places, which held out for the dauphin in the neighbourhood of Paris, surrendered to the conqueror. In this manner, while Henry was everywhere victorious, he fixed his residence at Paris; and while Charles had a small court, he was attended with a very magnificent one. On Whitunday 1421, the two kings and their two queens with crowns on their heads dined together in public; Charles receiving apparent homage, but Henry commanding with absolute authority.

In the mean time, the dauphin was chased beyond the Loire, and almost totally dispossessed of all the northern provinces. He was even pursued into the south, by the united arms of the English and Burgundians, and threatened with total destruction. In this exigence, he found it necessary to spin out the war, and to evade all hazardous actions with a rival who had been long accustomed to victory. His prudence was everywhere remarkable; and, after a train of long persecutions from fortune, he found her at length willing to declare in his favour, by the death of the king of England.

Charles VI. died a short time after; and Charles VII. succeeded his father to a nominal throne. Nothing could be more deplorable than the situation of that monarch on assuming his title to the crown. The English were masters of almost all France; and Henry VI. though yet but an infant, was solemnly invested with regal power by legates from Paris. The duke of Bedford was at the head of a numerous army, in the heart of the kingdom, ready to oppose every insurrection; while the duke of Burgundy, who had entered into a firm confederacy with him, still remained steadfast, and seconded his claims. Yet, notwithstanding these favourable appearances, Charles found means to break the leagues formed against him, and to bring back his subjects to their natural interests and their duty.

99  
Death of  
Henry and  
Charles.

However, his first attempts were totally destitute of success. Wherever he endeavoured to face the enemy he was overthrown, and he could scarcely rely on the friends next his person. His authority was insulted even by his own servants; advantage after advantage was gained against him; and a battle fought near Verneuil, in which he was totally defeated by the duke of Bedford, seemed to render his affairs altogether desperate. But from the impossibility of the English keeping the field without new supplies, Bedford was obliged to retire into England; and in the mean time, his vigilant enemy began to recover from his late consternation. Dumois, one of his generals, at the head of 1000 men, compelled the earl of Warwick to raise the siege of Montargis; and this advantage, slight as it was, began to make the French suppose that the English were not invincible.

100  
Desperate  
situation of  
Charles  
VII.

But they soon had still greater reason to triumph in their change of fortune, and a new revolution was produced by means apparently the most unlikely to be attended with success. In the village of Domremi, near Vaucouleurs, on the borders of Lorraine, there lived a country girl, about 27 years of age, called *Joan de Arc*. This girl had been a servant at a small inn; and in that humble station had submitted to those hardy employments which fit the body for the fatigues of war. She was of an irreproachable life, and had hi-

101  
The French  
affairs re-  
trieved by  
the Maid  
of Orleans.

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France. therto testified none of those enterprising qualities which displayed themselves soon after. She contentedly fulfilled the duties of her situation, and was remarkable only for her modesty and love of religion. But the miseries of her country seemed to have been one of the greatest objects of her compassion and regard. Her mind, inflamed by these objects, and brooding with melancholy steadfastness upon them, began to feel several impulses, which she was willing to mistake for the inspirations of heaven. Convinced of the reality of her own admonitions, she had recourse to one Baudricourt, governor of Vaucouleurs, and informed him of her destination by heaven to free her native country of its fierce invaders. Baudricourt treated her at first with neglect: but her importunities at length prevailed; and willing to make a trial of her pretensions, he gave her some attendants, who conducted her to the court, which at that time resided at Chinon.

The French court were probably sensible of the weakness of her pretensions; but they were willing to make use of every artifice to support their declining fortunes. It was therefore given out, that Joan was actually inspired; that she had been able to discover the king among the number of his courtiers, although he had laid aside all the distinctions of his authority; that she had told him some secrets, which were only known to himself; and that she had demanded, and minutely described, a sword in the church of St Catharine de Fierbois, which she had never seen. In this manner, the minds of the vulgar being prepared for her appearance, she was armed cap-à-pee, and shown in that martial dress to the people. She was then brought before the doctors of the university; and they, tinged with the credulity of the times, or willing to second the imposture, declared that she had actually received her commission from above.

When the preparations for her mission were completely blazoned, the next aim was to send her against the enemy. The English were at that time besieging the city of Orleans, the last resource of Charles, and every thing promised them a speedy surrender. Joan undertook to raise the siege; and to render herself still more remarkable, girded herself with the miraculous sword, of which she before had such extraordinary notices. Thus equipped, she ordered all the soldiers to confess themselves before they set out; she displayed in her hand a consecrated banner, and assured the troops of certain success. Such confidence on her side soon raised the spirits of the French army; and even the English, who pretended to despise her efforts, felt themselves secretly influenced with the terrors of her mission. A supply of provisions was to be conveyed into the town; Joan, at the head of some French troops, covered the embarkation, and entered Orleans at the head of the convoy which she had safely protected. While she was leading her troops along, a dead silence and astonishment reigned among the English; and they regarded with religious awe that temerity, which they thought nothing but supernatural assistance could inspire. But they were soon roused from their state of amazement by a sally from the town; Joan led on the besieged, bearing the sacred standard in her hand, encouraging them with her words and actions, bringing them to the trenches, and overpowering the besie-

gers in their own redoubts. In the attack of one of the forts, she was wounded in the neck with an arrow; but instantly pulling out the weapon with her own hands, and getting the wound quickly dressed, she hastened back to head the troops, and to plant her victorious banner on the ramparts of the enemy. These successes continuing, the English found that it was impossible to resist troops animated by such superior energy; and Suffolk, who conducted the attack, thinking that it might prove extremely dangerous to remain any longer in the presence of such a courageous and victorious enemy, raised the siege, and retreated with all imaginable precaution.

From being attacked, the French now in turn became the aggressors. Charles formed a body of 6000 men, and sent them to besiege Jergeau, whither the English, commanded by the earl of Suffolk, had retired, with a detachment of his army. The city was taken; Suffolk yielded himself a prisoner; and Joan marched into the place in triumph at the head of the army. A battle was soon after fought near Patay, where the English were worsted, as before; and the generals Scales and Talbot were taken prisoners.

The raising of the siege of Orleans was one part of the Maid's promise to the king of France; the crowning him at Rheims was the other. She now declared that it was time to complete that ceremony; and Charles, in pursuance of her advice, set out for Rheims at the head of 12,000 men. The towns through which he passed opened their gates to receive him; and Rheims sent him a deputation, with its keys, upon his approach. The ceremony of his coronation was there performed with the utmost solemnity; and the *Maid of Orleans* (for so she was now called) seeing the completion of her mission, desired leave to retire, alleging that she had now accomplished the end of her calling. But her services had been so great, that the king could not think of parting with her; he pressed her to stay so earnestly, that she at length complied with his request.

A tide of successes followed the performance of this solemnity; Laon, Soissons, Chateau-Thierry, Provins, and many other fortresses in that neighbourhood, submitted to him on the first summons. On the other hand, the English, discomfited and dispirited, fled on every quarter; not knowing whether to ascribe their misfortunes to the power of forcery or to a celestial influence; but equally terrified at either. They now found themselves deprived of the conquests they had gained, in the same manner as the French had formerly submitted to their power. Their own divisions, both abroad and at home, unfitted them entirely for carrying on the war; and the duke of Bedford, notwithstanding all his prudence, saw himself divested of his strong holds in the country, without being able to stop the enemy's progress. In order therefore, to reverse the declining state of his affairs, he resolved to have Henry crowned king at Paris, knowing that the natives would be allured to obedience by the splendour of the ceremony. In 1430, Henry was accordingly crowned, all the vassals that still continued under the English power swearing fealty and homage. But it was now too late for the ceremonies of a coronation to give a turn to the affairs of the English; the generality of the kingdom had declared against them, and the remainder

France. remainder only waited a convenient opportunity to follow the example.

103  
Maid of  
Orleans  
taken pri-  
soner,

An accident ensued soon after, which, though it promised to promote the English cause in France, in the end served to render it odious, and conduced to the total evacuation of that country. The duke of Burgundy, at the head of a powerful army, had laid siege to Compeign; and the Maid of Orleans had thrown herself into the place, contrary to the wishes of the governor, who did not desire the company of one whose authority would be greater than his own. The garrison, however, were rejoiced at her appearance, and believed themselves invincible under her protection. But their joy was of short duration; for Joan having the day after her arrival headed a sally, and twice driven the enemy from their intrenchments, she was at last obliged to retire, placing herself in the rear, to protect the retreat of her forces. But in the end, attempting to follow her troops into the city, she found the gates shut, and the bridge drawn up by order of the governor, who is said to have long wished for an opportunity of delivering her up to the enemy.

Nothing could exceed the joy of the besiegers, in having taken a person who had been so long a terror to their arms. The service of Te Deum was publicly celebrated on this occasion; and it was hoped, that the capture of this extraordinary person would restore the English to their former victories and successes. The duke of Bedford was no sooner informed of her being taken, than he purchased her of the Count Vendome, who had made her his prisoner, and ordered her to be committed to close confinement. The credulity of both nations was at that time so great, that nothing was too absurd to gain belief that coincided with their passions. As Joan but a little before, from her successes, was regarded as a saint, she was now, upon her captivity, considered as a forceress, forsaken by the demon who had granted her a fallacious and temporary assistance. Accordingly it was resolved in council to send her to Rouen to be tried for witchcraft: and the bishop of Beauvais, a man wholly devoted to the English interest, presented a petition against her for that purpose. The university of Paris was so mean as to join in the same request. Several prelates, among whom the cardinal of Winchester was the only Englishman, were appointed as her judges. They held their court at Rouen, where Henry then resided; and the Maid, clothed in her former military apparel, but loaded with irons, was produced before the tribunal. Her behaviour there no way disgraced her former gallantry; she betrayed neither weakness nor womanish submission; but appealed to God and the pope for the truth of her former revelations. In the issue, she was found guilty of heresy and witchcraft; and sentenced to be burnt alive, the common punishment for such offences.

But previous to the infliction of this dreadful sentence upon her, they were resolved to make her abjure her former errors; and at length so far prevailed upon her, by terror and rigorous treatment, that her spirits were entirely broken by the hardships she was obliged to suffer. Her former visionary dreams began to vanish, and a gloomy distrust to take place of her late inspirations. She publicly declared herself willing to recant, and promised never more to give way to the

vain delusions which had hitherto misled her, and imposed on the people. This was what her oppressors desired; and willing to show some appearance of mercy, they changed her sentence into perpetual imprisonment, and to be fed during life on bread and water. But the rage of her enemies was not yet satiated. Suspecting that the female dress which she had consented to wear, was disagreeable to her, they purposely placed in her apartment a suit of men's apparel, and watched for the effect of their temptation upon her. Their cruel artifices prevailed. Joan, struck with the sight of a dress in which she had gained so much glory, immediately threw off her penitent's robes, and put on the forbidden garment. Her enemies caught her equipped in this manner; and her imprudence was considered as a relapse into her former transgressions. No recantation would suffice, and no pardon would be granted. She was condemned to be burnt alive in the market place of Rouen; and this infamous sentence was accordingly executed with most brutal severity.

104  
and cruelly  
put to  
death.

One of the first misfortunes which the English felt after this punishment, was the defection of the duke of Burgundy; who had for some time seen the error of his conduct, and wished to break an unnatural connexion, that only served to involve his country in ruin. A treaty was therefore begun and concluded between him and Charles, in which the former agreed to assist him in driving the English out of France. This was a mortal blow to their cause; and such was its effects upon the populace of London when they were informed of it, that they killed several of the duke of Burgundy's subjects, who happened to be among them at the time. It might perhaps also have hastened the duke of Bedford's death, who died at Rouen a few days after the treaty was concluded; and the earl of Cambridge was appointed his successor to the regency of France.

From this period, the English affairs became totally irretrievable. The city of Paris returned once more to a sense of its duty. Lord Willoughby, who commanded it for the English, was contented to stipulate for the safe retreat of his troops to Normandy. Thus ground was continually, though slowly, gained by the French; and notwithstanding their fields were laid waste, and their towns depopulated, yet they found protection from the weakness and divisions of the English. At length both parties began to grow weary of a war, which, though carried on but feebly, was yet a burden greater than either could support. But the terms of peace insisted upon by both were so wide of each other, that no hopes of an accommodation could quickly be expected. A truce, therefore, for twenty-two months, was concluded in 1443, which left every thing on the present footing between the parties. No sooner was this agreed upon, than Charles employed himself with great industry and judgment in repairing those numberless ills to which his kingdom, from the continuance of wars both foreign and domestic, had so long been exposed. He established discipline among his troops, and justice among his governors. He revived agriculture, and repressed faction. Thus being prepared once more for taking the field, he took the first favourable occasion of breaking the truce; and Normandy was at the same time invaded by four

105  
Affairs of  
the English  
totally  
ruined.

France.

powerful armies; one commanded by Charles himself, a second by the duke of Brittany, a third by the count of Alençon, and a fourth by the Count Dunois. Every place opened its gates almost as soon as the French appeared before them. Rouen was the only one that promised to hold out a siege; but the inhabitants clamoured so loud for a surrender, that the duke of Somerset, who commanded the garrison, was obliged to capitulate. The battle, or rather the skirmish, of Fourmingsi, was the last stand which the English made in defence of their French dominions. However, they were put to the rout, and above a thousand were slain. All Normandy and Guienne, that had so long acknowledged subjection to England, were lost in the space of a year; and the English saw themselves entirely dispossessed of a country which for above three centuries they had considered as annexed to their native dominions. Calais alone remained of all their conquests; and this was but a small compensation for the blood and treasure which had been lavished in that country, and only served to gratify ambition with a transient applause.

126  
Domestic  
misfortunes  
and death  
of Charles.

Thus, in the year 1450, the power of the English in France was entirely destroyed; and Charles deservedly obtained the surname of *Victorious*, on account of the vigour he had shown in driving out the invaders of his country. His satisfaction, however, was now greatly diminished by domestic misfortunes. The dauphin, forgetting the allegiance and filial duty he owed to his father, had already impeded his conquests by his seditious intrigues. He had used every endeavour to thwart the designs of his ministers, and it was supposed that he had destroyed Agnes Soreille his father's favourite mistress by poison. He had married Charlotte daughter to the duke of Savoy; which Charles had resented by a declaration of war against the duke, but had been persuaded to recal it in order to prosecute the war against Guienne, which made part of the dominions of the English. At last, weary of the disobedience of his son, he commanded him to be arrested; but Louis, informed of his design, withdrew to Franche Comte, and afterwards to Brabant; of which the duke of Burgundy (at this time sovereign of the country) was no sooner apprised, than he ordered him to be supplied with every necessary, and treated with all imaginable respect. He refused to see him, however, until he should obtain the approbation of his father; on which Louis, having in vain attempted to draw the duke into a participation of his crimes, employed himself in sowing dissension betwixt his benefactor and his son the count of Charolois, at the very time that he himself was receiving a pension of 12,000 crowns annually from the father. Thus he at last destroyed the domestic peace of his benefactor, while his unnatural behaviour created continual suspicions in the mind of his father. Charles was repeatedly informed that his own domestics, along with his undutiful son, were in a conspiracy against his life. The miserable monarch, therefore, in continual fear of being poisoned, and having none in whom he could repose any confidence, obstinately refused for some days to take any nourishment; and when at last prevailed upon by the importunities of his attendants to do so, his stomach had become incapable of receiving food, so that he died for want of sustenance in the year 1461. His body, neglected by his unnatural son, was interred at the ex-

pence of Tannegui de Chastel, who had been his faithful companion.

France.

127  
Reign of  
Louis XI.

On the death of Charles, his son Louis succeeded to the throne, to which he had so long aspired. He was reckoned one of the greatest politicians that ever existed; though his character was not on that account the more amiable; on the contrary, there are few princes whose history appears in a more detestable light. So destitute was he of natural affection, that he did not even attempt to conceal his joy at his father's death. He pretended much friendship for the count of Charolois, son to the duke of Burgundy, on account of the protection he had received at his father's court; and even conferred upon him a pension of 12,000 crowns annually: but all this show of affection soon degenerated into a mortal aversion on both sides. Some differences which took place between the courts of France and Castile produced an interview betwixt the two monarchs, Louis, and Henry surnamed the *Impotent*. They met at Mauleon on the confines of Navarre: but their negotiations came to nothing, and they parted with a mutual contempt of each other; Henry despising the mean and sordid appearance of Louis, as he in his turn did the gaudy magnificence of Henry. In his negotiations with the duke of Burgundy, Louis proved more successful; persuading him to restore some towns on the river Somme, which had been ceded by Charles VII. and by the possession of which the duke was in effect master of Picardy. This cession was opposed by the count of Charolois; but Louis, by corrupting John de Croy the duke's minister, obtained his end; and for the sum of 400,000 crowns the cities were delivered to him. By this transaction he effectually ensured the hatred of Charolois: and even in that very transaction the duplicity of Louis was eminently displayed; for though he had agreed to retain in those towns the officers appointed by the duke, he was no sooner in possession of them than he displaced them all, and nominated others in their stead.

The duchy of Brittany was at this time governed by Francis, a weak but generous prince, and whose defect of capacity was supplied by the abilities of his ministers. Him Louis insulted in the most grievous manner; and as Francis found himself unable to oppose such a powerful adversary alone, he joined in a close alliance with the duke of Burgundy and the count of Charolois; the latter having been grievously offended with Louis, and even accused him of attempting his life. The conspiracy was joined by several of the principal French nobility, who had been oppressed by the king; and though the secret was confided to upwards of 500 persons, not one of them ever divulged it. Louis finding matters become very critical, marched with an army towards the capital, which the count of Charolois already insulted. A battle ensued, in which both princes exerted themselves to the utmost, though their valour was but ill seconded by the bravery of their troops. About 1500 perished on each side; but the count of Charolois remained master of the field of battle. Louis, however, after this engagement, entered the capital: where he endeavoured, by every kind concession he could think of, to conciliate the affection of his subjects; in which he succeeded so well, that though the army of insurgents

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France. was soon augmented to more than 100,000 men, they were unable to make themselves masters of the city. At last a treaty was set on foot betwixt Louis and the count of Charolois; by which the latter obtained the towns which had been formerly ceded, with the districts of Boulogne, Guisne, Peronne, Mondidior, and Roye, as a perpetual inheritance for himself. By granting favours to the other confederates, the league was broken; and the moment that Louis found himself freed from danger, he protested against the whole treaty in the presence of some confidential members of parliament, as contrary to the interest of the crown; and therefore waited the first favourable opportunity to crush one by one those who had been ready by their united efforts to destroy himself. The duke of Bourbon, one of the most able of the confederates, was gained over, by bestowing upon him in marriage, Jane the natural daughter of Louis himself, with the dowry of Usson in Auvergne; together with Moras, Beaurepaire, and Cormillon in Dauphiny; while, by the discontents betwixt the dukes of Brittany and Normandy, he was enabled to secure the neutrality of the former, and to recover from the latter some territories which he had unwillingly ceded to him.

109  
Peace con-  
cluded.

110  
Treachery  
of Louis.

In 1467, Philip duke of Burgundy, from his amiable qualities surnamed *The Good*, died, and left his dominions to his son Charles count of Charolois. That fiery and impetuous prince, jealous of the growing power of France, and an implacable enemy of Louis, had entered into a secret treaty with Francis; but Louis had driven the Bretons from the posts they occupied in Normandy before the duke of Burgundy could pass the Somme. The king, however, alarmed at the power of the confederates, concluded a peace with Brittany; and, confiding in his talents for negotiation, determined to have a personal interview with the duke of Burgundy.

111  
Louis im-  
prisoned by  
Charles.

This memorable interview took place in the year 1468; and Peronne, a city of Picardy, but belonging to the duke of Burgundy, was appointed as the place of rendezvous. To this place the politic Louis repaired with a slender train, and attended only by Cardinal Balue, the duke of Bourbon, and the count de St Pol, constable of France; seemingly without reflecting that he was entering a hostile city, where he might be confined for any length of time, or treated at the pleasure of the duke, who was his mortal enemy. Indeed he had not long been in the place when he began to see the error of his conduct; and by the daily concurrence of Burgundian lords and other persons of rank, who were his avowed enemies, he became alarmed for his personal safety. His fear now suggested to him a worse measure than even the former; and he requested apartments in the castle, where it was in the power of his rival in a moment to make him a close prisoner. This event accordingly took place, and that through the arts and machinations of Louis himself. His design had been from the beginning to keep the duke of Burgundy constantly employed in domestic wars. For this purpose he had, before his interview with Charles, excited the inhabitants of Liege, who were subject to the duke of Burgundy, to revolt. It is most probable, that he did not imagine the effects of this treachery would so soon begin to appear. At the very time, however, that Louis was

in the castle of Peronne, the people of Liege revolted, seized the bishop and governor; and having massacred great numbers of the adherents of Charles, retired with the prisoners they had made to the capital. Charles was soon informed of this massacre, with the additional circumstance, that the ambassadors of Louis were seen animating the insurgents to their work of destruction. He then flew into a transport of rage; commanded the gates of the castle to be shut and strictly guarded; denouncing the severest vengeance on the perfidious monarch who had so often deceived him. Louis, however, though greatly, and no doubt very justly, alarmed, did not neglect to take the proper methods for securing himself. He distributed large sums of money among those officers to whom he imagined the duke was most inclined to pay any regard, and by splendid promises and presents endeavoured to allay the resentment of his other enemies. At last the resentment of Charles having subsided, he entered into a treaty with the king, and concluded it upon much the same terms as those which had been agreed upon before. His resentment, however, still manifested itself so far, that he insisted upon Louis being present at the punishment he inflicted upon the inhabitants of Liege for the massacre they had committed, and of which we have already taken notice. This was agreed to: the two princes formed the siege of the city in conjunction; and, notwithstanding the obstinate defence of the people, it was at last taken by storm, and the inhabitants massacred. It was not long, however, before the new alliance was dissolved. A confederacy against Louis, whom neither promises nor treaties could bind, was formed betwixt his own brother the duke of Normandy and the duke of Burgundy; but before their measures were ripe for execution, Louis had already commenced hostilities. The duke of Burgundy, as a peer of France, was summoned to parliament; and on his refusal, the constable St Pol made himself master of St Quintin. Several other cities were soon after reduced; and Baldwin, the natural brother of Charles, corrupted by Louis, deserted his cause; and the haughty spirit of the duke was thus at last obliged to condescend to solicit a peace. This, however, was of no long duration. Charles, encouraged by the success of Edward IV. of England his brother-in-law, began once more to league against Louis with the dukes of Brittany and of Guienne; the latter being the king's brother, formerly duke of Normandy, but who had exchanged that duchy for the territory of Guienne. But while the affairs of the confederates seemed to be in a prosperous way, their prospects were suddenly overcast by the death of the duke of Guienne, which was universally supposed to have been occasioned by poison, and Louis was as universally looked upon as the author. The abbot of St Joan d'Angeli was fixed upon as the immediate perpetrator of the deed: but on the day appointed for his trial he was found strangled in his cell; and this also was with great probability supposed to have been the deed of Louis, who after the death of his brother instantly seized on the territory of Guienne, and annexed it to the dominions of France.

France.

112  
A treaty  
between  
Louis and  
Charles.

By this unheard-of conduct of the French monarch, Charles was exasperated to such a degree, that he vowed the most dreadful vengeance against the unhappy people.

France.  
113  
Furious invasion of France by Charles of Burgundy.

people of France, and threatened to sacrifice to the memory of the duke of Guienne every one who now fell into his hands. The citizens of Nells were massacred without distinction of sex or age; Beauvis resisted his attacks; after which Charles wreaked his fury on other places. Having entered the country of Caux, he reduced the cities of Eu and St Valery, burnt Longueville, and wasted the whole country as far as Rouen. Louis, on the other hand, steady and constant in his designs, determined to dissolve the league between the duke of Brittany and Edward IV. of England. Accordingly he encamped with his army on the frontiers of Brittany; while the duke, not meeting with the assistance promised by Edward, was obliged to consent to a truce for a year; and the duke of Burgundy himself was obliged to follow his example, having committed such devastations as deprived him of all means of subsistence in the country, so that he could neither advance nor retreat. In a very little time, however, he again began to conspire with the king of England against Louis, and a powerful invasion was determined upon. Edward was to cross the sea with an army of 10,000 men, while Charles assembled all his forces to join him. The former was also to set up a claim to the crown of France, and at least to obtain the provinces of Normandy and Guienne; the duke was to have Champagne with some adjacent districts; to free his dominions from homage; and neither party was to make peace without the consent of the other. It was supposed that the duke of Brittany would naturally accede to the confederacy; and the Count de St Pol, constable of France, had engaged to deliver up the town of St Quintin and others which he occupied on the river Somme. Louis, however, still had the good fortune to avoid the storm. Charles, instead of advancing to the assistance of Edward, who had entered France at the head of 15,000 archers and 1500 men at arms, laid siege to the city of Nuiz on the Rhine; while the constable St Pol, instead of delivering up the towns as he had promised, deceived his allies, and enabled Louis to dissolve a confederacy, which, had it been vigorously maintained, might have involved him in the greatest difficulties. To procure the departure of Edward, however, he was obliged to consent to a tribute of 75,000 crowns, as well as to settle on the king himself 50,000 crowns for life; betrothing also the dauphin to the eldest daughter of the king of England. The duke of Burgundy exclaimed loudly against this treaty; but Edward persisted in his resolution; and it was accordingly executed at a place called *Pecquigny*, near Amiens; but in such a manner as showed the little confidence the two sovereigns reposed in each other. A grated barrier was erected in the middle of the bridge of Pecquigny, between the barriers of which only a man's arm could pass: the two princes appeared on the opposite sides of it; and having conferred privately, and confirmed the treaty between them, parted with many protestations of friendship; in which, probably, neither party was very sincere. A power was reserved by Edward, for the duke of Burgundy to accede to the treaty; but the latter haughtily replied, that he was able to support himself without the assistance of England; and that he would make no peace with Louis till three months after the return of Edward to his own

country. To this resolution he adhered: but no sooner was the term expired, than he concluded a truce with Louis for nine years. The stipulations publicly agreed upon betwixt these two princes consisted only in some articles for the mutual advantage of their subjects; but privately they had signed others of a different nature. The constable St Pol having rendered himself obnoxious to all parties by his complicated treachery, fled to Mons in Hainault; but the duke of Burgundy had already consented to deliver him up on condition of receiving his estates and moveables as the price of his treachery.

Thus was Louis without any other remarkable qualification than the mere arts of falsehood and duplicity, got rid of all his enemies except the duke of Burgundy, whose growing power rendered him a constant object of jealousy and terror. His own imprudence and rashness, however, soon proved his ruin. Having rashly engaged in a war with the Swifs, he was defeated in the first engagement with that martial nation, with the loss of his military chest and baggage, with his plate and jewels, supposed to be the richest in Europe. His disappointment on this occasion was so great, that he was seized with a severe sickness, from which he had hardly recovered when he resumed his mad scheme of conquering the Swifs. Another battle ensued; in which, after an obstinate dispute, Charles was defeated with the loss of 18,000 men, himself escaping with great difficulty. This disaster was followed by the defection of most of his allies; the duke of Lorraine recovered the city of Nancy and great part of his dominions which Charles had seized; while the latter, overwhelmed with shame and disappointment, spent his time in solitude and inactivity. From this he was at last roused by the misfortunes which fell upon him in such quick succession. He now invested the city of Nancy; and in this, as well as in every other instance, he acted against the advice of his best officers; and the consequences were still more fatal than before. The duke of Lorraine advanced with a strong body of Germans to the relief of the city, while Charles had scarcely 4000 men to oppose him. His troops were therefore easily defeated, and himself, notwithstanding the most heroic efforts of valour, hurried away in the crowd. The count de Campobasso, an Italian nobleman in whom he put a great deal of confidence, but who was in reality a traitor, had deserted with about 80 men in the beginning of the engagement. He left 12 or 15 men about the duke's person, with strict orders to assassinate him in the tumult; and this order they punctually complied with; the body of Charles being found two days after the battle pierced with three wounds.

The news of Charles's death was received with the most unfeigned joy by Louis, whose sole object now was to unite the territories of the duke of Burgundy to his own. This might be done in two ways; one by a match betwixt the dauphin and Mary the heiress of Burgundy; the other, by marrying her to the duke of Angouleme, a prince of the royal blood of France, and on whom Mary had shown some inclination to bestow herself. The king, however, to whom duplicity and falsehood seem to have been absolutely necessary, chose a third method, more agreeable to his character. The match with the dauphin was attended with such

France.

116  
Charles engaged in a war with the Swifs.

114  
Invasion by Edward IV. of England.

115  
Louis agrees to pay an annual pension to Edward.

117  
He is assassinated.

118  
Conquest of Burgundy by Louis.

France. circumstances as rendered it evidently impracticable. The disparity of age was very great, the dauphin being only eight years old, and the princefs twenty: the Flemings were besides very much averfe from fubmitting to a prince whose powerful refources would enable him to opprefs their liberties: but notwithstanding thefe unfurmoutable difficulties, Louis chofe to infift upon the match, at the fame time that he endeavoured to make himfelf mafter of her dominions by force of arms. He addreffed circular letters to the principal cities of Burgundy; representing, that the duchy had been given by King John to the male heirs of his fon Philip; and that now, when thefe were extinct by the death of Charles, the territory reverted of courfe to the crown. To render this argument more effectual, he corrupted the governors of fome towns, feduced the inhabitants of others to rife againft their governors; whilft he himfelf at the head of an army, prepared to enforce obedience from thofe who could not be worked upon by other methods. Thus the province of Burgundy was entirely reduced; but Flanders could not be brought under fubjection either by fair means, force, or fraud. In his conduft for this purpofe, indeed, Louis difplayed the moft deteftable as well as the meaneft treachery and falfehood. To render Mary odious to her fubjects, he negotiated with her minifters, and prevailed upon them to difclofe to him fome of the moft important ftate fecrets; after which he communicated their letters to the ftates of Flanders. This double treachery, however, did not at prefent answer his purpofe. The two minifters whom he had betrayed were indeed put to death without mercy, and that even in the prefence of their fovereign: but Mary herfelf was thus induced to beftow herfelf upon the emperor Maximilian; and Louis had the mortification to find that all his arts had contributed only to aggrandize a rival power, whom he had already fufficient caufe to dread. To remedy this oversight, he entered into an alliance with Edward IV. of England, whom he had infpired with a jealoufy of his brother Clarence, in order to prevent a match betwixt that nobleman and the princefs Mary, which had alfo been in agitation. Thus a peace was concluded between the two monarchs, to continue during the life of each, and a year after.

The marriage of Mary with Maximilian effectually fecured the independence of Flanders; while the return of the prince of Orange to the party of that princefs extended the flames of war once more to the cities of Burgundy. The French were on the point of being totally expelled from that country, when Maximilian unexpectedly made propofals of peace. A truce was on this concluded between the two princes, but without any term limited for its duration, or without any conditions ftipulated in favour of the Burgundians; fo that the whole country was quickly after reduced by Louis.

119 Tyranny and cruelty of Louis. The king now freed from the apprehenfions of foreign enemies, turned his vindictive difpofition againft his own fubjects; over whom, under pretence of former rebellions, he exercifed the moft infupportable tyranny. The principal victim to his fanguinary difpofition on this occafion was James d'Armagnac duke of Nemours, one of the firft noblemen in the kingdom, but who had formerly appeared a zealous confederate

againft him in the league in which Edward and Charles were concerned. The unfortunate nobleman, knowing that vengeance was determined againft him, fled to a fortrefs named *Carlat*, fituated among the mountains of Auvergne. Here he was befieged by the Seigneur de Beaujeu, who had married Anne the daughter of Louis. The place, however, was almoft impregnable to any force; fo that his enemies were obliged to make the moft folemn promifes of fafety in order to induce him to furrender himfelf. By thefe he was at laft perfuaded to truft himfelf in the hands of the faithlefs tyrant; who no fooner had him in his power than he fhut him up in the *Baftile* in an iron cage, and reprimanded the judges becaufe they had releafed him from this clofe confinement during the time of his examination. The judges reluctantly condemned him to be beheaded: but the king's cruelty extended beyond the fentence; and he ordered the two young fons of the duke, though yet in early childhood, to be placed direftly under the fcaffold, that they might be covered with the blood of their father. Four thoufand perfons are fuppofed to have perifhed upon this occafion without any form or trial: and were it not for the concurrent testimony of the hiftorians of that age, the inhumanities and barbarities of this monarch are fcarce to be credited. By thefe he broke the fpirits of the French nobility, and gradually extended the power of the crown beyond all bounds; fo that at laft it was limited only by the fovereign's pleafure. Amidft all the perfidy and cruelty, however, for which this monarch is fo juftly to be detefted, we may on fome occafions remark a kind of magnanimity and generofity, which we cannot but applaud. An inftance of this was his fupporting the houfe of Medici againft Pope Sextus, whom he obliged to defift from his attacks, and to recal his fentence which he had fulminated againft them.

120 In 1479, the emperor Maximilian, who had lightly abandoned the duchy of Burgundy when he might have reduced it, now renewed his claims when it was no longer in his power to enforce them. After a variety of actions of leffer note, and the destruction of cities on both fides, a decisive battle was fought at Guinegate. Here the Flemings were routed; but as the French purfued with too great ardour, the infantry of the enemy rallied, and the battle was renewed with great flaughter on both fides. A more decisive advantage was afterwards gained by the capture of 80 Flemifh veffels, which induced that commercial people to think of peace. In the mean time, however, Louis, after a life fpent in continual deceit, hypocrify, and cruelty, received warning of his approaching end by a fit of apoplexy with which he was feized in the year 1480. He lay fpeechlefs and motionlefs for two days; after which he recovered in fome degree, but never completely regained his health and ftrength. His illnefs, however, neither prevented him from purfuing the fchemes of his ambition, nor from ufing the fame methods as before to attain them. He feized, without any pretence, the eftates of the duke of Bourbon, the only nobleman in the kingdom whose power could give him any caufe of fufpicion; yet, notwithstanding his affiduity for the intereft of the dauphin, he kept him a kind of prifoner in the caftle of Amboife, permitting none but his own fervants, or perfons

France.

sons of the meanest rank, to have access to him. He banished his own consort, the mother of the dauphin, to Savoy, and endeavoured to inspire the prince with aversion towards her. By the death of Charles, the titular king of Naples, and the last of the second house of Anjou, he became master of the county of Provence; but his satisfaction on this occasion was marred by a second stroke of apoplexy. Still, however, he revived, and, with his recovery, again began to pursue his ambitious intrigues. The death of Mary of Burgundy, who perished by a fall from her horse, inspired him with new views; and he betrothed his son to the infant daughter of the emperor. Thus he offended Edward IV. of England, whose eldest daughter Elizabeth had been previously contracted to the dauphin; and a war would have undoubtedly ensued, had it not been for the death of the king of England. This was followed in no long time after by that of Louis himself, who had in vain exhausted the skill of the physician, and wearied the clerical order with prayers and processions to avert the impending stroke. He expired in the year 1483, after a reign of 23 years; during which he was detested by his subjects, whom he had continually oppressed; and equally dreaded and hated by his neighbours, whom he had constantly deceived: notwithstanding which he obtained the title of *Most Christian* from his holiness, which his successors have ever after retained.

121  
Death of  
Louis XI.

Notwithstanding the dark character of this prince, it is undoubtedly to be allowed, that he laid the foundations of the future greatness of France. By his arts he deprived the common people of their liberty, depressed the power of the nobility, established a standing army, and even induced the states to render many taxes perpetual, which formerly were only temporary, in order to support the army which was to keep themselves in slavery. From this time the people were accustomed to submit entirely to the voice of their sovereign as their only legislator; and being always obedient in matters of the greatest consequence, they cheerfully contributed whatever sums were required to fulfil the king's pleasure.

122  
Reign of  
Charles  
VIII.

Charles VIII. who succeeded his father Louis XI. in 1483, was only 14 years of age at the time of his father's death: but though he might, even at that age, have ascended the throne without any material violation of the laws of France, yet it was judged necessary to have a regent, on account of the king's delicacy of constitution and want of education. Three competitors appeared as candidates for this important trust, viz. John duke of Bourbon, a prince of the blood, and who had, till the age of 60, maintained the most unblemished character; Louis duke of Orleans, presumptive heir to the crown, but who from his being only 20 years old himself, seemed incapacitated on that account from undertaking such an important office: the third competitor was Anne, the eldest daughter of Louis, to whom the latter had in the last moments of his life committed the charge of the kingdom, with the title of governess. The claim of this lady was supported by the assembly of the states general at Tours; and though she was only entered into the 22d year of her age, it appears that the office could not have been more properly bestowed. Being married to Peter of Bourbon, sire of Beaujeu,

123  
Regency of  
the Lady  
Beaujeu.

her present title was *the Lady of Beaujeu*; but she appears to have acted entirely independent of her husband, who was but of a moderate capacity, and indeed had been recommended to her by Louis on account of his slender abilities, lest by any other match the house of Bourbon should be too much aggrandized. Her first step was to ingratiate herself with the people, by some popular acts; among which one was to punish the instruments of her father's cruelties. One of these, named Olivier le Dian, who, from the station of a barber, had raised himself to the confidence and favour of the king, and had distinguished himself by the invention of new modes of torture, was publicly hanged. Another, named Jean Doyac, who by continual acts of violence and rapacity had oppressed the people, was condemned, after being whipped in all the open places or squares of Paris, to have one of his ears cut off, and his tongue pierced with a hot iron; after which he was conveyed to his native city of Montferrand, where he was again whipped, and his other ear cut off; after which his estates, as well as those of Olivier, were confiscated. Jacques Coitier, the physician of Louis, who had availed himself of the terror of death with which the king was strongly influenced, to extort great sums of money from him, was ordered to answer for the immense wealth he had acquired; but he averted the danger by paying a fine of 50,000 crowns.

Thus the lady de Beaujeu gained the affection of the people at large; and was equally successful in gaining over those who were averse to her government. The duke of Bourbon was made constable, an office which he had long desired; but the duke of Orleans behaved in such a manner as to exclude all hopes of favour. Incensed at the determination of a trifling dispute at tennis against him, by the lady Beaujeu, he exclaimed, that whoever had decided it in that manner "was a liar if a man, or a strumpet if a woman." After this furious declaration he fled to the castle of Beaujency, where, however, he was soon forced to surrender. He then applied to Henry VII. of England, who had newly ascended the throne of England; but that prince, naturally slow and cautious, did not pay much attention to his proposals; on which he next made his application to the court of Brittany. Here he was received with great marks of esteem, and began to entertain hopes of marrying the daughter of the duke; but being looked upon with a jealous eye by the nobility, they entered into secret negotiations with Anne, and even solicited her to invade the country. In these negotiations, however, they stipulated that only a certain number of troops should enter the province, and that no fortified place should remain in the hands of the French; which conditions were indeed agreed to by the regent, though she determined to keep them no longer than it answered her purpose. In pursuance of this resolution, Brittany was invaded at once by four armies, each of them superior to the stipulated number, who quickly made themselves masters of the most important places in the country; while the troops of the duke retired in disgust, leaving them to pursue their conquests as they pleased. Finding at last, however, that the entire subjection of their country was determined upon, the nobility began to exert themselves in defence of it; and, inflamed by the enthusiasm of liber-

France.

124  
Duke of  
Orleans  
flies to Brit-  
tany.

125  
That coun-  
try in-  
vaded by  
the French

France. ty, they raised an army of 60,000 men. By these the French were compelled to abandon the siege of Nantz; but this proved only a transient gleam of success. Anne persevered in her design of completing the conquest of the country, and the state of Europe at that time favoured the design. Of all the European states, England alone was then capable of affording any effectual assistance; and the slow caution of Henry prevented him from giving the assistance which for his own interest he ought to have done. Thus the Bretons were left to defend themselves the best way they could; and having ventured a battle, they were entirely defeated, and most of their leaders taken prisoners. A small body of English, under the command of Lord Woodville, who assisted them, were entirely cut in pieces. The duke soon after died by a fall from his horse, leaving his dominions to his daughter Anne, at that time only 13 years of age. A marriage was negotiated betwixt this princess and Maximilian king of the Romans, who had been married to Mary of Burgundy; but by reason of the poverty of that prince it was never completed. The lady Beaujeu, then, finding that the absolute conquest of Brittany would still be a difficult matter, determined to conclude a marriage betwixt the young king of France and the duchess, though the former had already been married to Margaret of Austria, the daughter of Maximilian. This marriage indeed had not been consummated by reason of the tender age of the princess; but she had been sent to Paris for her education, and had for several years been treated as queen of France. In 1491, however, Margaret was sent back to her father: Anne of Brittany for a long time refused to violate the engagements into which she had entered; but at last, finding herself distressed on all sides, and incapable of resisting the numerous forces of France with which she was pressed, she reluctantly consented to the match, and the nuptials were celebrated the same year at Langeais in Touraine.

126  
Marriage  
between  
the king  
of France  
and du-  
chess of  
Brittany.

Maximilian, whose poverty had prevented him from giving any assistance to his bride, or even from coming to see her, enraged at the double disgrace he had suffered, began, when too late, to think of revenge. France was now threatened with an invasion from the united forces of Austria, Spain, and England. But this formidable confederacy was soon dissipated.—Henry, whose natural avarice had prevented him from giving the necessary assistance, was bought off with money: the immediate payment of 745,000 crowns, and the promise of 25,000 annually ever after, persuaded him to retire into his own country. Ferdinand king of Spain had the counties of Roussillon and Cerdagne restored to him; while Maximilian was gratified by the cession of part of Artois, which had been acquired by Louis XI.

127  
His expedi-  
tion into  
Italy, and  
surprising  
success.

The young king of France agreed to these terms the more readily, that he was impatient to undertake an expedition into Italy, in order to conquer the kingdom of Naples, to which he claimed a right. Most of his counsellors were against the expedition; but the king was inflexible, even though Ferdinand king of Naples offered to do homage for his kingdom, and pay him a tribute of 50,000 crowns a-year. He appointed Peter duke of Bourbon regent in his absence; after which he set out on his expedition with very few

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troops and very little money. By the way he fell ill of the smallpox, but in a short time recovered, and entering Italy with only 6000 horse and 12,000 foot, he was attended with the most surprising success, traversing the whole country in six weeks, and becoming master of the kingdom of Naples in less than a fortnight. Such extraordinary good fortune seemed miraculous; and he was reckoned an instrument raised up by God to destroy the execrable tyrants with which Italy was at that time infested. Had Charles made use of this prepossession in his favour, and acted up to the character generally given him, he might have raised his name as high as any hero of antiquity. His behaviour, however, was of a very different nature. He amused himself with feasts and shows; and leaving his power in the hands of favourites, they abandoned it to whoever would purchase titles, places, or authority, at the rates they imposed; and the whole force he proposed to leave in his new conquered dominions amounted to no more than 4000 men.

But while Charles was thus losing his time, a league was concluded against him at Venice; into which entered the pope, the emperor Maximilian, the archduke Philip, Ludovic Sforza, and the Venetians. The confederates assembled an army of 40,000 men, commanded by Francis marquis of Mantua; and they waited for the king in the valley of Farnova, in the duchy of Parma, into which he descended with 9000 men. On the 6th of July 1495 he attacked the allies; and, notwithstanding their great superiority, defeated them, with the loss of only 80 of his own men. Thus he got safe to France; but his Italian dominions were lost almost as soon as he departed. Some schemes were proposed for recovering these conquests; but they were never put in execution, and the king died of an apoplexy in 1498.

128  
His death.

The premature death of this monarch, in the 28th year of his age, was supposed to have been owing to his irregular life, and particularly his attachment to women; which had for some time impaired his health, and brought on evident symptoms of his approaching dissolution. At last he relinquished his irregularities, and retired with the queen to the castle of Ambloise. Here in passing through a low door he struck his head with violence against the top. No unfavourable symptom appeared at the time; but soon afterwards, as he conversed with his confessor, and avowed his design of observing the nuptial fidelity he owed to the queen, he suddenly fell backward in a fit of apoplexy. He recovered his voice three times, and uttered some expressions of devotion; but instantly relapsed, and in a short time expired, notwithstanding every assistance that could be given. He was greatly celebrated for his sweet temper and agreeable disposition, which procured him the surnames of the *Affable* and *Courteous*. Two of his domestics are said to have died of grief after his death, and his widow abandoned herself to the most pungent sorrow for *two days*.

By the death of Charles VIII. the throne of France passed from the direct line of the house of Valois, and Louis duke of Orleans succeeded to the throne. At the time of his accession he was in his 36th year, and had long been taught prudence in the school of adversity. During the administration of the lady Beaujeu, he had been, as we have already observed, constantly in disgrace; and after his connexions with the

M

duke

France.

duke of Brittany, had spent a very considerable time in prison; and though afterwards set at liberty by Charles, he had never possessed any share of that monarch's confidence or favour. Towards the conclusion of that reign, he fell under the displeasure of the queen; and had afterwards continued at his castle of Blois till he was called from thence to the possession of the kingdom. He had been married in early life, and against his will, to Jane the youngest daughter of Louis XI. a princess of an amiable disposition, but deformed in her person, and supposed to be incapable of bearing children. Afterwards he entertained thoughts of having this marriage dissolved, and was supposed to possess the affection of the duchess of Brittany, before she became queen of France. After the death of her husband, that princess retired to Brittany, where she pretended to assume an independent sovereignty; but Louis having got his marriage with Jane dissolved by Pope Alexander VI. quickly after made proposals to the queen-dowager, which on her part were accepted without hesitation; though it was stipulated, that if she should have two sons, the younger should inherit the duchy of Brittany.

As Louis, while duke of Orleans, had some pretensions to the kingdom of Naples, he instantly set about realizing them by conquest. On his accession, he found matters in that country much more favourable to his designs than formerly. The pope, Alexander VI. was very much in his interests, from the hopes of getting his son Cæsar Borgia provided for: he had conciliated the friendship of the Venetians by promising them a part of the Milanese; he concluded a truce with the archduke Philip; and renewed his alliances with the crowns of England, Scotland, and Denmark. He then entered Italy with an army of 20,000 men; and being assisted by the Venetians, quickly conquered one part of the duchy, while they conquered the other, the duke himself being obliged to fly with his family to Inspruck. He then attacked Ferdinand of Spain with three armies at once, two to act by land, and one by sea; but none of these performing any thing remarkable, he was obliged to evacuate the kingdom of Naples in 1504.

In 1506, the people of Genoa revolted; drove out the nobility; chose eight tribunes; and declared Paul Nuova, a silk dyer, their duke: after which they expelled the French governor, and reduced a great part of the Riviera. This occasioned Louis's return into Italy; where, in 1507, he obliged the Genoese to surrender at discretion: and, in 1508, entered into the league of Cambray, with the other princes who at that time wanted to reduce the overgrown power of the Venetians. Pope Julius II. who had been the first contriver of this league, very soon repented of it; and declared, that if the Venetians would restore the cities of Faenza and Rimini, which had been unjustly taken from him, he would be contented. This was refused; and in 1509, the forces of the republic received such an entire defeat from Louis, that they agreed to restore not only the two cities demanded by Pope Julius, but whatever else the allies required.

The pope now, instead of executing his treaties with his allies, made war on the king of France without the least provocation. Louis called an assembly of his clergy; where it was determined, that in some cases it

was lawful to make war upon the pope; upon which the king declared war against him, and committed the care of his army to the Marshal de Trivulce. He soon obliged the pope to retire into Ravenna; and in 1511, Gaston de Foix, duke of Nemours, gained a great victory at Ravenna, but was himself killed in the engagement. After his death the army was disbanded for want of pay; and the French affairs in Italy, and everywhere else, fell into great confusion. They recovered the duchy of Milan, and lost it again in a few weeks. Henry VIII. of England invaded France, and took Terruene and Tournay; and the Swiss invaded Burgundy with an army of 25,000 men. In this desperate situation of affairs the queen died, and Louis put an end to the opposition of his most dangerous enemies by negotiating marriages. To Ferdinand of Spain he offered his second daughter for either of his grandsons, Charles or Ferdinand; and to renounce, in favour of that marriage, his claims on Milan and Genoa. This proposal was accepted; and Louis himself married the princess Mary, sister to Henry VIII. of England. This marriage he did not long survive, but died on the 2d of January 1514; and was succeeded by Francis I. count of Angoulesme, and duke of Bretagne and Valois.

The new king was no sooner seated on the throne, than he resolved on an expedition into Italy. In this he was at first successful, defeating the Swiss at Marignano, and reducing the duchy of Milan. In 1518, the emperor Maximilian dying, Francis was very ambitious of being his successor, and thereby restoring to France such a splendid title, which had been so long lost. But Maximilian, before his death, had exerted himself so much in favour of Charles V. of Spain, that Francis found it impossible to succeed; and from that time an irreconcilable hatred took place between the two monarchs. In 1521, this ill will produced a war; which, however, might perhaps have been terminated, if Francis could have been prevailed upon to restore the town of Fontarabia, which had been taken by his admiral Bonivet: but this being refused, hostilities were renewed with greater vigour than ever; nor were they concluded till France was brought to the very brink of destruction. The war was continued with various success till the year 1524; when Francis having invaded Italy, and laid siege to Pavia, he was utterly defeated before that city, and taken prisoner on the 24th of February.

This disaster threw the whole kingdom into the utmost confusion. The Flemish troops made continual inroads; many thousand boors assembled in Alsace, in order to make an invasion from that quarter; Henry VIII. had assembled a great army, and threatened the kingdom on that side also; and a party was formed in the kingdom, in order to dispossess the duchess of the regency, and confer it upon the duke de Vendosme. This prince, however, who, after the constable, was the head of the house of Bourbon, went on purpose to Lyons, where he assured the regent that he had no view but for her service, and that of his country; upon which she formed a council of the ablest men of the kingdom, and of this she made him president. The famous Andrew Doria sailed with the French galleys to take on board the remains of the French troops under the duke of Alva, whom he landed safely in France. Those who escaped out of the

France.

130  
His marriage with the princess Mary of England, and death.

131  
Francis I. invades Italy.

132  
Defeated and taken prisoner.

Milanese

129  
Expedition of Louis XII. into Italy.

France.

Milanese also made their way back again as well as they could. Henry VIII. under the influence of Cardinal Wolsey, resolved not to oppress the oppressed: he therefore assured the regent that she had nothing to fear from him; and at the same time advised her not to consent to any treaty by which France was to be dismembered. To the emperor, however, he used another language. He told him, that the time was now come when this puissant monarchy lay at their mercy; and therefore, that so favourable an opportunity should not be let slip: that, for his part, he should be content with Normandy, Guienne, and Gascony, and hoped the empire would make no scruple of owning him king of France: adding, that he expected the emperor would make a right use of his victory, by entering Guienne in person; in which case he was ready to bear half the expences of the war. He foresaw what fell out: the emperor was alarmed at these conditions, and did not care to have him for a neighbour; for which reason he agreed to a truce with the regent for six months. In Picardy the Flemings were repulsed; and the count de Guise, with the duke of Lorraine, had the good fortune, with a handful of troops, to defeat and cut to pieces the German peasants.

133  
Francis I.  
carried to  
Madrid,  
where he  
signs a dis-  
advanta-  
geous trea-  
ty;

In the mean time, Francis was detained in captivity in Italy: but being wearied of his confinement in that country, and the princes of Italy beginning to cabal for his deliverance, he was carried to Madrid; where, on the 14th of January 1525, he signed a treaty, the principal articles of which were, That he should resign to the emperor the duchy of Burgundy in full sovereignty; that he should desist from the homage which the emperor owed him for Artois and Flanders; that he should renounce all claim to Naples, Milan, Asti, Tournay, Lisle, and Hesden, &c.; that he should persuade Henry d'Albert to resign the kingdom of Navarre to the emperor, or at least should give him no assistance; that within 40 days he should restore the duke of Bourbon and all his party to their estates; that he should pay the king of England 500,000 crowns which the emperor owed him; that when the emperor went to Italy to receive the Imperial crown, he should lend him 12 galleys, four large ships, and a land army, or instead of it 200,000 crowns.

All these articles the king of France promised on the word and honour of a prince to execute; or, in case of non-performance to return prisoner into Spain. But, notwithstanding these professions, Francis had already protested before certain notaries and witnesses in whom he could trust, that the treaty he was about to sign was against his will, and therefore null and void. On the 21st of February, the emperor thought fit to release him from his prison, in which he had been closely confined ever since his arrival in Spain; and after receiving the strongest assurances from his own mouth, that he would literally fulfil the terms of the treaty, sent him under a strong guard to the frontiers, where he was exchanged for his two eldest sons, who were to remain as hostages for his fidelity.

134  
and breaks  
it.

When the king returned to his dominions, his first care was to get himself absolved by the pope from the oaths he had taken; after which he entered into a league with the pontiff, the Venetians, the duke of Milan, and the king of England, for preserving the peace of Italy. In the month of June, he publicly

received remonstrances from the states of Burgundy; in which they told him, without ceremony, that by the treaty of Madrid he had done what he had no right to do, in breach of the laws and his coronation oath; adding, that if he persisted in his resolution of throwing them under a foreign yoke, they must appeal to the general states of the kingdom. At these remonstrances the viceroy of Naples and the Spanish ministers were present. They perceived the end which the king aimed at, and therefore expostulated with him in pretty warm terms. At last the viceroy told him, that he had now nothing left but to keep his royal word in returning to the castle of Madrid, as his predecessor John had done in a like case. To this the king replied, that King John acted rightly; that he returned to a king who had treated him like a king; but that at Madrid he had received such usage as would have been unbecoming to a gentleman: that he had often declared to the emperor's ministers, that the terms they extorted from him were unjust and impracticable: but that he was still willing to do all that was fit and reasonable; and to ransom his sons at the rate of two millions of gold, in lieu of the duchy of Burgundy.

Hitherto the treaty for the tranquillity of Italy had been kept secret, in hopes that some mitigation of the treaty of Madrid would have been obtained; but now it was judged expedient to publish it, though the viceroy of Naples and the Spanish lords were still at the French court; and the emperor was to be admitted into it, provided he accepted the king's offer of two millions for the release of his children, and left the duke of Milan and other Italian princes in quiet possession of their dominions. It is the common misfortune of all leagues, that the powers who enter into them keep only their own particular interests in view, and thus defeat the general intention of the confederacy. This was the case here. The king's great point was to obtain his children upon the terms he had proposed; and he was desirous of knowing what hopes there were of that, before he acted against the monarch who had them in his power. Thus the duke of Milan and the pope were both sacrificed. The former was obliged to surrender to the duke of Bourbon, and the latter was surpris'd by the Colonnas; both of which disasters would have been prevented if the French succours had entered Italy in time. See ITALY.

According to an agreement which had been made between Francis and Henry, their ambassadors went into Spain, attended each of them by a herald, in order to summon the emperor to accept the terms which had been offered him; or, in case of refusal, to declare war. It seems the emperor's answer was foreseen in the court of France; and therefore the king had previously called together an assembly of the notables; that is, persons of the several ranks of his people in whom he could confide. To them he proposed the great question, Whether he was bound to perform the treaty of Madrid? or, Whether if he did not perform it, he was obliged in honour to return to Spain? To both these questions, the assembly answered in the negative: they said, that Burgundy was united to the crown of France, and that he could not separate it by his own authority; that his person also was the property of the public, of which therefore he could not dispose; but for the two millions, which they looked

France. upon as a just equivalent, they undertook that it should be raised for his service. When the ambassadors delivered their propositions, Charles treated the English herald with respect, and the French one with contempt; which produced a challenge from Francis to the emperor\*. All differences, however, were at last adjusted; and a treaty was concluded at Cambray, on the 5th of August 1528. By this treaty, instead of the possession, the emperor contented himself with reserving his right to the duchy of Burgundy, and the two millions of crowns already mentioned. Of these he was to receive 1,200,000 in ready money: the prince's lands in Flanders belonging to the house of Bourbon were to be delivered up; these were valued at 400,000 more: and the remaining 400,000 were to be paid by France in discharge of the emperor's debt to England. Francis was likewise to discharge the penalty of 500,000 crowns which the emperor had incurred, by not marrying his niece the princess Mary of England; and to release a rich *fleur-de-lis* which had been many years before pawned by the house of Burgundy for 50,000 crowns. The town and castle of Helden were also yielded; together with the sovereignty of Flanders and Artois, and all the king's pretensions in Italy. As for the allies of France, they were abandoned to the emperor's mercy, without the least stipulation in their favour; and Francis himself protested against the validity of the treaty before he ratified it, as did also his attorney-general before he registered it in parliament; but both of them with the greatest secrecy imaginable.

Nothing farther of much consequence happened during the remainder of the reign of Francis I. The war was soon renewed with Charles, who made an invasion into France, but with very bad success; nor was peace fully established but by the death of Francis, which happened on the 3d of March, 1547. He was succeeded by his son Henry II. who ascended the throne that very day on which he was 29 years of age. In the beginning of his reign, an insurrection happened in Guienne, owing to the oppressive conduct of the officers who levied the salt tax. The king despatched against the insurgents two bodies of troops; one commanded by the duke of Aumale son to the duke of Guise, the other by the constable. The first behaved with the greatest moderation, and brought back the people to their duty without making many examples: the other behaved with the utmost haughtiness and cruelty; and though the king afterwards remitted many of his punishments, yet from that time the constable became odious to the people, while the family of Guise were highly respected.

<sup>137</sup> Henry persecutes the Protestants. In 1548, the king began to execute the edicts which had been made against the Protestants with the utmost severity; and, thinking even the clergy too mild in the prosecution of heresy, erected for that purpose a chamber composed of members of the parliament of Paris. At the queen's coronation, which happened this year, he caused a number of Protestants to be burned, and was himself present at the spectacle. He was, however, so much shocked, that he could never forget it; but complained, as long as he lived, that, at certain times, it appeared before his eyes, and troubled his understanding.

In 1549, a peace being concluded with England, the

king purchased Boulogne from the latter, for the sum of 400,000 crowns; one half to be paid on the day of restitution, and the other a few months after. Scotland was included in the treaty, and the English restored some places they had taken there. This was the most advantageous peace that France had hitherto made with England; the vast arrears which were due to that crown being in effect remitted; and the pension which looked so like tribute, not being mentioned, was in fact extinguished. The earl of Warwick himself, who had concluded the peace, was so sensible of the disgrace suffered by this nation on this occasion, that he pretended to be sick, in order to avoid setting his hand to such a scandalous bargain.

This year, an edict was made to restrain the extravagant remittances which the clergy had been in use of making to the court of Rome, and for correcting some other abuses committed by the papal notaries. With this edict Pope Julius III. was highly displeas'd; and the following year (1550) war was declared by the king of France against the pope and the emperor. The pretence was, that Henry protected Octavio Farnese duke of Parma, whom the pope was desirous of depriving of his dominions. In this war the king was threatened with the censures of the church, more especially when it was known that he had entered into an alliance with the Turks, and a Turkish fleet entered the Mediterranean, where they threatened the isle of Gozo, and made descents upon Sicily. Henry, however, strongly denied any such connexion, and insisted that the emperor had given them sufficient provocation: but be that as it will, the emperor soon found himself in such danger from these new enemies, that he could not support the pope as he intended, who on that account was obliged to sue for peace. After <sup>139</sup> success the king continued the war against the emperor against the emperor. with success; reducing the cities of Toul, Verdun, and Metz. He then entered the country of Alsace, and reduced all the fortresses between Hagenau and Wissemburg. He failed, however, in his attempt on Straßburg; and was soon after obliged by the German princes and the Swiss to desist from farther conquests on that side. This war continued with very little interruption, and as little success on the part of the French, till the year 1557, when a peace was concluded; and soon after, the king was killed at a <sup>140</sup> He is killed tournament by one Count de Montgomery, who was at a tournament. reckoned one of the strongest knights in France, and who had done all he could to avoid this encounter with the king.

The reign of his successor Francis II. was remarkable only for the persecution of the Protestants; which became so grievous, that they were obliged to take up arms in their own defence. This occasioned several civil wars, the first of which commenced in the reign of Charles IX. who succeeded to the throne in 1560. This <sup>141</sup> Civil wars first war continued till the year 1562, when a peace with the Protestants. was concluded, by which the Protestants were to have a free pardon and liberty of conscience. In 1565, the war broke out anew, and was continued with very little interruption till 1569, when peace was again concluded upon very advantageous terms for the Protestants. After this King Charles, who had now taken the government into his hands, carelessly the Protestants in an extraordinary manner. He invited to court

France. <sup>138</sup> Advantageous treaty with England.

France. <sup>135</sup> Treaty of Cambray. † See *Duel*.

<sup>136</sup> Francis dies and is succeeded by Henry II.

<sup>139</sup> Henry's success against the emperor.

<sup>140</sup> He is killed at a tournament.

<sup>141</sup> Civil wars with the Protestants.

France. court the admiral Coligni, who was the head of the Protestant party; and cajoled him so, that he was lulled into a perfect security, notwithstanding the many warnings given him by his friends, that the king's fair speeches were by no means to be trusted; but he had soon reason to repent his confidence. On the 22d of August 1571, as he was walking from the court to his lodgings, he received a shot from a window, which carried away the second finger of his right hand, and wounded him grievously in the left arm. This he himself ascribed to the malice of the duke of Guise, the head of the Catholic party. After dinner, however, the king went to pay him a visit, and amongst others made him this compliment: "You have received the wound, but it is I who suffer;" desiring at the same time that he would order his friends to quarter about his house, and promising to hinder the Catholics from entering that quarter after it was dark. This satisfied the admiral of the king's sincerity; and hindered him from complying with the desires of his friends, who would have carried him away, and who were strong enough to have forced a passage out of Paris if they had attempted it.

142  
Dreadful  
massacre of  
the Prote-  
stants.

In the evening, the queen mother, Catharine de Medicis, held a cabinet council to fix the execution of the massacre of the Protestants, which had been long meditated. The persons of which this council was composed, were, Henry duke of Anjou, the king's brother; Gonzagua duke of Nevers; Henry of Angoulesme grand prior of France, and bastard brother of the king; and marshal de Tavannes; and Albert de Gondi, count de Retz: the direction of the whole was given to the duke of Guise, to whom the administration had been entirely confided during the former reign. The guards were appointed to be in arms, and the city officers were to dispose the militia to execute the king's orders, of which the signal was the ringing of a bell near the Louvre. Some say, that when the hour approached, which was that of midnight, the king grew undetermined: that he expressed his horror at shedding so much blood, especially considering that the people whom he was going to destroy were his subjects, who had come to the capital at his command, and in confidence of his word; and particularly the admiral, whom he had detained so lately by his caresses. The queen mother, however, reproached him with his cowardice, and represented to him the great danger he was in from the Protestants; which at last induced him to consent. According to others, however, the king himself urged on the massacre; and when it was proposed to him to take off only a few of the heads, he cried out, "If any are to die, let there not be one left to reproach me with breach of faith."

As soon as the signal was given, a body of Swiss troops of the Catholic religion, headed by the duke of Guise, the chevalier d'Angoulesme, accompanied by many persons of quality, attacked the admiral's house. Having forced open the doors, the foremost of the assassins rushed into his apartment; and one of them asked if he was Coligni? To this he answered that he was; adding, "Young man respect these gray hairs:" to which the assassin replied by running him through the body with a sword. The duke & Guise and the chevalier growing impatient below stairs, cried out to

France. know if the business was done; and being told that it was, commanded that the body should be thrown out at the window. As soon as it fell on the ground, the chevalier, or (as some say) the duke of Guise, wiping the blood off the face, kicked it with his foot. The body was then abandoned to the fury of the populace; who, after a series of indignities, dragged it to the common gallows, to which they chained it by the foot, the head being cut off and carried to the queen mother; who, it is said, caused it to be embalmed and sent to Rome. The king himself went to see the body hang upon the gibbet; where a fire being kindled under it, part was burnt, and the rest scorched. In the Louvre, the gentlemen belonging to the king of Navarre and the prince of Condé were murdered under the king's eye. Two of them, wounded and pursued by the assassins, fled into the bedchamber of the queen of Navarre, and jumped upon her bed, beseeching her to save their lives; and as she went to ask this favour of the queen mother, two more, under the like circumstances, rushed into the room, and threw themselves at her feet. The queen mother came to the window to enjoy these dreadful scenes; and the king, seeing the Protestants who lodged on the other side of the river flying for their lives, called for his long gun, and fired upon them. In the space of three or four days, many thousands were destroyed in the city of Paris, by the most cruel deaths which malice itself could invent. Peter Ramus, professor of philosophy and mathematics, after being robbed of all he had, his belly being first ripped open, was thrown out of a window. This so much affected Denis Lambin, the king's professor, that, though a zealous Catholic, he died of terror. The first two days, the king denied it was done by his orders, and threw the whole blame on the house of Guise: but, on the 28th of August, he went to the parliament, avowed it, was complimented upon it, and directed a process against the admiral, by which he was stigmatized as a traitor. Two innocent gentlemen suffered as his accomplices in a pretended plot against the life of the king, in order to set the crown on the head of the prince of Condé. They were executed by torch light; and the king and the queen mother (with the king of Navarre and the prince of Condé by force) were spectators of this horrid fact; and they also assisted at the jubilee to thank God for the execution of such an infamous design.

The massacre was not confined to the city of Paris alone. On the eve of St Bartholomew, orders had been sent to the governors of provinces to fall upon the Protestants themselves, and to let loose the people upon them; and though an edict was published before the end of the week, assuring them of the king's protection, and that he by no means designed to exterminate them because of their religion, yet private orders were sent, of a nature directly contrary; in consequence of which, the massacre, or (as, in allusion to the Sicilian vespers †, it was now styled) the *Matins of Paris*, † See Sicily, were repeated in Meaux, Orleans, Troyes, Angers, Thoulouse, Rouen, and Lyons; so that in the space of two months 30,000 Protestants were butchered. The next year Rochelle, the only strong fortress which the Protestants held in France, was besieged, but was not taken without the loss of 24,000 of the Catholics who besieged it. After this a pacification ensued on terms favourable

France. favourable to the Protestants, but to which they never trusted.

This year the duke of Anjou was elected king of Poland, and soon after set out to take possession of his new kingdom. The king accompanied him to the frontiers of the kingdom; but during the journey was seized with a slow fever, which from the beginning had a very dangerous appearance. He lingered for some time under the most terrible agonies both of body and mind; and at last died on the 30th of May 1572, having lived 24 years, and reigned 13. It is said, that after the dreadful massacre above mentioned, this prince had a fierceness in his looks, and a colour in his cheeks, which he never had before. He slept little, and never found. He waked frequently in agonies, and had soft music to compose him again to rest.

<sup>143</sup>  
Death of  
Charles IX.

<sup>144</sup>  
Henry III.

During the first years of the reign of Henry III. who succeeded his brother Charles, the war with the Protestants was carried on with indifferent success on the part of the Catholics. In 1575, a peace was concluded, called by way of eminence the *Edict of Pacification*. It consisted of no fewer than 63 articles; the substance of which was, that liberty of conscience, and the public exercise of religion, were granted to the reformed, without any other restriction than that they should not preach within two leagues of Paris or any other part where the court was; party chambers were erected in every parliament, to consist of equal numbers of Catholics and Protestants, before whom all judgments were to be tried: The judgments against the admiral, and, in general, all who had fallen in the war or been executed, were reversed; and eight cautionary towns were given to the Protestants.

<sup>145</sup>  
Catholic  
league  
formed.

The edict gave occasion to the Guises to form an association in defence, as was pretended, of the Catholic religion, afterwards known by the name of the *Catholic League*. In this league, though the king was mentioned with respect, he could not help seeing that it struck at the very root of his authority: for, as the Protestants had already their chiefs, so the Catholics were, for the future, to depend entirely upon the chief of the league; and were, by the very words of it, to execute whatever he commanded, for the good of the cause, against any, without exception of persons. The king, to avoid the bad effects of this, by the advice of his council declared himself head of the league; and of consequence recommenced the war against the Protestants, which was not extinguished as long as he lived.

The faction of the duke of Guise, in the mean time, took a resolution of supporting Charles cardinal of Bourbon, a weak old man, as presumptive heir of the crown. In 1584 they entered into a league with Spain, and took up arms against the king; and though peace was concluded the same year, yet in 1587 they again proceeded to such extremities, that the king was forced to fly from Paris. Another reconciliation was soon after effected; but it is generally believed that the king from this time resolved on the destruction of Guise. Accordingly, finding that this nobleman still behaved towards him with his usual insolence, the king caused him to be stabbed, as he was coming into his presence, by his guards, on the 23d of December 1587. The king himself did not long survive him; being stabbed by one James Clement, a Ja-

<sup>146</sup>  
Duke of  
Guise murdered, and  
likewise the  
king.

cobine monk, on the first of August 1588. His wound at first was not thought mortal; but his frequent swooning quickly discovered his danger; and he died next morning, in the 39th year of his age, and 16th of his reign.

France.

Before the king's death, he nominated Henry Bourbon king of Navarre for his successor on the throne of France; but as he was a Protestant, or at least one who greatly favoured their cause, he was at first owned by very few except those of the Protestant party. He met with the most violent opposition from the members of the Catholic league; and was often reduced to such straits, that he went to people's houses under colour of visits, when in reality he had not a dinner in his own. By his activity and perseverance, however, he was at last acknowledged throughout the whole kingdom, to which his abjuration of the Protestant religion contributed not a little. As the king of Spain had laid claim to the crown of France, Henry no sooner found himself in a fair way of being firmly seated on the throne, than he formally declared war against that kingdom; in which he at last proved successful, and in 1597 entered upon the quiet possession of his kingdom.

<sup>147</sup>  
Henry IV.

The king's first care was to put an end to the religious disputes which had so long distracted the kingdom. For this purpose, he granted the famous edict, dated at Nantz, April 13. 1598. It re-established, in a most solid and effectual manner, all the favours that had ever been granted to the reformed by other princes; adding some which had not been thought of before, particularly the allowing them a free admission to all employments of trust, profit, and honour; the establishing chambers in which the members of the two religions were equal; and the permitting their children to be educated without constraint in any of the universities. Soon after, he concluded peace with Spain upon very advantageous terms. This gave him an opportunity of restoring order and justice throughout his dominions; of repairing all the ravages occasioned by the civil war; and abolishing all those innovations which had been made, either to the prejudice of the prerogatives of the crown or the welfare of the people. His schemes

<sup>148</sup>  
Edict of  
Nantz.

of reformation, indeed, he intended to have carried beyond the boundaries of France. If we may believe the duke of Sully, he had in view no less a design than the new-modelling of all Europe. He imagined that the European powers might be formed into a kind of Christian republic, by rendering them as nearly as possible of equal strength; and that this republic might be maintained in perpetual peace, by bringing all their differences to be decided before a senate of wise, disinterested, and able judges: and then he thought it would be no difficult matter to overturn the Ottoman empire. The number of these powers was to be 15; viz. the Papacy; the empire of Germany; France; Spain; Hungary; Great Britain; Bohemia; Lombardy; Poland; Sweden; Denmark; the republic of Venice; the States General; the Swiss Cantons; and the Italian commonwealth, which was to comprehend the states of Florence, Genoa, Lucca, Modena, Parma, Mantua, and Monaco. In order to render the states equal, the empire was to be given to the duke of Bavaria; the kingdom of Naples to the pope; that of Sicily

<sup>149</sup>  
The king  
proposes to  
new-model  
the Euro-  
pean  
powers.

France. Sicily to the Venetians; Milan to the duke of Savoy, who, by his acquisition, was to become king of Lombardy; the Austrian Low Countries were to be added to the Dutch republic; Franche Comte, Alsace, and the country of Trent, were to be given to the Swifs. With a view, it is now thought, of executing this grand project, but under pretence of reducing the exorbitant power of the house of Austria, Henry made immense preparations both by sea and land; but if he really had such a design, he was prevented by death from attempting to execute it. He was stabbed in his coach by one Ravilliac, on the 12th of May 1608.

150  
He is murdered.

151  
Louis XIII.

On the death of Henry IV. the queen mother assumed the regency. Ravilliac was executed, after suffering horrid tortures. It is said that he made a confession, which was so written by the person who took it down, that not one word of it could ever be read, and thus his instigators and accomplices could never be discovered. The regency, during the minority of Louis XIII. was only remarkable for cabals and intrigues of the courtiers. In 1617, the king assumed the government himself, banished the queen mother to Blois, caused her favourite Marshal d'Ancre to be killed, and chose for his minister the famous Cardinal Richelieu. In 1620, a new war broke out between the Catholics and Protestants, which was carried on with the greatest fury on both sides; and we may judge of the spirit which actuated both parties by what happened at Negrepisse, a town in Quercy. This place was besieged by the king's troops, and it was resolved to make an example of the inhabitants. The latter, however, absolutely refused to surrender upon any terms. They defended themselves, therefore, most desperately; and the city being at last taken by storm, they were all massacred, without respect of rank, sex, or age, except ten men. When these were brought into the king's presence, he told them they did not deserve mercy: they answered, that they would not receive it; that the only favour they asked, was to be hanged on trees in their own gardens; which was granted, and the place reduced to ashes. Both parties soon became weary of such a destructive war; and a peace was concluded in 1621, by which the edict of Nantz was confirmed. This treaty, however, was of no long duration. A new war broke out which lasted till the year 1628, when the edict of Nantz was again confirmed; only the Protestants were deprived of all their cautionary towns, and consequently of the power of defending themselves in time to come. This put an end to the civil wars on account of religion in France. Historians say, that in these wars above a million of men lost their lives, that 150,000,000 livres were spent in carrying them on; and that 9 cities, 400 villages, 2000 churches, 2000 monasteries, and 10,000 houses, were burnt or otherwise destroyed during their continuance. The next year, the king was attacked with a slow fever which nothing could allay, an extreme depression of spirits, and prodigious swelling in his stomach and belly. The year after, however, he recovered, to the great disappointment of his mother, who had been in hopes of regaining her power. She was arrested; but found means to escape into Flanders, where she remained during the rest of his reign. Richelieu, by a masterly train of politics, though himself was next to an enthusiast for popery, supported the

Protestants of Germany and Gustavus Adolphus against the house of Austria; and after quelling all the rebellions and conspiracies which had been formed against him in France, he died some months before Louis XIII. in 1643.

Louis XIV. surnamed *le Grand*, succeeded to the throne when he was only five years of age. During his minority, the kingdom was torn in pieces under the administration of his mother Anne of Austria, by the factions of the great, and the divisions between the court and parliament, for the most trifling causes and upon the most despicable principles. The prince of Condé shined like a blazing star; sometimes a patriot, sometimes a courtier, and sometimes a rebel. He was opposed by the celebrated Turenne, who from a Protestant had turned Papist. The nation of France was involved at once in civil and domestic wars; but the queen mother having made choice of Cardinal Mazarine for her first minister, he found means to turn the arms even of Cromwell against the Spaniards, and to divide the domestic enemies of the court so effectually among themselves, that when Louis assumed the reins of government into his own hands, he found himself the most absolute monarch that had ever sat upon the throne of France. He had the good fortune, on the death of Mazarine, to put the domestic administration of his affairs into the hands of Colbert, who formed new systems for the glory, commerce, and manufactures of France, all which he carried to a surprising height. The king himself ignorant and vain, was blind to every patriotic duty of a king, promoting the interests of his subjects only that they might the better answer the purposes of his greatness; and by his ambition he embroiled himself with all his neighbours, and wantonly rendered Germany a dismal scene of devastation. By his impolitic and unjust revocation of the edict of Nantz in the year 1685, with the dragooning\* the Protestants that followed it, he \* See Dragooning. obliged them to take shelter in England, Holland, and different parts of Germany, where they established the silk manufactories, to the great prejudice of their own country. He was so blinded by flattery, that he arrogated to himself the divine honours paid to the Pagan emperors of Rome. He made and broke treaties for his conveniency: and in the end he raised against himself a confederacy of almost all the other princes of Europe; at the head of which was King William III. of England. He was so well served, that he made head for some years against this alliance; and France seemed to have attained the highest pitch of military glory, under the conduct of those renowned generals Condé and Turenne. (See UNITED PROVINCES.) At length, having provoked the English by his repeated infidelities, their arms under the duke of Marlborough, and those of the Austrians under Prince Eugene, rendered the latter part of Louis's life as miserable as the beginning of it was splendid. His reign, from the year 1702 to 1711, was one continued series of defeats and calamities; and he had the mortification of seeing those places taken from him, which, in the former part of his reign, were acquired at the expence of many thousand lives. (See BRITAIN, N<sup>o</sup> 342, &c.)—Just as he was reduced, old as he was, to the desperate resolution of collecting his people and dying at their head, he was saved by the English Tory ministry deserting

France.

152

Louis XIV.

France. ferting the cause, withdrawing from their allies, and concluding the peace of Utrecht in 1713. See BRITAIN, N<sup>o</sup> 371, &c.

The last years of Louis XIV. were also embittered by domestic calamities; which, added to those he had already endured of a public nature, impressed him with a deep melancholy. He had been for some time afflicted with a fistula; which, though successfully cut, ever afterwards affected his health. The year before the peace, his only son, the duke of Burgundy, died, together with the dukes and their eldest son; and the only remaining child was left at the point of death. The king himself survived till the month of September 1715; but on the 14th of that month expired, leaving the kingdom to his great grandson Louis, then a minor.

<sup>153</sup>  
Louis XV.

<sup>154</sup>  
Administration of the duke of Orleans.

By the last will of Louis he had devolved the regency during the minority of the young king, upon a council, at the head of which was the duke of Orleans. That nobleman, however, disgusted with a disposition which gave him only a casting vote, appealed to the parliament of Paris, who set aside the will of the late king and declared him sole regent. His first acts were extremely popular, and gave the most favourable ideas of his government and character. He restored to the parliament the right which had been taken from them of remonstrating against the edicts of the crown, and compelled those who had enriched themselves during the calamities of the former reign to restore their wealth. He also took every method to efface the calamities occasioned by the unsuccessful wars in which his predecessor had engaged; promoted commerce and agriculture; and, by a close alliance with Great Britain and the United Provinces, seemed to lay the foundation of a lasting tranquillity. This happy prospect, however, was soon overcast by the intrigues of Alberoni the Spanish minister, who had formed a design of recovering Sardinia from the emperor, Sicily from the duke of Savoy, and of establishing the Pretender on the throne of Britain. To accomplish these purposes, he negotiated with the Ottoman Porte, Peter the Great of Russia, and Charles XII. of Sweden; the Turks intending to resume the war against the emperor; the two latter to invade Great Britain. But as long as the duke of Orleans retained the administration of France, he found it impossible to bring his schemes to bear. To remove him, therefore, he fomented divisions in the kingdom. An insurrection took place in Brittany; and Alberoni sent small parties into the country in disguise, in order to support the insurgents, and even laid plots to seize the regent himself. All of a sudden, however, the Spanish minister found himself disappointed in every one of his schemes. His partizans in France were put to death; the king of Sweden was killed at Frederickshall in Norway; the Czar, intent on making new regulations, could not be persuaded to make war upon Britain; and the Turks refused to engage in a war with the emperor, from whom they had lately suffered so much. The cardinal, nevertheless, continued his intrigues; which quickly produced a war betwixt Spain on the one part, and France and Britain on the other. The Spaniards, unable to resist the union of two such formidable powers, were soon reduced to the necessity of suing for peace; and the terms were dic-

tated by the regent of France; and of these the dismissal of Alberoni the Spanish minister was one. A double marriage was now set on foot: the duke of Orleans gave his own daughter, Mademoiselle Montpensier, to Don Lewis prince of Asturias, while the infant of Spain was betrothed to her cousin the king of France. From this time the house of Bourbon continued united; both princes being convinced, that it was their interest not to waste their strength in wars against each other.

France.

The spirit of conquest having now in a great measure subsided, and that of commerce taken place throughout the world in general, France became the scene of as remarkable a project in the commercial way as ever was known in any country. One John Law, a Scotf-

<sup>155</sup>  
Destructive project of John Law.

man, who had been obliged to leave his own country, laid the plan of a company which might by its notes pay off the debt of the nation, and reimburse itself by the profits. Law had wandered through various parts of Europe, and had successively endeavoured to engross the attention of various courts. The proposal was made to Victor Amadeus king of Sicily; but he dismissed Law with a reply, that "he was not rich enough to ruin himself;" but in France it was looked upon in a more favourable light; the nation being at this time involved in a debt of 200 millions, and the regent, as well as the people in general, very fond of embarking in new schemes. The bank, thus established, proceeded at first with some degree of caution; but having by degrees extended their credit to more than 80 times their real stock, they soon became unable to answer the demands made upon them; so that the company was dissolved the very same year in which it had been instituted. The confusion into which the kingdom was thrown by this fatal scheme, required the utmost exertions of the regent to put a stop to it; and scarcely was this accomplished when the king, in 1723, took the government into his own hands. The duke then became minister; but did not long enjoy this post. His irregularities had broken his constitution, and brought on a number of maladies, under which he in a short time sunk, and was succeeded in his administration by the duke of Bourbon Condé. The king, as we have already remarked, had been married, when very young, to the infant of Spain, though by reason of his tender years the marriage had never been completed. The princess, however, had been brought to Paris, and for some time treated as queen of France; but as Louis grew up, it was easy to see that he had contracted an inveterate hatred against the intended partner of his bed. The minister, therefore, at last consented that the princess should be sent back; an affront so much resented by the queen her mother, that it had almost produced a war betwixt the two nations.

<sup>156</sup>  
The king takes the government into his own hands.

<sup>157</sup>  
The infant of Spain sent back.

The dissolution of the marriage of Louis was the last act of Condé's administration; and the procuring of a new match was the first act of his successor Cardinal Fleury. The princess pitched upon was the daughter of Stanislaus Leszczinski, king of Poland, who had been deposed by Charles XII. of Sweden. The princess was destitute of personal charms, but of an amiable disposition; and though it is probable that she never possessed the love of her husband, her excellent qualities could not but extort his esteem; and the

<sup>158</sup>  
Marriage of Stanislaus king of Poland.

France. birth of a prince soon after their marriage removed all the fears of the people concerning the succession.

Cardinal Fleury continued the pacific schemes pursued by his predecessors; though they were somewhat interrupted by the war which took place in the year 1733. Notwithstanding the connexion betwixt that monarch and the French nation, however, Fleury was so parsimonious in his assistance, that only 1500 soldiers were sent to relieve Dantzic, where Stanislaus himself resided, and who at that time was besieged by the Russians. This pitiful reinforcement was soon overwhelmed by a multitude of Russians; and Stanislaus was at last obliged to renounce all thoughts of the crown of Poland, though he was permitted to retain the title of king: and that this title might not be merely nominal, the king of France consented to bestow upon him the duchies of Bar and Lorraine; so that, after the death of Stanislaus, these territories were indissolubly united to the dominions of France. Fleury steadily pursued his pacific plans, and the disputes between Spain and England in 1737 very little affected the peace of France; and it must be remembered to his praise, that instead of fomenting the quarrels betwixt the neighbouring potentates, he laboured incessantly to keep them at peace. He reconciled the Genoese and Corsicans, who were at war; and his mediation was accepted by the Ottoman Porte; who at that time carried on a successful war with the emperor of Germany, but made peace with him at the intercession of the cardinal. All his endeavours to preserve the general peace, however, proved at last ineffectual. The death of the emperor Charles VI. in 1740, the last prince of the house of Austria, set all Europe in a flame. The emperor's eldest daughter, Maria Theresa, claimed the Austrian succession, which comprehended the kingdoms of Hungary and Bohemia, the duchy of Silesia, Austrian Suabia, Upper and Lower Austria, Stiria, Carinthia, Carniola; the four forest towns; Burgaw; Brigsaw; the Low Countries; Friuli; Tyrol; the duchy of Milan; and the duchies of Parma and Placentia. Among the many competitors who pretended a right to share, or wholly to inherit, these extensive dominions, the king of France was one. But as he wished not to awaken the jealousy of the European princes by preferring directly his own pretensions, he chose rather to support those of Frederick III. who laid claim to the duchy of Silesia. This brought on the war of 1740; and of which an account is given under the articles BRITAIN and PRUSSIA. It was terminated in 1748 by the treaty of Aix-la-Chapelle; but to this Louis, who secretly meditated a severe vengeance against Britain, only consented, that he might have time to recruit his fleet and put himself somewhat more upon an equality with this formidable power. But while he meditated great exploits of this kind, the internal tranquillity of the kingdom was disturbed by violent disputes betwixt the clergy and parliaments of France. In the reign of Louis XIV. there had been violent contests betwixt the Jansenists and Jesuits concerning free will and other obscure points of theology; and the opinions of the Jansenists had been declared heretical by the celebrated papal bull named *Unigenitus*; the reception of which was enforced by the king, in opposition to the parliaments, the archbishop of Paris, and the body of the

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people. The archbishop, with 15 other prelates, protested against it as an infringement of the rights of the Gallican church, of the laws of the realm, and an insult on the rights of the people themselves. The duke of Orleans favoured the bull by inducing the bishops to submit to it; but at the same time stopped a persecution which was going on against its opponents. Thus matters passed over till the conclusion of the peace; a short time after which, the jealousy of the clergy was awakened by an attempt of the minister of state to inquire into the wealth of individuals of their order. To prevent this, they revived the contest about the bull *Unigenitus*; and it was resolved, that confessional notes should be obtained of dying persons; that these notes should be signed by priests who maintained the authority of the bull; and that, without such notes, no person could obtain a viaticum, or extreme unction. On this occasion the new archbishop of Paris, and the parliament of that city, took opposite sides; the latter imprisoning such of the clergy as refused to administer the sacraments excepting in the circumstances above mentioned. Other parliaments followed the example of that of Paris; and a war was instantly kindled betwixt the civil and ecclesiastical departments of the state. In this dispute the king interfered, forbade the parliaments to take cognizance of ecclesiastical proceedings, and commanded them to suspend all prosecutions relative to the refusal of the sacraments: but instead of acquiescing, the parliaments presented new remonstrances, refused to attend any other business, and resolved that they could not obey this injunction without violating their duty as well as their oath. They cited the bishop of Orleans before their tribunal; and ordered all writings, in which its jurisdiction was disputed, to be burnt by the executioner. By the assistance of the military, they enforced the administration of the sacraments to the sick, and ceased to distribute that justice to the subject for which they had been originally instituted. The king, enraged at their obstinacy, arrested and imprisoned four of the members who had been most obstinate, and banished the remainder to Bourges, Poitiers, and Auvergne; while, to prevent any impediment from taking place in the administration of justice by their absence, he issued letters patent, by which a royal chamber for the prosecution of civil and criminal suits was instituted. The counsellors refused to plead before these new courts; and the king, finding at last that the whole nation was about to fall into a state of anarchy, thought proper to recal the parliament. The banished members entered Paris amidst the acclamations of the inhabitants; and the archbishop, who still continued to encourage the priests in refusing the sacraments, was banished to his seat at Conflans; the bishops of Orleans and Troyes were in like manner banished, and a calm for the present restored to the kingdom.

The tranquillity thus established was of no long duration. In the year 1756, the parliaments again fell under the displeasure of their king by their imprudent persecution of those who adhered to the bull *Unigenitus*. They proceeded so far in this opposition as to refuse to register certain taxes absolutely necessary for the carrying on of the war. By this Louis was so provoked, that he suppressed the fourth and fifth chambers of inquests, the members of which had distinguished

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gished

159  
Disputes  
betwixt the  
parliaments  
and clergy.

160  
Parliament  
of Paris  
banished.

161  
New dis-  
putes be-  
twixt the  
king and  
parliament.

France.

gushed themselves by their opposition to his will. He commanded the bull *Unigenitus* to be respected, and prohibited the secular judges from ordering the administration of the sacraments. On this 15 counsellors of the great chamber resigned their offices, and 124 members of the different parliaments followed their example; and the most grievous discontents took place throughout the kingdom. An attempt was made by a fanatic, named *Damien*, to assassinate him; and the king was actually wounded, though slightly, between the ribs, in the presence of his son and in the midst of his guards. The assassin was put to the most exquisite tortures; in the midst of which he persisted, in the most obstinate manner, to declare that he had no intention to kill the king; but that his design was only to wound him, that God might touch his heart, and incline him to restore peace to his dominions, &c. These expressions, which undoubtedly indicated insanity, had no effect on his merciless judges, who consigned him to one of the most horrid deaths the ingenuity or cruelty of man could invent. This attempt, however, seems to have had some effect upon the king; for he soon after banished the archbishop of Paris, who had been recalled, and once more accommodated matters with his parliament.

162  
Family compact between France and Spain established.

The unfortunate event of the war of 1755 had brought the nation to the brink of ruin, when Louis implored the assistance of Spain; and on this occasion the celebrated *Family Compact* was signed; by which, with the single exception of the American trade, the subjects of France and Spain are naturalized in both kingdoms, and the enemy of the one sovereign is invariably to be looked upon as the enemy of the other. At that time, however the assistance of Spain availed very little; both powers were reduced to the lowest ebb, and the arms of Britain were triumphant in every quarter of the globe. See the article BRITAIN.

163  
Expulsion of the Jesuits.

The peace concluded at Paris in the year 1763, though it freed the nation from a most destructive and bloody war, did not restore its internal tranquillity. The parliament, eager to pursue the victory they had formerly gained over their religious enemies, now directed their efforts against the Jesuits, who had obtained and enforced the bull *Unigenitus*. That once powerful order, however, was now on the brink of destruction. A general detestation of its members had taken place throughout the whole world. A conspiracy formed by them against the king of Portugal, and from which he narrowly escaped, had roused the indignation of Europe, and this was still farther inflamed by some fraudulent practices of which they had been guilty in France. Le Valette, the chief of their missionaries at Martinico, had, ever since the peace of Aix-la-Chapelle, carried on a very extensive commerce, insomuch that he even aspired at monopolizing the whole West India trade when the war with Britain commenced in 1755. Leonay and Gouffre, merchants at Marseilles, in expectation of receiving merchandise to the value of two millions from him, had accepted of bills drawn by the Jesuits to the amount of a million and a half. Unhappily they were disappointed by the vast number of captures made by the British; in consequence of which they were obliged to apply to the Society of Jesuits at large: but they, either ignorant of their true interest, or too slow in giving assist-

ance, suffered the merchants to stop payment; and thus not only to bring ruin upon themselves, but to involve, as is usual in such cases, a great many others in the same calamity. Their creditors demanded indemnification from the Society at large; and on their refusal to satisfy them, brought their cause before the parliament of Paris. That body, eager to revenge themselves on such powerful adversaries, carried on the most violent persecutions everywhere against them. In the course of these, the volume containing the constitution and government of the order itself was appealed to, and produced in open court. It then appeared, that the order of Jesuits formed a distinct body in the state, submitting implicitly to their chief, who alone was absolute over their lives and fortunes. It was likewise discovered that they had, after a former expulsion, been admitted into the kingdom upon conditions which they had never fulfilled; and to which their chief had obstinately refused to subscribe; consequently that their existence at that time in the nation was merely the effect of toleration. The event was, that the writings of the Jesuits were pronounced to contain doctrines subversive of all civil government, and injurious to the security of the sacred persons of sovereigns: the attempt of *Damien* against the king was attributed to them, and every thing seemed to prognosticate their speedy dissolution. In this critical moment, however, the king interfered, and by his royal mandate suspended all proceedings against them for a year; a plan of accommodation was drawn up, and submitted to the pope and general of the order: but the latter, by his ill-timed haughtiness, entirely overthrew the hope of reconciliation. The king withdrew his protection, and the parliament redoubled their efforts against them. The bulls, briefs, constitutions, and other regulations of the Society, were determined to be encroachments on authority, and abuses of government; the Society itself was finally dissolved, and its members declared incapable of holding any clerical or municipal offices; their colleges were seized; their effects confiscated, and the order annihilated ever since.

France.

The parliament, having gained this victory, next made an attempt to set bounds to the power of the king himself. They now refused to register an edict which Louis had issued for the continuance of some taxes which should have ended with the war, and likewise to conform to another by which the king was enabled to redeem his debts at an inadequate price. The court attempted to get the edicts registered by force, but the parliaments everywhere seemed inclined to resist to the last. In 1766, the parliament of Brittany refused the crown a gift of 700,000 livres; in consequence of which they were singled out to bear the weight of royal vengeance: but while matters were on the point of coming to extremities, the king thought proper to drop the process altogether, and to publish a general amnesty. The parliaments, however, now affected to despise the royal clemency; which exasperated the king to such a degree, that he ordered the counsellors of the parliament of Brittany (who had refused to resume the functions of which he deprived them) to be included in the list of those who were to be drafted for militia; and those upon whom the lot fell were immediately obliged to join their respective regiments;

164  
Contentions betwixt the king and his parliament.

France. ments; the rest being employed in forming the city guard. The parliament of Paris remonstrated so freely upon this conduct of the king, that they also fell under his censure; and Louis in the most explicit manner declared, that he would suffer no earthly power to interfere with his will; and the parliaments were for the present intimidated into submission.

The interval of domestic tranquillity which now took place, was employed by the king in humbling the pride of the pope, who refused to recal a brief he had published against the duke of Parma. On this the French monarch reclaimed the territories of Avignon and Venaissin; and while the pontiff denounced his unavailing censures against him, the marquis de Rochecouart, with a single regiment of soldiers, drove out the troops of the pope, and took possession of the territories in question.

165  
Island of  
Corsica re-  
duced.

A more formidable opposition was made by the natives of the small island of Corsica; the sovereignty of which had been transferred to France by the Genoese its former masters, on condition that Louis should re-instate them in the possession of the island of Caprala, which the Corsicans had lately reduced. These islanders defended themselves with the most desperate intrepidity; and it was not till after two campaigns, in which several thousands of the bravest troops of France were lost, that they could be brought under subjection.

166  
Distressed  
state of the  
nation.

The satisfaction which this unimportant conquest might afford to Louis, was clouded by the distress of the nation at large. The East India Company had totally failed, and most of the capital commercial houses in the kingdom were involved in the same calamity. The minister, the duc de Choiseul, by one desperate stroke, reduced the interest of the funds to one half, and at the same time took away the benefit of the survivorship in the tontines, by which the national credit was greatly affected; the altercation betwixt the king and his parliaments revived, and the dissensions became worse than ever. The duc de Choiseul attempted in vain to conciliate the differences; his efforts tended only to bring misfortunes upon himself, and in 1771 he was banished by the king, who suspected him of favouring the popular party too much; and this was soon after followed by the banishment of the whole parliament of Paris, and that by the banishment of a number of others; new parliaments being everywhere chosen in place of those who had been expelled. The people were by no means disposed to pay the same regard to these new parliaments that they had done to the old ones; but every appearance of opposition was at last silenced by the absolute authority of the king. In the midst of this plentitude of power, however, which he had so ardently desired, his health daily declined, and the end of his days was evidently at no great distance. As he had all along indulged himself in sensual pleasures to the greatest excess, so now they proved the immediate means of his destruction. His favourite mistress, Madame de Pompadour, who for a long time governed him with an absolute sway, had long since been dead, and the king had for some time been equally enslaved by the charms of Madame du Barre. At last even her beauty proved insufficient to excite desire; and a succession of mistresses became necessary to rouse the languid appetites of the king. One

of these, who was infected with the smallpox, communicated the disease to the king; who in a short time died of it, notwithstanding all the assistance that could be given him by the physicians.

France.  
167  
Death of  
Louis XV.  
168  
Reign of  
Louis XVI.

The new king Louis XVI. grandson to the former, ascended the throne in the year 1774, in the 20th year of his age; and to secure himself against the disease which had proved fatal to his predecessor, submitted to inoculation, with several others of the royal family. Their quick and easy recovery contributed much to extend that practice throughout the kingdom, and to remove the prejudices which had been entertained against it.

The king had no sooner regained his health, than he applied himself diligently to extinguish the differences which had taken place betwixt his predecessor and the people. He removed those from their employments who had given cause of complaint by their arbitrary and oppressive conduct; and he conciliated the affection of his subjects by removing the new parliaments and recalling the old ones.

But though the prudence of Louis had suggested to him these compliances, he endeavoured still to preserve pure and entire the royal authority. He explained his intentions by a speech in the great chamber of parliament. "The step that he had taken to ensure the tranquillity and happiness of his subjects, ought not (he observed) to invalidate his own authority; and he hoped, from the zeal and attachment of the present assembly, an example of submission to the rest of his subjects. Their repeated resistance to the commands of his grandfather had compelled that monarch to maintain his prerogative by their banishment; and they were now recalled, in the expectation that they would quietly exercise their functions, and display their gratitude by their obedience." He concluded with declaring, "That it was his desire to bury in oblivion all past grievances; that he should ever behold with extreme disapprobation whatever might tend to create divisions and disturb the general tranquillity; and that his chancellor would read his ordinance to the assembly, from which they might be assured he would not suffer the smallest deviation to be made." That ordinance was conceived in the most explicit terms, and was immediately registered by the king's command. The articles of it limited within very narrow bounds the pretensions of the parliament of Paris: The members were forbidden to look upon themselves as one body with the other parliaments of the kingdom, or to take any step, or assume any title, that might tend towards or imply such an union: They were enjoined never to relinquish the administration of public justice, except in cases of absolute necessity, for which the first president was to be responsible to the king; and it was added, that on their disobedience the grand council might replace the parliament, without any new edict for the purpose. They were still however permitted to enjoy the right of remonstrating before the registering of any edicts or letters patent which they might conceive injurious to the welfare of the people, provided they preserved in their representations the respect due to the throne. But these remonstrances were not to be repeated; and the parliament, if they proved ineffectual, were to register the edict objected to within a month at farthest from the first day of its being

France. being published. They were forbidden to issue any arrets which might excite trouble, or in any manner retard the execution of the king's ordinances; and they were assured by the king himself, at the conclusion of this code for their future conduct, that as long as they adhered to the bounds prescribed, they might depend upon his countenance and protection. In short, the terms on which Louis consented to re-establish the parliaments were such, that they were reduced to mere cyphers, and the word of the king still continued to be the only law in the kingdom. The archbishop of Paris, who had likewise presumed to raise some commotions with regard to the bull Unigenitus, was obliged to submit; and severely threatened if he should afterwards interfere in such a cause.

1775. The final conquest of the Corsicans, who, provoked by the oppression of their governors, had once more attempted to regain their former liberty, was the first event of importance which took place after this restoration of tranquillity: but the kingdom was yet filled with disorder from other causes. A scarcity of corn happening to take place just at the time that some regulations had been made by M. Turgot the new financier, the populace rose in great bodies, and committed such outrages, that a military force became absolutely necessary to quell them; and it was not till upwards of 500 of these miserable wretches were destroyed that they could be reduced. The king, however, by his prudent and vigorous conduct on this occasion, soon put a stop to all riots, and eminently displayed his clemency as well as prudence in the methods he took for the restoration of the public tranquillity.

169  
Humane  
edict in fa-  
vour of de-  
serters.

170  
Suppression  
of the mous-  
quetaires.

The humanity of Louis was next shown in an edict which he caused to be registered in parliament, sentencing the deserters from his army in future to work as slaves on the public roads, instead of punishing them as formerly with death; and with equal attention to the general welfare of his subjects, he seized the moment of peace to fulfil those promises of economy which on his accession he had given to the people. Various regulations took place in consequence; particularly the suppression of the mousquetaires and some other corps, which being adapted more to the parade of guarding the royal person than any real military service, were supported at a great expence, without any adequate return of benefit to the state.

Particular attention was also paid to the state of the marine; and the appointment of M. de Sartine in 1776 to that department did honour to the penetration of the sovereign. That minister, fruitful in resources, and unwearied in his application, was incessantly engaged in augmenting the naval strength of his country; and the various preparations that filled the ports and docks created no small uneasiness to the British court.

The next appointment made by the king was equally happy, and in one respect singular and unprecedented. M. Turgot, though possessed of integrity and industry, had not been able to command the public confidence. On his retreat, M. Clugny, intendant general of Bourdeaux, had been elevated to the vacant post: but he dying in a very short space, M. Taboureaux des Reaux was appointed his successor; and the king soon after associated with him in the management of

the finances M. Neckar, by birth a Swiss, and by religion a Protestant. That gentleman, in the preceding reign, had been chosen to adjust some differences between the East India Company and the crown; and had discharged his trust in a manner which gained the approbation of both parties. Possessed of distinguished abilities, his appointment would have excited no surprise, had it not been contrary to the constant policy of France, which had carefully excluded the aliens of her country and faith from the controul of her revenue. It now stood forward as a new instance of enlargement of mind and liberality of sentiment; and will to posterity mark the prominent features of the reign of Louis XVI.

France.  
171  
Appoint-  
ment of M.  
Neckar to  
the direc-  
tion of the  
finances.

172  
The French  
privately  
assist the  
Americans  
in their  
contest  
with Bri-  
tain;  
Although the French monarch was of a pacific disposition, and not destitute of generosity of sentiment; yet his own and the public exultation had been openly and constantly proportioned to the success of the Americans in their contest with Britain: the princes of the blood and the chief nobility were eager to embark in support of the cause of freedom; and the prudence of the king and his most confidential ministers alone restrained their ardour. The fatal events of the former war were still impressed on the mind of Louis; and he could not readily consent to expose his infant marine in a contest with a nation who had so frequently asserted the dominion of the seas, and so lately broken the united strength of the house of Bourbon. At the same time, he was sensible that the opportunity of humbling those haughty islanders should not be entirely neglected, and that some advantages should be taken of the present commotions in America. Two agents from the United States, Silas Deane and Dr Benjamin Franklin, had successively arrived at Paris: and though all audience was denied them in a public capacity, still they were privately encouraged to hope that France only waited the proper opportunity to vindicate in arms the independence of America. In the mean while, the American cruisers were hospitably received into the French ports; artillery and all kinds of warlike stores were freely sold or liberally granted to the distress of the colonists; and French officers and engineers, with the connivance of government, entered into their service.

Some changes were about this time introduced into the different departments of state. The conduct of M. Neckar in the finances had been attended with universal approbation; and M. Taboureaux des Reaux, his colleague, had resigned his situation, but still retained the dignity of counsellor of state. To afford full scope to the genius of M. Neckar, Louis determined no longer to clog him with an associate: but, with the title of Director General of the Finances, submitted to him the entire management of the funds and revenue of France. In the ensuing year, the Count de St Germain, secretary at war, died; and the prince de Montbarey, who had already filled an inferior situation in that department, was now appointed to succeed him.

In the mean time, Louis's negotiations with foreign courts were not neglected. He concluded a new treaty of alliance with Switzerland; vigilantly observed the motions of the different princes of Germany on the death of the elector of Bavaria; and when closely questioned by the English ambassador, Lord Stormont, respecting the various warlike preparations which were diligently

France. diligently continued through the kingdom, he replied, That at a time when the seas were covered with English fleets and American cruizers, and when such armies were sent to the New World as had never before appeared there, it became prudent for him also to arm for the security of the colonies and the protection of the commerce of France. The king was not ignorant at the same time, that the remonstrances of Great Britain, and the importunities of the agents of the United States, would soon compel him to adopt some decisive line of conduct. This was hastened by a new event disastrous to Britain; the failure of General Burgoyne's expedition, and the capture of his army. The news of that event was received at Paris with unbounded exultation. M. Sartine, the marine superintendent, was eager to measure the naval strength of France with that of Great Britain; the queen, who had long seconded the applications of the American agents, now espoused their cause with fresh ardour; and the pacific inclinations of Louis being overborne by the suggestions of his ministers and the influence of the queen, it was at length determined openly to acknowledge the independence of the United States.

173  
and at last  
openly ac-  
knowledge  
the inde-  
pendence  
of the Unit-  
ed States.

Dr Franklin and Silas Deane, who had hitherto acted as private agents, were now acknowledged as public ambassadors from those states to the court of Versailles; and a treaty of amity and commerce was signed between the two powers in the month of February 1778. The duke of Noailles, ambassador to the court of London, was in the month of March instructed to acquaint that court with the above treaty. At the same time he declared, that the contracting parties had paid great attention not to stipulate any exclusive advantages in favour of France, and that the United States had reserved the liberty of treating with every nation whatever on the same footing of equality and reciprocity. But this stipulation was treated by the British with contempt; and the recal of Lord Stormont, their ambassador at Versailles, was the signal for the commencement of hostilities.—The events produced by this war are related under the articles AMERICA, BRITAIN, and INDOSTAN. Here our chief business is with domestic transactions, the measures of the cabinet, and the internal economy of the state.

174  
Removal of  
M. de Sar-  
tine.

In the year 1780 new changes in the French ministry took place. M. Bertin had resigned the office of secretary of state; the prince de Montbarey had retired from the post of secretary at war, and was succeeded by the Marquis de Segur. But the most important removal was that of M. Sartine, who had for several years presided over the marine department, and whose unwearied application and ability had raised the naval power of France to a height that astonished Europe: but his colleagues in the cabinet loudly arraigned a profusion, which would have diverted into one channel the whole resources of the kingdom; and his retreat opened a road to the ambition of the Marquis de Castries, who was appointed to supply his place.

This year, the king fixed on the anniversary of his birth day to render it memorable by a new instance of humanity: and he abolished for ever the inhuman custom of *putting the question*, as it was called, by torture; a custom which had been so established by the practice of ages, that it seemed to be an inseparable part of

the constitution of the courts of justice in France. At the same time, to defray the charges of war, he continued to diminish his own expenditure; and sacrificing his magnificence to the ease of his subjects, dismissed at once above 400 officers belonging to his court.

175  
Dismission  
of M.  
Neckar.

Unhappily, however, the popular discontents were excited next year by the dismissal of their favourite minister, M. Neckar. He had conceived the arduous but popular project of supporting a war by loans without taxes; and the rigid economy which he had introduced into all the departments of the royal household, and the various resources that presented themselves to his fertile genius, had supported him amidst the difficulties that attended this system. But his austerity of temper had not rendered him equally acceptable to the sovereign and his subjects; and the repeated reforms he had recommended were represented as inconsistent with the dignity of the crown; he was therefore in 1781 dismissed from his office of comptroller-general; and M. Joli de Fleuri, counsellor of state, was appointed to that important department. The defeat of the count de Grasse happened next year, and impressed the kingdom with general grief and consternation. Immense preparations were, however, made for the operations of 1783; and in conjunction with the courts of Madrid and the Hague, Louis was determined this year to make the most powerful efforts to bring the war to a conclusion. But in the midst of these preparations, the voice of peace was again heard; and Louis was induced to listen to the proffered mediation of the two first potentates in Europe, the emperor of Germany and the empress of Russia. The count de Vergennes, who still occupied the post of secretary of foreign affairs, was appointed to treat with Mr Fitzherbert the British minister at Brussels, but who had lately proceeded to Paris to conduct this important negotiation. The way was already smoothed for the restoration of public tranquillity, by provisional articles signed at the conclusion of the last year between the states of America and Great Britain, and which were to constitute a treaty of peace finally to be concluded when that between France and Great Britain took place. Preliminary articles were accordingly agreed upon and signed at Versailles: these were soon after succeeded by a definitive treaty; and France, throughout her extensive dominions, beheld peace once more established. Though the late war had been attended by the most brilliant success, and the independence of America seemed to strike deep at the source of her rival's power, yet France herself had not been entirely free from inconvenience. The retreat of M. Neckar, had, as we have already observed, diminished the public confidence; three different persons who had since transiently occupied his post, increased the jealousies of the people; and the failure of the celebrated Caisse d'Escompte completed the universal consternation.

176  
Peace con-  
cluded.

177  
Of the  
Caisse  
d'Escompte

That bank had been established in the year 1776. The plan of it was formed by a company of private adventurers, and its capital was fixed at 500,000 sterling. The professed design of the Company was to discount bills at short dates, at the rate of four per cent. per annum: but as this interest could never be an equivalent for the capital sunk by the proprietors, they were intrusted with the additional power of issuing notes to the amount of their capital, which, as they were



France. were capable at any time of being converted into specie, might be often voluntarily taken by their customers from mere convenience. The reputation of the bank soon caused its stock to sell above par: and its credit was still at the highest, when to the astonishment of the nation it suddenly stopped payment on the 2d of October 1783. The cause assigned was an uncommon scarcity of specie: But the public suspected that the failure arose from a loan secretly made to government; and what confirmed the suspicion was, that government about the same time stopped payment of the bills drawn upon them by their army in America.

Whatever was the cause of this event, the king was prevailed on to extend his protection to the Company. By four successive edicts the banks in Paris were ordered to receive the notes of the Caisse d'Escompte as currency; and a lottery with a stock of one million sterling, redeemable in eight years, being established, the tickets were made purchasable in notes of the Caisse d'Escompte. By these expedients the public confidence in that bank was revived, its business increased, and its stock rose to above double the original subscription; the bills from America were at the same time put in a train of payment, and public credit was restored throughout the kingdom. Some compensation also for the expences that had been incurred during the late war, was drawn from a treaty with the United States of America. These engaged to reimburse France in the sum of 18 millions of livres, which had been advanced in the hour of their distress; and Louis consented to receive the money, as more convenient to the States, in the space of 12 years, by 12 equal and annual payments.

178  
Treaty between  
France and  
Holland.

The general peace was soon after followed by a particular treaty between France and Holland, which was effected with great address by the Count de Vergennes. It included all the principles which can serve to cement in the closest union distinct nations under distinct governments; and by which they may mutually participate, in peace or in war, of good or of evil; and in all cases administer the most perfect aid, counsel, and succour to each other. It also prescribed, if their united good offices for the preservation of peace should prove ineffectual, the assistance they were to afford each other by sea and land. France was to furnish Holland with 10,000 effective infantry, 2000 cavalry, with 12 ships of the line and 6 frigates. Their High Mightinesses, on the other side, in case of a marine war, or that France should be attacked by sea, were to contribute to her defence six ships of the line and three frigates; and in case of an attack on the territory of France, the States General were to have the option of furnishing their land contingent either in money or troops, at the estimate of 5000 infantry and 1000 cavalry. Further, If the stipulated succours should be insufficient for the defence of the party attacked, or for procuring a proper peace, they engaged to assist each other with all their forces, if necessary; it being however agreed that the contingent of troops to be furnished by the States General should not exceed 20,000 infantry and 4000 cavalry. It was further added, that neither of the contracting powers should disarm, or make or receive proposals of peace or truce, without the consent of the other: they promised also not to contract any future alliance or engagement what-

ever, directly or indirectly, contrary to the present treaty; and on any treaties or negotiations being proposed which might prove detrimental to their joint interest, they pledged their faith to give notice to each other of such proposals as soon as made. France.

Thus was Holland now converted into the firm ally of that power against whose encroaching spirit she had formerly armed the most powerful kingdoms of Europe; while France having asserted the independence of America against Great Britain, and having converted an ancient and formidable foe into an useful friend, seemed to have attained an influence over the nations of the earth that she had never before been possessed of.

But however exalted her present situation might appear, the seeds of future commotion were already apparent to an attentive observer. The applause that had attended the parliament of Paris in their struggles with the late king might be considered as the first dawn of freedom; the language of that assembly had boldly inculcated to their countrymen their natural rights, and taught them to look with a less enraptured eye on the lustre that encompassed the throne. The war in America had contributed to enlarge the political ideas of the French: they had on that occasion stood forth as the champions of liberty, in opposition to regal power; and the officers, who had acted on that conspicuous theatre, accustomed to think and speak without restraint, on their return imparted to the provinces of France the flame of freedom which had been kindled in the wilds of America. From that moment the French, instead of silently acquiescing under the edicts of their sovereign, canvassed each action with bold and rigid impartiality; while the attachment of the army, which has ever been considered as the sole foundation of despotism, gave way to the noble enthusiasm of liberty.

179  
Conse-  
quence to  
France  
from her  
interfe-  
rence be-  
tween Bri-  
tain and  
her colo-  
nies.

We have already noticed the public dissatisfaction that had attended the dismissal of M. Necker; his transient successor, M. de Fleury, had retired from the management of the finances in 1783, and the more transient administration of M. d'Ormesson had expired in the same year that gave it birth. On his retreat, M. de Calonne, who had successively filled with acknowledged reputation the office of intendant of Mentz, and afterwards of the provinces of Flanders and Artois, was nominated to the post of comptroller-general. This gentleman, flexible and insinuating, eloquent in conversation and polished in his manners, fertile in resources and liberal in the disposal of the public money, soon rendered himself acceptable to the sovereign. But he did not enter upon his new and arduous station favoured by the breath of popularity: he was reported to be more able than consistent, and not to have tempered the ardour of his spirit by the severity of deep research; and the people, amidst repeated loans, regretted that severe simplicity which had characterized the administration of M. Necker.

180  
Appoint-  
ment and  
measures of  
M. de Ca-  
lonne.

It was the bold and judicious measures of Calonne, however, that restored credit to the Caisse d'Escompte, which had stopped payment a few weeks before his accession. His next measure, in 1784, the establishment of the Caisse d'Amortissement, or sinking fund, was entitled to a still higher degree of applause. The plan of that fund was simple and moderate: It was to pay annually by government, into the hands of a board set apart

France. apart for that purpose, the entire interest of the national debts, whether in stock or annuities, together with an additional sum of 120,000*l.* The annuities that would be extinguished every year were estimated at 50,000*l.*; and in that proportion, the sum set apart for the redemption of the national debt would annually increase. The operation of this new fund was limited to the term of 25 years; and during that term the annual receipt of the Caisse d'Amortissement is declared unalterable, and incapable of being diverted to any other object.

The principal measure of the next year was the establishment of a new East India Company, (the constitutions of which have been already detailed: see COMPANY);—a measure not equally commendable with the preceding, and which did not fail to excite violent complaints. The time, however, was now approaching, when the necessities of the state would compel him to measures still more unpopular, and destined to undergo a severer scrutiny. Although peace had been re-established throughout Europe for three years, yet the finances of France seemed scarce affected by this interval of tranquillity, and it was found requisite to close every year with a loan. The public expenditure of 1785 might probably seem to sanction this measure. It had been thought proper to fortify Cherbourg upon a large and magnificent scale; the claim of the emperor to the navigation of the Scheldt had obliged the French to increase their land forces, either to form a respectable neutrality, or to assist effectually their Dutch allies; and the marquis de Castries, fond of war, and profuse in his designs, had not suffered the navy, which M. Sartine had surrendered into his hands, to decline during the interval of peace. The treaty of commerce concluded in the year 1786 with Great Britain was a new source of discontent.—Though regarded by the English manufacturers as far from advantageous, it excited in France still louder murmurs. It was represented as likely to extinguish those infant establishments, which were yet unable to vie with the manufactures of England that had attained to maturity; and the market that it held out for the wines and oils of France was passed over in silence, while the distress of the artisan was painted in the most striking colours. But when the edict for registering the loan at the conclusion of the last year, and which amounted to the sum of three millions three hundred and thirty thousand pounds, was presented to the parliament of Paris, the murmurs of the people, through the remonstrances of that assembly, assumed a more legal and formidable aspect. The king, however, signified to the select deputation that were commissioned to convey to him their remonstrances, that he expected to be obeyed without farther delay. The ceremony of the registering accordingly took place on the next day; but it was accompanied with a resolution, importing, “that public economy was the only genuine source of abundant revenue, the only means of providing for the necessities of the state, and restoring that credit which borrowing had reduced to the brink of ruin.”

The king was no sooner informed of this step, than he commanded the attendance of the grand deputation of parliament; when he erased from their records

the resolution that had been adopted; and observed, France. that though it was his pleasure that the parliament should communicate, by its respectful representations, whatever might concern the good of the public, yet he never would allow them so far to abuse his clemency as to erect themselves into the censors of his government. At the same time, more strongly to mark his displeasure at their expostulations, he superseded one of their officers, who had appeared most active in forwarding the obnoxious resolution.

M. de Calonne, however, though gratified by the approbation of his sovereign, could not but feel himself deeply mortified by the opposition of the parliament. His attempts to conciliate that assembly had proved ineffectual: and he experienced their inflexible aversion at the critical juncture when their acquiescence might have proved of the most essential service. An anxious inquiry into the state of the public finances had convinced him that the expenditure by far exceeded the revenue. In this situation, to impose new taxes was impracticable; to continue the method of borrowing was ruinous; to have recourse only to economical reforms, would be found wholly inadequate; and he hesitated not to declare, that it would be impossible to place the finances on a solid basis, but by the reformation of whatever was vicious in the constitution of the state.

To give weight to this reform, M. de Calonne was sensible that something more was necessary than the royal authority; he perceived that the parliament was neither a fit instrument for introducing a new order into public affairs, nor would submit to be a passive machine for sanctioning the plans of a minister, even if those plans were the emanations of perfect wisdom. Though originally a body of lawyers, indebted for their appointments to the king, there was not an attribute of genuine legislative assembly but what they seemed desirous to engross to themselves; and they had been supported in their pretensions by the plaudits of the people, who were sensible that there was no other body in the nation that could plead their cause against royal or ministerial oppression. To suppress, therefore, the only power of controul that remained, and to render the government more arbitrary, was deemed too perilous a measure: yet to leave the parliament in the full possession of their influence, an influence that the minister was convinced would be exerted against him, was at once to render his whole system abortive.

In this dilemma, the only expedient that suggested itself was to have recourse to some other assembly, more dignified and solemn in its character, and which should in a greater degree consist of members from the various orders of the state and the different provinces of the kingdom. This promised to be a popular measure; it implied a deference to the people at large, and might be expected to prove highly acceptable. But the true and legitimate assembly of the nation, the States General, had not met since the year 1614; nor could the minister flatter himself with the hope of obtaining the royal assent to a meeting which a despotic sovereign could not but regard with secret jealousy. Another assembly had occasionally been substituted in 181 the room of the States General: this was distinguished of the Notables. by the title of the *Notables*; and consisted of a number.

France. ber of persons from all parts of the kingdom, chiefly selected from the higher orders of the state, and nominated by the king himself. This assembly had been convened by Henry IV. again by Louis XIII. and was now once more summoned by the authority of Louis XVI.

The writs for calling them together were dated on the 29th of December 1786; and they were addressed to seven princes of the blood, nine dukes and peers of France, eight field marshals, twenty-two nobles, eight counsellors of state, four masters of requests, eleven archbishops and bishops, thirty-seven of the heads of the law, twelve deputies of the *pays d'etats*, the lieutenant civil, and twenty-five magistrates of the different towns of the kingdom. The number of members was 144; and the 29th of January 1787 was the period appointed for their meeting.

Upon the arrival of the notables at Paris, however, the minister found himself yet unprepared to submit his system to their inspection, and postponed the opening of the council to the 7th of February. A second delay to the 14th of the same month was occasioned by the indisposition of M. de Calonne himself, and that of the count de Vergennes president of the council of finance and first secretary of state; and a third procrastination was the necessary result of the death of the count on the day previous to that fixed for the opening of the meeting. He was succeeded in the department of foreign affairs by the count de Montmorin, a nobleman of unblemished character. But his loss at this critical juncture was severely felt by M. de Calonne; he alone, of all the ministers, having entered with warmth and sincerity into the plans of the comptroller general. The chevalier de Miromesnil, keeper of the seals, was avowedly the rival and enemy of that statesman. The marshal de Castries, secretary for the marine department, was personally attached to M. Neckar; and the baron de Breteuil, secretary for the household, was the creature of the queen, and deeply engaged in what was called the Austrian system.

It was under these difficulties that M. de Calonne, on the 22d of February, first met the assembly of the notables, and opened his long-expected plan. He began by stating, that the public expenditure had for centuries past exceeded the revenue, and that a very considerable deficiency had of course existed; that the Mississippi scheme of 1720 had by no means, as might have been expected, restored the balance; and that under the economical administration of Cardinal Fleury the deficit still existed; that the progress of this derangement under the last reign had been extreme; the deficiency amounting to three millions sterling at the appointment of the Abbé Terray; who, however, reduced it to one million six hundred and seventy-five thousand pounds; it decreased a little under the short administrations that followed, but rose again in consequence of the war, under the administration of M. Neckar; and at his own accession to office, it was three millions three hundred and thirty thousand pounds.

In order to remedy this growing evil, M. Calonne recommended a territorial impost, in the nature of the England land tax, from which no rank or order of men were to be exempted; and an inquiry into the

France. possessions of the clergy, which hitherto had been deemed sacred from their proportion of the public burdens: the various branches of internal taxation were also to undergo a strict examination; and a considerable resource was presented in mortgaging the demesne lands of the crown.

The very necessity for these reforms was combated with a degree of boldness and force of reasoning that could not fail of deeply impressing the assembly; and instead of meeting with a ready acquiescence, the comptroller general was now launched into the boundless ocean of political controversy. M. Neckar, previous to his retirement, had published his *Compte rendu au Roi*, in which France was represented as possessing a clear surplus of 425,000 pounds Sterling: this performance had been read with avidity, and probably contributed to estrange from the author the royal countenance; but the credit of it was ably vindicated by M. de Brienne archbishop of Thoulouse.

M. de Calonne met with a still more formidable adversary in the count de Mirabeau. This extraordinary man, restless in his disposition, licentious in his morals, but bold, penetrating, and enterprising, had occasionally visited every court in Europe. He had been admitted at one time to the confidence of the minister; and had been directed, though in no ostensible character, to observe at Berlin, the disposition of the successor of the great Frederick; in this capacity he was frequently exposed to neglect and disappointment; his letters were often left unanswered; disgust succeeded to admiration; and he who had entered the Prussian court the intimate friend, returned to Paris the avowed enemy, of M. de Calonne: While the archbishop arraigned the understanding, the count impeached the integrity, of the comptroller general.

The eloquence of M. de Calonne, however, might have successfully vindicated his system and reputation against the calculations of Brienne, and the invectives of Mirabeau; but he could not support himself against the influence of the three great bodies of the nation. The ancient nobility and the clergy had ever been free from all public assessments; and had the evil gone no farther, it might have been still perhaps borne with patience; but through the shameful custom of selling patents of nobility, such crowds of new noblesse started up, that every province in the kingdom was filled with them. The first object with those who had acquired fortunes rapidly, was to purchase a patent; which, besides gratifying their vanity, afforded an exemption to them and their posterity from contributing proportionably to the exigencies of the state; the magistracies likewise throughout the kingdom enjoyed their share of these exemptions; so that the whole weight of the taxes fell on those who were least able to bear them.

The minister's design, then, of equalizing the public burdens, and by rendering the taxes general diminishing the load borne by the lower and most useful classes of people, though undoubtedly great and patriotic, at once united against him the nobility, the clergy, and the magistracy; and the event was such as might be expected: the intrigues of those three bodies raised against him so loud a clamour, that finding it impossible to stem the torrent, he not only resigned his

place

182  
Splendid  
project of  
M. de Calonne.

183  
Opposed by  
Mirabeau  
and the bi-  
shop of  
Thoulouse,

184  
and by the  
principal  
nobility,  
clergy, and  
magistrates.

France. place on the 12th of April, but soon after retired to  
185 England from the storm of persecution.

Upon which M. de Calonne resigns. In the midst of these transactions at home, Louis's attention was also called to the state of affairs in the republic of Holland, his new and close ally. The prince of Orange had been stripped of all authority by the aristocratic party; and, retiring from the Hague, maintained the shadow of a court at Nimeguen. His brother-in-law, however, the new king of Prussia, exerted his endeavours to promote the interests of the stadtholder; and, having offered, in concert with France, to undertake the arduous task of composing the differences which distracted the republic, the proposal was received with apparent cordiality by the court of Versailles. At the same time it could scarce be expected that France would become the instrument of restoring the prince of Orange to that share of power which he had before occupied, and thus abandon one of the longest and most favourite objects of her policy, the establishing a supreme and permanent controul in the affairs of Holland. In fact, the conditions which were framed by the Louvestein faction, as the basis of reconciliation, were such as plainly indicated their design to reduce the influence and authority of the stadtholder within very narrow limits. On his renouncing his right of filling up the occasional vacancies in the town senates, he was to be restored to the nominal office of captain general: but he was to be restrained from marching the troops into or out of any province, without leave from the respective provinces concerned; and he was also to subscribe to a resolution passed some time before by the senate of Amsterdam, that the command should at all times be revocable at the pleasure of the states. Had the prince acquiesced in these preliminaries, France would have completely attained the object of her long negotiations, and by means of the Louvestein faction have acquired the ascendancy that she had repeatedly sought in the councils of Holland. But under the difficulties that surrounded him, the prince of Orange was admirably supported and assisted by the genius, the spirit, and the abilities of his consort: she firmly rejected every measure tending to abridge any rights that had been attached to the office of stadtholder; and M. de Rayneval, the French negotiator, having in vain endeavoured to overcome her resolution, broke off the correspondence between the Hague and Nimeguen, and returned to Paris about the middle of January 1787.

187 Attempts of the French to support the republican party.

But the republican party were totally disappointed in their hopes from France. The court of Versailles had indeed long trusted to the natural strength of this party, and had been assiduous during the whole summer in endeavouring to second them by every species of succours that could be privately afforded. Crowds of French officers arrived daily in Holland; and either received commissions in the service of the states, or acted as volunteers in their troops. Several hundreds of tried and experienced soldiers were selected from different regiments; and being furnished with money for their journey, and assurances of future favour, were despatched in small parties to join the troops, and help to discipline the burghers and volunteers. A considerable corps of en-

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gineers were also directed to proceed silently and in disguise towards Amsterdam, and to assist in strengthening the works of that city. These aids, which might have proved effectual had the contest been confined to the states of Holland and the stadtholder, were overwhelmed in the rapid invasion of the Prussians; and the court of Berlin had taken its measures with so much celerity, and the situation of the republicans was already become so desperate, that it was doubtful whether their affairs could be restored by any assistance that France was capable of immediately administering. Yet on Great Britain fitting out a strong squadron of men of war at Portsmouth to give confidence to the operations of the king of Prussia, the court of Versailles also sent orders to equip 16 fail of the line at Brest, and recalled a small squadron which had been commissioned on a summer's cruise on the coast of Portugal. But in these preparations Louis seemed rather to regard his own dignity, than to be actuated by any hopes of effectually relieving his allies. All opposition in Holland might be already considered as extinguished. The states assembled at the Hague had officially notified to the court of Versailles, that the disputes between them and the stadtholder were now happily terminated; and as the circumstances which gave occasion for their application to that court no longer existed, so the succours which they had then requested would now be unnecessary.

Under these circumstances, France could only wish to extricate herself from her present difficulty with honour. She therefore readily listened to a memorial from the British minister at Paris: who proposed, in order to preserve the good understanding between the two crowns, that all warlike preparations should be discontinued, and that the navies of both kingdoms should be again reduced to the footing of a peace establishment. This was gladly acceded to by the court of Versailles; and that harmony which had been transiently interrupted between the two nations was restored.

188 Though the French king could not but sensibly feel Domestic concerns of France. the mortification of thus relinquishing the ascendancy which he had attained in the councils of Holland, the state of his own domestic concerns and the internal situation of his kingdom furnished matter for more serious reflection. The dismissal of M. de Calonne had left France without a minister, and almost without a system; and though the king bore the opposition of the notables with admirable temper, yet the disappointment that he had experienced sunk deep into his mind. Without obtaining any relief for his most urgent necessities, he perceived too late that he had opened a path to the restoration of the ancient constitution of France, which had been undermined by the crafty Louis XI. and had been nearly extinguished by the daring and sanguinary counsels of Richelieu under Louis XIII. The notables had indeed demeaned themselves with respect and moderation, but at the same time they had not been deficient in firmness. The appointment of the archbishop of Thoulouse, the vigorous adversary of M. de Calonne, to the office of comptroller-general, probably contributed to preserve the appearance of good humour in that assembly; yet the

189 Assembly of the Notables dissolved.

France. the proposed territorial impost, or general land tax, which was an object so ardently coveted by the court, was rejected. Louis, therefore, deprived of any further hope of rendering the convention subservient to his embarrassments, determined to dissolve the assembly; which he accordingly did, with a very moderate and conciliatory speech to the members on their dismissal.

190  
Refusal of  
the parlia-  
ment to re-  
gister the  
new taxes.

Thus disappointed of the advantage which he had flattered himself he would have drawn from the acquiescence of the notables, the king was obliged now to recur to the usual mode of raising money by the royal edicts; among the measures proposed for which purpose were the doubling of the poll tax, the re-establishment of the third twentieth, and a stamp duty. But the whole was strongly disapproved by the parliament of Paris; and that assembly, in the most positive terms, refused to register the edict. Louis was obliged to apply, as the last resort, to his absolute authority; and, by holding what is called *a bed of justice*, compelled them to enrol the impost.

The parliament, though defeated, were far from subdued; and on the day after the king had held his bed of justice, they entered a formal protest against the edict; declaring, "that it had been registered against their approbation and consent, by the king's express command; that it neither ought nor should have any force; and that the first person who should presume to attempt to carry it into execution, should be adjudged a traitor, and condemned to the galleys."—This spirited declaration left the king no other alternative, than either proceeding to extremities in support of his authority, or relinquishing for ever after the power of raising money upon any occasion without the consent of the parliament. Painful as every appearance of violence must have proved to the mild disposition of Louis, he could not consent to surrender, without a struggle, that authority which had been so long exercised by his predecessors. Since the commencement of the present discontents, the capital had been gradually filled with considerable bodies of troops; and about a week after the parliament had entered the protest, an officer of the French guards, with a party of soldiers, went at break of day to the house of each individual member, to signify to him the king's command, that he should immediately get into his carriage, and proceed to Troyes, a city of Champagne, about 70 miles from Paris, without writing or speaking to any person out of his own house before his departure. These orders were served at the same instant; and before the citizens of Paris were acquainted with the transaction, their magistrates were already on the road to their place of banishment.

191  
The mem-  
bers ban-  
ished.

Previous to their removal, however, they had presented a remonstrance on the late measures of government, and the alarming state of public affairs. In stating their opinions on taxes, they declared, that neither the parliaments, nor any other authority, excepting that of the three estates of the kingdom collectively assembled, could warrant the laying of any permanent tax upon the people; and they strongly enforced the renewal of those national assemblies, which had rendered the reign of Charlemagne so great and illustrious.

France. This requisition of the parliaments to re-establish the national council, or states general, was the more honourable, as the former assemblies must have sunk under the influence of the latter, and returned to their original condition of mere registers and courts of law. The confidence and attachment of the people of consequence rose in proportion to this instance of disinterestedness; their murmurs were openly expressed in the streets of the capital, and the general dissatisfaction was augmented by the stop that was put to public business by the exile of the parliament.

The cabinet at the same time was apparently weak, disunited, and fluctuating; and continual changes took place in every department of the state. Louis, averse to rigorous counsels, wished to allay the growing discontent by every concession that was consistent with his dignity; but it was generally believed, that the queen strongly dissuaded him from any step that might tend to the diminution of the royal authority. The influence of that princess in the cabinet was undoubtedly great: but the popularity which once had accompanied her was no more; and some imputations of private levity, which had been rumoured through the capital, were far from rendering her acceptable to the majority of the people; while the Count d'Artois, the king's brother, who had expressed himself in the most unguarded terms against the conduct of the parliament, stood exposed to all the consequences of popular hatred.

Nor was it only in the capital that the flame of liberty once more burst forth; it blazed with equal strength in the provincial parliaments. Among various instances of this nature, the parliament of Grenoble passed a decree against *lettres de cachet*, the most odious engine of arbitrary power; and declared the execution of them within their jurisdiction, by any person, and under whatever authority, to be a capital crime.

The king had endeavoured to soothe the Parisians by new regulations of economy, and by continual retrenchments in his household: but these instances of attention, which once would have been received with the loudest acclamations, were now disregarded under their affliction for the absence of their parliament. His majesty, therefore, in order to regain the affections of his subjects, consented to restore that assembly; abandoning at the same time the stamp duty, and the territorial impost, which had been the sources of dispute. These measures, were, however, insufficient to establish harmony between the court and the parliament. The necessities of the state still continued; nor could the deficiency of the revenue be supplied but by extraordinary resources, or a long course of rigid frugality. About the middle of November 1787, in a full meeting of the parliament, attended by all the princes of the blood and the peers of France, the king entered the assembly, and proposed two edicts for their approbation: one was for a new loan of 450 millions, near 19 millions sterling: the other was for the re-establishment of the Protestants in all their ancient civil rights; a measure which had long been warmly recommended by the parliament, and which was probably now introduced to procure a better reception to the loan.

192  
Recalled.

On

France.

On this occasion, the king delivered himself in a speech of uncommon length, filled with professions of regard for the people, but at the same time strongly expressive of the obedience he expected to his edicts. Louis probably imagined, that the dread of that banishment from which the members had been so lately recalled would have ensured the acquiescence of the assembly; but no sooner was permission announced for every member to deliver his sentiments, than he was convinced that their spirits remained totally unsubdued. An animated debate took place, and was continued for nine hours; when the king, wearied by perpetual opposition, and chagrined at some freedoms used in their debates, suddenly rose and commanded the edict to be registered without further delay. This measure was most unexpectedly opposed by the duke of Orleans, first prince of the blood; who, considering it as an infringement of the rights of parliament, protested against the whole proceedings of the day as being thereby null and void. Though Louis could not conceal his astonishment and displeasure at this decisive step, he contented himself with repeating his orders; and immediately after, quitting the assembly, retired to Versailles. On the king's departure, the parliament confirmed the protest of the duke of Orleans; and declared, that as their deliberations had been interrupted, they considered the whole business of that day as of no effect.

193  
Oppose the edict for a loan.

It was not to be supposed that Louis would suffer so bold an attack on his power with impunity. Accordingly, a letter was next day delivered to the duke of Orleans, commanding him to retire to Villars Cotterel, one of his seats, about 15 leagues from Paris, and to receive no company there except his own family; at the same time, the Abbé Sabatier and M. Freteau, both members of the parliament, and who had distinguished themselves in the debate, were seized under the authority of *lettres de cachet*, and conveyed, the first to the castle of Mont St Michel in Normandy, the last to a prison in Picardy. This act of despotism did not fail immediately to rouse the feelings of the parliament. On the following day they waited on the king, and expressed their astonishment and concern that a prince of the blood royal had been exiled, and two of their members imprisoned, for having declared in his presence what their duty and consciences dictated, and at a time when his majesty had announced that he came to take the sense of the assembly by a plurality of voices. The answer of the king was reserved, forbidding, and unsatisfactory; and tended to increase the resentment of the parliament. At the same time, it did not prevent them from attending to the exigencies of the state; and convinced of the emergency, they consented to register the loan for 450 millions of livres, which had been the source of this unfortunate difference. This concession contributed to soften the mind of the king, and the sentence of the two magistrates was in consequence changed from imprisonment to exile; M. Freteau being sent to one of his country seats, and the Abbé Sabatier to a convent of Benedictines.

The parliament, however, was not to be soothed by that measure to give up the points against which they had originally remonstrated. In a petition conceived

with freedom, and couched in the most animated language, they boldly reprobated the late acts of arbitrary violence, and demanded the entire liberation of the persons against whom they had been exerted. We have already noticed the fluctuating counsels of the court of Versailles; and that Louis, as often as he was left to pursue his own inclinations, adopted measures of reconciliation. On the present occasion, in the beginning of the year 1788, he recalled the duke of Orleans to court, who soon after obtained leave to retire to England; and he permitted the return of the Abbé Sabatier and M. Freteau to the capital.

France.

196  
Duke of Orleans recalled.

The parliament, however, had not confined their demands to the liberation of these gentlemen; but had also echoed the remonstrances of the parliament of Grenoble, and had loudly inveighed against the execution of *lettres de cachet*. These repeated remonstrances, mingled with personal reflections, seconded most probably the suggestions of the queen, and Louis was once more instigated to measures of severity. Mess. d'Esprenail and Monlambert, whose bold and pointed harangues had pressed most closely on the royal dignity, were doomed to experience its immediate resentment. While a body of armed troops surrounded the hotel in which the parliament were convened, Colonel Degout entered the assembly, and secured the persons of the obnoxious members, who were instantly conducted to different prisons. This new instance of arbitrary violence occasioned a remonstrance from parliament, which in boldness far exceeded all the former representations of that assembly. They declared they were now more strongly confirmed, by every proceeding, of the entire innovation which was aimed at in the constitution. "But, Sir," added they, "the French nation will never adopt the despotic measures to which you are advised, and whose effects alarm the most faithful of your magistrates: we shall not repeat all the unfortunate circumstances which afflict us; we shall only represent to you with respectful firmness, that the fundamental laws of the kingdom *must* not be trampled upon, and that *your authority can only be esteemed so long as it is tempered with justice.*"

197  
New remonstrances.

Language so pointed and decisive, and which asserted the controlling power of the laws above the regal authority, could not fail of seriously alarming the king; and with a view to diminish the influence of parliament, it was determined again to convene the notables. Accordingly, about the beginning of May, Louis appeared in that assembly: and after complaining of the excesses in which the parliament of Paris had indulged themselves, and which had drawn down his reluctant indignation on a few of the members, he declared his resolution, instead of annihilating them as a body, to recal them to their duty and obedience by a salutary reform. M. de la Moignon, as keeper of the seals, then explained his majesty's pleasure to establish a *cour plenier* or supreme assembly, to be composed of princes of the blood, peers of the realm, great officers of the crown, the clergy, marshals of France, governors of provinces, knights of different orders, a deputation of one member from every parliament, and two members from the chambers of council, and to be summoned as

198  
Assembly of the Notables.

France. often as the public emergency, in the royal opinion, should render it requisite.

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Opposition  
to the  
king's pro-  
posals.

If the assembly of the notables listened in silent deference to the project of their sovereign, the parliament of Paris received it with every symptom of aversion. That body strongly protested against the establishment of any other tribunal; and declared their final resolution not to assist at any deliberations in the supreme assembly which his majesty prepared to institute. A more unexpected mortification occurred to the king in the opposition of several peers of the realm: these expressed their regret at beholding the fundamental principles of the constitution violated; and while they were lavish in the professions of attachment to the person of their sovereign, concluded with apologizing for not entering on those functions assigned them in the plenary court, as being inconsistent with the true interests of his majesty, which were inseparable from those of the nation.

The flame quickly spread throughout the more distant provinces; at Rennes in Brittany, and Grenoble in Dauphine, the people broke out into acts of the most daring outrage. In the latter city several hundred of the inhabitants perished in a conflict with the military; they yet maintained their ground against the regulars; and the commanding officer, at the entreaties of the first president, readily withdrew his troops from a contest into which he had entered with reluctance. The different parliaments of the kingdom at the same time expressed their feelings in the most glowing language; and strongly urged the necessity of calling together the states general, the lawful council of the kingdom, as the only means of restoring the public tranquillity.

Louis now plainly saw, that a compliance with the public wishes for the re-establishment of the states general was absolutely necessary, in order to avoid the calamities of a civil war, which impended upon his refusal. In that event he must have expected to have encountered the majority of the people, animated by the exhortations and example of their magistrates; the peers of the realm had expressed the strongest disapprobation of his measures; nor could he even depend any longer on the support of the princes of his blood: but what afforded most serious matter of alarm was the spirit lately displayed among the military, who, during the disturbances in the provinces, had reluctantly been brought to draw their swords against their countrymen, and many of whose officers so recently engaged in establishing the freedom of America, publicly declared their abhorrence of despotism.

It was not however, till after many a painful struggle that Louis could resolve to restore an assembly, whose influence must naturally overshadow that of the crown, and whose jurisdiction would confine within narrow limits the boundless power he had inherited from his predecessor. In the two preceding reigns the states general had been wholly discontinued; and though the queen regent, during the troubles which attended the minority of Louis XIV. frequently expressed her intention of calling them together, she was constantly dissuaded by the representations of Mazarin. It is probable that the present monarch still flattered himself with the hope of being able to allure the members

of that assembly to the side of the court; and having employed them to establish some degree of regularity in the finances, and to curb the spirit of the parliament, that he would again have dismissed them to obscurity.

France.

Under these impressions an arret was issued in August, fixing the meeting of the states general to the first of May in the ensuing year; and every step was taken to secure the favourable opinion of the public during the interval. New arrangements took place in the administration; and M. Neckar, whom the confidence of the people had long followed, was again introduced into the management of the finances; the torture, which by a former edict had been restricted in part, was now entirely abolished; every person accused was allowed the assistance of counsel, and permitted to avail himself of any point of law; and it was decreed, that in future sentence of death should not be passed on any person, unless the party accused should be pronounced guilty by a majority at least of three judges.

200  
Arret for  
summon-  
ing the  
states ge-  
neral.

The time appointed for the convention of the states general was now approaching; and the means of assembling them formed a matter of difficult deliberation in the cabinet. The last meeting, in 1614, had been convened by application to the bailiwicks. But this mode was liable to several strong objections; the bailiwicks had been increased in number and jurisdiction, several provinces having since that period been united to France; and the numbers and quality of the members were no less an object of serious attention: it was not till the close of the year, therefore, that the proposal of M. Neckar was adopted, which fixed the number of deputies at 1000 and upwards, and ordained that the representatives of the third estate or commons should equal in number those of the nobility and clergy united.

The eyes of all Europe were now turned on the states general; but the moment of that assembly's meeting was far from auspicious: The minds of the French had long been agitated by various rumours; the unanimity that had been expected from the different orders of the states was extinguished by the jarring pretensions of each; and their mutual jealousies were attributed by the suspicions of the people to the intrigues of the court, who were supposed already to repent of the hasty assent which had been extorted. A dearth that pervaded the kingdom increased the general discontent; and the people, pressed by hunger, and inflamed by resentment, were ripe for revolt. The sovereign also, equally impatient of the obstacles he continually encountered, could not conceal his chagrin; while the influence of the queen in the cabinet was again established, and was attended by the immediate removal of M. Neckar. The dismissal of that mini-  
201  
Insurrec-  
tions and  
revolution.

ster, so long the favourite of the public, was the signal of open insurrection: the Parisians assembled in myriads; the guards refused to oppose and stain their arms with the blood of their fellow citizens; the Count d'Artois and the most obnoxious of the nobility thought themselves happy in eluding by flight the fury of the insurgents; and in a moment a revolution was accomplished, the most remarkable perhaps of any recorded in history.

But before we proceed in our narration, and detail the

France. the transactions which have marked the progress of this singular and terrible revolution, it may be worth while to take a short view of the internal situation of France previous to this period, and the more obvious political causes, the operation of which seems to have contributed to the production of this great event.

The moral history of man is always more important than the mere recital of any physical occurrences that may take place in his lot. It is not the fall of a mighty monarch and the dispersion of his family; it is not the convulsion of empires, and the oceans of human blood which have been shed, that render the French revolution peculiarly interesting. Such events, however deplorable, are far from being without example in the history of mankind. In the populous regions of the east, where superstition and slavery have always prevailed, they are regarded as forming a part of the ordinary course of human affairs; because an intrepid and skilful usurper finds it easy to intimidate or ensnare millions of weak and credulous men. In Europe the case is very different; no adventurer can advance far without encountering thousands as artful and as daring as himself. Events are not the result either of blind hazard or of individual skill; conspiracies or plots produce little effect. Like other arts, the art of government has been brought to much perfection; and an established constitution can only be shaken by the strong convulsion produced by national passions and efforts. The wonderful spectacle which we are now to contemplate, is that of a mild and polished people becoming in an instant sanguinary and fierce; a well established government, celebrated for its dexterity and skill, overturned almost without a struggle; a whole nation apparently uniting to destroy every institution which antiquity had hallowed or education taught them to respect; a superstitious people treating the religion of their fathers with contempt; a long-enslaved people, whose very chains had become dear to them, occupied in their public councils in the discussion of refined and even visionary schemes of freedom: in short, 25,000,000 of persons suddenly treading under foot every sentiment and every prejudice that they themselves had once regarded as sacred and venerable.

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France  
formerly  
under a  
barbarous  
aristocracy.

Like the other nations of Europe, France was anciently governed by a barbarous aristocracy, whose different members were feebly united by the authority of a succession of kings destitute of power or influence. The nobles, within their own territories, enjoyed privileges entirely royal: they made peace and war; they coined money; they were judges in the last resort; their vassals were their slaves, whom they brought and sold along with the lands; the inhabitants of cities, although freemen, were depressed and poor, depending for protection upon some tyrannical baron in their neighbourhood. At length, however, by the progress of the arts, the cities rose into considerable importance, and their inhabitants, along with such freemen of low rank as resided in the country, were considered as entitled to a representation in the states-general of the kingdom, under the appellation of *tiers etat*, or *third estate*; the clergy and the nobles forming the two first estates. But the sovereign, having speedily become despotic, the meetings of the states general were laid aside. This absolute authority, on the part of the crown, was not acquired, as it was in England by the house of Tudor,

by abolishing the pernicious privileges of the nobles and elevating the commons; but by skilful encroachments, by daring exertions of prerogative, and the use of a powerful military force. In France, therefore, the monarch was absolute, yet the nobles retained all their feudal privileges, and the ecclesiastical hierarchy did the same. The following was, in a few words, the state of that country during these two last centuries.

France.

The kingdom of France, previous to the revolution, <sup>203</sup> was never reduced to one homogeneous mass. It consisted of a variety of separate provinces acquired by different means; some by marriage, some by legacy, and others by conquest. Each province retained its ancient laws and privileges, whether political or civil, as expressed in their capitularies or conditions by which they were originally acquired. In one part of his dominions the French monarch was a count, in another he was a duke, and in others he was a king; the only bond which united his vast empire being the strong military force by which it was overawed. Each province had its barriers; and the intercourse betwixt one province and another was often more restrained by local usages than the intercourse of either with a foreign country. Some of the provinces, such as Bretagne and Dauphiné, even retained the right of assembling periodically their provincial states; but these formed no barrier against the power of the court.

The clergy formed the first estate of the kingdom <sup>204</sup> in point of precedence. They amounted to 130,000. The higher orders of them enjoyed immense revenues; but the *curés* or great body of acting clergy <sup>formed the first estate in the kingdom.</sup> possessed more than about L. 28 sterling a-year, and their *vicaires* about half that sum. A few of their dignified clergy were men of great piety, who resided constantly in their dioceses, and attended to the duties of their office; but by far the greater number of them passed their lives at Paris and Versailles, immersed in all the intrigues and dissipation of a gay and corrupted court and capital. They were almost exclusively selected from among the younger branches of the families of the most powerful nobility, and accounted it a kind of dishonour to the order of bishops for any persons of low rank to be admitted into it. The lower clergy, on the contrary, were persons of mean birth, and had little chance of preferment. At the same time, we find several respectable exceptions to this last rule. The clergy, as a body, independent of the tithes, possessed a revenue arising from their property in land, amounting to four or five millions sterling annually; at the same time they were exempt from taxation. The crown had of late years attempted to break through this privilege. To avoid the danger, the clergy presented to the court a free gift of a sum of money somewhat short of a million sterling every five years.

The nobility was nominally the second order of the <sup>205</sup> state, but it was in reality the first. The nobles amounted to no less than 200,000 in number. The title and rank descended to all the children of the family, but the property to the eldest alone: hence vast multitudes of them were dependent upon the bounty of the court. They regarded the useful and commercial arts as dishonourable, and even the liberal professions of the law and physic as in a great measure beneath their dignity, <sup>disdaining</sup>

France. daining to intermarry with the families of their professors. The feudal system in its purity was extremely favourable to the production of respectable qualities in the minds of those who belonged to the order of the nobles; but the introduction of commerce has rendered its decline equally unfavourable to that class of men. Instead of the ancient patriarchal attachment between the feudal chieftain and his vassals, the nobility had become greedy landlords in the provinces, that they might appear in splendor at court and in the capital. There, lost in intrigue, sensuality, and vanity, their characters became frivolous and contemptible. Such of the French noblesse, however, as remained in the provinces, regarded with indignation this degradation of their order, and still retained a proud sense of honour and of courage, which has always rendered them respectable. The order of the nobles was exempted from the payment of taxes, although the property of some of them was immense. The estates of the prince of Conde, for example, were worth 200,000*l.* a-year, and those of the duke of Orleans nearly twice as much. The crown had indeed imposed some trifling taxes upon the noblesse, which, however, they in a great measure contrived to elude.

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The parliament the third.

Next to the nobles, and as a privileged order possessing a secondary kind of nobility of their own, we may mention the parliaments. These were large bodies of men, in different provinces, appointed as courts of law for the administration of justice. In consequence of the corruption of the officers of state, the members purchased their places, which they held for life; but the son was usually preferred when he offered to purchase his father's place. In consequence of this last circumstance, the practising lawyers had little chance of ever becoming judges. Courts thus constituted consisted of a motley mixture of old and young, learned and ignorant, men. Justice was ill administered. The judges allowed their votes in depending causes to be openly solicited by the parties or their friends. No wife man ever entered into a litigation against a member of one of these parliaments; no lawyer would undertake to plead his cause; it never came to a successful issue, and usually never came to any issue at all. After the states-general had fallen into disuse, the parliaments acquired a certain degree of political consequence, and formed the only check upon the absolute power of the crown. The laws, or royal edicts, before being put in force, were always sent to be registered in the books of the parliaments. Taking advantage of this, in favourable times and circumstances, they often delayed or refused to register the royal edicts, and presented remonstrances against them. This was done under a kind of legal fiction: for they pretended that the obnoxious edict being injurious to the public happiness, could not be the will of the king, but must either be a forgery or an imposition by the ministers. These objections were got the better of, either by a positive order from the king, or by his coming in person and ordering the edict to be registered. The parliaments, however, often carried their opposition very far, even to the ruin of themselves and their families as individuals. This rendered them extremely popular with the nation, and enabled them to embarrass a weak administration. After all, however, the opposition of the parliaments was so feeble, that it was never thought

worth while to abolish them entirely till towards the end of the reign of Louis XV.; but they were restored as a popular measure, at the beginning of the reign of Louis XVI.

207  
The commons the lowest order. Oppressive burdens on them.

The *tiers etat*, or commons, formed the lowest order of the state in France, and they were depressed and miserable in the extreme. To form a conception of their situation, it is necessary to observe that they bore the whole pecuniary burdens of the state: They alone were liable to taxation. An expensive and ambitious court; an army of 200,000 men in time of peace, and of twice that number in war; a considerable marine establishment, public roads and works, were all supported exclusively by the lowest of the people. To add to the evil, the revenues were ill collected. They were let out to farmers-general at a certain sum, over and above which they not only acquired immense fortunes to themselves, but were enabled to advance enormous presents to those favourites or mistresses of the king or the minister, by means of whom they procured their places. To raise all this money from the people, they were guilty of the cruellest oppression, having it in their power to obtain whatever revenue laws they pleased, and executing them in the severest manner. For this last purpose they kept in pay an army of clerks, subalterns, scouts, and spies, amounting to 80,000 men. These men were indeed detested by the king, whom they deceived and kept in poverty; by the people, whom they oppressed; and by the ancient nobility, as purse-proud upstarts. But the court of France could never contrive to manage without them. The peasants could be called out by the intendants of the provinces, in what they called *corvées*, to work upon the high roads for a certain number of days in the year, which was a source of severe oppression, as the intendant had the choice of the time and place of their employment, and was not bound to accept of any commutation in money. They were moreover subject to the nobles in a thousand ways. The nobles retained all their ancient manerial or patrimonial jurisdictions. The common people being anciently slaves, had obtained their freedom upon different conditions. In many places they and their posterity remained bound to pay a perpetual tribute to their feudal lords. Such tributes formed a considerable part of the revenue of many of the provincial nobles. No man could be an officer of the army, by a late regulation, who did not produce proofs of nobility for four generations. The parliaments, although originally of the *tiers etat*, attempted also to introduce a rule that none but the noblesse should be admitted into their order. In such a situation, it will not be accounted surprising that the common people of France were extremely superstitious and ignorant. They were, however, passionately devoted to their monarch, and whatever concerned him. In 1754, when Louis XV. was taken ill at Metz, the whole nation was truly in a kind of despair. The courier and his horse that brought the news of his recovery to Paris were both almost suffocated by the embraces of the people.

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Despotic power of the king.

We have said that the French monarch was despotic. His power was supported by his army, and by a watchful police, having in pay an infinite host of spies and other servants. In France no man was safe. The secrets of private families were searched into. Nothing was

France. was unknown to the jealous inquisition of the police. Men were seized by *lettres de cachet* when they least expected it, and their families had no means of discovering their fate. The sentence of a court of law against a nobleman was usually revered by the minister. No book was published without the license of a censor-general appointed by the court, and the minister was accountable to none but the king. No account was given of the expenditure of the public money. Enormous gratifications and pensions were given as the reward of the most infamous services. The supreme power of the state was usually lodged with a favourite mistress, and she was sometimes a woman taken from public prostitution. This was not indeed the case under Louis XVI. but it was nevertheless one of the misfortunes of his life that he was far from being absolute in his own family. Still, however, with all its faults, the French court was the most splendid and polished in Europe. It was more the resort of men of talents and literature of every kind, and there they met with more ample protection, than anywhere else. The court was often jealous of their productions, but they met with the most distinguished attention from men of fortune and rank; inasmuch that for a century past the French have given the law to Europe in all questions of taste, of literature, and of every polite accomplishment. The gay elegance that prevailed at court diffused itself through the nation; and amidst much internal misery, gave it to a foreigner the appearance of happiness, or at least of levity and vanity.

209  
Splendour  
of the court  
&c.

210  
Causes of  
the Revolution.  
&c.

Such as it was, this government had stood for ages, and might have continued, had not a concurrence of causes contributed to its overthrow. The inferior orders of clergy, excluded from all chance of preferment, regarded their superiors with jealousy and envy, and were ready to join the laity of their own rank in any popular commotion. The inferior provincial noblesse beheld with contempt and indignation the vices and the power of the courtiers, and the higher nobility wished to diminish the power of the crown. The practising lawyers, almost entirely excluded from the chance of becoming judges, wished eagerly for a change of affairs, not doubting that their talents and professional skill would render them necessary amidst any alterations that could occur. Accordingly, they were the first instruments in producing the revolution, and have been its most active supporters. The monied interest wished eagerly for the downfall of the ancient nobility. As for the great mass of the common people, they were too ignorant, too superstitiously attached to old establishments, and too much depressed, to have any conception of the nature of political liberty, or any hope of obtaining it. We have already stated the leading circumstances which led to the French revolution (see N<sup>o</sup> 184, &c.); but there were other circumstances which contributed in an equal degree both to its commencement and its progress.

For 40 years the principles of liberty had been disseminated with eagerness in France by some men of great talents, as Rousseau, Helvetius, and Raynal, to whom the celebrated Montesquieu had led the way. Besides these, there was in France a vast multitude of what were

France. called *men of letters*, or persons who gave this account of the manner in which they spent their time. All these were deeply engaged on the side of some kind of political reform. The men of letters in Paris alone are said to have amounted to 20,000. One of the last acts of the administration of the archbishop of Thoulouse was, on the 5th July 1788, to publish a resolution of the king in council, inviting all his subjects to give him their advice with regard to the state of affairs. This was considered as a concession of an unlimited liberty of the press; and it is scarcely possible to form an idea of the infinite variety of political publications which from that period diffused among the people a dissatisfaction with the order of things in which they had hitherto lived.

The established religion of France had for some time past been gradually undermined. It had been solemnly assaulted by philosophers in various elaborate performances; and men of wit, among whom Voltaire took the lead, had attacked it with the dangerous weapon of ridicule. The Roman Catholic religion is much exposed in this respect, in consequence of the multitude of false miracles and legendary tales with which its history abounds. Without discriminating betwixt the respectable principles on which it rests, and the superstitious follies by which they had been defaced, the French nation learned to laugh at the whole, and rejected instead of reforming the religion of their fathers. Thus the first order in the state had already begun to be regarded as useless, and the minds of men were prepared for important changes.

The immense population of the city of Paris, amounting to upwards of 800,000 souls, rendered it an important engine in the hands of the conductors of the revolution. An overgrown capital has always proved dangerous to a government that is or attempts to be despotic, as appears from the history of ancient Babylon and Rome, as well as of modern Constantinople, of London under Charles I. and Paris under several of its kings.

We cannot here avoid mentioning a physical event, which assisted not a little in producing many of the convulsions attending the revolution, a general scarcity of grain, which occurred about that period. On Sunday the 13th of July 1788, about nine in the morning, without any eclipse, a dreadful darkness suddenly overspread several parts of France. It was the prelude of such a tempest as is unexampled in the temperate climates of Europe. Wind, rain, hail, and thunder, seemed to contend in impetuosity; but the hail was the great instrument of ruin. Instead of the rich prospects of an early autumn, the face of nature in the space of an hour presented the dreary aspect of universal winter. The soil was converted into a morass, the standing corn beaten into the quagmire, the vines broken to pieces, the fruit trees demolished, and unmelted hail lying in heaps like rocks of solid ice. Even the robust forest trees were unable to withstand the fury of the tempest. The hail was composed of enormous, solid, and angular pieces of ice, some of them weighing from eight to ten ounces. The country people, beaten down in the fields on their way to church, amidst this concussion of the elements, concluded that the last day was arrived; and scarcely attempting to extricate themselves,

France.

themselves, lay despairing and half suffocated amidst the water and the mud, expecting the immediate dissolution of all things. The storm was irregular in its devastations. While several rich districts were laid entirely waste, some intermediate portions of country were comparatively little injured. One of 60 square leagues had not a single ear of corn or fruit of any kind left. Of the 66 parishes in the district of Pontoise, 43 were entirely desolated, and of the remaining 23 some lost two-thirds and others half their harvest. The Isle of France, being the district in which Paris is situated, and the Orleanois, appear to have suffered chiefly. The damage there, upon a moderate estimate, amounted to 80,000,000 of livres, or between three and four millions sterling. Such a calamity must at any period have been severely felt; but occurring on the eve of a great political revolution, and amidst a general scarcity throughout Europe, it was peculiarly unfortunate, and gave more embarrassment to the government than perhaps any other event whatever. Numbers of families found it necessary to contract their mode of living for a time, and to dismiss their servants, who were thus left destitute of bread. Added to the public discontent and political dissensions, it produced such an effect upon the people in general, that the nation seemed to have changed its character; and instead of that levity by which it had ever been distinguished, a settled gloom now seemed fixed on every countenance.

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Attempt to reduce the power of the crown in spring 1789.

The spring of the year 1789 was a period of much political anxiety in France. The superior orders wished to reduce the power of the crown, but were jealous of their own privileges, and determined to retain them; while the popular philosophers and others were endeavouring to render them odious, and to rouse the people to a love of freedom. Still, however, the great body of the common people remained careless spectators of the struggle, and unconscious of the approaching commotion. Such was their indifference, that few of them took the trouble even to attend and vote at the elections of the deputies to the states-general. In many places, where a thousand voters were expected, not fifty came forward; but such of them as did appear showed that a seed was sown which might one day rise into important fruits. In the instructions which they gave to their deputies, the British constitution was in general the model of what they wished their government to be. They demanded equal taxation, the abolition of *lettres de cachet* or arbitrary imprisonment, the responsibility of ministers, and the extinction of the feudal privileges of the nobles; but they wished that the whole three orders of the state should sit and vote in one house, well knowing that their nobility were not prepared to act the moderate part of a British house of lords. The nobles, on the contrary, although willing to renounce some of their pecuniary privileges, and to sacrifice the power of the crown, were most decisively resolved neither to surrender their feudal prerogatives nor the right of sitting in three separate assemblies; by means of which each of the orders could easily resist the encroachments of the other two. Mr Neckar has been improperly censured for not deciding this last important question previous to the meeting of the states-general: but it must be observed, that the very

purpose of calling that assembly was to overturn the unjust privileges of the higher orders through its medium, and without any direct interposition on the part of the ministers. Had the king positively decided in favour of three chambers, the nobles and the clergy would have retained all those ancient abuses established in their own favour, of which it was his wish to deprive them, and the crown and its prerogatives would have been the only objects of sacrifice. It was therefore thought safer to leave the *tiers etat* to fight its own battle; nor was it yet imagined that the commons of France, depressed and poor, and dispersed by situation over a multitude of provinces, could ever unite in enterprises dangerous to the sovereign.

The states had been summoned to meet at Versailles on the 27th of April, and most of the deputies arrived at that time; but the elections for the city of Paris not being concluded, the king deferred the commencement of their sessions till the 4th of May. During this period, the members, left in idleness, began to find out and form acquaintance with each other. Among others, a few members from Brittany (Bretagne) formed themselves into a club, into which they gradually admitted many other deputies that were found to be zealous for the popular cause, and also many persons who were not deputies. This society, thus originally established at Versailles, was called the *Comité Breton*; and was one day destined, under the appellation of the *Jacobin Club*, to give laws to France, and to diffuse terror and alarm throughout Europe. On the other side, the aristocratic party established conferences at the house of Madame Polignac, for the purpose, it is said, of uniting the nobles and the clergy.

An event occurred at this time which all parties ascribed to some malicious motive. In the populous suburb of St Antoine, a M. Reveillon carried on a great paper manufactory. A false report was spread that he intended to lower the wages of his workmen, and that he had declared bread was too good for them, and that they might subsist very well on potato-flour. A commotion was raised, he was burnt in effigy, and his house was thereafter burnt and pillaged by the mob, who were not dispersed till the military had been called in, and much carnage ensued. The popular party asserted that the commotion had been artfully excited by the party of the queen and the Count D'Artois, to afford a pretence for bringing great bodies of the military to the neighbourhood to overawe the states-general, or induce the king more decisively to resolve on assembling that body at Versailles, in preference to Paris, where they and the popular minister M. Neckar wished it to be held.

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A popular riot in the suburb of St Antoine.

On the 4th of May the states-general assembled at Versailles. They commenced business by going in a solemn procession, preceded by the clergy, and followed by the king, according to ancient custom, to church, to perform an act of devotion. The nobles were arrayed in a splendid robe, and they and the higher clergy glittered in gold and jewels. The commons appeared in black, the dress belonging to the law. The assembly was thereafter opened by a

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The States-General commence business at Versailles.  
short

France.  
1789.

short speech from the throne, in which the king congratulated himself on thus meeting his people assembled; alluded to the national debt, and the taxes, which were severely felt because unequally levied; he took notice of the general discontent and spirit of innovation which prevailed, but declared his confidence in the wisdom of the assembly for remedying every evil. "May an happy union (added he) reign in this assembly; and may this epocha become ever memorable for the happiness and prosperity of the country. It is the wish of my heart; it is the most ardent desire of my prayers; it is, in short, the price which I expect from the sincerity of my intentions and my love for my people."

M. Barretin, the keeper of the seals, next addressed the assembly in a congratulatory and uninteresting speech. He was followed by the popular minister M. Neckar, who spoke for three hours. Though much applauded on account of the clear financial details which his speech contained, he encountered a certain degree of censure from all parties, on account of the cautious ambiguity which he observed with regard to the future proceedings of the states-general.

215  
Their debates and inactivity.

Next day the three orders assembled separately. The deputies of the *tiers etat* amounted to 600 in number, and those of the nobles and clergy to 300 each. During their first sittings much time was spent in unimportant debates about trifling points of form; but the first important question, that necessarily became the subject of their discussion, was the *verification of their powers*, or production of the commissions of the members, and investigation of their authenticity. The commons (*tiers etat*) laid hold of this as a pretext for opening the grand controversy, whether the states-general should sit in one or in three separate chambers? They sent a deputation inviting the nobles and the clergy to meet along with them in the common hall for the purpose of *verifying their powers* in one common assembly. In the chamber of the clergy 114 members voted for the performance of this ceremony in the general assembly; and 133 against it. But in the more haughty order of the nobles, the resolution for the verification in their own assembly was carried by a majority of 188 against 47. The commons paid no regard to this. They were conducted by bold and skilful leaders, who discerned the importance of the point in contest, and resolved not to abandon it. Aware of the exigencies of the state, they knew that the crown was nearly verging upon bankruptcy; and that such were the deficiencies of the revenue, that only a short delay was necessary to accomplish the absolute dissolution of the government. They suffered five weeks to pass away therefore in total inactivity. During this period proposals were made on the part of the ministry for a pacification between the three orders, and conferences were opened by commissioners from each. But no art could seduce the commons from their original purpose, or prevail with them to enter upon the business of the state.

216  
Popularity of the Tiers Etat, or commons.

The nation had expected much from the assembling of the states-general, and learnt the news of their inaction with no small degree of concern. The *tiers etat* was naturally popular, and the public censure could not readily devolve upon that favourite order.

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Moreover, from the first period of their assembling the commons made every effort to augment their own natural popularity. They admitted all persons promiscuously into the galleries, and even into the body of their hall. No restraint was attempted to be laid upon the most vehement marks of popular applause or censure. Lists of the voters names were publicly taken and sent to Paris upon every remarkable occasion; and the members suddenly found themselves become, according to their political sentiments, the objects of general execration or applause. The new and bold notions of liberty that were daily advanced by the leaders of the *tiers etat* were received with acclamation by their hearers. The capital became interested in the issue of every debate; and the political fervor was eagerly imbibed by the nation with that vivacity which is so peculiar to the French. The commons accused the nobles of obstinately impeding the business of the state, by refusing to verify their powers in one common assembly. The accusation was swallowed by the multitude, who saw not, or were unwilling to see, that the attack was made by their own favourite order. In the mean time the nobles became rapidly more and more unpopular. Their persons were insulted, new publications daily came forth, and were greedily bought up, which reviled their whole order, and represented them as an useless or pernicious body of men, whose existence ought not to be tolerated in a free state. Whoever adhered to them was branded with the odious appellation of *Aristocrate*. The clergy, from the influence of the parish *curés* or parsons, seemed ready to desert their cause. They were even opposed by a minority of their own body, which derived lustre from having at its head the duke of Orleans the first prince of the blood. Still, however, the majority of the nobles remained firm; well aware, that if they once consented to sit in the same assembly, and to vote promiscuously, with the ambitious and more numerous body of the commons, their whole order, and all its splendid privileges must speedily be overthrown.

The leaders of the commons saw the change that was taking place in the minds of men; and they at length regarded the period as arrived when they ought to emerge from their inactivity, and execute the daring project of seizing the legislative authority in their country. They declared that the representatives of the nobles and the clergy were only the deputies of particular incorporations whom they would allow to fit and vote along with themselves; but who had no title in a collective capacity to act as the legislators of France. For conducting business with more facility, they appointed 20 committees. In consequence of a proposal by the Abbe Sieyes, a final message was sent to the privileged orders, requiring their attendance as individuals, and intimating that the commons, as the deputies of 96 out of every hundred of their countrymen, were about to assume the exclusive power of legislation. None of the nobles obeyed this summons; but three *curés*, Messrs Cefve, Ballard, and Jalot, presented their commissions, and were received with loud acclamations. They were next day followed by five more, among whom were Messrs Gregoire, Dillon, and Bodineau. After some debate concerning the appellation which they ought to assume, the commons, with

217  
Taking advantage of this popularity, they seize the legislative authority;

France. such of the clergy as had joined them, solemnly voted themselves the sovereign legislators of their country under the name of the *National Assembly*. The result of the vote was no sooner declared, than the hall resounded with shouts from the immense concourse of spectators, of "Vive le roi et vive l'assemblée nationale," *Long live the king and the national assembly*. M. Bailly was chosen president for four days only, Messrs Camus and Pison de Galand secretaries, and the assembly proceeded to business.

assembly, after wandering about in search of a place of meeting, at length entered the church of St Louis, and were immediately joined by the majority of the clergy, with their president, the archbishop of Vienne, at their head. Two nobles of Dauphiné, the marquis de Blaçon and the count d'Agoult, presented their commissions at the same time. Encouraged by these events, and by the applauses of surrounding multitudes, the assembly now expected with firmness the measures about to be adopted.

France. 1798. The Assembly meets in the church of St Louis.

218 And assert their own sovereignty. Its first acts were decisively expressive of its own sovereignty. All taxes imposed without the consent of the representatives of the people were declared to be null and void; but a temporary sanction was given to the present taxes, although illegal, till the dissolution of the assembly, and no longer. It was added, that "as soon as, in concert with his majesty, the assembly should be able to fix the principles of national regeneration, it would take into consideration the *national debt*, placing, from the present moment, the creditors of the state under the safeguard and honour of the French nation."

219 Majority of the clergy unite with them. The popular cause now gained ground so fast, that on the 19th of June a majority of the clergy voted for the verification of their powers in common with the national assembly, and they resolved to unite with them on the following day.

220 Fears of the nobles. Affairs were now come to a crisis, and the nobles perceived that they must instantly make a decisive stand, or yield up their cause as finally lost. Such was their alarm, that M. d'Esprenil proposed, at one of the sittings of their order, to address the king, intreating him to dissolve the states-general. Hitherto that prince had gone along with M. Neckar in favouring the popular cause in opposition to the aristocracy. But every art was now used to alarm his mind upon the subject of the late assumptions of power on the part of the commons, and these arts were at length successful. Repeated counsels were held; M. Neckar was absent attending a dying sister, and the king was prevailed upon to act agreeably to the advice of the leaders of the nobles. But the first measure which they adopted was so ill conducted as to afford little prospect of final success to their cause. On the 20th of June, when the president and members were about to enter as usual into their own hall, they found it unexpectedly surrounded by a detachment of the guards, who refused them admission, while the heralds at the same time proclaimed a royal session. Alarmed by this unforeseen event, the meaning of which they knew not, but apprehending that an immediate dissolution of the assembly was designed, they instantly retired to a neighbouring tennis-court, where, in the vehemence of their enthusiasm, they took a solemn oath "never to separate till the constitution of their country should be completed."

221 Royal session proclaimed.

On the 22d a new proclamation intimated that the royal session was deferred till the following day. It was now found that the assembly had been excluded from their hall merely because the workmen were occupied in preparing it for the intended solemnity. This information was ill calculated to excite favourable expectations of the measures about to be adopted at a royal session, ushered in by such circumstances of marked disrespect for the representatives of the people. The

The royal session was held in the most splendid form, but altogether in the style of the ancient despotism. Soldiers surrounded the hall. The two superior orders were seated, while the representatives of the people, left standing a full hour in the rain, were in no humour, when at last admitted, to receive with much complacency the commands of their sovereign. The king read a discourse, in which he declared null and void the resolutions of the 17th, but at the same time presented the plan of a constitution for France. It contained many good and patriotic principles, but preserved the distinction of orders, and the exercise of *lettres de cachet*; it said nothing about any active share in the legislative power to be possessed by the states-general, and was silent both about the responsibility of ministers and the liberty of the press. The king concluded by commanding the deputies immediately to retire, and to assemble again on the following day. He then withdrew, and was followed by all the nobles and a part of the clergy. The commons remained in gloomy silence on their seats. It was interrupted by the grand master of the ceremonies, who reminded the president of the intentions of the king. Instantly the vehement count de Mirabeau, starting from his seat, exclaimed with indignation, "The commons of France have determined to debate. We have heard the intentions that have been suggested to the king; and you, who cannot be his agent with the states-general, you who have here neither seat nor voice, nor a right to speak, are not the person to remind us of his speech. Go tell your master, that we are here by the power of the people, and that nothing shall expel us but the bayonet." The applause of the assembly seconded the enthusiasm of the orator, and the master of the ceremonies withdrew in silence.

M. Camus then rose; and in a violent speech indignantly stigmatized the royal session by the obnoxious appellation of a *bed of justice*; he concluded by moving that the assembly should declare their unqualified adherence to their former decrees. This motion was followed by another, pronouncing the persons of the deputies inviolable. Both were supported by Messrs Pétion, Barnave, Glaizen, the Abbés Gregoire, Sieyès, and many others, and were unanimously decreed. The assembly therefore continued their sittings in the usual form. On the following day the majority of the clergy attended as members; and on the 25th the duke of Orleans, along with 49 of the deputies belonging to the order of nobles, joined them also. The remaining nobles, as well as the small minority of the clergy, now found themselves awkwardly situated. Whether on this account, or because their leaders had by this time formed a plan for carrying their point not by peaceable means but by the aid of a military force, the king, on the 27th, invited by a pressing letter both orders

to-

France. 1798. Discourse of the King

222 The Assembly meets in the church of St Louis.

224 Ill received by the commons.

225 Debates after the King's departure.

France. to join the commons. This request was immediately  
 1789. complied with, although many of the nobility disappro-  
 226 ved of the measure.

Alarming situation of France at this period. The situation of France was now become truly alarm-  
 ing. When the king retired from the assembly after the royal session, he was followed by more than 6000 citizens, from whom loud clamours and every mark of disapprobation broke forth. All Versailles was speedily in an uproar. M. Neckar had repeatedly solicited his dismissal, and the report of this had increased the popular clamour. The court was in consternation. The king probably discovered, with no great satisfaction, that his minister was more popular than himself. At six o'clock in the evening the queen sent for M. Neckar. When he returned from the palace, he assured the crowd that waited for him that he would not abandon them; upon which they retired satisfied. At the same time the news of the royal session had thrown the city of Paris into violent agitation. The peace of that capital was at this time endangered by a variety of causes. A dreadful famine raged through the land, which in a great city is usually most severely felt. This prepared the minds of men for receiving unfavourable impressions of their political state. Every effort was moreover made to disorganize the government, and produce a dislike to the ancient order of things. The press poured forth innumerable publications, filled with new and seducing, though generally impracticable, theories of liberty. These were distributed *gratis* among the bulk of the people of Paris, and dispersed in the same manner through the provinces. Philip duke of Orleans (presumptive heir to the crown, failing the children and brothers of the king) is with good reason believed to have supplied this expence out of his more than royal revenues. In the gardens of the Palais Royal at Paris, which belonged to him, an immense multitude was daily assembled, listening from morning to night to orators who descanted upon the most violent subjects of popular politics. Many of these orators were suspected to be in his pay. It was even believed that his money found its way into the pockets of some of the most distinguished leaders in the national assembly.

227 Numerous seditious publications.

228 Seduction of the military. But the government was, if possible, still more dangerously assaulted by the methods now generally used to seduce the military. Every officer of the French army belonged to the order of the nobles; and from that quarter, therefore, it might have been imagined that there was little danger. But this very circumstance became the means of disorganizing that great engine of despotism. As the soldiers could not avoid imbibing some of the new opinions, their own officers became the first objects of their jealousy; especially in consequence of that impolitic edict of Louis XVI. which required every officer to produce proofs of four degrees of nobility; and thus insulted, by avowedly excluding the private men from promotion. Perhaps with a view to what might happen, the instructions to the deputies of the *tiers etat* had recommended an increase of the pay of the soldiers. And now at Paris every art was used to gain them to the popular cause. They were conducted to the Palais Royal, and were there caressed and flattered by the populace, while they listened to the popular harangues. These arts were successful. On the 23d of June they first refused to

fire on the mob in a riot. Some of them were on the 30th reported to be in confinement for this offence; a crowd instantly collected, and rescued them, the dragons that were brought to suppress the tumult grounding their arms. A deputation of the citizens solicited of the assembly the pardon of the prisoners. The assembly applied to the king, who pardoned them accordingly.

229 The military called out. All these events, together with the tumultuous state of the capital, which was daily increasing, made it necessary for the king to call out the military force to restore, if possible, the public peace. That his intentions were pure, the then state of affairs will permit no man but a democrat to doubt; but the aristocracy, with the Count d'Artois at their head, were bringing forward other measures, which ultimately contributed to the ruin of themselves, the king, and the kingdom. Crowds of soldiers were collected from all parts of the kingdom around Paris and Versailles. It was observed, that these consisted chiefly of foreign mercenaries. Camps were traced out. Marshal Broglie, a tried veteran, was sent for and placed at the head of the army. The king was supposed to have entirely yielded to new counsels, and every thing bore the appearance of a desperate effort to restore the energy of the ancient government. This is the most important period of the French revolution; yet the specific designs of the leading actors have never been clearly understood. It was rumoured at the time, that Paris was to be subdued by a siege and bombardment; that the assembly was to be dissolved, and its leaders put to death. These are incredible exaggerations; but the crisis of French liberty was universally regarded as at hand, and also the existence of the national assembly as an independent body; or at least upon any other footing than that proposed by the king on the 23d of June.

230 The assembly addresses the king to remove them, which is refused. An able and eloquent address to the king against the assemblage of foreign troops in their neighbourhood was brought forward by Mirabeau, and voted by the assembly. The king properly replied, that the state of the capital was the cause of assembling the troops, and offered to transfer the states-general to Noyons or Soissons. "We will neither remove (exclaimed Mirabeau) to Noyons or to Soissons; we will not place ourselves between two hostile armies, that which is besieging Paris, and that which may fall upon us through Flanders or Alsace; we have not asked permission to run away from the troops; we have desired that the troops should be removed from the capital."

231 They again address the king; Thirty-five thousand men were now stationed in the neighbourhood of Paris and Versailles. The posts were occupied which commanded the city, and camps were marked out for a greater force. The Count d'Artois and his party regarded their plans as ripe for execution; and M. Neckar received a letter from the king, requiring him to quit the kingdom in 24 hours. That popular minister took the route of Brussels on the following day, when his departure was made public. In his dismissal the popular, or, as it was now called, the *democratic*, party thought they saw the resolution adopted to accomplish their ruin. The assembly again addressed the throne; they requested anew the removal of the troops, offering to be responsible for the public peace, and to proceed in a body to Paris to encoun-

France. ter personally every danger that might occur. But they were coolly told, that the king was the best judge of the mode of employing the troops, and that the presence of the assembly was necessary at Versailles. From a sovereign who doubtless recollected the proceedings of the long parliament of England, a different reply could not in reason be expected. On receiving it, however, it was instantly decreed, on the motion of the marquis de la Fayette, that the late ministry had *carried with them* the confidence of the assembly; that the troops *ought* to be removed; that the ministry are and shall be responsible to the people for their conduct; that the assembly persisted in all its former decrees; and that as it had taken the public debt under the protection of the nation, no power in France was entitled to pronounce the infamous word *bankruptcy*.

234  
Consternation in Paris on Neckar's retreat.

The city of Paris was thrown into deep consternation by the news of M. Neckar's retreat. His bust and that of the duke d'Orleans were dressed in mourning, and carried through the streets. The royal Alлемand, a German regiment, broke in pieces the busts, and dispersed the populace. The prince De Lambesq, grand ecuyer of France, was ordered to advance with his regiment of cavalry, and take post at the Thuilleries. Being a man of a violent temper, and enraged by the appearances of disapprobation which were visible around him, he furiously cut down with his sword a poor old man who was walking peaceably in the gardens. The consequences of this act of inhumanity were such as might have been expected; a shout of execration instantly arose; the cry *to arms* was heard; the military were assaulted on all sides; the French guards joined their countrymen, and compelled the Germans, overpowered by numbers, and unsupported by the rest of the army, to retire.

235  
Cruelty of the Prince De Lambesq.

All order was now at an end, and as night approached an universal terror diffused itself through the city. Bands of robbers were collecting; and from them or from the foreign soldiery a general pillage was expected. The night passed away in consternation and tumult. It was found in the morning that the hospital of St Lazare was already plundered. The alarm bells were rung; the citizens assembled at the Hotel de Ville, and adopted a proposal that was there made, of enrolling themselves as a militia for general defence, under the appellation of the *national guard*. This day and the succeeding night were spent in tolerable quietness, without any attempt on the part of the army. On the morning of the memorable 14th of July, it was discovered that the troops encamped in the Champs Elisees had moved off, and an immediate assault was expected. The national guard now amounted to 150,000 men; but they were in general destitute of arms. They had assumed a green cockade; but on recollecting that this was the livery of the Count d'Artois, they adopted one of red, blue, and white. M. de la Salle was named commander in chief, officers were chosen, and detachments sent around in quest of arms. In the Hotel des Invalides upwards of 30,000 stand of arms were found, along with 20 pieces of cannon; a variety of weapons was also procured from the *garde meuble de la couronne*, and from the shops of armourers, cutlers, &c.

236  
Terror in the city universal.

The celebrated fortress of the Bastile was an object

of much jealousy to the Parisians. At 11 o'clock in the morning, M. de la Rosiere, at the head of a numerous deputation, waited upon M. de Launay the governor, who promised, along with the officers of his garrison, that they would not fire upon the city unless they should be attacked. But a report was soon spread through Paris, that M. de Launay had, in a short time thereafter, admitted into the fortress a multitude of persons, and then treacherously massacred them. The cause of this piece of perfidy has never been explained. The fact itself has been denied; but it was attested at the time by the duke of Dorset, the British ambassador at the court of France. The effect of the report was, that a sudden resolution was adopted of assaulting the Bastile; an immense and furious multitude rushed into its outer, and soon forced their way into its inner courts, where they received and returned a severe fire for the space of an hour. The French guards, who were now embodied into the national guard, conducted the attack with skill and coolness: they dragged three waggons loaded with straw to the foot of the walls, and there set them on fire; the smoke of these broke the aim of the garrison, while it gave no disturbance to the more distant assailants. The besieging multitude pressed the attack with incredible obstinacy and vigour for the space of four hours; the garrison was in confusion; the officers served the cannon in person, and fired their muskets in the ranks; the governor, in despair, thrice attempted to blow up the fortress. A capitulation, when at last fought, was refused to the garrison, and an unconditional surrender took place. The governor, and M. de Lofme Salbrai his major, a gentleman of distinguished humanity and honour, became victims of popular fury in spite of every effort that could be made for their protection; but the French guards succeeded in procuring the safety of the garrison. Only seven prisoners were found in the Bastile. A guard was placed in it, and the keys were sent to the celebrated M. Brisot de Warville, who a few years before had inhabited one of its caverns.

The remaining part of this eventful day was spent at Paris in a mixture of triumph and alarm. In the pocket of the governor of the Bastile a letter was found, encouraging him to resistance by the promise of speedy succours, written by M. de Flestelles, the prevot de marchands, or chief city magistrate, who had pretended to be a most zealous patriot. This piece of treachery was punished by instant death; and his bloody head was carried through the city on a pole, along with that of M. de Launay. At the approach of night a body of troops advanced towards the city; at the Barriere d'Enfer. The new national guard hurried thither, preceded by a train of artillery, and the troops withdrew upon the first fire: barricadoes were everywhere formed, the alarm-bells were rung, and a general illumination continued during the whole of this night of confusion.

In the mean time, it was obvious that the new ministry were entering upon a difficult scene of action, where one false step might lead to ruin, and where their own plan of conduct ought to be maturely digested. Marshal Broglio was made minister of war, the baron de Breteuil president of finance, M. de la Galiezere comptroller-general, M. de la Porte intendant of the war department, and M. Foulon intendant of the navy;

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237  
The Bastile attacked;

238  
And surrendered unconditionally.

239  
A new ministry appointed.

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240  
Their situa-  
tion diffi-  
cult, and  
their con-  
duct bad.

navy; but these were only meant to act as official men, under the Count d'Artois, and the other leaders of the aristocracy. To these leaders there did not even remain a choice of difficulties; no resource was left but that of overawing by military power the national assembly and the capital, and of risking the desperate measure of a national bankruptcy, which the court had not formerly dared to encounter, and to avoid which it had convoked the states-general. No trace remains, however, of any attempt to put this criminal, but last resource, in execution. The evening after the departure of M. Neckar was spent by the court of Versailles in feasting and joy, as if a victory had been gained. The courtiers of both sexes went round among the soldiery, striving to secure their fidelity by caresses, largesses, and every species of flattering attention. The ministry not only failed to support the Prince de Lambesq in the post which he had been sent to occupy, but they suffered the whole of the 13th to pass in indecision, while the capital was in a state of rebellion, while an army was formally mustering within its walls, and the names of the principal nobility were put up in lists of proscriptions. They received the news of the capture of the Bastille with confusion and dismay, which were increased, if possible, by information given by Marshal Broglio, that the troops refused to act against Paris or the national assembly. In this perplexity they adopted the miserable device of concealing from the king the state of public affairs; and that unfortunate prince was thus perhaps the only person out of millions around him who remained ignorant of the convulsions in which his country was involved.

At length, at midnight, the Duke de Liancourt forced his way into the king's apartment, and told him of the revolt of his capital, of his army, and of the surrender of the fortrefs of the Bastille. The Count d'Artois, who was present, still attempted to retain the monarch under his fatal delusion; but the Duke de Liancourt turning round, exclaimed, "As for you, Sir, your life can only be saved by instant flight; I have seen with horror your name in the bloody list of the proscribed." Accordingly the count, with the members of his short-lived administration and their adherents, fled to the frontiers. And thus an emigration commenced, the source of that terrible contest which has covered Europe with bloodshed and mourning. This ministry had, no doubt, many difficulties to contend against; but an accurate attention to their conduct excites a suspicion which, while it exculpates them from many intended crimes that have been laid to their charge, at the same time does little honour to their talents. It is this, that they had come into office without having formed any clear plan of conduct; that they were men acting without decision and at random, and consequently became the sport of those events which they wanted skill and vigour to direct or controul. By their introduction into office, and their misconduct while in it, the royal authority fell prostrate before the popular party in the national assembly. The nobles and the clergy still remained, but confounded in one assembly with the more numerous order of the *tiers etat*; and no longer rallying round a throne that was too feeble to afford protection, they soon yielded to that fierce and levelling spirit of democracy that now rose around them.

But the person of the monarch was still beloved.—  
Early next morning the king went to the assembly, but with none of the usual solemnities. He "regretted the commotions of the capital, disavowed any knowledge of an intention against the persons of the deputies, and intimated that he had commanded the removal of the troops." A deep and expressive silence prevailed for a few moments; this was succeeded by vehement and universal shouts of applause. The king arose to depart, and instantly the whole assembly crowded around, and attended him to his palace. The queen appeared at a balcony with the dauphin in her arms; the music played the pathetic air of *Où peut-on être mieux qu'au sein de sa famille*. The enthusiasm of loyalty communicated itself to the surrounding multitudes, and nothing was heard but acclamations of joy.

On the following day, the king declared his resolution to visit the city of Paris in person. Accordingly that prince, who never wanted personal courage, however deficient he might be in political steadfastness, set out, attended by some members of the assembly and by the militia of Versailles. He was met by the celebrated M. de la Fayette, at the head of a body of the national guard, of which he had now been chosen commander in chief. M. Bailly, in whose person the ancient office of mayor of Paris had been revived, received the king at the gates, and delivered to him the keys. All this while no shout was heard from the crowd of innumerable spectators but that of *Vive la nation*. The king advanced to the Hotel de Ville, where the new cockade was presented to him, which he put on, and presented himself with it at a window. At the sight of this badge of patriotism an universal shout of *Vive le Roi* burst forth from every quarter; and he returned to Versailles amidst general triumph and applause.

Much confusion still prevailed in the capital; but there was more appearance of regularity than could have been expected at the conclusion of such important events. This arose from a casual concurrence of circumstances. To conduct with ease the elections to the states-general, Paris had been divided into 60 districts, each of which had a separate place of meeting. The people did not elect the members to the states-general; but they chose delegates, who under the name of electors, voted for the members. At the commencement of the disturbances, the electors, at the request of their fellow-citizens, assumed a temporary authority; of which, however, they were soon weary, and as soon as possible procured the public election of 120 persons as municipal officers for the government of the city. The citizens having got the habit of assembling in their districts, grew fond of it: they assembled frequently, made rules for their own government, and sent commissioners to communicate with other districts. The tumultuous nature of these meetings, and the vehemence of debate which prevailed in them, will best be conceived from the ludicrous contrivance of one of their presidents, who stationed a drummer at the back of his chair, and when the confusion and noise became altogether unmanageable, gave the signal for beating the drum, which speedily overpowered every other noise. These meetings, however, gradually ripened into clubs, in which much dexterity and intrigue were exerted.

The whole of the late ministry escaped excepting M. Foulon.

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241  
The king  
goes to the  
assembly.

242

And next  
day visits  
the city of  
Paris in  
person;

243

In which  
much con-  
fusion still  
prevailed.

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<sup>244</sup>  
Fate of M.  
Foulon,  
and Ber-  
thier.

Foulon. His character, it may well be imagined, was extremely unpopular; for he is said to have asserted, that he would "make the people of Paris eat hay." He had retired to the country, but was seized by his own vassals, and brought to Paris with a bundle of hay tied to his back. In spite of every effort made by M. M. Bailly and Fayette to procure him a fair trial at least, he was carried to the *Place de Greve*, and hanged at a lamp-iron by the enraged multitude. His son-in-law M. Berthier, attempting to defend himself against a similar fate, fell, covered with wounds. Their heads were carried round on poles; and thus the populace became habituated to the sight of blood and murder: they were even taught by popular songs to glory in such actions, and particularly by the well known song *Ca-ira*.

<sup>245</sup>  
Consequen-  
ces of M.  
Neckar's  
return.

In consequence of an invitation from the king, M. Neckar returned to France. He was received by the assembly with great applause, and in Paris with infinite solemnity and triumph. He here, however, committed a political error that made some noise. In deploring the late excesses and murders, and taking notice of the arrest of M. Bezenval, an officer of the Swiss guards, he requested of the electors at the Hotel de Ville, in a solemn harangue, that the past should be forgotten; that proscriptions should cease, and a general amnesty be proclaimed. In a moment of enthusiasm this was agreed to, and the electors decreed what unquestionably exceeded their powers. The districts of Paris were instantly in commotion; the electors alarmed, declared that they only meant that "henceforth the people would punish no man but according to law;" and at the same time, to prove that they themselves were free from ambition, they formally renounced all their own powers. The assembly took up the question. Lally Tolendal, Mounier, Clermont Tonnerre, Garat junior, and others, declared that no person ought to be arrested without a formal accusation; while Mirabeau, Robespierre, Barnave, and Gleizen, alleged, on the contrary, that the people were entitled to lay hold of any man who had publicly appeared at the head of their enemies. The debate ended, by admitting the explanation of the electors, and by a declaration that it was the duty of the assembly to see justice executed in all cases.

<sup>246</sup>  
The com-  
motions,  
&c. of the  
capital  
reach to the  
provinces.

The commotions and enthusiasm of the capital were speedily communicated to the provinces. In every quarter the people seized upon all the arms that could be found, and the military uniformly refused to act against them. Many acts of outrage were committed in Brittany, at Strasbourg, in the Lionnois, and elsewhere, in which the nobility were the sufferers. The mischiefs that occurred were usually magnified at a distance; but that very circumstance was an additional evil. For example: It was stated in the National Assembly that M. de Mesmay, lord of Quincey, invited a number of patriots, among whom were the officers of a neighbouring garrison, to a splendid entertainment at his house, to celebrate the happy union of the three orders: That in the midst of the feast the master of the house contrived to withdraw unnoticed, and to set fire to a train previously laid, which communicated with a quantity of gunpowder in the cellars, in consequence of which the whole company, by a sudden explosion, were blown into the air. It was found on inquiry,

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that there was not one word of truth in the whole story. But before this inquiry could be made, all France had resounded with accounts of the pretended bloody tragedy; and the whole nobility of the kingdom suffered in a less or greater degree, from the prejudices excited by this unhappy report, the origin of which has never been well explained. It would be vain to state all the idle rumours to which at this time the blind credulity of the multitude gave currency. At one time, the Aristocrats were cutting down the green corn; at another time they were burying flour in common sewers, or casting leaves into the Seine. One report was no sooner proved to be false than another arose, and the whole nation was agitated by suspicion and alarm. The National Assembly were engaged in framing their celebrated declaration of the rights of man, which was to form the basis of the new constitution, when the alarming accounts, received from all quarters, of the state of anarchy into which the kingdom was falling, obliged them suddenly to turn their attention to objects of practical necessity. The privileged orders found themselves become the objects of universal jealousy and hatred; and that something must instantly be done to save their families and property, which were menaced on every side with persecution and pillage. Regarding the popular torrent as now become irresistible, to save something they resolved to sacrifice a part.

On the afternoon sitting of the 4th of August, the Viscount de Noailles, seconded by the Duke d'Aguillon, opened one of the most important scenes in the French Revolution, or in the history of any country. These noblemen stated, that the true cause of the commotions which convulsed the kingdom existed in the misery of the people, who groaned under the double oppression of public contributions and of feudal services. "For three months (said M. de Noailles) the people have beheld us engaged in verbal disputes, while their own attention and their wishes are directed only to things. What is the consequence? They are armed to reclaim their rights, and they see no prospect of obtaining them but by force." He therefore proposed to do justice as the shortest way of restoring tranquillity, and for that purpose to decree, that henceforth every tax should be imposed in proportion to the wealth of the contributors, and that no order of the state should be exempted from the payment of public burdens; that the wealth of feudal claims should be redeemed at a fair valuation; but that such claims as consisted of personal services on the part of the vassal should be abolished without compensation, as contrary to the imprescriptible rights of man. The extensive possessions of the noblemen who made these proposals added much lustre to the disinterested sacrifice which they afforded. Their speeches were received with the most enthusiastic applauses by the Assembly and the galleries, and their proposals were decreed by acclamation without a vote. No nation is so much led by the influence of sudden emotions as the French. The patriotic contagion now spread fast through every breast, and a contest of generosity ensued. The hereditary jurisdictions possessed by the nobles within their own territories were next sacrificed. All places and pensions granted by the court were suppressed, unless granted as the reward of merit or of actual services. The game laws, which condemned the husbandman, under severe penalties, to leave his proper-

<sup>249</sup>  
The game-  
laws, &c.  
abolished.

ty

France. 1789. ty a prey to infinite multitudes of animals reserved for pastime, had always been numbered among the severe grievances of the French peasantry. These were therefore renounced, along with the exclusive rights of rabbit warrens, fisheries, and dove-cotes. The sale of offices was abolished, and the fees exacted from the poor, together with the privilege of holding a plurality of livings, were relinquished by the clergy. The deputies of the *Pais d'Etat*, or privileged provinces, with the deputies of Dauphiné at their head, next came forward, and offered a surrender of their ancient privileges, requesting that the kingdom might no longer remain parcelled out among Dauphinois, Bretons, Provençaux, &c. but that they should all form one great mass of French citizens. They were followed by the representatives of Paris, Marseilles, Lyons, Bourdeaux, Strasbourg, &c. who requested leave to renounce all their separate privileges as incorporations, for the sake of placing every man and every village in the nation upon a footing of equality. Thus the Assembly proceeded, till every member had exhausted his imagination upon the subject of reform. To close the whole, the Duc de Liancourt proposed that a solemn *Te Deum* should be performed, that a medal should be struck in commemoration of the events of that night; and that the title of RESTORER OF GALLIC LIBERTY should be bestowed upon the reigning monarch. A deputation was accordingly appointed to wait upon the king, respectfully to inform him of the decrees.

250  
Many ancient privileges are voluntarily surrendered.

251  
Tithes and revenues of the clergy taken away.

Several succeeding days were necessary to form into laws the decrees of the 4th August, and committees were appointed to make out reports for that purpose. One of these reports having included the tithes and revenues of the clergy among the abuses that were to be done away, and having proposed in lieu of them to grant a certain stipend to the different ministers of religion to be payable by the nation, the clergy attempted to make a stand in defence of their property, and violent debates ensued. In these they were ably supported by the Abbé Sieyès: but as the clergy had formerly deserted the nobles, so they were now in their turn abandoned to their fate by the hereditary aristocracy. The popular party had long regarded the wealth of the church as an easy resource for supplying the wants of the state.— Never was there a more complete proof of the influence of opinion over the affairs of men. The Catholic clergy of France, though possessed of more property than they enjoyed at the time when princes took up arms or laid them down at their command, now found so few defenders, that they were terrified into a voluntary surrender of all that they and their predecessors had possessed for ages. In their overthrow, they scarcely enjoyed even the barren honour of having fallen the last of those privileged orders that so long had ruled over this ancient kingdom. They and the nobles, and the king, still possessed their former titles and nominal dignity; but all of them were now subdued, and at the mercy of the commons of France, who speedily dismissed them at their pleasure.

252  
A new ministry appointed,

As a short season of tranquillity in the Court and the National Assembly succeeded these great popular sacrifices, the King laid hold of it as a fit opportunity for the appointment of a new ministry. They consisted of the archbishop of Vienne, the archbishop of Bourdeaux, M. Neckar, the Count de St Priest, Count de

Montmorin, the Count de la Luzerne, and the Count de la Tour du Pin Paulin. M. Neckar, as minister of finance, having stated the distressed situation of the revenue, presented the plan of a loan of thirty millions of livres. But M. Mirabeau, from a spirit of rivalry, as it would seem, to M. Neckar, prevailed with the Assembly to alter and to narrow the conditions of it in such a degree that very few subscribers were found, and the loan could not be filled up. This failure involved the Assembly in a considerable degree of unpopularity; in consequence of which they allowed M. Neckar to prescribe his own terms for the purpose of obtaining a loan of eighty millions. But the happy instant of public confidence had been allowed to pass away, and this loan was never more than half filled up. Recourse was next had to patriotic contributions; and great numbers of gold rings, silver buckles, and pieces of plate, were presented to the Assembly. The royal family themselves sent their plate to the mint, either to give countenance to these donations, or, as M. Neckar has since asserted, through absolute necessity, for the purpose of supporting themselves and their family. The confusion into which the nation had been thrown by the late events had produced a suspension of the payment of all taxes. There existed, in fact, no efficient government; and if society escaped entire dissolution, it was merely in consequence of those habits of order which are produced by a state of long continued civilization. The business of government could not be transacted without money, and many vain efforts were made by the ministry to procure it. At length M. Neckar was driven to the desperate resource of proposing a *compulsory loan*, or that every individual possessed of property should advance to the state a sum equal to one-fourth of his annual income. This bold proposition was supported by Mirabeau, and adopted by the Assembly; but it does not appear to have ever been effectually executed.

In the mean time, the Assembly was busily occupied in framing the celebrated declaration of the *Rights of Man*, which was afterwards prefixed to the new constitution. This was followed by the discussion of a point of much delicacy and difficulty; viz. What share of legislative authority the king ought to possess under the new constitution; whether an absolute negative or *veto*, a suspensive *veto*, or no *veto* at all? This question operated like a touchstone for trying the sentiments of every person; and the assembly, consisting of 1200 men, was now seen to arrange itself into two violent contending factions. The debates were vehement and tumultuous, and continued for many days. As the assembly sat in public, and as multitudes of people of all descriptions were admitted into the galleries, and even into the body of the hall among the members, many indecent scenes took place in consequence of the interference of the spectators to applaud or censure the sentiments which were delivered. Thus the public at large became speedily interested in the discussion; the city of Paris took a side in opposition to the *veto*, and the whole empire was thrown into agitation by new and speculative questions. The distinguished place which France holds among the nations of Europe rendered these singular events and discussions the object of universal attention. The contagious love of novelty spread rapidly abroad, and gave rise to that well-founded jealousy on the part of the monarchs of Europe, which

France. 1789. Who find great difficulty in raising money.

254  
Discussion on the Rights of Man,

155  
And the king's veto

France. was speedily to burst forth in a bloody tempest.—In the present case, the people of Paris became most eagerly interested. Rumours of plots were spread through the country, and a new storm was obviously gathering, when the question was thus got quit of. M. Mounier remarked, that the executive power could possess no negative against the decrees of the present assembly, which had been nominated by the nation with supreme powers for the express purpose of framing a constitution, which was to remain binding over all orders of men in the state; and with regard to future legislatures, the king declared by a message, that he wished to possess no more than a *suspensive veto*. It is remarkable that the popular Mirabeau concluded a speech in favour of the absolute *veto* of the crown with these words, “That it would be better to live in Constantinople than in France, if laws could be made without the royal sanction.” This political adventurer is, however, accused of having taken care to circulate in Paris a report that he had opposed the *veto* with all his influence; and to give credit to the story, he is said to have quitted the assembly just before the division, that his vote might not appear on record against it.

The month of August was spent in the debates about the *veto*; and in the beginning of September a new constitutional question was presented to the assembly by one of its numerous committees. This was, Whether the legislative body ought to consist of one or of two chambers? Mounier, Lally Tolland, Clermont Tonnerre, and others, who were zealous lovers of freedom upon what were then accounted moderate principles, supported eagerly the idea of establishing two independent chambers in imitation of the British constitution; but they were deserted both by the democratic and aristocratic parties. The first of these regarded an upper house or senate as a refuge for the old aristocracy, or as the cradle of a new one; while the higher nobles and clergy feared lest such an arrangement might prevent the future re-establishment of the ancient division into three orders. Of 1000 members who voted, only 89 supported the proposal for dividing the legislature into two chambers.

Soon after this, the king gave his sanction to the important decrees of the 4th of August, but not without some hesitation, and expressing doubts of the wisdom of some of them in a letter to the assembly. At the same time the *inviolability* of the person of the monarch was decreed, the indivisibility of the throne, and its hereditary descent from male to male in the reigning family.—But we shall not here attempt to enter into a detail of the various articles of the new constitution as connected with the circumstances under which they became the subject of debate. We shall only state those more remarkable circumstances which tend to ascertain the peculiar changes which the sentiments of the nation underwent in the progress of a revolution the most remarkable that occurs in human history.

In consequence of the debates upon the questions of the *veto* and the two chambers, the minds of parties had become much irritated. Paris wore the same threatening aspect that it had done in the months of June and of July preceding; and every thing seemed tending towards an important crisis. The aristocratic party accused their antagonists of a design to excite new insurrections; and the charge was retorted, by cir-

culating a report that a plot for conveying the king to Metz was already ripe for execution.

From the period of the defection of the French guards, who were now in the pay of the capital, the protection of the royal family had been entrusted to the militia or national guard of Versailles, together with the regiment of the *gardes du corps*, which was composed entirely of gentlemen. Upon the circulation of the report of the intended flight of the king, the French guards began to wish to be restored to their ancient employment of attending his person, for the purpose of preventing any attempt of this nature. This idea was eagerly cherished by the capital; and, in spite of every effort used by M. de la Fayette, the obvious appearance of approaching disturbances could not be prevented. The popular party saw the advantages which they would derive from placing the assembly and the king in the midst of that turbulent metropolis which had given birth to the revolution, and upon the attachment of which they could most securely depend. Every encouragement was therefore given by the most active leaders of what was now called the *Democratic* party to the project of establishing the court at Paris. The ministry were under no small degree of alarm; and the count d'Estaing, who commanded the national guard of Versailles, requested the aid of an additional regiment. The regiment of Flanders was accordingly sent for: its arrival caused no small degree of anxiety; and every effort was instantly made to gain over both officers and soldiers to the popular cause.

On the first of October the garde du corps, probably for the purpose of ingratiating themselves with the newly arrived regiment, and perhaps to attach them more steadily to the royal cause, invited the officers of the regiment of Flanders to a public entertainment. Several officers of the national guard, and others of the military, were invited. The entertainment was given in the opera house adjoining to the palace; several loyal toasts were drank: but it is asserted, that when the favourite popular toast *The Nation* was given, it was rejected by the *gardes du corps*. In ordinary cases, such a trifling circumstance as this, or even any other of the transactions of a night of festivity, would justly be regarded as unworthy of notice in recording the more remarkable events in the history of a great nation; but such was now the singular state of affairs, that the most trivial occurrences were instrumental, by their combination, in the production of important consequences. The queen, having seen from a window of the palace the gaiety which prevailed among the military, prevailed with the king, who was just returned from hunting, to visit them along with herself and the dauphin. Their sudden appearance in the saloon kindled in an instant the ancient enthusiasm of French loyalty. The grenadiers of the regiment of Flanders along with the Swiss chassateurs, had been admitted to the dessert; and they, as well as their officers, drank the health of the King, Queen, and Dauphin, with their swords drawn. The royal family having bowed with politeness to the company, retired.—Of all nations, the French are most liable to the influence of sudden impressions: the music played the favourite air, *O Richard! O mon Roi! l'univers l'abandonne*, “O Richard! O my king! the world abandons thee.” In the eagerness of loyalty,

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Consequences of their insurrections.

256  
Discussion about the legislative body, whether it ought to consist of one or two chambers.

257  
The royal sanction granted to the decrees of the 4th August, &c.

258  
State of parties in Paris.

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loyalty, the national cockade, which had been adopted by some of the gardes du corps, was thrown aside, and white cockades were supplied as quickly as they could be made by the ladies of the court.

When these events were next day reported at Paris, accompanied by a multitude of exaggerations, they gave rise to the most violent alarm. The capital was at that time suffering all the horrors of famine; and in such a situation, the news of a feast which others have enjoyed, seldom gives much pleasure to hungry men. To the former report of an intended flight on the part of the royal family, it was now added, that a counter revolution was speedily to be attempted by force of arms; and that the present scarcity was artificially created by the court for the purpose of reducing the people to submission. Their aristocratic antagonists have since asserted, that the famine was indeed artificial; but that it was created by a portion of the violent party in the national assembly, which was then denominated the *Cabal*, whose object was to excite commotions as the means of procuring an opportunity of setting the duke of Orleans at the head of the state, either as regent, or in some other form. To this last party Mirabeau is said to have belonged.

For four days no notice was taken in the assembly of what had passed at the entertainment given by the gardes du corps. On the 5th of October M. Petion mentioned it for the first time, and a violent debate ensued; during which Mirabeau rose and exclaimed, "Declare that the king's person *alone* is sacred, and I myself will bring forward an impeachment;" thereby alluding to the conduct of the queen. While this debate was proceeding at Versailles, the city of Paris was in commotion. A vast multitude of women of the lowest rank, with some men in women's clothes, had assembled at the *Hotel de Ville*, and were calling aloud for arms and bread. They resolved to proceed instantly to Versailles to demand bread from the king and from the national assembly. La Fayette opposed them in vain; for his own soldiers refused to turn their bayonets against the women. Upon this one Stanislaus Maillard, who had distinguished himself at the taking of the Bastille, offered himself as a leader to the insurgents. He had the address to prevail with them to lay aside such arms as they had procured; and he set out for Versailles about noon with as much order among his followers as could well be expected from such an assemblage. Either because the passion for going to Versailles had suddenly become too infectious to be resisted, or because the multitude already gone thither was now accounted dangerous, the mayor and municipality of Paris thought fit to give orders to la Fayette instantly to set out for that place at the head of the national guard.

In the mean time, Maillard approached Versailles with his tumultuous troop; he arranged them in three divisions, and persuaded them to behave with tolerable decency. The king was hunting in the woods of Mendon when he was informed of the arrival of a most formidable band of women calling aloud for bread. "Alas! (replied he) if I had it, I should not wait to be asked." Maillard entered the assembly accompanied by a deputation of his followers to state the object of their journey. The assembly, to pacify them, sent a deputation of their own number along with them to

lay their complaints before the king. His majesty received the whole with great politeness, and readily agreed to go into any measures for the supply of the capital that could be suggested. The report of this behaviour had such an effect upon the multitude collected around the palace, that they began to disperse; but they were speedily succeeded by another crowd not less numerous. A sudden resolution of flight seems now to have been proposed by the court; for the king's carriages were brought to the gate of the palace which communicates with the orangery: but the national guard of Versailles refused to allow them to pass, and the king himself refused to remove, or to allow any blood to be shed in his cause.

La Fayette with his army at length arrived about 10 o'clock at night, and found the assembly in a very unpleasant situation. Their hall and galleries were crowded by the Parisian fish-women and others of the mob, who, at every instant, interrupted the debates. La Fayette waited upon the king, and informed him of the proceedings of the day, planted guards in every quarter; and after a scanty banquet had been procured for the multitude, he prevailed with the assembly to close their sitting for the night. In this last part of his conduct M. la Fayette has been much censured, and probably not without reason; for it could scarcely be expected that such a night would be spent in peace by the immense assemblage of turbulent characters that were now brought together. All was quiet, however, till about six in the morning of the 6th, when a great number of women and desperate persons rushed forward to the palace, and attempted to force their way into it. Two of the gardes du corps were killed; the crowd ascended the staircase leading to the queen's apartment, but were bravely resisted by M. Miemandre a sentinel, who gave the alarm, and defended his post till he fell covered with wounds, of which, however, he afterwards fortunately recovered. The ruffians, reeking with his blood, rushed into the chamber of the queen, and pierced with bayonets and poniards the bed whence this persecuted woman had but just time to fly almost naked, and, through ways unknown to the murderers, had escaped to seek refuge at the feet of the king, who was already alarmed, and had gone to seek her.

The tumult became more violent every moment, and the sudden death seemed to threaten the royal family; but la Fayette was by this time at the head of his troops, whom he beseeched earnestly to save the gardes du corps from massacre. In this he was successful; some that had been taken prisoners were surrounded by the grenadiers of the French guards who protected them, and the retreat of the whole corps was easily secured. The crowd was speedily driven from the different quarters of the palace, which they were already beginning to pillage; and the royal family ventured to show themselves at a balcony. A few voices now exclaimed, *Le Roi à Paris*, "the King to Paris." The shout became general; and the king, after consulting with la Fayette, declared that he had no objection to take up his residence at Paris, provided he was accompanied by the queen and his children. When the proposal was reported to the assembly, the popular leaders expressed much satisfaction. They ordered a deputation of 100 members to attend the king thither; they voted the national assembly inseparable from the king. His majesty

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262  
La Fayette  
with his  
army  
reaches  
Versailles  
at night.

263  
Desperate  
attempt on  
the queen.

264  
The royal  
family  
saved by  
Fayette.

260  
A multi-  
tude of  
women of  
the lowest  
rank march  
to Ver-  
sailles,

261  
and send  
a depu-  
tation to  
the assem-  
bly.

France. set out at two o'clock a prisoner in the custody of the mob. Two gentlemen were selected from his body guard, and, with all the parade of an execution, beheaded in the court of his palace. Their heads were stuck upon spears, and led the procession; whilst the royal captives who followed in the train, and beheld this spectacle, were conducted so slowly, that a short journey of twelve miles was protracted to six hours. The king, the queen, and their children, were lodged in the old palace of the Louvre, while Monsieur went to reside at the Luxemburg. The city was illuminated, and the evening spent in triumph by the Parisians.

266  
Triumph of the popular party.

The removal of the king to Paris was regarded as a triumph by the popular party. The higher order of nobles considered it as completely ruinous to their hopes; and even many men of talents, such as Mounier and Lally Tollendal, whom we cannot avoid regarding as friends to the popular cause in its outset, now regarded every prospect of attaining a happy constitutional freedom as at an end, as the national representatives must be for ever exposed to the insults, and overawed by the influence, of a turbulent capital. Many members of the assembly took refuge in foreign countries, and used every effort to excite the other nations of Europe to hostility against France. As the duke of Orleans had been regarded as a chief agent in promoting the late disturbances, the marquis de la Fayette waited upon him, and insisted upon his leaving the kingdom for a time. The duke was overawed, and, on pretence of public business, went to England, where he remained for several months.

267  
The assembly holds its first session at Paris.

On the 19th of October, the National Assembly held its first session in Paris. The king was closely guarded in his own palace; and no apparent opposition now stood in the way to prevent the popular party from giving to their country such a constitution as they might judge expedient. Much, however, was yet to be done, and many difficulties remained, resulting from the habits of men educated under a very different order of things. Two days after the Assembly came to Paris, a baker was publicly executed by the mob, upon a false accusation of having concealed a quantity of bread.—While the Assembly was at a distance, events of this nature had been little attended to, and the leading party avoided attempting to check these ebullitions of popular violence, from which they had derived so much advantage; but that party was now all powerful, and so flagrant an offence committed against the law was regarded as an insult upon the sovereignty of the National Assembly. Two leaders of the mob were therefore tried and publicly executed, and a severe law was passed, of the nature of the British riot act, authorising the magistrates to act by military force against any multitude of persons that should refuse to disperse. Thus the peace of the capital was secured for several months; but in the country at large no small degree of anxiety and trouble still subsisted. The same suspicious temper which had prevailed at Paris agitated the provinces with the dread of plots and monopolies of grain. Add to this, that the noblesse in the country were by no means satisfied with the liberality with which their representatives had on the 4th of August voted away their privileges and their property. This produced violent jealousies between the peasants and their lords,

and gradually conveyed to every corner of the kingdom the political ferment which had commenced at Paris.

The National Assembly being now, however, in tolerable security, proceeded in the arduous attempt of forming a free constitution for the great empire of France. The Abbé Sieyès presented a plan for dividing the kingdom into 83 *departments*, of about 324 square leagues, and of each department into several *districts*, and each district was subdivided into *cantons* of four square leagues in extent. Thus the whole of the ancient divisions of the kingdom into governments, generalities, and bailiwicks, was in an instant obliterated. An attempt was also made to simplify in an equal degree the relative situation of individuals in civil life, by a decree which put an end to all distinction of orders and immunities, so far as any privilege whatever was concerned. At the same time, a bold and most important measure was adopted, which has since proved the organ of those terrible efforts which France has been enabled to make against the rest of Europe. This was the confiscation of the whole of the lands belonging to the church, for the purpose of supplying the exigencies of the state. In this transaction, all regard to justice was thrown aside. The lands of the church were as certainly the property of the then possessors of them as any entailed estate among us is the property of him who occupies it. The state may have had a right to appropriate to itself the church lands upon the death of the incumbents; but it might with equal justice, and perhaps greater propriety, have seized the enormous revenues of the duke of Orleans, as have confiscated a single acre belonging to the most useless abbot without his own consent. This nefarious measure was proposed by the bishop of Autun, M. Talleyrand Perigord, a man of no religion, who had been promoted to the bench in a most irregular manner to serve this very purpose. The mode in which this property was to be expended was by issuing assignments (*assignats*) upon it; which assignments were to be received by the state for the payment of taxes, or for the purchase of church lands when set up to sale. A provision was at the same time made for the national clergy, who were for the future to be paid by the state. On the day following that on which this important measure was adopted, a decree was passed, suspending the parliaments of the kingdom from the exercise of their functions.

Decrees, in which the interests of so vast a multitude of individuals were involved, could not be carried into effect without much murmuring and opposition. The parliaments, in particular, began to exert themselves with vigour, and, by protests and other publications, attempted to invalidate the decrees of the Assembly as illegal; but these privileged bodies, who had often been accustomed to contend with some success against the despotic administration of their country, and on that account had been for ages the objects of public applause, now found themselves utterly forsaken, and unable to resist the mandate of a popular Assembly. After a few fruitless struggles, they were all of them under the necessity of submitting to their fate.

Nothing remarkable now occurred for some time.—The Assembly proceeded to organize the kingdom by the establishment of municipalities, and by reforming the jurisprudence of the country. It is to be observed, however, that when the parliament of Paris was abolished,

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268  
The kingdom divided into 83 departments.

269  
The church lands confiscated.

270  
Fruitless attempts of the parliaments.

271  
Municipalities established, &c.

France.

lished, the Chatelet, being the second court in that city, was retained for the purpose of trying those persons who had become most obnoxious by their attachment to the royal cause. This court had the spirit to acquit the Baron de Bezenval, Marshal Broglio, and the Prince de Lambesq. But having incurred much popular odium on this account, they were guilty of the unworthy meanness of condemning to death the Marquis de Favres, for a pretended conspiracy (of which no tolerable proof was ever brought) to massacre La Fayette, Bailly, and Neckar, and to convey the king to Peronne.

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During the whole of this winter the king had been very strictly watched by numerous guards placed around his palace, inasmuch that the other nations of Europe considered him as in a state of captivity. To do away this impression, if possible, and to make their king appear a voluntary agent in the measures that had lately been adopted, was now regarded as a matter of some importance. Every effort was therefore made to prevail with him to come to the Assembly suddenly, and, as it were, of his own voluntary motion, there to declare his adherence to the measures which had lately been adopted. For some time he resisted this proposal; but at length, on the 4th of February, he did suddenly appear in the National Assembly, where he complained of the attempts that had been made to shake the new constitution. He declared his wish "that it should be universally known that the monarch and the representatives of the nation were united, and their wishes were the same; that he would defend the constitutional liberty of the state; that, in conjunction with the queen, he would early form the sentiments of his son for that new order of things which the circumstances of the empire had introduced." This declaration dispirited the aristocratic party in no small degree, and increased that unhappy tendency of looking for aid from foreign countries which they had always been too apt to indulge.

272  
Monasteries suppressed, and their lands confiscated.

On the 13th of February, monastic establishments were suppressed, and their lands confiscated; but the present friars and nuns were allowed pensions for their subsistence, and to continue the observance of their monastic vows, if they thought fit. We may observe here, that, in consequence of the evacuation of the monasteries, it is probable that about this time the *Breton* committee began to assume the appellation of the *Jacobin Club*, from the hall belonging to the Jacobin friars at Paris, in which their meetings were now held.

March  
15th.

273  
The Red Book, or list of pensions and donations, published.

An event occurred at this time which tended in no small degree to increase the odium under which the old government already laboured. This was the publication of the *Red Book*, or list of pensions and donations granted by the crown. In consequence of the most pressing instances, it had been communicated by M. Neckar to a committee of the assembly, after many entreaties, and the most solemn promises of secrecy. It afforded, however, too striking an advantage to the popular party not to be made use of, and in a few days M. Neckar, to his no small surprise, saw this register publicly sold by every bookseller in Paris. He ought not, indeed, to have been surprised; and the giving up of this list is one of the many proofs which the transactions of that period afford of his great unsuitness for the office which he held. With much indignation, however, he de-

manded why the committee had published it without the permission of the Assembly or the king? But he was told by the committee, that "as to the Assembly, they were sure of its approbation; and as to the king, they were not his representatives." To give an idea of the effect of this publication, it is only necessary to remark, that, under the short administration of M. Calonne, the two brothers of the king had received from the public treasury, independent of their legitimate income, nearly two millions sterling, and that 600,000l. had been granted to an individual, because he was the husband of Madame de Polignac. M. Neckar's opposition to this publication tended in no small degree to injure his popularity, and the rest of the ministry began to lose the confidence of the public. Indeed, at this time, fertile causes of alarm prevailed on all sides. The clergy were attempting to revive in the provinces the ancient animosities between the Roman Catholics and the Protestants, ascribing the late decrees of the Assembly to the latter. The German princes who possessed property in the north of France were complaining loudly of the violation of their rights by the abolition of the feudal system, although the National Assembly had voted to them a compensation. The most melancholy intelligence was received from their colonies in the West Indies. In regulating these, the Assembly had not recognized the right of the free negroes to enjoy the same privileges with other citizens; at the same time, they did not go the length of denying these privileges. This uncertain conduct produced infinite calamities. The whites contended with those commonly called *people of colour*. These again sometimes stood in opposition to the free negroes, or to the slaves; and hence it sometimes happened that no less than three hostile assemblies were held at the same time in the same colony, which made war upon each other with the most inveterate fury. Each party found protectors in the National Assembly of the parent state. Those who favoured or opposed the existence of distinctions at home, in general followed out the same principle with regard to the colonies.

France.  
1790.  
274  
Effect of its publication.

275  
Numerous sources of alarm.

On the 14th of May, M. de Montmorency communicated to the National Assembly the preparations for war in which England and Spain were engaged. This brought forward the constitutional question, "Who ought to possess the power of declaring peace and war?" The Count Clermont Tonnerre, Messrs de Serent, Vireu, and Dupont, supported the royal prerogative; while on the other side, the exclusive right of the legislative body to exercise this important prerogative was supported by Messrs d'Aiguillon, Garat jun. Freteau, Jellot, Charles Lameth, Sillery, Petion, Robespierre, &c. M. Petion proposed a decree "that the French nation renounced for ever all idea of conquest, and confined itself entirely to defensive war;" which was passed with universal acclamation. The Count de Mirabeau at length successfully proposed that peace and war should be declared by the king and the legislative body in conjunction; and the decree that was passed on the subject is a strange farrago of contradictions and absurdities. It enjoined the king to "guard the state from external attacks." But how could this be done, without repelling any attack that might be made upon it? This, however, he could not do, without previously informing the National Assembly; and if that body chanced

276  
Debate on the royal power to declare peace and war.

France. not to be sitting at the time, he was bound to let the enemy advance without opposition till he had convened his orators, dispersed over 20,000 square leagues, and listened to their metaphysical quibbles in Paris.

1790.  
277  
Farce acted in the assembly by a Prussian refugee, &c.

On the 16th June, a very singular farce was acted in the Assembly. A Prussian refugee, who called himself Anacharis Clouts, and who was struggling hard to bring himself into public notice, on an evening sitting (which, it is to be observed, was generally ill attended by the persons of the highest rank), introduced to the Assembly a number of persons dressed in the different habits of all the different countries that could be thought of. In a formal harangue, he told the Assembly that he was come, as the *orator of the human race*, at the head of the representatives of all nations, to congratulate them upon the formation of their new constitution. He was answered by the president with abundance of solemnity, and retired with his motley groupe. This fustian piece of folly, which in any other country than France would scarcely, perhaps, have excited a smile, was treated by the Assembly in a serious light. Alexander Lameth proposed, that the figures of different nations exhibited in chains at the feet of Louis XIV. should be destroyed as an insult upon mankind. M. Lambel, a lawyer, at this moment proposed the *abolition of all hereditary titles*. He was supported by La Fayette, St Fargeau, and the Viscount de Noailles. The decree was passed, along with another suppressing all armorial bearings. It is our intention at present rather to state facts than to hazard any political opinion concerning the wisdom or folly of the transactions which we record. It may here, however, be remarked, that no part of the proceedings of the French National Assembly was received by persons of rank upon the Continent of Europe with so much indignation as this.—The feudal system had been overturned, and the property of the church wrested from it, with little comparative notice; but when those nominal distinctions were attacked which antiquity had sanctioned, and personal vanity rendered dear, the surrounding nations were instantly alarmed, and beheld with terror the levelling precedent. We may likewise add, that no part of their proceedings was more inimical to rational and practical freedom. To preserve a perfect equality of ranks is impossible. In a commercial nation, industry will procure wealth, and wealth will every where procure dependents. Now nothing more contributes to keep within some tolerable bounds the insolence of newly acquired wealth, than the rank attached to birth and nobility, which time and prejudice have conspired to make respectable. It is not a little remarkable, that of all the King's ministers, Neckar alone, a plebeian, a republican, born and bred in a democracy, advised his majesty to refuse his assent to this foolish decree, as a violent but useless encroachment upon the prejudices of a powerful order of the state.

279  
Proposal to commemorate the taking of the Bastille.

In the mean time, the capital was entirely engrossed by hurry and bustle. M. Bailly had proposed a plan for commemorating the anniversary of the taking of the Bastille. It was adopted, because it flattered the vanity of the people, by presenting them with a splendid spectacle in commemoration of their own exertions.—The army had been much disorganised; and it was resolved to attempt to unite all its branches, as well as the whole departments of the state, in one common at-

tachment to the new order of things, by collecting into one place deputations, for the purpose of swearing fidelity to the new constitution. In the middle of the Champ de Mars an altar was erected, at which the civic oath, as it was called, was to be taken. Around the altar an amphitheatre was thrown up capable of containing 400,000 spectators: 2000 workmen were employed in this operation; and the people of Paris fearing lest the plan might not be completed, assisted in the labour. All ranks of persons, the nobles, clergy, and even ladies, with the eagerness for novelty so peculiar to that people, united their efforts. Crowds of foreigners as well as natives hurried to the capital to be present at this solemnity, which was called the *Confederation*. The long-expected 14th of July at length arrived. At six o'clock in the morning the procession was arranged on the Boulevards, and consisted of the electors of the city of Paris, the representatives of the commons, the administrators of the municipality, a battalion of children, with a standard, inscribed "The hopes of the nation;" deputies from the troops of France wherever quartered, and of every order, along with deputies from all the departments; to these were added immense detachments of the military, and of the national guards, along with an almost infinite multitude of drums, trumpets, and musical instruments. The procession was extremely splendid, as every district had its peculiar decorations. The national assembly passed through a grand triumphal arch, and the king and queen, attended by the foreign ministers, were placed in a superb box. After a solemn invocation to God, the king approached the altar, and, amidst the deepest silence, took the following oath: "I the king of the French do swear to the nation, that I will employ the whole power delegated to me by the constitutional law of the state, to maintain the constitution, and enforce the execution of the law." The president of the national assembly then went up to the altar, and took the civic oath, "I swear to be faithful to the nation, the law, and the king; and to maintain with all my powers the constitution decreed by the national assembly, and accepted by the king." Every member of the assembly standing up, said, "That I swear." La Fayette then advancing, took the oath for himself; the other deputies of the national guards pronouncing after him, "That I swear;" and these words were solemnly pronounced by every individual of this immense assembly. *Te Deum* was then sung. The performance was sublime beyond the powers of description. Never perhaps before was there such an orchestra, or such an audience: their numbers baffled the eye to reckon, and their shouts in full chorus rent the skies. It is impossible to enumerate all the means which were employed to add splendor to this day. It ended with a general illumination, and no accident disturbed the public tranquillity.

The assembly now proceeded in the formation of the constitution with considerable tranquillity; which, however, was disturbed by an unhappy event at Nancy. Most of the officers of the army were unfriendly to the late revolution, and every means had been employed by them to disgust the soldiers with it. At Nancy, in particular, necessaries had been denied them, and their pay was kept back, under pretence that this was the will of the national assembly. Driven to despair, the regiments in garrison threw off their allegiance, and demanded

France.  
1790.  
280  
Ceremony of the confederation.

281  
The soldiers at Nancy disgusted, and the consequences.

France. 1790. manded loudly the regimental accounts. They seized at the same time the military chest, and sent a deputation to state their case at Paris to the national assembly. But the officers were before-hand, and prepossessed the minister of war against them; upon whose representation a decree was passed, authorising the commander in chief of the province, M. Bouillé, to reduce the insurgents by force. This was no sooner known, than the national guard of Nancy assembled, and sent a deputation to give a fair statement of facts. But Bouillé, without waiting the result of an explanation, hastened to Nancy at the head of all the troops he could suddenly collect; and having fallen upon the regiments of Chateaufieux and Mestre de Camp, after putting an immense multitude to the sword, he took 400 prisoners.

The king's regiment was prevented from acting against Bouillé by the intrepidity of a young officer of the name of *Deffilles*, who, however, died of the wounds which he received on the occasion. The news of these events filled Paris with indignation. The assembly afterwards reversed its own decrees against the insurgents at Nancy. Public honours were decreed to the memory of *Deffilles*; but *Bouillé* could not be punished, because he had only acted in obedience to authority.

282 M. Neckar resigns, and leaves the kingdom without being regretted. M. Neckar's popularity had been gradually declining, as he was unwilling to go all the lengths that the ruling party wished. He gave in his resignation on the 4th of September, and speedily thereafter left the kingdom. He was regretted by no party. He was regarded, on the one side, as having conducted the kingdom to its ruin, by the concessions which he originally advised the king to make in favour of the *tiers etat*; while he was despised by the opposite party as a lukewarm politician, of narrow views, and a feeble mind. He departed, however, with the unblemished reputation of strict integrity. M. Neckar does not seem to have penetrated deeply into the characters of men, or to have had any conception of the effects of that terrible and restless energy which is called forth in a nation which attempts to make important changes in its ancient manners and government. Having no conception of the important era which was about to open upon that country of which he was the minister, he was far from being qualified to direct or controul it amidst the convulsions which it was destined to encounter. Unable to brook the loss of his popularity, he peevishly retired to Switzerland, where he published a work, which shows to the conviction of every unprejudiced reader the integrity of the French king, and the wicked projects of the leading democrates, whom he himself had armed with power.

283 Attempts to re-organize the army. The remaining part of this year was occupied in attempts to introduce some degree of subordination into the navy of France, which had been much disorganized, and in farther regulating the affairs of the clergy. It was now declared, that such clergymen as should not take the following oath, which had been prescribed some months before, should be considered as ejected from their benefices: "To watch carefully over the faithful in the parish or diocese which was entrusted to his care; to be faithful to the nation, the law, and the king; and to maintain to the utmost of his power the new constitution of France, and particularly the decrees relative to the civil constitution of the clergy." This

France. decree rendered the situation of conscientious men extremely perplexing; especially as the pope testified in marked terms his disapprobation of the oath. The people were reduced to the dilemma of choosing between their new political and their old religious prejudices, and the result was extremely unfavourable to the interest of religion,

The assembly commenced the new year with a decree, announcing the termination of its session, which was to take place as soon as it should have finished the discussion of a list of constitutional articles. In the meantime, on the side of Germany, Spain, Italy, and Savoy, hostile appearances began to be exhibited, and bodies of troops advanced around the French frontier. The emperor Leopold was, however, too cautious to announce his intentions; and the king soon communicated a letter from him, containing protestations of amicable dispositions, but adding, that "the innovations occasioned by the decrees of the 4th of August ought to be done away." The king treated this merely as an official measure on the part of the emperor, that he might not appear to renounce the claims of certain German princes connected with Lorraine and Alsace. But the assembly expressed some alarm, and voted an augmentation of the national force. About this period several new efforts were made by the disaffected clergy in various parts of the kingdom to excite disturbances, which it is unnecessary to mention in detail. On the 20th of February the public attention was roused by a circumstance that in any other state of affairs would have been accounted unimportant. The king announced to the assembly, that his aunts, the daughters of Louis XV. had that morning left Paris; but as he did not apprehend that the existing laws laid them under any restraint in this respect, he had not opposed their departure. After some debate, the assembly agreed that the king had judged well; and these princesses were left to pursue their journey to Rome, which they reached after some delays occasioned by the jealousy of certain municipalities through which they passed. Thus the kingdom was gradually deserted by every branch of the royal family, excepting the king and his eldest brother Monsieur. The assembly, however, continued its labours with considerable quietness. In the end of the month of March died the celebrated M. de Mirabeau, at the age of 42 years; a man whose integrity has for many good reasons been much suspected, but whose political address and intrepidity, and whose splendid powers of eloquence, have been seldom equalled. He received from his countrymen at his death marks of respect unparalleled in modern history. During his short illness, his door was besieged by anxious citizens. A mourning of eight days was decreed by the assembly, and also a grand procession, which was attended by all the public functionaries. He was the first who was interred in the new magnificent Pantheon, consecrated to the reception of the remains of illustrious men. But his ashes were afterwards removed, in consequence of very clear proofs that he had not been incorruptible by money.

284 An emigrant army assembled on the borders of Alsace. During the whole of this spring, much fear was entertained that some attempts at a counter revolution were about to be made. The emigrant army assembled on the borders of Alsace was reviewed by the prince of Condé. Their uniform was black, faced with yellow, with

1791.  
284  
Hostile appearances in Germany, &c.

285  
Departure of the king's aunts from Paris.

286  
Death of Mirabeau.

287  
An emigrant army assembled on the borders of Alsace, with

France. with a death's head, furrounded by a laurel wreath, on one cuff, and a sword on the other; with the motto, "Conquer or die." The king was also furrounded by crowds of nonjuring priests and other disaffected persons. Thus, that popular jealousy which in every period of the revolution has strikingly marked the French character, was kept on the alarm. On the 18th of April, therefore, when the royal family was preparing to go to St Cloud to pass some days, a report was instantly spread that the king was about to fly from the country. The carriages were immediately furrounded by people. La Fayette drew out the national guard, but they refused to act. "We know (exclaimed they) that we are violating the laws, but the safety of our country is the first law." The king instantly went to the assembly, and with much spirit complained of the insult. He was answered respectfully by the president, and continued his journey. As the royal family had enjoyed a considerable degree of freedom for some time past, which was demonstrated by the unsuccessful opposition made to this journey—the present opportunity was embraced for intimating to foreign courts his acceptance of the constitution; and all obnoxious persons were dismissed from about his person. The breach of discipline on the part of the national guard on this occasion was so much resented by La Fayette, that he resigned his command. Paris was thrown into consternation; and it was not till after the most universal solicitation that he was prevailed upon to resume his office.

289  
Behaviour of Bouille on the frontiers.

290  
The king, queen, and royal family, leave Paris.

291  
Monsieur and madame arrive at Brussels.

About this time M. de Bouillé, to whom the protection of the frontiers was entrusted, was employing, as it is now said, every means in his power to render the country defenceless. The garrisons were left unprovided; disunion was spread among the national troops; they were removed from the frontiers, and their place was occupied by foreigners, wherever it could be done. The emigrants abroad, and their friends at home, were lying in wait for an opportunity of revolt;—when suddenly, on the 21st of June, it was announced from the Thuilleries, that the king, the queen, the dauphin, with monsieur and madame, had quitted the palace and the capital, without leaving any information of their intention or their route. The emotion excited by this news among the multitude was a mixture of consternation and rage. The national assembly, however, acted with much coolness. They instantly took upon themselves the government, and decreed their sittings permanent. They sent messengers, at the same time, in all directions, to attempt to lay hold of the fugitives. These had taken different routs. Monsieur and madame arrived safely at Brussels on the 23d. The king, queen, and their children, when they came to a considerable distance from the capital, were furnished by Bouillé with a guard of dragoons, under pretence of protecting treasure for the pay of the troops. At the distance of 156 miles, and when only a few leagues from the frontiers, they were arrested at St Meneshoult by the postmaster, M. Drouet, formerly a dragoon in the regiment of Condé. At half past seven o'clock in the evening the carriages stopt to change horses at his house; he thought he recollected the queen, and imagined that the king's face resembled the impressions stamped upon assignats. The escort of dragoons increased the suspicion. He suffered them to depart at

11 o'clock without notice; but taking a companion with him, he went by a shorter road to Varennes. With the assistance of the postmaster there he gave the alarm, and overturned a carriage on the bridge, which detained the royal travellers till the national guard of the place had assembled, and the arrest was effected without bloodshed. They were brought back to Paris by a deputation from the assembly. At his departure, the king had imprudently left behind him a memorial, in which he declared, that he never had thought any sacrifice too great for the restoration of order; but that the destruction of the kingdom, and the triumph of anarchy, being the only reward of all his efforts, he thought it necessary to depart from it. He then takes a review of the faults of the new constitution, the grievances he has suffered; and protests against every thing that he had been compelled to do during his captivity.

Different parties were very differently affected by this ill-conducted and unfortunate flight of the king. A small republican party had already begun to appear, and during the king's absence, attempts were made to induce the public at large to consider the royal authority as no necessary part of a free constitution. But the minds of men were by no means prepared for the reception of this new doctrine. The idea, however, having been thus publicly proposed, left some impressions, which in time contributed to give rise to important events. By far the greater number of leading men, however, were at present convinced, that it was impossible to conduct a great empire like France, well and prosperously, without the assistance of an hereditary chief. They therefore determined to pass over the affair with as much silence as possible, and to hasten the period when their new constitution should be complete. But there is reason to believe, that this journey was at the long-run highly instrumental in producing very fatal effects to the personal safety of the monarch.

His flight seemed a signal for emigration. Many of the aristocratic party sent in resignations of their seats in the national assembly. Troops were levied on the frontiers in the king's name; who took care, however, to disavow any connexion with such a procedure. Bouillé emigrated, and afterwards sent to the assembly a furious threatening letter: "You shall answer (says he) for the lives of the king and of the queen to all the monarchs of the universe. Touch but a single hair of their heads, and not one stone shall be left upon another in Paris. I know the roads. I will conduct the foreign armies. This letter is but the forerunner of the manifesto of the sovereigns of Europe."

A considerable calm throughout France followed these events, and it might be regarded as in a state of tranquillity. It contained, indeed, parties entertaining much animosity against each other, and many citizens had withdrawn to foreign countries; but the peace was not broken, and moderate men hoped that much prosperity would follow from the late agitations. But this calm was delusive; and in the midst of it those projects were formed which were afterwards to prove so fatal to the peace of France and of Europe. Towards the close of this summer, a convention took place at Piltitz in Saxony between the emperor Leopold and the king of Prussia. Its object was not known at the time, but it gradually came into view, and is now by many understood

France.  
1791.  
292  
The king and queen arrested at Varennes.

293  
Consequences of this unfortunate flight.

294  
Treaty of Piltitz.

France. 1791. flood to have been intended for the purpose of concluding a league for the invasion of France, the new-modelling of its government, and the partition of some of its fairest provinces. The following paper has been repeatedly published as the copy of a treaty concluded and signed at Pavia, and is generally understood to have been identical with, and therefore known by, the name of the *Treaty of Pilnitz*. We are far from vouching for its authenticity. It may have been fabricated by the French assembly, to unite all parties in the nation against the foreign powers which threatened to invade them. But in stating the events of this revolution, it is perhaps still more necessary, for the purpose of rendering the actions of men comprehensible, to give an account of what was at the time *believed* to have occurred, than it now is to ascertain what was actually true.

*Partition Treaty between the Courts in Concert, concluded and signed at Pavia, in the Month of July 1791.*

His majesty the emperor will take all that Louis XIV. conquered in the Austrian Netherlands, will give them to his serene highness the elector Palatine; so that these new possessions, added to the Palatinate, may hereafter have the name of *Austrasia*.

His majesty will preserve for ever the property and possession of Bavaria, to make in future an indivisible mass with the domains and hereditary possessions of the house of Austria.

Her serene highness the archduchess Maria Christina shall be, conjointly with his serene highness her nephew the archduke Charles, put into hereditary possession of the duchy of Lorraine.

Alsace shall be restored to the empire; and the bishop of Strasbourg, as well as the chapter, shall recover their ancient privileges, and the ecclesiastical sovereigns of Germany shall do the same.

If the Swiss Cantons consent to accede to the coalition, it may be proposed to them to annex to the Helvetic league the bishopric of Porentrui, the desiles of Franche Comté, and even those of Tyrol, with the neighbouring bailiwicks, as well as the territory of Versoy, which intersects the Pays de Vaud.

Should his majesty the king of Sardinia subscribe to the coalition, La Bresse, Le Bugey, and the Pays de Gex, usurped by France from Savoy, shall be restored to him.

In case his Sardinian majesty can make a grand diversion, he shall be suffered to take Dauphiné, to belong to him for ever as the nearest descendant of the ancient dauphins.

His majesty the king of Spain shall have Rouffillon and Bearn, with the island of Corsica; and he shall have the French part of the island of St Domingo.

Her majesty the empress of all the Russias shall take upon herself the invasion of Poland, and at the same time retain Kaminiach, with that part of Podolia which borders on Moldavia.

His majesty the emperor shall oblige the Porte to give up Chocsim, as well as the small forts of Servia, and those on the river Lurna.

His majesty the king of Prussia, by means of the above-mentioned invasion of the empress of all the Russias into Poland, shall make an acquisition of Thorn and Dantzic, and there unite the Palatinate on the east to the confines of Silesia.

France. 1791. His majesty the king of Prussia shall besides acquire Luface; and his serene highness the elector of Saxony shall in exchange receive the rest of Poland, and occupy the throne as hereditary sovereign.

His majesty the present king of Poland shall abdicate the throne on receiving a suitable annuity.

His royal highness the elector of Saxony shall give his daughter in marriage to his serene highness the youngest son of his royal highness the grand duke of all the Russias, who will be the father of the race of the hereditary kings of Poland and Lithuania. (Signed) LEOPOLD. PRINCE NASSAU. COUNT FLORIDA BLANCA. BISCHOFFSWERDER.

In the mean time, the national assembly was hastening fast to the completion of the new constitution. <sup>295</sup> The new constitution was finished on the 3d of September, and presented to the king. It begins with the following declaration of the rights of a man and a citizen: and thereafter follow the different branches; the chief of which are here translated.

I. All men are born, and remain, free and equal in rights: social distinctions cannot be founded but on common utility.

II. The end of all political associations is the preservation of the natural and imprescriptible rights of man: these rights are liberty, property, security, and resistance against oppression.

III. The principle of *sovereignty* resides essentially in the nation: *no body of men*, no *individual*, can exercise an authority that does not emanate expressly from that source.

IV. *Liberty* consists in the power of doing every thing except that which is hurtful to another: hence the exercise of the natural rights of every man has no other bounds than those that are necessary to ensure to the other members of society the enjoyment of the same rights: those bounds can be determined by the law only.

V. The law has a right to forbid those actions alone that are hurtful to society. Whatever is not forbidden by the law, cannot be hindered; and no person can be constrained to do that which the law ordaineth not.

VI. The law is the expression of the general will: all the citizens have a right to concur personally, or by their representatives, to the formation of the law: it ought to be the same for all, whether it protect, or whether it punish. All citizens being equal in the eye of the law, are equally admissible to dignities, places, and public offices, according to their capacity, and without any other distinction but that of their virtue and their talents.

VII. No man can be accused, arrested, or detained, except in cases determined by the law, and according to the forms which the law hath prescribed. Those who solicit, dispatch, execute, or cause to be executed, arbitrary orders, ought to be punished; but every citizen that is summoned or seized in virtue of the law, ought to obey instantly—he becomes culpable by resistance.

VIII. The law ought to establish such punishments only as are strictly and evidently necessary; and no person can be punished but in virtue of a law established and promulgated prior to the offence, and legally applied.

IX. Every man being presumed innocent till such time

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time as he has been declared guilty, if it shall be deemed absolutely necessary to arrest a man, every kind of rigour employed, not necessary to secure his person, ought to be severely repressed by the law.

X. No person shall be molested for his opinions, even such as are religious, provided that the manifestation of those opinions does not disturb the public order established by the law.

XI. The free communication of thought, and of opinion, is one of the most precious rights of man. Every citizen, therefore, may freely speak, write, and publish, his sentiments; subject, however, to answer for the abuse of that liberty, in cases determined by the law.

XII. The guarantee of the Rights of Man and Citizens, involves a necessity of *public force*: this force is then instituted for the advantage of all, and not for the particular utility of those to whom it is confided.

XIII. For the maintenance of public force, and for the expences of administration, a common contribution is indispensably necessary: this contribution should be equally divided amongst all the citizens, in proportion to their abilities.

XIV. Every citizen has a right, by himself, or by his representatives, to decide concerning the necessity of the public contribution; to consent to it freely; to look after the employment of it; to determine the quantity, the distribution, the collection, and duration.

XV. The society has a right to demand from every public agent an account of his administration.

XVI. Every society, in which the guarantee of rights is not assured, nor the separation of powers determined, has *no constitution*.

XVII. Property being a right inviolable and sacred, no person can be deprived of it, except when the public necessity, legally ascertained, shall evidently require it, and on condition of a just and previous indemnification.

The constitution guarantees, as natural and civil rights,

1. That all citizens are admissible to places and employments without any distinction, but that of ability and virtue.

2. That all contributions shall be divided equally among all the citizens, in proportion to their means.

3. That the same crimes shall be subject to the same punishments, without any distinction of persons.

The constitution in like manner guarantees, as natural and civil rights,

Liberty to all men of going, staying, or departing, without being arrested, or detained, but according to the forms prescribed by the constitution.

Liberty to all men of speaking, writing, printing, and "publishing their thoughts, without having their writings subjected to any examination or inspection before publication;" and of exercising the religious worship to which they are attached.

Liberty to all citizens of assembling peaceably, and without arms, complying with the laws of police.

Liberty of addressing to all constitutional authorities petitions individually signed.

The constitution guarantees the inviolability of property, or a just and previous indemnity for that of which public necessity, legally proved, shall require the sacrifice.

A public instruction shall be created and organized, common to all citizens, gratuitous with regard to those parts of tuition indispensable for all men, and of which the establishment shall be gradually distributed in a proportion combined with the division of the kingdom.

"The kingdom is one and indivisible;" its territory, for administration, is distributed into 83 departments, each department into districts, each district into cantons.

Those are French citizens,

Who are born in France, of a French father;

Who having been born in France of a foreign father, have fixed their residence in the kingdom;

Who having been born in a foreign country, of a French father, have returned to settle in France, and have taken the civic oath:

In fine, who having been born in a foreign country, being descended in whatever degree from a Frenchman or Frenchwoman, who have left their country from religious motives, come to reside in France, and take the civic oath.

The right of French citizenship is lost,

1st, By naturalization in a foreign country;

2dly, By being condemned to penalties which involve the civic degradation, provided the person condemned be not re-instated;

3dly, By a sentence of contumacy, provided the sentence be not annulled;

4thly, By initiation into any foreign order or body which supposes either proofs of nobility "or distinctions of birth, or requires religious vows."

"The law considers marriage only as a civil contract."

The sovereignty is one, indivisible, "inalienable, and imprescriptible," and it belongs to the nation: no section of the people, or individual, can arrogate the exercise of it.

The nation, from which alone flow all powers, cannot exercise them but by delegation.

The French constitution is representative: the representatives are the legislative body and the king.

The National Assembly, forming the legislative body, is permanent, and consists of one chamber only.

It shall be formed by new elections every two years.

The legislative body cannot be dissolved by the king.

The number of representatives to the legislative body shall be 745, on account of the 83 departments of which the kingdom is composed; and independent of those that may be granted to the colonies.

The representatives shall be distributed among the departments, according to the three proportions of land, of population, and of the contribution direct.

Of the 745 representatives 247 are attached to the land. Of these each department shall nominate three, except the department of Paris, which shall nominate only one.

Two hundred and forty-nine representatives are attached to the population. The total mass of the active population of the kingdom is divided into 249 parts; and each department nominates as many of the deputies as it contains parts of the population.

Two hundred and forty-nine representatives are attached to the contribution direct. The sum total of the direct contribution of the kingdom is likewise divided into 249 parts; and each department nominates as many deputies as it pays parts of the contribution.

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In order to form a legislative national assembly, the active citizens shall convene, in primary assemblies, every two years in the cities and cantons.

"The primary assemblies shall meet of full right on the first Sunday of March, if not convoked sooner by the public officers appointed to do so by the law."

To be an active citizen, it is necessary,

To be a Frenchman, or to have become a Frenchman ;

To have attained 25 years complete ;

To have resided in the city or the canton from the time determined by the law ;

To pay in any part of the kingdom a direct contribution, at least equal to the value of three days labour, and to produce the acquittance ;

Not to be in a menial capacity, namely, that of a servant receiving wages ;

To be inscribed in the municipality of the place of his residence in the list of the national guards ;

To have taken the civic oath.

The primary assemblies shall name electors in the proportion of the number of active citizens residing in the city or canton.

There shall be named one elector to the assembly, or not, according as there shall happen to be present 100 active citizens.

There shall be named two, when there shall be present from 151 to 250, and so on in this proportion.

The electors named in each department shall convene, in order to choose the number of representatives, whose nomination shall belong to their department, and a number of substitutes equal to the third of the representatives.

"The assemblies shall be held of full right on the last Sunday of March, if they have not been before convoked by the public officers appointed to do so by law."

All active citizens, whatever be their state, profession, or contribution, may be chosen representatives of the nation.

Excepting, nevertheless, the ministers and other agents of the executive power, &c.

The members of the legislative body may be re-elected to a subsequent legislature, but not till after an interval of one legislature.

No active citizen can enter or vote in an assembly if he is armed.

The representatives shall meet on the first Monday of May, in the place of the sittings of the last legislature.

The royalty is indivisible, and delegated hereditarily to the race on the throne from male to male, by order of primogeniture, to the perpetual exclusion of women and their descendants.

Nothing is prejudged on the effect of renunciations in the race on the throne.

The person of the king is inviolable and sacred ; his only title is king of the French.

If the king put himself at the head of an army, and direct the forces of it against the nation, or if he do not oppose, by a formal act, any such enterprise undertaken in his name, he shall be held to have abdicated.

If the king having gone out of the kingdom, do not return to it, after an invitation by the legislative body, within the space which shall be fixed by the pro-

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clamation, "and which cannot be less than two months," he shall be held to have abdicated the royalty.

After abdication, express or legal, the king shall be in the class of citizens, and may be accused and tried like them, for acts posterior to his abdication.

The nation makes provision for the splendour of the throne by a civil list, of which the legislative body shall fix the sum at the commencement of each reign, for the whole duration of that reign.

The king is a minor till the age of 18 complete ; and during his minority there shall be a regent of the kingdom.

The regency belongs to the relation of the king, next in degree according to the order of succession to the throne, who has attained the age of 25 ; provided he be a Frenchman resident in the kingdom, and not presumptive heir to any other crown, and have previously taken the civic oath.

The presumptive heir shall bear the name of *Prince Royal*.

"The members of the king's family called to the eventual succession of the throne, shall add the denomination of *French Prince* to the name which shall be given them in the civil act proving their birth ; and this name can neither be patronymic nor formed of any of the qualifications abolished by the present constitution.

"The denomination of *prince* cannot be given to any individual, and shall not carry with it any privilege or exception to the common right of all French citizens."

To the king alone belong the choice and dismissal of ministers.

"The members of the present national assembly, and of the subsequent legislatures, the members of the tribunal of appeal, and those who shall be of the high jury, cannot be advanced to the ministry, cannot receive any place, gift, pension, allowance, or commission of the executive power or its agents during the continuance of their functions, or during two years after ceasing to exercise them : the same shall be observed respecting those who shall only be inscribed on the list of high jurors as long as their inscription shall continue."

No order of the king can be executed if it be not signed by him, and countersigned by the minister or comptroller of the department.

In no case can the written or verbal order of a king shelter a minister from responsibility.

The constitution delegates exclusively to the legislative body the powers and functions following :

To propose and decree laws—The king can only invite the legislative body to take an object into consideration ;

To fix the public expences ;

To establish the public contributions, to determine the nature of them, the amount of each sort, the duration, and the mode of collection, &c.

War cannot be resolved on but by a decree of the national assembly, passed on the formal and necessary proposition of the king, and sanctioned by him.

During the whole course of war, the legislative body may require the king to negotiate peace ; and the king is bound to yield to this requisition.

It belongs to the legislative body to ratify treaties of peace,

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peace,

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The deliberations of the legislative body shall be public, and the minutes of the sittings shall be printed.

The legislative body may, however, on any occasion, form itself into a general committee.

The plan of a decree shall be read thrice, at three intervals, the shortest of which cannot be less than eight days.

The decrees of the legislative body are presented to the king, who may refuse them his consent.

In case of a refusal of the royal consent, that refusal is only suspensive.—When the two following legislatures shall successively present the same decree in the same terms on which it was originally conceived, the king shall be deemed to have given his sanction.

The king is bound to express his consent or refusal to each decree within two months after its presentation.

No decree to which the king has refused his consent can be again presented to him by the same legislature.

The supreme executive power resides exclusively in the hands of the king.

The king is the supreme head of the land and sea forces.

The king names ambassadors, and the other agents of political negotiations.

He bestows the command of armies and fleets, and the ranks of marshal of France and admiral :

He names two-thirds of the rear-admirals, one-half of the lieutenant-generals, camp-marshals, captains of ships, and colonels of the national gendarmerie :

He names a third of the colonels and lieutenant-colonels, and a sixth of the lieutenants of ships :

He appoints in the civil administration of the marine, the directors, the comptrollers, the treasurers of the arsenals, the masters of the works, the under masters of civil buildings, half of the masters of administration, and the under masters of construction.

He appoints the commissaries of the tribunals :

He appoints the superintendants in chief of the management of contributions indirect, "and the administration of national domains :"

He superintends the coinage of money, and appoints officers entrusted with this superintendance in the general commission and the mints.

The effigy of the king is struck on all the coinage of the kingdom.

There is in each department a superior administration, and in each district a subordinate administration.

The administrators are specially charged with distributing the contributions direct, and with superintending the money arising from the contributions, and the public revenues in their territory.

The king has the right of annulling such acts of the administrators of department as are contrary to the law or the orders transmitted to them.

He may, in case of obstinate disobedience, or of their endangering, by their acts, the safety or peace of the public, suspend them from their functions.

The king alone can interfere in foreign political connections.

Every declaration of war shall be made in these terms : *By the king of the French in the name of the nation.*

The judicial power can in no case be exercised either by the legislative body or the king.

Justice shall be gratuitously rendered by judges chosen from time to time by the people, and instituted by letters patent of the king, who cannot refuse them.

"The public accuser shall be nominated by the people."

"The right of citizens to determine disputes definitively by arbitration, cannot receive any infringement from the acts of the legislative power."

In criminal matters, no citizens can be judged except on an accusation received by jurors, or decreed by the legislative body in the case in which it belongs to it to prosecute the accusation.

After the accusation shall be admitted, the fact shall be examined, and declared by the jurors.

The person accused shall have the privilege of challenging 20, "without assigning any reason."

The jurors who declare the fact shall not be fewer than 12.

The application of the law shall be made by the judges.

The process shall be public ; "and the person accused cannot be denied the aid of counsel."

No man acquitted by a legal jury can be apprehended or accused on account of the same fact.

For the whole kingdom there shall be one tribunal of appeal, established near the legislative body.

A high national court, composed of members of the tribunal of appeal and high jurors, shall take cognizance of the crimes of ministers, and the principal agents of the executive power ; and of crimes which attack the general safety of the state, when the legislative body shall pass a decree of accusation.

It shall not assemble but on the proclamation of the legislative body ; "and at the distance of 30,000 toises at least from the place of meeting of the legislative body."

The national guards do not form a military body, or an institution in the state ; they are the citizens themselves called to assist the public force.

Officers are chosen for a time, and cannot again be chosen till after a certain interval of service as privates.

None shall command the national guard of more than one district.

All the parts of the public force employed for the safety of the state from foreign enemies are under the command of the king.

Public contributions shall be debated and fixed every year by the legislative body, and cannot continue in force longer than the last day of the following session, if they are not expressly renewed.

"Detailed accounts of the expence of the ministerial departments, signed and certified by the ministers or comptrollers-general, shall be printed and published at the commencement of the sessions of each legislature.

"The same shall be done with the statements of the receipt of the different taxes, and all the public revenues."

The French nation renounces the undertaking of any war with a view of making conquests, and will never employ its forces against the liberty of any people.

The constituting national assembly declares, "That

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the nation has the imprescriptible right of changing its constitution; and nevertheless considering that it is more conformable to the national interest to employ only by means provided in the constitution itself, the right of reforming those articles of it, of which experience shall have shown the inconveniences, decrees, that the proceeding by an assembly of revision shall be regulated in the form following:

“When three successive legislatures shall have expressed an uniform wish for the change of any constitutional article, the revision demanded shall take place.

“The next legislature, and the following, cannot propose the reform of any constitutional article.

“The fourth legislature, augmented with 249 members, chosen in each department, by doubling the ordinary number which it furnishes in proportion to its population, shall form the assembly of revision.”

The French colonies and possessions in Asia, Africa, and America, “though they form part of the French empire,” are not included in the present constitution.

With respect to the laws made by the national assembly which are not included in the act of constitution, and those anterior laws which it has not altered, they shall be observed, so long as they shall not be revoked or modified by the legislative power.

On the 13th of September the king announced, by a letter to the president of the Assembly, his acceptance of the constitution. This event was ordered to be notified to all the foreign courts, and the Assembly decreed a general amnesty with respect to the events of the revolution. On the following day the king repaired in person to the National Assembly; and being conducted to a chair of state prepared for him at the side of the president, he signed the constitutional act, and took an oath of fidelity to it. He then withdrew, and was attended back to the Thuilleries by the whole Assembly, with the president at their head. On the 30th of September, this National Assembly, which has since been known by the name of the *Constituent Assembly*, dissolved itself, and gave place to the succeeding *Legislative National Assembly*, which had been elected according to the rules prescribed by the new constitution.

On the character and the labours of the *Constituent Assembly*, we shall only remark, that it contained many men of talents, and, in all probability, a considerable number of men of integrity. Towards the close of its session, it assumed a very striking character of moderation, and appears to have been completely monarchical, although its jealousy of the ancient aristocracy prevented it from sufficiently guarding the throne against popular violence: for a very striking defect in the new constitution soon appeared. The king possessed a *veto*, or negative, upon the resolutions of the legislative body: but this negative he was bound to exercise in person, without responsibility, and without the intervention of his ministers. He had no senate, or upper chamber, to stand between him and popular violence; and there was something apparently absurd in setting the vote of an individual in opposition to the collective wisdom and will of a whole nation. In consequence of this, he was reduced to the hard alternative of yielding to every vote of the National Assembly, or of exposing himself personally to public odium.

The new Assembly was opened by the king on the

7th of October, with much apparent union on all sides. His speech, recommending unanimity and confidence between the legislative and executive powers, was received with unbounded applause. The character of the men who composed the new National Assembly was unauuspicious to the Court. At the commencement of the revolution, the great body of the people at a distance from the capital were little interested in those projects of freedom which occupied the more enlightened or more turbulent inhabitants of Paris. They had gradually, however, been roused from their lethargy. The variety of powers conferred by the new constitution upon the people at large, and the multiplicity of offices of which it gave them the patronage, had kindled in the minds of men a love of dominion, and a wish to interfere in public affairs. This attached them to the new order of things. The love of power, which is the least disguised passion in the human heart, and equally strong in the breast of the meanest and of the highest of mankind, was thus, under the name of liberty, become a leading passion throughout this wide empire. They who flattered it most, and were most loud in praise of the rights of the people, became speedily the favourites of the public. The consequence of this was, that the new National Assembly was chiefly composed of country gentlemen, of principles highly democratic, or of men of letters who had published popular books, or conducted periodical publications. The members of the Constituent Assembly had been excluded by their own decree from holding seats in the new legislature.—The members of the latter, therefore, had little regard for a constitution which they themselves had not framed, and which was not protected by the venerable sanction of antiquity.

When this Assembly first met, it showed a very trifling attention to formalities, and a peevish jealousy of the ministers of the crown. In the mean time, the treaty of Pilnitz, already mentioned, began to be rumoured abroad, and France was thrown into a state of anxious jealousy for the safety of its newly-acquired liberties. Although the Prussians and Germans (the elector of Mentz alone excepted) all continued to temporize, the northern powers, Sweden and Russia, entered into strict engagements to restore the old despotism of France. On the 9th of November, a decree was passed, that the emigrants who, after the first of January next, should be found assembled, as at present, in a hostile manner, beyond the frontiers, should be considered as guilty of a conspiracy, and suffer death; that the French princes, and public functionaries, who should not return before that period, should be punishable in the same manner, and their property forfeited during their own lives. On the 18th, a series of severe decrees was also passed against such of the ejected clergy as still refused to take the civic oath. To both these decrees the king opposed his *veto*, or negative.—The moderate party, who were attached to the constitution, rejoiced at this as a proof of the freedom of their sovereign. But, on the other side, it excited a most violent clamour, and became the means of exciting new suspicions of the wishes of the court. At this time answers were received from the different foreign courts to the notification sent them of the king's acceptance of the new constitution. These were generally conceived in a stile of caution, and avoided giving

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The new  
assembly  
opened by  
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Character  
of the  
members.

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And ac-  
cepted by  
the king.

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The as-  
sembly dis-  
solved.

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Character  
and labours  
of the con-  
stituent as-  
sembly.

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Their jea-  
lousy of  
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sters of the  
crown.

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Pacific an-  
swers are  
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powers.

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open offence. The emperor even prohibited all assemblages of emigrants within his states; and the king intimated to the Assembly that he had declared to the elector of Treves, that unless the emigrants should cease before the 15th of January to make hostile preparations within his territories, he would be considered as the enemy of France. All this, however, did not preserve the court from suspicion; for although the different foreign courts had openly declared pacific intentions, yet the French emigrants boldly asserted, that all Europe was actually arming in their favour. Accordingly they ceased not to solicit their equals in rank, who still remained within the country, to leave it to join with them in what they called the *royal cause*.—The unhappy Louis, placed between a republican party that was gradually gathering strength, and an aristocratical party that was rousing Europe to arms against a nation of which he was the constitutional chief, and a combination of princes justly suspected of wishing to seize upon a part of his dominions, stood in a situation which would have perplexed the most skilful statesman; and it is no proof of incapacity that he fell a sacrifice to circumstances which might have overwhelmed any known measure of human ingenuity. Addresses were crowding into the Assembly, disapproving the conduct of the court. M. Montmorin resigned; M. Delessart succeeded him; and M. Cahier de Gerville became minister of the interior. M. du Portail resigned also, and M. Narbonne succeeded him as minister of war. In the month of November, M. Bailly's mayoralty terminated; and the once popular La Fayette appeared as a candidate to succeed him. But he was successfully opposed by M. Petion, a violent Jacobin, and a declared republican, who was elected mayor of Paris by a great majority.

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But the court is still suspected.

303  
The ministry changed.

304  
The Feuillans established to oppose the Jacobin club.

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State of France in the end of 1791 and beginning of 1792.

At this period the moderate men, who were friends of the constitution, attempted to counteract the influence of the Jacobin club by the establishment of a similar one. It derived its name from the vacant convent of the *Feuillans*, in which it assembled. The most active members of the Constituent Assembly belonged to it, such as M. M. D'Andre, Barnave, the Lameths, Du Port, Rabaud, Sieyes, Chapelier, Thouret, Labord, Taleyrand, Montesquieu, Beaumetz, &c. The Jacobins contrived to excite a riot at the place of their meeting, which was in the vicinity of the hall of the National Assembly. This afforded a pretext for applying to the Assembly for the removal of the new club. The Assembly showed their disposition, by complying with this request.

At the end of this year, the kingdom of France was by no means prosperous. The public revenue had fallen far short of the expenditure. The emigrant nobility had carried out of the kingdom the greater part of the current coin; and a variety of manufacturers, who depended upon their ostentatious luxury, were reduced to much distress. The dispositions of foreign courts appeared very doubtful. The new year, however, opened with delusive prospects of tranquillity.—The German princes appeared satisfied with the mode of compensation which the French had offered for the loss of their possessions in Alsace and Lorraine. The prince of Lowestein accepted of an indemnification.—The princes of Hohenlohé and Salm-Salm declared themselves ready to treat upon the same terms. Prince

Maximilian, and the dukes of Wirtemberg and Deux-Ponts, freely negotiated. It is unnecessary to state in detail the subtleties employed, in the mean time, by the crafty Leopold, for amusing the French with the appearances of peace. M. Delessart, minister for foreign affairs, fell a sacrifice to them, and probably to the undecided character of Louis. He was accused by M. Briffot of not having given timely notice to the National Assembly of the dispositions of foreign powers, and of not pressing proper measures for securing the honour and safety of the nation. A decree of accusation passed against him in his absence. He was apprehended, tried by the high national court at Orleans, and executed in consequence of its sentence.

The sudden death of Leopold on the first of March gave rise to a transient hope that peace might still be preserved. A suspicion of poison fell upon the French, but it was removed by the detail of his disease that was speedily published. On the 16th of the same month, the king of Sweden was wounded by a nobleman of the name of Ankerstrom, and died on the 29th. This enterprising prince had overturned the constitution of his own country, and he had formed the project of conducting in person his troops to the frontiers of France, and of commanding or accompanying the combined armies of Europe in their attempt to avenge the cause of insulted royalty. It was in a great measure to counteract this scheme that he was assassinated.

The sudden fall, however, of these two enemies rather accelerated than retarded the meditated hostilities. The young king of Hungary, who succeeded to the empire, made no secret either of his own intentions or of the existence of a *concert of Princes* against France. M. Dumourier was now at the head of the war-office, M. Roland was minister of the interior, and M. Clavier minister of finance. The Jacobins were all-powerful. The court gave way to the torrent. The property of the emigrants was confiscated, reserving the rights of creditors. The Imperial minister, Prince Kaunitz, demanded three things of France; 1st, The restitution of their feudal rights to the German princes; 2dly, To restore Avignon to the Pope, the inhabitants of which had some time before thrown off their allegiance, and prevailed with the Constituent Assembly to receive their country as a part of France; and lastly, Prince Kaunitz demanded, that “the neighbouring powers should have no reason for apprehension from the present weakness of the internal government of France.” On receiving these demands, the king proposed a declaration of war, which was decreed by the National Assembly on the 20th of April, against *the King of Hungary and Bohemia*.

The French immediately began the war, by attacking in three different columns the Austrian Netherlands. M. Theobald Dillon advanced from Lille to Tournay, where he found a strong body of Austrians ready to receive him. The national troops, unaccustomed to sustain the fire of regular soldiers, were instantly thrown into confusion, and fled even to the gates of Lille. The cry of *treason* resounded on all sides; and their commander, an experienced and faithful officer, was murdered by his own soldiers and the mob. A second division of 10,000 men, under Lieutenant-General Biron, took possession of Quivrain on the 29th, and marched towards Mons. General Biron was here attacked by

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The death of the emperor and murder of the king of Sweden.

307  
The emperor's successor openly avows warlike intentions.

308  
And the Austrian Netherlands are unsuccessfully attacked by the French.

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the Austrians, whom he repulsed. Hearing, however, of the defeat of Dillon, he retreated. A third party advanced to Furnes, but afterwards withdrew. La Fayette at the same time advanced towards Bouvines, half way to Namur, from which he afterwards retreated. The whole of these expeditions were ill contrived, in as much as they divided the French undisciplined troops, and exposed them in small bodies to the attack of veteran forces. The Austrians were some time before they attempted to retaliate. At length, however, on the 11th of June, they attacked M. Gouvion, who commanded the advanced guard of La Fayette's army near Maubeuge. M. Gouvion was killed by a rolling bullet; but La Fayette himself having come up, the Austrians abandoned the field. In the mean time, matters were hastening in Paris towards a violent crisis. Two parties, both of which were hostile to the present constitution, had gradually been formed in the state. The one wished to give more effectual support to the royal authority, by establishing a *senate* or *two chambers*, to prevent the king's vote from being the sole check upon popular enthusiasm. The other party wished to set aside royalty altogether, and to hazard the bold experiment of converting France into a republic. These last were supported by the Jacobin club, which had now contrived to concentrate in itself an immense mass of influence. Innumerable popular societies were established in every town and village throughout the provinces. With these a regular correspondence was kept up by writing and by emissaries. Thus schemes and notions were instantaneously propagated through a great empire, and all the violent spirits which it contained were enabled to act in concert: But the more immediate engine of the republican party consisted of the immense population of the metropolis, whom they now endeavoured to keep in constant alarm. For this purpose they alleged, that an *Austrian Committee*, that is to say, a conspiracy in favour of the enemies of the country, existed among the friends of the court. M. M. Genonné and Brissot even offered in the assembly to prove the existence of this pretended Austrian committee. A report was next circulated, that the king intended to abscond from the capital on the 23d of May. His majesty publicly contradicted these accusations as calumnies, but they made no small impression upon the minds of the public. New decrees were now made against the refractory clergy, but these his majesty refused to sanction. A proposal was also made and decreed in the assembly to form a camp of 20,000 men under the walls of Paris, and that for this levy every canton in the kingdom should contribute one horseman and four infantry. The national guard of Paris disliked the proposal, and the king gave to it his negative. Indeed at this time the king seems to have come to a resolution of standing out against the Jacobin party, to which he had for some time yielded. The ministry were therefore dismissed, excepting M. Dumourier, and others were appointed in their stead. By this event Dumourier lost the confidence of the Jacobin club. He saw his error, resigned his office, and joined the army. In the mean time a decree had been passed, authorising the manufactory of pikes for the purpose of arming cheaply the lower class of citizens. All means were used to render the king odious by inflammatory writings

and harangues; and in both of these the noted incendiary Marat took the lead.

On the 20th of June M. Roederer, the procureur general syndic informed the national assembly, that, contrary to law, formidable bodies of armed men were preparing to present petitions to the king, and to the national assembly. A part of them speedily appeared with St Huruge and Santerre a brewer at their head. They marched through the hall in a procession that lasted two hours, at four o'clock in the afternoon, to the number of about 40,000. They surrounded the Thuilleries. The gates were thrown open; and on an attempt to break the door of the apartment where the king then was, he ordered them to be admitted. His sister the princess Elizabeth never departed from his side during four or five hours that he was surrounded by the multitude, and compelled to listen to every indignity. All this while Petion, the mayor of Paris, was unaccountably absent. He at length, however, arrived, and also a deputation from the assembly. The queen, with her children and the princess de Lamballe, were in the mean time in the council-chamber, where, though protected from violence, they were yet exposed to much insult. At last, in consequence of the approach of evening, and of the entreaties of Petion, the multitude gradually dispersed.

The indignities suffered on this day by the royal family were in some respects not unfavourable to their cause. A great number of the most respectable inhabitants of the capital were ashamed of such proceedings. They complained of them severely in a petition to the assembly, and addresses to the same purpose were received from several departments. The directory of the department of Paris, at the head of which were M. Rochefoucault and M. Talleyrand, published a declaration disapproving of the conduct of the mayor, and of M. Manuel the procureur of the commune, whom they afterwards suspended from their offices, although they were speedily restored by a decree of the assembly. At the same time, La Fayette leaving his army suddenly, appeared on the 26th at the bar of the national assembly. He declared that he came to express the indignation which the whole army felt on account of the events of the 20th: he called upon the assembly to punish the promoters of these events, and to dissolve the factious clubs. The sudden appearance of La Fayette threw the Jacobins into consternation, and from that period they never ceased to calumniate him.

On the 1st of July, on the motion of M. Jean de Brie, the assembly ordered a proclamation to be made, that *the country was in danger*. On the 6th, the king gave intimation that the king of Prussia was marching with 52,000 men to co-operate against France. The French arms were at this time somewhat successful in the Austrian Netherlands; but the cabinet speedily thought it necessary to order the armies to retreat: a measure which was afterwards publicly censured by Marshal Luckner.

On the 7th, a singular scene occurred in the national assembly. At the instant that M. Brissot was about to commence an oration, M. Lamourette bishop of Lyons requested to be heard for a few minutes. He expatiated on the necessity of union among the members of the assembly, and of sacrificing their passions and pre-

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310  
An armed mob marches through the assembly, &c.

311  
The more respectable inhabitants are ashamed of such conduct.

312  
The king of Prussia marches against France.

313  
Moderate speech of the bishop of Lyons.

309  
Two parties in Paris at this period, and the consequences.

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judices on the altar of their country. He concluded an animated address with these words, "Let all who hold in equal detestation a republic and two chambers, and who wish to maintain the constitution as it is, rise!" The words were scarcely pronounced when the whole assembly started from their seats. Men of all parties solemnly embraced each other, and protested their adherence to the constitution. A deputation announced this happy event to the king; who immediately came and congratulated them in a short speech, which was received with infinite applause. The only good effect, however, produced by this temporary agreement was, that the festival of the 14th of July, which was celebrated with the usual magnificence, passed over in tranquillity.

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Manifesto  
of the  
duke of  
Brunswick.

On the 25th of July, the duke of Brunswick issued at Coblenz his celebrated manifesto. It declared the purpose of the intended invasion of France to be the restoration of the French king to full authority. It declared the national guard of France responsible for the preservation of tranquillity; and threatened with the punishment of death, as rebels to their king, those who should appear in arms against the allied powers. All men holding offices, civil or military, were threatened in the same manner, as well as the inhabitants of all cities. The city of Paris in particular, and the national assembly, were declared responsible for every insult which might be offered to the royal family. It was declared, that if they were not immediately placed in safety, the allies were resolved to inflict "on those who should deserve it the most exemplary and ever memorable avenging punishments, by giving up the city of Paris to military execution, and exposing it to total destruction; and the rebels who should be guilty of illegal resistance should suffer the punishments which they should have deserved." This sanguinary and imprudent manifesto operated as a warrant for the destruction of the unfortunate Louis XVI. It left no middle party in the nation. All who wished to preserve freedom in any form, and all who loved the independence of their country, were instantly united. At the same time, the reproaches cast on the king by the Jacobins now gained universal credit. The kings of Prussia and of Hungary told the French nation, that their monarch was secretly hostile to the constitution; and the restoration of him and his family to despotic power was made the sole pretence for a bloody and dangerous war.

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Injurious  
to Louis.

316  
But advantageous  
to the republican  
party, who resolve  
to depose him.

The republican party saw the advantage which they had now gained, and resolved upon the deposition of the king. The chief engine which they meant to employ in this service consisted of about 1500 men, who had come to Paris at the period of the confederation on the 14th of July, and therefore called *federés*, and who were also sometimes denominated *Marseillois*, from the place from which the greater number of them came. Next to these, dependence was placed in the populace of the suburbs of the capital. The designs of the republicans were not unknown to the court, and both parties were forming plans of operation. It is said that the royal party intended that the king and his family should suddenly leave the capital, and proceed to as great a distance as the constitution permitted. The republicans are said to have intended to seize the person of the king, and to confine him in the castle of Vincennes till a national convention should decide upon his

fate. Both allegations are probably true. Every motive which can influence the mind of man must have induced Louis to wish to be at a distance from the factious and sanguinary capital. And the subsequent conduct of the republicans authorise us to believe them capable of the worst crime that was laid to their charge.

France.

1792.

Various charges had been brought forward in the assembly against La Fayette, and the 8th of August was appointed for their discussion. In the mean time, on the 3d of August, Petion the mayor, at the head of a deputation from the sections of Paris, appeared at the bar, and in a solemn speech demanded the deposition of the king. The discussion of the accusation against La Fayette was considered as a trial of strength between the parties: he was acquitted, however, by a majority of nearly 200; and the republican party, despairing of carrying their point by a vote of the national assembly, resolved to have recourse to insurrection and force.

317  
La Fayette  
accused and  
acquitted.

On the evening of the 9th of August, about 1500 gentlemen, officers of the army, and others, repaired to the palace, resolved to protect the royal family or to die in their defence: added to these were 700 Swiss guards, with a body of cavalry amounting to about 1000. Mandat, the commander of the national guards, a man who was firmly attached to the constitution, had procured 2400 of that body and 12 pieces of cannon. With such a force, it has been generally thought that, by vigorous and steady councils, the palace, which is a kind of castle, might have been successfully defended; and what is now called a revolution might have born the name of a rebellion. Meanwhile the assembly declared its sittings permanent. Petion was at the palace late on the evening of the 9th. Some apprehensions were entertained, or pretended to be entertained, for his safety (for the whole of this business was, on the part of the republicans, the most infernal plot), and a deputation from the assembly brought him away. At midnight the tocsin or alarm bell was sounded, and the drums beat to arms through the city. At this instant a number of the most active leaders of the republican party assembled, and elected a new common council or *commune*. The persons thus irregularly chosen instantly took possession of the common hall, and drove out the lawful members; who, with that weakness with which men are apt to shrink from stations of responsibility in perilous times, readily gave place to the usurpers. The new commune sent repeated messages to M. Mandat, requiring his attendance upon important business. He was occupied in arranging the troops in the best order around the palace; but suspecting nothing, he went to the common hall, and was there astonished to find a different assembly from what he expected. He was abruptly accused of a plot to massacre the people, and ordered to prison; but as he descended the stairs, he was shot with a pistol, and Santerre was appointed in his stead to command the national guard.

318  
Horrid plot  
of the re-  
publicans.

On this eventful night no person in the palace went to bed. About six o'clock in the morning of the 10th the king descended into the gardens to review the troops. He was received with shouts of *Vive le roi*, excepting from the artillery, who shouted *Vive la nation*. The king returned to the palace, and the multitude continued to collect. The national guard seemed undetermined about what they were to do, as they assembled in divisions near the palace; and had a steady re-

sistance

France.  
1792.

istance been made from within, it is probable they would have joined the royal party. But towards eight o'clock M. Roederer procured admittance to the palace, and told the king that armed multitudes were assembling in hostile array around the Thuilleries; that the national guard was not to be depended upon; and that, in case of resistance, the whole royal family would most certainly be massacred. He therefore advised the king to seek protection in the hall of the national assembly. With this advice the king, with his usual facility of temper, was ready to comply; but the queen opposed with vehemence the humiliating proposal. Becoming gradually, however, alarmed for the safety of her children, she gave her consent; and the king and queen, the princess Elizabeth, with the prince and princess royal, went on foot to the hall of the assembly. "I am come hither (said his majesty) to prevent a great crime. Among you, gentlemen, I believe myself in safety." By an article of the constitution the assembly could not deliberate in presence of the king. The royal family were, therefore, placed in a narrow box separated from the hall by a railing, where they remained for 14 hours without any place to which they could retire for refreshment, excepting a very small closet adjoining. Here they sat listening to debates, in which the royal character and office were treated with every mark of insult.

When the king left the palace of the Thuilleries, he unfortunately forgot to order it to be immediately surrendered. He recollected this as soon as he reached the assembly, and sent orders for this purpose; but it was now too late. The insurgents amounted to about 20,000 effective men. They were drawn up in tolerable order by Westerman a Prussian, and had about 30 pieces of cannon along with them. The gentlemen within the palace, who had assembled to protect the king's person, were now dispirited, and knew not what part to act. The commander of the Swiss, M. Affry, was absent, and the captains knew not what to do; and the national guard had no leader in consequence of the death of Mandat. About nine o'clock the outer gates were forced open; and the insurgents formed their line in front of the palace. A bloody combat commenced chiefly between the Marseillois and the Swiss. After a brave resistance of about an hour, the Swiss were overpowered by numbers, and gave away. All of them that could be found in the palace were massacred; some even while imploring quarter on their knees. Others escaped into the city, and were protected by individuals. Of this brave regiment, however, only 200 survived; but every human being, even the lowest servants found in the palace, were put to death. The Swiss taken prisoners in various quarters were conducted to the door of the assembly, and taken by a decree under the protection of the state. But the sanguinary multitude insisted upon putting them to instant death; and the assembly would, in all probability, have been unable to protect them, had not the Marseillois interfered in their favour.

The suspension of the royal authority was now decreed, and the nation was invited to elect a *Convention* to determine the nature of its future government. On this uncommon occasion all Frenchmen of 21 years of age were declared capable of electing, and of being elected, deputies to the new national Convention. Com-

missioners were, in the mean time, sent on the same evening to give to the armies a false and favourable account of these transactions. The royal family were sent to the old palace of the Temple in the midst of the city, to remain there under a strict guard; and all persons of rank who had been attached to them were seized and committed to the different prisons.

To give an idea of the temper of the people of Paris at this time, it is proper to remark, that at the same instant when the multitude with a bloody fury was massacring the menial servants in the palace, and could scarcely be restrained from offering violence to the Swiss who were made prisoners, they would suffer no act of pillage to pass unpunished. Several attempts of this kind were accordingly followed by the instant death of the criminals. The plate, the jewels, and money found in the Thuilleries were brought to the national assembly, and thrown down in the hall. One man, whose dress and appearance bespoke extreme poverty, cast upon the table an hat full of gold.—But the minds of these men were elevated by enthusiasm; and they conceived themselves at this moment the champions of freedom, and objects of terror to the kings of the earth.

In the mean time, the situation of France was extremely critical, and it appeared very doubtful if the new convention would ever be suffered to assemble. La Fayette had accidentally got speedy notice of the events of the 10th of August. He advised the magistrates of the town of Sedan to imprison the commissioners from the national assembly when they should arrive there; which was accordingly done. He, at the same time, published an address to his army, calling upon them to support the king and the constitution; but finding that they were not to be depended upon, on the 19th of August he left the camp in the night, accompanied only by his staff and a few servants. They took the route of Rochefort in Liege, which was a neutral country; but were met by a party of the enemy, who took them prisoners, and La Fayette was detained for several years in Prussian and Austrian dungeons. The severe treatment of this man was probably a considerable error in policy on the part of the allies. His fidelity to his king is very generally admitted; though some have entertained strong suspicions of his having acted a very base part to that unfortunate monarch; and in the British house of commons he has been called an abandoned ruffian. The expression is certainly too strong. His errors seem to have been those of the head rather than of the heart; and at all events, he should have been protected by the allies, if for no other reason than to encourage subsequent desertions among the officers of the republican army.

To return from this digression. The commissioners were soon set at liberty at Sedan, and received with applause by the army of La Fayette. General Arthur Dillon at first entered into the sentiments of La Fayette; but the politic Dumourier diverted him from his purpose, and by this means regained his credit with the Jacobins, and was appointed commander in chief. The other generals, Biron, Montesquieu, Kellerman, and Custine, made no opposition to the will of the national assembly.

Meanwhile, the combined armies of Austria and Prussia had entered France. The duke of Brunswick's army

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318  
Bloody temper of the people of Paris, &c.

323  
Critical situation of the whole kingdom.

324  
La Fayette withdraws from the army.—His fate and character.

219  
The royal family fly for safety to the hall of the national assembly.

320  
A bloody conflict in the palace, in which most of the Swiss-guards are massacred.

321  
The royal authority suspended, and royal family imprisoned.

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1792.

325  
The combined  
armies enter  
France  
in great  
force.

army was above 50,000 strong. General Clairfait had joined him with 15,000 Austrians, and a considerable body of Hessians, along with 20,000 French emigrants; amounting in all to 90,000 men. To oppose these, Dumourier had only 17,000 men collected near the point from which the enemy were approaching in Luxembourg. The French emigrants had given the duke of Brunswick such an account of the distracted state of their own country, and of the pretended disaffection of all orders of men towards the ruling faction in Paris, that no resistance of any importance was expected. When the combined troops, consisting either of steady Austrian or Hungarian battalions, or of those well disciplined Prussians which the great Frederick had inured to the best military discipline, were reviewed in Germany before setting out on their march, it is said that the spectators, among whom the French cause was not unpopular, beheld them with anxiety and regret, and pitied the unhappy country against which this irresistible force was directed. The soldiers and their officers regarded themselves as departing for a hunting match, or an excursion of pleasure; and many of the usual accommodations of an army were ill attended to, such as hospitals, &c. The beginning of their progress into France justified these expectations. Longwy surrendered after a siege of 15 hours, although well fortified, possessed of a garrison of 3,500 men, and defended by 71 pieces of cannon. The news of this event irritated the assembly so much, that they decreed, that, when retaken, the houses of the citizens should be razed to the ground; and, distrustful of the officers of the army, they decreed that the municipal officers of a town should hereafter have power to controul the deliberation of the council of war. Verdun was next summoned; and here the municipality compelled the governor M. Beaurepaire to surrender. That officer, disappointed and enraged, shot himself dead with a pistol in presence of the council, and on the 2d of September the Prussian troops entered the town.

326  
Alarm at  
Paris on  
account of  
their suc-  
cess.

The news of this second capture, and of the approach of the Prussians, spread an instant alarm through Paris. It was proposed to raise a volunteer army, which should set out immediately to meet the enemy. The common council, which was now led by Robespierre, Danton, Marat, and others of the most sanguinary character, ordered the alarm-guns to be fired, and the populace to be summoned to meet in the Champ de Mars to enroll themselves to march against the enemy. The people assembled, and either in consequence of a premeditated plan, or, which is not very probable, of an instantaneous movement, a number of voices exclaimed, that "the domestic foes of the nation ought to be destroyed before its foreign enemies were attacked."

327  
Horrid  
massacres.

Parties of armed men proceeded without delay to the prisons where the non-juring clergy, the Swiss officers, and those confined since the 10th of August on account of practices against the state, were detained in custody. They took out the prisoners one by one, gave them a kind of mock trial before a jury of themselves, acquitted some few, and murdered the rest. Among these last was the princess de Lamballe. She was taken from her bed before this bloody tribunal, and massacred; her head was carried by the populace to the Temple, to be seen by the queen, whose friend she was.

These massacres lasted for two days, and upwards of 1000 persons were put to death. There is scarce any thing in history that can be represented as parallel to them; they were committed, it is said, by less than 300 men, in the midst of an immense city, which heard of them with horror, and in the vicinity of the national assembly, which, by going in a body, could have put an end to them. But such was the confusion and dismay of these two disgraceful days, that no man dared to stir from his own house; and every one believed that the whole city, excepting his own street, was engaged in massacre and bloodshed. The national guards were all ready at their respective posts, but no man directed them to act: and there is too much reason to suspect that Santerre and the chiefs of the commune connived, at least, at the transaction.

In the mean time, General Dumourier was taking the best measures to protract the march of the enemy till the army of Kellerman, consisting of 20,000 men, could join him from Lorraine, and that of Bournonville from Flanders, amounting to 13,000; together with whatever new levies Luckner might be able to send him from Chalons. The forest of Argonne extends from north to south upwards of 40 miles; it lay directly in the route of the duke of Brunswick, who must either force his way across it, or make a circuit of 40 miles by the pass of Grandpré on the north, or by Barleduc on the south. The pass that lay directly in his route was that of Biesme. After surveying Dillon's position here, he left a party of 20,000 men to watch it; and with the main body of his army took the circuitous rout by Grandpré on the north. Here Dumourier waited to receive him, and was attacked on the 12th and 13th without success: but on the 14th, the attack of the Prussians was irresistible, and Dumourier retreating, gave up the pass. On his march he was so violently pressed by the advanced cavalry of the Prussians, that his army, at one time, was seized with a panic, and fled before 1,500 men; who, if they had pushed their advantage, might have dispersed it. On the 15th, however, Dumourier encamped at St Meneshould, and began to fortify it. Bournonville's army joined Dumourier on the 17th. The duke of Brunswick formed a plan of attacking Kellerman before his junction could be completed. That general arrived on the 19th within a mile of Dumourier's camp; the projected attack took place; the Prussians manœuvred with their usual coolness and address; they attempted to surround Kellerman's army, but this could not be accomplished. The French troops preserved excellent order, while the national vivacity was constantly showing itself in their shouts and patriotic songs: 400 French were killed, and 500 wounded; the loss of the Prussians was much greater: and, in the face of the enemy, Kellerman joined Dumourier at the end of the engagement without opposition. At the time that the attack was made on the army of Kellerman, an attempt was made to force Dillon's camp at Biesme by the 20,000 men that had been left in its vicinity, but without success; and this large detachment was thus prevented from crossing the forest of Argonne and joining the duke of Brunswick. It is to be observed, that in these engagements the French owed their superiority chiefly to the excellence of their artillery; a circumstance which served to convince their enemies that they

France.

1792.

328

State of  
the French  
army, and  
conduct of  
Dumourier.

329

The Prussians oblige him to retreat, but do not follow up their advantage.

France. had to contend with regular military bodies, and not with undisciplined multitudes, as they expected.

1792. The duke of Brunswick encamped his army at La Lun, near the camp of Dumourier. And here the Prussians began to be in extreme distress both from sickness and famine. No temptation could induce the inhabitants of the country to carry provisions to the hostile camp, while at the same time the French army was abundantly supplied.

332 Bournonville, with a body of 4000 men, intercepted several droves of cattle and other convoys of provisions destined for the Prussians. The rain fell in torrents, and the roads were uncommonly deep. Exposed to the cold, the moisture, and want of provisions, the Prussians rashly ate great quantities of the grapes of Champagne. The consequence of this was, that an epidemical distemper commenced and spread through the army to such an extent, that 10,000 men at one time were unfit for duty. The duke of Brunswick, however, still commanded a force much more numerous than that of Dumourier; and he has been much censured for not attacking his camp, and forcing him to engage. It has been said that the veteran and numerous force which he commanded would have marched to certain victory against the raw troops that opposed them; that, having defeated Dumourier's army, there was nothing to oppose their march to Paris. But the duke of Brunswick had entered France upon the supposition, that in its present distracted state no regular army could be brought into the field against him, and that the people at large were hostile to the ruling faction. The contrary of all this had turned out to be true. He found himself in the midst of an hostile people, and opposed by skilful military chiefs. A defeat in such a situation would have brought certain ruin to his army; and even the loss sustained in the acquisition of a victory might have proved equally fatal. The remains of the French army would not fail to hang upon his rear; and from the disposition of the people it appeared impossible to ascertain to what amount that army might be suddenly increased. After proposing a truce, therefore, which lasted eight days, he commenced his retreat towards Grandpré, and no advantage was gained over him in the course of it. Verdun was retaken by the French on the 12th of October, and Longwy on the 18th; the siege of Thionville was at the same time raised. That small, but strong fortress, under the command of General Felix Wimpfen, had held in check an army of 15,000 men.

333 Lisle summoned and vigorously besieged by the Austrians, but in vain.

While the Prussians were advancing from the north-east, the Austrians under the duke of Saxe Teschen laid siege to Lisle. The council-general of the commune answered the summons of the besiegers thus: "We have just renewed our oath to be faithful to the nation, and to maintain liberty and equality, or to die at our post. We will not perjure ourselves." Such was the cant of these men who had already perjured themselves by contributing to overturn the constitution which they had repeatedly sworn to defend. The Austrian batteries began to play upon the town on the 29th, and were chiefly directed against that quarter which was inhabited by the lower class of citizens, for the purpose of making them mutinous and seditious. This procedure was ill judged. The lower classes of mankind are always much accustomed to hardships, and they go farthest in

support of any enthusiastic principle they have been persuaded to adopt. Accordingly, though a great part of the city was reduced to a heap of ruins, the citizens of Lisle became daily more obstinate. They received each other into the houses that were still standing, and every vault and cellar was occupied. Although upwards of 30,000 red-hot balls and 6000 bombs were thrown into the city, besides the efforts made by an immense battering train of artillery, yet the loss both to the garrison and people did not exceed 500 persons, most of whom were women and children. After a fortnight of fruitless labour the Austrians raised the siege.

War had been declared against the king of Sardinia on account of the threatening appearances exhibited in that quarter. On the 20th of September General Montefquieu entered the territories of Savoy, and was received at Chambery and throughout the whole country with marks of unbounded welcome. On the 29th General Anselm, with another body of troops, took possession of Nice and the country around it. On the 30th General Custine advanced to Spire, when he found the Austrians drawn up in order of battle. He attacked and drove them through the city, taking 3000 of them prisoners. The capture of Worms succeeded that of Spire; Mentz surrendered by capitulation; and Franckfort fell into the hands of the French on the 23d. Out of this last place, however, they were afterwards driven on the 2d of December.

334 The national convention assembled. It was found to contain men of all characters, orders, and ranks. Many distinguished members of the Constituting Assembly were elected into it, and also several that had belonged to the Legislative Assembly; even foreigners were invited to become French legislators. The famous Thomas Paine and Dr Priestley of England were elected by certain departments; but the latter declined accepting. Clouts, a Prussian, whom we formerly noticed as bringing a deputation to the bar of the constituent assembly, consisting of persons representing all the nations of the earth, was also chosen. The general aspect of the new convention showed that the republican party had acquired a decided superiority. On the first day of meeting M. Collot d'Herbois, who had formerly been an actor, ascended the tribune, and proposed the eternal abolition of royalty in France. The question was carried by acclamation, and the house adjourned. Messages were sent to all parts of the country to intimate the decree, and by the influence of the Jacobins they were everywhere received with applause. It was next day decreed, that all public acts should be dated by the year of the French republic; and all citizens were declared eligible to all the vacant offices and places. The rage of republicanism soon went so far, that the ordinary titles of Monsieur and Madame were abolished, and the appellation of Citizen substituted in their stead, as more suitable to the principles of liberty and equality.—It may be remarked, that in this last trifling circumstance an attachment to the form of speech to which they had been accustomed appears even in its abolition: For, although the Roman orators addressed their countrymen when assembled by the honourable appellation of Citizens, yet they never, in addressing an individual, called him Citizen Cato, or Citizen Cæsar, according to the mode now adopted in France.

France. 1792.

334 War declared against the king of Sardinia, Savoy taken, &c.

335 The national convention assembled.

336 And decrees the eternal abolition of royalty in France.

France.

1792.

337  
Two opposite factions in the convention.

It was soon discovered that the leading republicans had divided into two opposite factions. The one of these was called *Girondists*, because Vergniaud, Gensonné, Guadet, and some others of its leaders, were members from the department of La Gironde. The celebrated Condorcet belonged to this party; and they were sometimes denominated *Brissotines*, from M. Brissot de Warville their principal leader. They supported the ministry now in office, at the head of which was Roland; and the majority of the convention was obviously attached to them. In opposition to these was the smaller party of the *Mountain*: so called from its members usually sitting in the convention on the upper seats of the hall. They were men possessed of less personal respectability, and fewer literary accomplishments, but of daring and sanguinary characters, whom the revolution had brought into public notice. At the head of this party were Danton and Robespierre; and subordinate to these were Conthon, Bazire, Thuriot, Merlin de Thionville, St André, Camille Demoulins, Chabot, Collot D'Herbois, Sergent, Legendre, Fabre D'Eglantine, Panis, and Marat.

These two parties showed the diversity of their characters in the manner in which they treated the massacres of the 2d and 3d of September. The Brissotines, with the majority of the convention, wished to bring the murderers to trial; but the question was always eluded by the other party, with the assistance of the Jacobin club and of the populace.

338  
Decree against the emigrants, &c.

On the 9th of October it was decreed, that all emigrants, when taken, should suffer death; and on the 15th of November, in consequence of an insurrection in the duchy of Deux Ponts, and an application on the part of the insurgents to the convention for aid, the following decree was passed: "The national convention declare, in the name of the French nation, that they will grant fraternity and assistance to all those people who wish to procure liberty; and they charge the executive power to send orders to the generals to give assistance to such people as have suffered, or are now suffering, in the cause of liberty." Of this decree foreign nations, with great reason, complained much, as will shortly appear.

339  
Battle of Jemappe, and surrender of the Austrian Netherlands.

To return to the military affairs of the new republic. On the 12th of October General Dumourier came to Paris, and was speedily sent to commence a winter campaign in the Netherlands. He suddenly attacked the Austrians at the village of Bossu, and drove them from their ground. On the 5th of November he came in sight of the enemy upon the heights of *Jemappe*. Three rows of fortifications arose above each other, defended by 100 pieces of cannon. Their right was covered by the village and a river, and their left by thick woods. The French were by their own account 30,000, whilst others with great probability of truth compute them at double that number, and the number of the Austrians was at least 20,000. At seven in the morning of the following day a heavy cannonade commenced on both sides, and at noon a close attack was determined on by the French, whose right wing was commanded by Generals Bourmonville and Dampierre and the centre by Generals Egalité (son to the duke of Orleans who had assumed that name), Stetenbosse, Desportets, and Drouet. The music played the popular march of the Marfellois, and the soldiers rushed on with enthusiasm, shouting "Vive la nation." The en-

agement was warm and bloody; the French were twice repulsed; but their impetuosity was at last irresistible, and about two o'clock the enemy fled from their last entrenchments. The loss on both sides was very great, that of the Austrians amounting to 4000. This victory was decisive of the fate of the Netherlands. Mons and Brussels surrendered to Dumourier; Tournay, Malines, Ghent, and Antwerp, were taken possession of by General Labourdonnaye; Louvain and Namur were taken by General Valence; and the whole Austrian Netherlands, Luxembourg only excepted, fell into the hands of the French: Liege was taken on the 28th of November after a successful engagement, in which the Austrians lost 5 or 600 men and an immense train of artillery.

France was now in a situation not unusual in the history of those nations that either are free, or are attempting to become so; successful in all quarters abroad, but distracted by factions at home. The two parties in the convention were engaged in a struggle, which daily became more implacable. The party called the *Mountain* did not hesitate about the nature of the means they were to employ to bring about the ruin of their antagonists. They are even suspected of having, through the medium of Pache the war-minister, retarded the supply of the armies, to render the ruling party odious by want of success. They were for some time, however, unfortunate in this respect; and the daily news of victories supported with the public the credit of the Girondists. A new subject was therefore fallen upon, which was the question, how the dethroned king was to be disposed of? The moderate party wished to save him; and this was a sufficient reason for their antagonists to resolve upon his ruin. A committee was appointed to give in a report upon his conduct. A variety of accusations were brought against him; and the convention infamously resolved to act the part of accusers and of judges.

It was on the 11th of December when the ill-fated monarch was ordered to the bar of the convention: the act of accusation was read, and the king was summoned by the president, Barrere, to answer to each separate charge.

*Pres.* "Louis, the French nation accuses you of having committed a multitude of crimes to establish your tyranny, in destroying her freedom. You, on the 20th of June 1789, attempted the sovereignty of the people, by suspending the assemblies of their representatives, and expelling them with violence from the places of their sittings. This is proved in the process verbal entered at the Tennis-court of Versailles by the members of the constituent assembly. On the 23d of June you wanted to dictate laws to the nation; you surrounded their representatives with troops; you presented to them two royal declarations, subversive of all liberty, and ordered them to separate. Your own declarations, and the minutes of the assembly, prove these attempts. What have you to answer?"

*Louis.* "No laws were then existing to prevent me from it."

*Pres.* "You ordered an army to march against the citizens of Paris. Your satellites have shed the blood of several of them, and you would not remove this army till the taking of the Bastille and a general insurrection announced to you that the people were victorious. The

speeches

France.  
1792.340  
Violent contests between the Girondists and the Mountain.341  
The king brought to trial.

France. speeches you made on the 9th, 12th, and 14th of July to the deputations of the constituent assembly, shew what were your intentions; and the massacres of the Thuilleries rise in evidence against you.—What have you to answer?"

1792.

*Louis.* "I was master at that time to order the troops to march; but I never had an intention of shedding blood."

*Pref.* "After these events, and in spite of the promises which you made on the 15th in the constituent assembly, and on the 17th in the town-house of Paris, you have persisted in your projects against national liberty. You long eluded the execution of the decrees of the 11th of August, respecting the abolition of personal servitude, the feudal government, and tythes: you long refused acknowledging the rights of man: you doubled the number of the life-guards, and called the regiment of Flanders to Versailles: you permitted, in orgies held before your eyes, the national cockade to be trampled under foot, the white cockade to be hoisted, and the nation to be slandered. At last, you rendered necessary a fresh insurrection, occasioned the death of several citizens, and did not change your language till after your guards had been defeated, when you renewed your perfidious promises. The proofs of these facts are in your observations of the 18th of September, in the decrees of the 11th of August, in the minutes of the constituent assembly, in the events of Versailles of the 5th and 6th of October, and in the conversation you had on the same day with a deputation of the constituent assembly, when you told them you would enlighten yourself with their councils, and never recede from them.—What have you to answer?"

*Louis.* "I have made the observations which I thought just on the two first heads. As to the cockade, it is false; it did not happen in my presence."

*Pref.* "You took an oath at the federation of the 14th of July, which you did not keep. You soon tried to corrupt the public opinion, with the assistance of Talon who acted in Paris, and Mirabeau who was to have excited counter-revolutionary movements in the provinces.—What have you to answer?"

*Louis.* "I do not know what happened at that time; but the whole is anterior to my acceptance of the constitution."

*Pref.* "You lavished millions of money to effect this corruption, and you would even use popularity as a means of enslaving the people. These facts are the result of a memorial of Talon, on which you have made your marginal comments in your own hand-writing, and of a letter which Laporte wrote to you on the 19th of April; in which, recapitulating a conversation he had with Rivarol, he told you, that the millions which you had been prevailed upon to throw away had been productive of nothing. For a long time you had meditated on a plan of escape. A memorial was delivered to you on the 28th of February, which pointed out the means for you to effect it; you approve of it by marginal notes.—What have you to answer?"

*Louis.* "I felt no greater pleasure than that of relieving the needy; this proves no design."

*Pref.* "On the 28th a great number of the nobles and military came into your apartments in the castle of the Thuilleries to favour that escape: you wanted to

quit Paris on the 10th of April to go to St Cloud.—What have you to answer?"

*Louis.* "This accusation is absurd."

*Pref.* "But the resistance of the citizens made you sensible that their distrust was great; you endeavoured to discard it by communicating to the constituent assembly a letter, which you addressed to the agents of the nation near foreign powers, to announce to them that you had freely accepted the constitutional articles, which had been presented to you; and, notwithstanding, on the 21st you took flight with a false passport. You left behind a protest against these self-same constitutional articles; you ordered the ministers to sign none of the acts issued by the National Assembly; and you forbade the minister of justice to deliver up the seals of state. The public money was lavished to insure the success of this treachery, and the public force was to protect it, under the orders of Bouillé, who shortly before had been charged with the massacre of Nancy, and to whom you wrote on this head, "to take care of his popularity, because it would be of service to you." These facts are proved by the memorial of the 23d of February, with marginal comments in your own hand-writing; by your declaration of the 20th of June, wholly in your own hand-writing; by your letter of the 4th of September 1790 to Bouillé; and by a note of the latter, in which he gives you an account of the use he made of 993,000 livres, given by you, and employed partly in trepanning the troops who were to escort you.—What have you to answer?"

*Louis.* "I have no knowledge whatever of the memorial of the 23d of February. As to what relates to my journey to Varennes, I appeal to my declaration to the commissaries of the constituent assembly at that period."

*Pref.* "After your detention at Varennes, the exercise of the executive power was for a moment suspended in your hands, and you again formed a conspiracy. On the 17th of July the blood of citizens was shed in the Champ de Mars. A letter, in your own hand-writing, written in 1790 to La Fayette, proves that a criminal coalition subsisted between you and La Fayette, to which Mirabeau acceded. The revision began under these cruel auspices; all kinds of corruptions were made use of. You have paid for libels, pamphlets, and newspapers, designed to corrupt the public opinion, to discredit the assignats, and to support the cause of the emigrants. The registers of Septeuil shew what immense sums have been made use of in these liberticide manoeuvres.—What have you to answer?"

*Louis.* "What happened on the 17th of July has nothing at all to do with me. I know nothing of it."

*Pref.* "You seemed to accept the constitution on the 14th of September; your speeches announced an intention of supporting it, and you were busy in overturning it, even before it was completed. A convention was entered into at Pilnitz on the 24th of July, between Leopold of Austria and Frederic-William of Brandenburg, who pledged themselves to re-erect in France the throne of absolute monarchy, and you were silent upon this convention till the moment when it was known by all Europe.—What have you to answer?"

*Louis.* "I made it known as soon as it came to my knowledge; besides, every thing that refers to this subject concerns the minister."

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*Pres.* "Arles had hoisted the standard of rebellion; you favoured it by sending three civil commissaries, who made it their business not to repress the counter-revolutionists, but to justify their proceedings.—What have you to answer?"

*Louis.* "The instructions which were given to the commissaries must prove what was their mission; and I knew none of them when the ministers proposed them to me."

*Pres.* "Avignon, and the county of Venaissin, had been united with France; you caused the decree to be executed; but a month after that time civil war desolated that country. The commissaries you sent thither helped to ravage it.—What have you to answer?"

*Louis.* "I do not remember what delay has been caused in the execution of the decree; besides, this occurrence has no personal reference to me; it only concerns those that have been sent, not those who sent them."

*Pres.* "Nimes, Montauban, Mende, Jales, felt great shocks during the first days of freedom. You did nothing to stifle those germs of counter-revolution till the moment when Saillant's conspiracy became manifestly notorious.—What have you to answer?"

*Louis.* "I gave, in this respect, all the orders which were proposed to me by the ministers."

*Pres.* "You sent 22 battalions against the Marseillois, who marched to reduce the counter-revolutionists of Arles.—What have you to answer?"

*Louis.* "I ought to have the pieces referring to this matter, to give a just answer."

*Pres.* "You gave the southern command to Wittgenstein, who wrote to you on the 21st of April 1792, after he had been recalled: 'A few instants more, and I shall call around the throne of your majesty thousands of French, who are again become worthy of the wishes you form for their happiness.'—What have you to answer?"

*Louis.* "This letter is dated since his recall; he has not been employed since. I do not recollect this letter."

*Pres.* "You paid your late life-guards at Coblenz; the registers of Septeuil attest this; and general orders signed by you prove that you sent considerable remittances to Bouillé, Rochefort, Vauguyon, Choiseul, Beaupre, Hamilton, and the wife of Polignac.—What have you to answer?"

*Louis.* "When I first learned that my life-guards assembled beyond the Rhine, I stopped their pay: as to the rest, I do not remember?"

*Pres.* "Your brothers, enemies to the state, caused the emigrants to rally under their banners: they raised regiments, took up loans, and concluded alliances in your name: you did not disclaim them; but at the moment when you were fully certain that you could no longer cross their projects, your intelligence with them by a note, written by Louis Stanislaus Xavier, signed by your two brothers, was conceived in these words:

'I wrote to you, but it was by post, and I could say nothing. We are two here, who make but one; one in sentiments, one in principles, one in zeal of serving you. We keep silence; because, were we to break it too soon, it would injure you: but we shall speak as soon as we shall be certain of general support, and that moment is near. If we are spoken to on the

part of those people, we shall hear nothing; but if on your part, we will listen: we shall pursue our road straight. It is therefore desired that you will enable us to say something. Do not stand on ceremonies. Be easy about your safety: we only exist to serve you; we are eagerly occupied with this point, and all goes on well; even our enemies feel themselves too much interested in your preservation to commit an useless crime which would terminate in their own destruction.

'L. S. XAVIER and  
'CHARLES PHILIPPE.'

"What have you to answer?"

*Louis.* "I disowned all the proceedings of my brothers, according as the constitution prescribed me to do, and from the moment they came to my knowledge. Of this note I know nothing."

*Pres.* "The soldiers of the line, who were to be put on the war establishment, consisted but of 100,000 men at the end of December, you therefore neglected to provide for the safety of the state from abroad. Narbonne required a levy of 50,000 men, but he stopped the recruiting at 26,000, in giving assurances that all was ready; yet there was no truth in these assurances. Servan proposed after him to form a camp of 20,000 men near Paris; it was decreed by the legislative assembly; you refused your sanction.—What have you to answer?"

*Louis.* "I had given to the ministers all the orders for expediting the augmentation of the army: in the month of December last, the returns were laid before the assembly. If they deceived themselves, it is not my fault."

*Pres.* "A flight of patriotism made the citizens repair to Paris from all quarters. You issued a proclamation, tending to stop their march; at the same time our camps were without soldiers. Dumourier, the successor of Servan, declared that the nation had neither arms, ammunition, nor provisions, and that the posts were left defenceless. You waited to be urged by a request made to the minister Lajard, when the legislative assembly wished to point out the means of providing for the external safety of the state, by proposing the levy of 42 battalions. You gave commission to the commanders of the troops to disband the army, to force whole regiments to desert, and to make them pass the Rhine, to put them at the disposal of your brothers, and of Leopold of Austria, with whom you had intelligence. This fact is proved by the letter of Toulougeon, governor of Franche Comté.—What have you to answer?"

*Louis.* "I know nothing of this circumstance; there is not a word of truth in this charge."

*Pres.* "You charged your diplomatic agents to favour this coalition of foreign powers and your brothers against France, and especially to cement the peace between Turkey and Austria, and to procure thereby a larger number of troops against France from the latter. A letter of Choiseul-Gouffier, ambassador at Constantinople, verifies the fact.—What have you to answer?"

*Louis.* "M. Choiseul did not speak the truth: no such thing has ever been."

*Pres.* "The Prussians advanced against our frontiers: your minister was summoned on the 8th of July to give an account of the state of our political relations

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France. 1792. with Prussia; you answered, on the 10th, that 50,000 Prussians were marching against us, and that you gave notice to the legislative body of the formal acts of the pending hostilities, in conformity to the constitution.—What have you to answer?"

*Louis.* "It was only at that period I had knowledge of it: all the correspondence passed with the ministers."

*Pres.* "You entrusted Dabancourt, the nephew of Calonne, with the department of war; and such has been the success of your conspiracy, that the posts of Longwy and Verdun were surrendered to the enemy at the moment of their appearance.—What have you to answer?"

*Louis.* "I did not know that Dabancourt was M. Calonne's nephew. I have not divested the posts. I would not have permitted myself such a thing. I know nothing of it, if it has been so."

*Pres.* "You have destroyed our navy—a vast number of officers belonging to that corps had emigrated; there scarcely remained any to do duty in the harbours; meanwhile Bertrand was granting passports every day; and when the legislative body represented to you his criminal conduct on the 8th of March, you answered, that you were satisfied with his services.—What have you to answer?"

*Louis.* "I have done all I could to retain the officers. As to M. Bertrand, since the legislative assembly presented no complaint against him that might have put him in a state of accusation, I did not think proper to turn him out of office."

*Pres.* "You have favoured the maintenance of absolute government in the colonies; your agents fomented troubles and counter-revolutions throughout them, which took place at the same epoch when it was to have been brought about in France, which indicates plainly that your hand laid this plot.—What have you to answer?"

*Louis.* "If there are any of my agents in the colonies, they have not spoken the truth; I had nothing to do with what you have just mentioned."

*Pres.* "The interior of the state was convulsed by fanatics; you avowed yourself their protector, in manifesting your evident intention of recovering by them your ancient power.—What have you to answer?"

*Louis.* "I cannot answer to this; I know nothing of such a project."

*Pres.* "The legislative body had passed a decree on the 29th of January against the factious priests; you suspended its execution.—What have you to answer?"

*Louis.* "The constitution reserved to me the free right to refuse my sanction of the decrees."

*Pres.* "The troubles had increased; the minister declared, that he knew no means in the laws extant to arraign the guilty. The legislative body enacted a fresh decree, which you likewise suspended.—What have you to say to this?"

[Louis replied in the same manner as in the preceding charge.]

*Pres.* "The uncitizen-like conduct of the guards whom the constitution had granted you, had rendered it necessary to disband them. The day after, you sent them a letter expressive of your satisfaction, and con-

tinued their pay. This fact is proved by the treasurer of the civil list.—What have you to answer?"

*Louis.* "I only continued them in pay till fresh ones could be raised, according to the tenor of the decree."

*Pres.* "You kept near your person the Swiss guards: the constitution forbade you this, and the legislative assembly had expressly ordained their departure.—What have you to answer?"

*Louis.* "I have executed all the decrees that have been enacted in this respect."

*Pres.* "You had private companies at Paris, charged to operate movements useful to your projects of a counter-revolution. Dangremont and Gilles were two of your agents, who had salaries from the civil list. The receipts of Gilles, who was ordered to raise a company of 60 men, shall be presented to you.—What have you to answer?"

*Louis.* "I have no knowledge whatever of the projects laid to their charge: the idea of a counter-revolution never entered into my mind."

*Pres.* "You wished to suborn, with considerable sums, several members of the legislative and constituent assemblies. Letters from St Leon and others evince the reality of these deeds.—What have you to answer?"

*Louis.* "Several persons presented themselves with similar decrees, but I have waved them."

*Pres.* "Who are they that presented you with those projects?"

*Louis.* "The plans were so vague that I do not recollect them now."

*Pres.* "Who are those to whom you gave money?"

*Louis.* "I gave money to nobody."

*Pres.* "You suffered the French name to be reviled in Germany, Italy, and Spain, since you omitted to demand satisfaction for the bad treatment which the French suffered in those countries.—What have you to answer?"

*Louis.* "The diplomatical correspondence will prove the contrary; besides, this was a concern of the ministers."

*Pres.* "You reviewed the Swiss on the 10th of August at five o'clock in the morning; and the Swiss were the first who fired upon the citizens."

*Louis.* "I went on that day to review all the troops that were assembled about me; the constituted authorities were with me, the department, the mayor, and municipality; I had even invited thither a deputation of the national assembly, and I afterwards repaired into the midst of them with my family."

*Pres.* "Why did you draw troops to the castle?"

*Louis.* "All the constituted authorities saw that the castle was threatened; and as I was a constituted authority, I had a right to defend myself."

*Pres.* "Why did you summon the mayor of Paris in the night between the 9th and 10th of August to the castle?"

*Louis.* "On account of the reports that were circulated."

*Pres.* "You have caused the blood of the French to be shed."

*Louis.* "No, Sir, not I."

*Pres.* "You authorized Septeuil to carry on a considerable

France. considerable trade in corn, sugar, and coffee, at Hamburg. This fact is proved by a letter of Septeuil."

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*Louis.* "I know nothing of what you say."

*Presf.* "Why did you affix a *veto* on the decree which ordained the formation of a camp of 20,000 men?"

*Louis.* "The constitution left to me the free right of refusing my sanction of the decrees; and even from that period I had demanded the assemblage of a camp at Soissons."

*President,* addressing the convention. "The questions are done with." (To *Louis*)—"Louis, is there any thing that you wish to add?"

*Louis.* "I request a communication of the charges which I have heard, and of the pieces relating thereto, and the liberty of choosing counsel for my defence."

*Valazé,* who sat near the bar, presented and read to *Louis Capet* the pieces, viz. The memoir of *Laporte* and *Mirabeau*, and some others, containing plans of a counter-revolution.

*Louis.* "I disown them."

*Valazé* next presented several other papers, on which the act of accusation was founded, and asked the king if he recognized them. These papers were the following:

*Valazé.* "Letter of *Louis Capet*, dated June 29th 1790, settling his connexions with *Mirabeau* and *La Fayette* to effect a revolution in the constitution."

*Louis.* "I reserve to myself to answer the contents"—(*Valazé* read the letter.)—"It is only a plan, in which there is no question about a counter-revolution; the letter was not to have been sent."

*Valazé.* "Letter of *Louis Capet*, of the 22d of April, relative to conversations about the *Jacobins*, about the president of the committee of finances, and the committee of domains; it is dated by the hand of *Louis Capet*."

*Louis.* "I disown it."

*Valazé.* "Letter of *Laporte*, of Thursday morning, March 3d, marked in the margin in the hand-writing of *Louis Capet* with March 3d 1791, implying a pretended rupture between *Mirabeau* and the *Jacobins*."

*Louis.* "I disown it."

*Valazé.* "Letter of *Laporte* without date, in his hand-writing, but marked in the margin by the hand of *Louis Capet*, containing particulars respecting the last moments of *Mirabeau*, and expressing the care that had been taken to conceal from the knowledge of men some papers of great concern which had been deposited with *Mirabeau*."

*Louis.* "I disown it as well as the rest."

*Valazé.* "Plan of a constitution, or revision of the constitution, signed *La Fayette*, addressed to *Louis Capet*, April 6th 1790, marked in the margin with a line in his own hand-writing."

*Louis.* "These things have been blotted out by the constitution."

*Valazé.* "Do you know this writing?"

*Louis.* "I do not."

*Valazé.* "Your marginal comments?"

*Louis.* "I do not."

*Valazé.* "Letter of *Laporte* of the 19th of April, marked in the margin by *Louis Capet* April 19. 1791, mentioning a conversation with *Rivareol*."

*Louis.* "I disown it."

*Valazé.* "Letter of *Laporte*, marked April 16. 1791, in which it seems complaints are made of *Mirabeau*, the abbé *Perigord*, *André*, and *Beaumetz*, who do not seem to acknowledge sacrifices made for their sake."

*Louis.* "I disown it likewise."

*Valazé.* "Letter of *Laporte* of the 23d of February 1791, marked and dated in the hand-writing of *Louis Capet*; a memorial annexed to it, respecting the means of his gaining popularity."

*Louis.* "I know neither of these pieces."

*Valazé.* "Several pieces without signature, found in the castle of the *Thuilleries*, in the gap which was shut in the walls of the palace, relating to the expences to gain that popularity."

*President.* "Previous to an examination on this subject, I wish to ask a preliminary question: Have you caused a presf with an iron door to be constructed in the castle of the *Thuilleries*, and had you your papers locked up in that presf?"

*Louis.* "I have no knowledge of it whatever."

*Valazé.* "Here is a day-book written by *Louis Capet* himself, containing the pensions he has granted out of his coffer from 1776 till 1792, in which are observed some douceurs granted to *Acloque*."

*Louis.* "This I own, but it consists of charitable donations which I have made."

*Valazé.* "Different lists of sums paid to the Scotch companies of *Noailles*, *Gramont*, *Montmorency*, and *Luxembourg*, on the 9th of July 1791."

*Louis.* "This is prior to the epoch when I forbade them to be paid."

*Presf.* "Louis, where had you deposited those pieces which you own?"

*Louis.* "With my treasurer."

*Valazé.* "Do you know these pension-lists of the life-guards, the one hundred Swiss, and the king's guards for 1792?"

*Louis.* "I do not."

*Valazé.* "Several pieces relative to the conspiracy of the camp of *Jales*, the original of which are deposited among the records of the department of *L'Ar-dèche*."

*Louis.* "I have not the smallest knowledge of them."

*Valazé.* "Letter of *Bouillé*, dated *Mentz*, bearing an account of 993,000 livres received of *Louis Capet*."

*Louis.* "I disown it."

*Valazé.* "An order for payment of 168,000 livres, signed *Louis*, indorsed *Le Bonneirs*, with a letter and billet of the same."

*Louis.* "I disown it."

*Valazé.* "Two pieces relative to a present made to the wife of *Polignac*, and to *Lavauguyon* and *Choiseul*."

*Louis.* "I disown them as well as the others."

*Valazé.* "Here is a note signed by the two brothers of the late king, mentioned in the declaratory act."

*Louis.* "I know nothing of it."

*Valazé.* "Here are pieces relating to the affair of *Choiseul-Gouffier* at *Constantinople*."

*Louis.* "I have no knowledge of them."

*Valazé.*

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*Valazé.* "Here is a letter of the late king to the bishop of Clermont, with the answer of the latter, of the 16th of April 1791."

*Louis.* "I disown it."

*President.* "Do you not acknowledge your writing and your signet?"

*Louis.* "I do not."

*President.* "The seal bears the arms of France."

*Louis.* "Several persons made use of that seal."

*Valazé.* "Do you acknowledge this list of sums paid to Gilles?"

*Louis.* "I do not."

*Valazé.* "Here is a memorandum for indemnifying the civil list for the military pensions; a letter of Dufresne St Leon, which relates to it."

*Louis.* "I know none of those pieces."

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He is allowed to nominate his own counsel;

When the whole had been investigated in this manner, the president, addressing the king, said, "I have no other questions to propose—have you any thing more to add in your defence?"—"I desire to have a copy of the accusation (replied the king), and of the papers on which it is founded. I also desire to have a counsel of my own nomination." Barrere informed him, that his two first requests were already decreed, and that the determination respecting the other would be made known to him in due time.

It would have been an excess of cruelty to refuse a request so reasonable in itself; it was therefore decreed that counsel should be allowed to the king, and his choice fell upon M. M. Tronchet, Lamoignon Maleherbes, and Defeze; he had previously applied to M. Target, who excused himself on account of his age and infirmity. On the 26th of December, the king appeared for the last time at the bar of the convention; and M. Defeze read a defence which the counsel had prepared, and which was equally admired for the solidity of the argument and the beauty of the composition.

When the defence was finished, the king arose, and holding a paper in his hand, pronounced in a calm manner, and with a firm voice, what follows: "Citizens, you have heard my defence; I now speak to you, perhaps for the last time, and declare that my counsel have asserted nothing to you but the truth; my conscience reproaches me with nothing. I never was afraid of having my conduct investigated; but I observed with great uneasiness, that I was accused of giving orders for shedding the blood of the people on the 10th of August. The proofs I have given through my whole life of a contrary disposition, I hoped would have saved me from such an imputation, which I now solemnly declare is entirely groundless."

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But is condemned to death by a small majority.

The discussion was fatally closed on the 16th of January. After a sitting of near 34 hours, the punishment of death was awarded by a small majority of the convention, and several of these differed in opinion from the rest, respecting the time when it should be inflicted; some contending that it should not be put in execution till after the end of the war, while others proposed to take the sense of the people, by referring the sentence to the primary assemblies.

M. Defeze then solemnly invoked the assembly in the name of his colleagues, to consider by what a small majority the punishment of death was pronounced against the dethroned monarch. "Do not afflict France (added this eloquent advocate) by a judgment that will appear terrible to her, when five voices only

were presumed sufficient to carry it." He appealed to eternal justice, and sacred humanity, to induce the convention to refer their sentence to the tribunal of the people. "You have either forgotten or destroyed (said the celebrated M. Tronchet) the lenity which the law allows to criminals, of requiring at least two-thirds of the voices to constitute a definitive judgment."

The sentence was ordered to be executed in twenty-four hours.

The king and his family had been for some time kept separate from each other; but he was now allowed to see them, and to choose an ecclesiastic to attend him. The meeting, and, above all, the separation from his family, was tender in the extreme. On Monday the 21st January, at eight o'clock in the morning, the unfortunate monarch was summoned to his fate. He ascended the scaffold with a firm air and step. Raising his voice, he said, "Frenchmen, I die innocent; I pardon all my enemies; and may France"—at this instant the inhuman Santerre ordered the drums to beat, and the executioners to perform their office. When they offered to bind his hands, he started back as if about to resist; but recollected himself in a moment, and submitted. When the instrument of death descended, the priest exclaimed, "Son of St Louis, ascend to heaven." The bleeding head was held up, and a few of the populace shouted *Vive la Republique*. His body was interred in a grave that was filled up with quicklime, and a guard placed around till it should be consumed.

Thus fell Louis XVI. He possessed from nature a good understanding, which, however, was blunted by the early indulgences of a court. He had a strong sense of justice, and his humanity was perhaps extreme. One defect rendered his virtues of little value, which was the possession of an irresolute and unsteady character. Unambitious, and easily advised, he was without difficulty induced to change his purposes, especially by his queen, whose connexion with the house of Austria had always tended to render his counsels unpopular. Whether he was or was not connected with the foreign invaders of his country, posterity must decide; but all men of sense and moderation must be convinced that he was murdered by a band of ruffians. Indeed a sentence so infamous, and in all respects unjust, is not to be found in the records of history. The greater part of the charges brought against him were trifling. Those which seem to be of importance relate to conduct authorized by the constitution under which he acted; and that constitution declared his person inviolable. The severest punishment that he could incur by law, was not death, but deposition; and there is no doubt, that in putting him to death the French nation broke the social compact which their representatives made with him. In a political view, this tragical event was injurious to the republican cause throughout Europe. No man out of France ventured to justify it; and in all countries it excited the most violent indignation against the rulers of the new republic.

New enemies were now hastening to join the general league against France. We do not mean here to enter into a detail of the political struggles that occurred in any other country, than that in the narrative of whose revolution we are now engaged. It will therefore only be necessary to remark in general, that the British government at this time thought itself endangered by the propagation of those speculative opinions which had overturned

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overturnd the French monarchy. Almost all the men of property in the kingdom concurred with the ministry in thinking a war with France necessary for the purpose of securing the constitution at home. After the 10th of August the British minister had been recalled; but the new republic still suffered the former ambassador from France, M. Chauvelin, to remain in England.

The ostensible grounds of quarrel on the part of Great Britain were chiefly two; the decree of the 15th of November 1792, by which it was truly observed that encouragement to rebellion was held out to the subjects of every state, and that war was thereby waged against every established government. Of this decree the French executive council gave explanations, denying the fairness of the interpretation put upon it, and alleging, that the intention of the convention was only to give aid to such countries as *had already* acquired their freedom, and by a declaration of the general will requested aid for its preservation. But this explanation cannot be admitted. The decree expressly says, that the French nation will grant *assistance to all who wish to procure liberty*; and when it is considered what their notions of liberty are, it cannot be doubted but that their intention was to excite rebellion in foreign nations. The second point of dispute referred to the opening of the Scheldt. This river runs from Brabant through the Dutch territory to the sea. The Dutch had shut up the mouth of it, and prevented any maritime commerce from being carried on by the people of Brabant by means of the river. To render themselves popular in Brabant, the French had declared, that they would open the navigation of the Scheldt. But Great Britain had some time before bound herself by treaty with the Dutch to assist them in obstructing this navigation, and now declared to the French, that the project of opening the Scheldt must be renounced if peace with Great Britain was to remain. The French alleged, that by the law of nations navigable rivers ought to be open to all who reside on their banks; but that the point was of no importance either to France or England, and even of very little importance to Holland; that if the people of Brabant themselves chose to give it up, they would make no objection. It has been thought remarkable, that the Dutch gave themselves no trouble about the matter. They did not ask the assistance of England; and with that coolness which is peculiar to their character, the merchants individually declared, that if the Scheldt was opened, they could manage their commerce as well at Antwerp as at Amsterdam. But in all this there is nothing strange. Among the Dutch were many republicans, who wished for the downfall of the stadtholder. These rejoiced at every thing which distressed him, or had a tendency to render his office useless in the eyes of the people. Others, who thought differently, were afraid to speak their sentiments, as Dumourier was in their neighbourhood with a victorious army. The result of the whole was, that M. Chauvelin was commanded by the British government to leave this country. The French executive council gave powers to another minister, M. Maret, to negotiate, and requested a passport for him; but he was not suffered to land. The haughty republicans having thus far humbled themselves before the British government, at last, on the 1st of February 1793, on the motion of Brissot, the national convention decreed, among other articles, that "George king of England had never ceased since the revolution

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War declared  
against  
the king of  
England  
and stadtholder  
of Holland,

of the 10th of August 1792 from giving to the French nation proofs of his attachment to the concert of crowned heads; that he had drawn into the same lake the stadtholder of the United provinces; that, contrary to the treaty of 1783, the English ministry had granted protection to the emigrants and others who have openly appeared in arms against France; that they have committed an outrage against the French republic, by ordering the ambassador of France to quit Great Britain; that the English have stopped divers boats and vessels laden with corn for France, whilst, at the same time, contrary to the treaty of 1786, they continue the exportation of it to other foreign countries; that to thwart more efficaciously the commercial transactions of the republic with England, they have by an act of parliament prohibited the circulation of assignats. The convention therefore *declare*, that in consequence of these acts of hostility and aggression, the French republic is at war with the king of England and the stadtholder of the United Provinces.

The absurdity of pretending that any treaty with France made in 1783 could be violated by protecting the emigrants who fled from the fury of the convention, must be obvious to every reader. The convention was itself a rebellious usurpation of the government with which such a treaty was made. The prohibition of assignats was certainly contrary to no law, and was sanctioned by every motive of expediency, unless the convention could prove that all nations were bound by the law of nature to risk their own credit upon the credit of the French republic.

About a fortnight after this absurd declaration against Britain, war was likewise declared against Spain; and in the course of the summer France was at war with all Europe, excepting only Swisserland, Sweden, Denmark, and Turkey.

In the mean time General Dumourier, who was proceeding agreeably to his orders, made an attack upon Holland; but in doing this he dispersed his troops in such a manner as to expose them much to any attack on the side of Germany. He commanded General Miranda to invest Maestricht, while he advanced to block up Breda, and Bergen-op-zoom. The first of these places, viz. Breda, surrendered on the 24th of February; Klundert was taken on the 26th; and Gertruydenberg on the 4th of March. But here the triumphs of Dumourier ended. The sieges of Williamstadt and Bergen-op-zoom were vigorously but unsuccessfully pressed. On the 1st of March General Clairfait having passed the Roer, attacked the French posts, and compelled them to retreat with the loss of 2000 men.

The following day the archduke attacked them anew with considerable success. On the 3d the French were driven from Aix-la-Chapelle, with the loss of 4000 men killed and 1600 taken prisoners.

The siege of Maestricht was now raised, and the French retreated to Tongres, where they were also attacked, and forced to retreat to St Tron. Dumourier here joined them, but did not bring his army along with him from the attack upon Holland. After some skirmishes, a general engagement took place at Neerwinden. It was fought on the part of the French with great obstinacy; but they were at length overpowered by the number of their enemies, and perhaps also by the treachery of their commander. This defeat was fatal. The French lost 3000 men, and 6000 immediately

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And against  
Spain.

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Progress of  
Dumourier.

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He is de-  
feated.

France. immediately deserted and went home to France. Dumourier continued to retreat, and on the 22d he was again attacked near Louvain. He now, through the medium of Colonel Mack, came to an agreement with the Imperialists that his retreat should not be seriously interrupted. It was now fully agreed between him and the Imperialists, that while the latter took possession of Condé and Valenciennes, he should march to Paris, dissolve the convention, and place the son of the late king upon the throne.

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And joins the allies;

The rapid retreat and successive defeats of General Dumourier rendered his conduct suspicious. Commissioners were sent from the executive power for the purpose of discovering his designs. They dissembled, and pretended to communicate to him a scheme of a counter-revolution. He confessed his intention of dissolving the convention and the Jacobin club by force, which he said would not exist three weeks longer, and of restoring monarchy. On the report of these commissioners the convention sent Bournonville the minister of war to supersede and arrest Dumourier, along with Camus, Blancal, La Marque, and Quinette, as commissioners. The attempt on the part of these men was at least hazardous, to say no more of it; and the result was, that on the first of April Dumourier sent them prisoners to General Clairfait's head quarters at Tournay as hostages for the safety of the royal family. He next attempted to seduce his army from their fidelity to the convention; but he speedily found that he had much mistaken the character of his troops. Upon the report that their general was to be carried as a criminal to Paris, they were seized with sudden indignation; but when they found that an attempt was making to prevail with them to turn their arms against their country, their sentiments altered. On the 5th of April two proclamations were issued; one by General Dumourier, and the other by the prince of Saxe Cobourg, declaring that their only purpose was to restore the constitution of 1789, 1790, and 1791. Prince Cobourg announced that the allied powers wished merely to co-operate with General Dumourier in giving to France her constitutional king and the constitution she had formed for herself, declaring, on his word of honour, that he came not to the French territory for the purpose of making conquests. On the same day Dumourier went to the advanced guard of his own camp at Maulde. He there learned that the corps of artillery had risen upon their general, and were marching to Valenciennes; and he soon found that the whole army had determined to stand by their country. Seven hundred cavalry and 800 infantry was the whole amount of those that deserted with Dumourier to the Austrians, and many of them afterwards returned.

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but his army refuse to act with him.

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Proclamations of the Imperial commander in chief.

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State of France at this period.

By the defection of Dumourier, however, the whole army of the north was dissolved, and in part disbanded, in presence of a numerous, well-disciplined, and victorious enemy. The Prussians were at the same time advancing on the Rhine with an immense force, and about to commence the siege of Mentz. In the interior of the republic more serious evils if possible were arising. In the departments of La Vendée and La Loire, or the provinces of Brittany and Poitou, immense multitudes of emigrants and other royalists had gradually assembled in the course of the winter. They professed to act in the name of Monsieur, as regent of France.

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About the middle of March they advanced against Nantz to the amount of 40,000. In the beginning of April they defeated the republicans in two pitched battles, and possessed themselves of 50 leagues of country. They even threatened by their own efforts to shake the new republic to its foundation. On the 8th of April a congress of the combined powers assembled at Antwerp. It was attended by the prince of Orange and his two sons, with his excellency Vander Spiegel, on the part of Holland; by the duke of York and Lord Auckland on the part of Great Britain; by the prince of Saxe Cobourg, Counts Metterinch, Starenberg, and Mercy Dargenteau, with the Prussian, Spanish, and Neapolitan envoys. It was here determined to commence active operations against France. The prince of Cobourg's proclamation was recalled, and a scheme of conquest announced.

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Congress of the combined powers.

Commissioners from the convention now set up the standard of the republic anew, and the scattered battalions flocked around it. General Dampierre was appointed commander, and on the 13th he was able to resist a general attack upon his advanced posts. On the 14th, his advanced guard yielded to superior numbers, but on the 15th was victorious in a long and well-fought battle. On the 23d the Austrians were again repulsed, and on the 1st of May General Dampierre was himself repulsed in an attack upon the enemy. On the 8th another engagement took place, in which the French general was killed by a cannon ball. On the 23d a very determined attack was made by the allies upon the French fortified camp of Famars, which covered the town of Valenciennes. The French were overcome, and in the night abandoned their camp. In consequence of this the allies were enabled to commence the siege of Valenciennes; for Condé had been blockaded from the 1st of April.

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The republican army again assembled.

About the same time General Custine on the Rhine made a violent but unsuccessful attack upon the Prussians, in consequence of which they were soon enabled to lay siege to Mentz. The Corsican general Paoli revolted at this period; and the new republic, assaulted from without by the whole strength of Europe, was undermined by treachery and faction within.

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Revolt of Paoli.

While the country was in a state verging upon utter ruin, parties in the convention were gradually waxing more fierce in their animosity; and regardless of what was passing at a distance, they seemed only anxious for the extermination of each other. In the month of March, the celebrated *Revolutionary Tribunal* was established for the purpose of trying crimes committed against the state; and the Girondist party, the mildness of whose administration had contributed not a little to increase the evils of their country, began to see the necessity of adopting measures of severity. But the public calamities, which now rapidly followed each other in succession, were ascribed by their countrymen to their imbecility or perfidy. This gave to the party of the *Mountain* a fatal advantage. On the 15th of April the communes of the 48 sections of Paris presented a petition, requiring that the chiefs of the Girondists therein named should be impeached and expelled from the convention. This was followed up on the 1st of May by another petition from the suburb of St Antoine. The Girondist party in the mean time impeached Marat, but he was acquitted by the jury at his trial. The

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State of parties in France, and the revolutionary tribunal established.

T Mountain,

France. Mountain, by the assistance of the Jacobin club, had now acquired a complete ascendancy over the city of Paris. The Girondists or Brissotines proposed therefore to remove the convention from the capital; and to prevent this, the *Mountain* resolved to make the same use of the people of the capital against the Girondist party that they had formerly done against the monarch on the 10th of August. It is unnecessary to state in detail all the tumults that occurred either in Paris or in the convention during the remaining part of the month of May. On the 31st, at four o'clock in the morning, the tocsin was sounded, the generale was beat, and the alarm guns fired. All was commotion and terror. The citizens flew to arms, and assembled round the convention. Some deputations demanded a decree of accusation against 35 of its members. The day, however, was spent without decision. On the afternoon of the 1st of June an armed force made the same demand. On the 2d of June this was repeated, the tocsin again sounded, and an hundred pieces of cannon surrounded the national hall. At last Barrere mounted the tribune. He was considered as a moderate man, and respected by both parties; but he now artfully deserted the Girondists. He invited the denounced members voluntarily to resign their character of representatives. Some of them complied, and the president attempted to dissolve the sitting; but the members were now imprisoned in their own hall. Henriot, commander of the armed force, compelled them to remain; and the obnoxious deputies, amounting to upwards of 90 in number, were put under arrest, and a decree of denunciation against them signed.

360 The Mountain party get the upper hand. It is obvious, that on this occasion the liberties of France were trodden under foot. The minority of the national representatives, by the assistance of an armed force raised in the capital, compelled the majority to submit to their measures, and took the leading members prisoners. Thus the city of Paris assumed to itself the whole powers of the French republic; and the nation was no longer governed by representatives freely chosen, but by a minority of their members, whose sentiments the city of Paris and the Jacobin club had thought fit to approve of. Human history is a mass of contradictions. The *Mountain* party came into power by preaching liberty, and by violating its fundamental principles. How far the plea of political necessity may excuse their conduct, we shall not venture to decide explicitly. Certain it is, however, that they soon commenced, both at home and abroad, a career of the most terrible energy that is to be found in the annals of nations.

361 Several cities and departments revolt in consequence. The first result of their victory in the capital was calamitous to the republic at large. Brissot and some other deputies escaped, and endeavoured to kindle the flames of civil war. In general, however, the influence of the Jacobin club, and of its various branches, was such, that the north of France adhered to the convention as it stood; but the southern departments were speedily in a state of rebellion. The department of Lyons declared the *Mountain* party outlawed. Marseilles and Toulon followed the example of Lyons, and entered into a confederacy, which has since been known by the appellation of *Federalism*. The departments of La Gironde and Calvades broke out into open revolt. In short, the whole of France was in a state of violent convulsion. Still, however, the enthusiastic garrisons

of Mentz and Valenciennes protected it against the immediate entrance of a foreign force, and allowed leisure for one of its internal factions to gain an ascendancy, and thereafter to protect its independence. In the mean time, the political enthusiasm of all orders of persons was such, that even the female sex did not escape its contagion. A young woman of the name of Charlotte Cordé, in the beginning of July, came from the department of Calvades to devote her life for what she thought the cause of freedom and of her country. She requested an interview with *Marat*, the most obnoxious of the *Mountain* party. Having obtained it, and conversed with him calmly for some time, she suddenly plunged a dagger in his breast, and walked carelessly out of the house. She was immediately seized and condemned. At the place of execution she behaved with infinite constancy, shouting *Vive la republique*. The remains of *Marat* were interred with great splendor, and the convention attended his funeral. His party perhaps derived advantage from the manner of his death, as it seemed to fasten the odious charge of assassination upon their antagonists, and gave them the appearance of suffering in the cause of liberty. The truth is, that assassination was sanctioned by both parties under pretence of defending the liberties of the republic.

362 Marat murdered by a woman. One of the first acts of the *Mountain* junto after their triumph was to finish the republican constitution. Previous to their fall, the Girondists had brought forward the plan of a constitution, chiefly the work of Condorcet; but it was never sanctioned by the convention, and was too intricate to be practically useful. The new constitution now framed, which was afterwards sanctioned by the nation, but was never put in practice, abolished the former mode of electing the representatives of the people through the medium of *electoral* assemblies, and appointed them to be chosen immediately by the *primary* assemblies, which were to consist of from 200 to 600 citizens, each man voting by ballot or open vote at his option. There was one deputy for every 40,000 individuals, and population was the sole basis of representation. The elections were to take place every year on the 1st of May. *Electoral* assemblies were, however, retained for one purpose. Every 200 citizens in the primary assemblies named one elector; and an assembly of all the electors of the department was afterwards held, which elected candidates for the *executive council*, or ministry of the republic. The legislative body chose out of all this list of candidates the members of the executive council. One half of this council was renewed by each legislature in the last month of the session. Every law, after being passed by the legislative body, was sent to the department. If in more than half of the departments the tenth of the primary assemblies of each did not object to it, it became effectual. Trial by jury was established. National conventions might be called for altering the constitution, and were to be called, if required by the tenth of the primary assemblies of each department in a majority of the departments.

The publication of this constitution procured no small degree of applause to the convention and the *Mountain* party. The rapidity with which it was formed (being only a fortnight) seemed to cast a just reproach upon the slowness of their antagonists, and it was regarded as a proof of their being decidedly serious.

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Fall of  
Conde and  
Valenciennes.

rious in the cause of republicanism. No regard, however, was paid to it by the convention, which declared itself permanent, nor indeed did it seem possible to carry it into execution.

We have mentioned that Condé was invested from the beginning of April. It did not yield till the 10th of July, when the garrison was so much reduced by famine and disease, that out of 4000 men, of which it originally consisted, only 1500 were fit for service. The eyes of all Europe were in the mean time fixed upon the siege of Valenciennes. Colonel Moncrieff had contended, that batteries ought immediately to be placed under the walls without approaching it by regular parallels; but the Imperial engineer Mr Ferraris asserted, that the work of the great Vauban must be treated with more respect; and his opinion was adopted by the council of war. The trenches were opened on the 14th of June. Few sallies were attempted by the garrison, on account of the smallness of their number. The inhabitants at first wished to surrender; but the violence of the bombardment prevented their assembling or giving much trouble on that head to General Ferrand the governor. Much of the labour of the siege consisted of mines and countermines. Some of these having been successfully sprung by the allies, the town was surrendered on the 27th of July by capitulation to the duke of York, who took possession of it in behalf of the emperor of Germany. The siege of Mentz was at the same time going on. It suffered much from famine. At last, after an unsuccessful attempt by the French army on the Rhine for its relief, it surrendered on the 22d of July.

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The allied  
powers divided as to  
their future proceeding.

At the termination of the siege of Valenciennes it would appear that the allied powers were at a loss how to proceed next. The Austrian commanders are said to have presented two plans: The first was to penetrate to Paris by the assistance of the rivers which fall into the Seine; the other was to take advantage of the consternation occasioned by the surrender of Valenciennes, and with 50,000 light troops to penetrate suddenly to Paris, while a debarkation should be made on the coast of Brittany to assist the royalists. The proposal of the British ministry was, however, adopted, which was, to divide the grand army, and to attack West Flanders, beginning with the siege of Dunkirk. This determination proved ruinous to the allies. The French found means to vanquish in detail that army, which they could not encounter when united.

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Unfortunate consequences of the division of their forces.

It has been said that the duke of York was in secret correspondence with Omeron the governor of Dunkirk; but the latter was removed before any advantage could be taken of his treachery. On the 24th of August the duke of York attacked and drove the French outposts into the town, after an action in which the Austrian General Dalton was killed. A naval armament was expected from Great Britain to co-operate in the siege, but it did not arrive. In the mean time, a strong republican force menaced the covering army of the allies, which was commanded by General Freytag. He was soon attacked and totally routed. The siege was raised. The British lost their heavy cannon and baggage, with several thousand men; and the convention, believing that their general Houchard could have cut off the duke of York's retreat, tried and executed him for this neglect of duty.

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Prince Cobourg and General Clairfait in the mean time unsuccessfully attempted to besiege Cambray and Bouchain. Quesnoy was, however, taken by General Clairfait on the 11th of September; and here finally terminated for the present campaign the success of the allies in the Netherlands.

A considerable part of the French army of the north took a strong position near Maubeuge, where they were blockaded by Prince Cobourg; but upon the 15th and 16th of October he was repeatedly attacked by the French troops under General Jourdan, who succeeded Houchard. The French had now recovered their vigour. They brought into the field a formidable train of artillery, in which were many 24 pounders. Commissioners from the convention harangued the soldiers, threatened the fearful, and applauded the brave. Crowds of women, without confusion, went through the ranks, distributing spirituous liquors in abundance, and carrying off the wounded. The attacks were repeated and terrible on both sides; but the Austrians had considerably the disadvantage, and Prince Cobourg retired during the night. The French now menaced maritime Flanders. They took Furnes and besieged Nieuport. A detachment of British troops ready to sail to the West Indies were hastily sent to Ostend, and prevented for the present the farther progress of the French.

Such was the multiplicity of the events that now occurred in France, that it is difficult to state the outlines of them with any tolerable perspicuity. We have already mentioned the extensive dissensions that occurred throughout the republic in consequence of the triumph of the Mountain party on the 31st of May. The department of Calvades was first in arms against the convention under the command of General Felix Wimpfen; but before the end of July the insurrection was quieted, after a few slight skirmishes. But the federalism of the cities of Marseilles, Lyons, and Toulon, still remained. Lyons was attacked on the 8th of August by the conventional troops. Several actions followed, which were attended with great loss both on the part of the assailants and of the besieged. The city was reduced almost to ruins; but it held out during the whole month of September. The besieging general Kellerman was removed from his command, on account of his supposed inactivity; and the city surrendered on the 8th of October to General Doppet, a man who had lately been a physician. Such was the rage of party zeal at this time, that the walls and public buildings of Lyons were ordered to be destroyed, and its name changed to that of *Ville Affranchie*. Many hundreds of its citizens were dragged to the scaffold on account of their alleged treasonable resistance to the convention. The victorious party, wearied by the slow operation of the guillotine, at last destroyed their prisoners in multitudes, by firing grape-shot upon them. Such indeed was the unrelenting character of the Mountain at this time, not only here but through the whole republic, that they themselves pretended not to excuse it, but declared that terror was with them *the order of the day*.

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Lyons besieged by the conventional troops, and taken.

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Unrelenting character of the conquerors.

In the end of July General Cartaux was sent against Marseilles. In the beginning of August he gained some successes over the advanced federalist troops. On the 24th he took the town of Aix, and the Marseillois

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The Marseillois obliged to submit.

France. submitted. But the leading people of the important town and harbour of Toulon entered into a negotiation, and submitted to the British admiral Lord Hood, under condition that he should preserve as a deposit the town and shipping for Louis XVII. and under the stipulation that he should assist in restoring the constitution of 1789. The siege of Toulon was commenced by General Cartaux in the beginning of September. It continued without much vigour during that and the whole of the succeeding month. Neapolitan, Spanish, and English troops, were brought by sea to assist in its defence. In the beginning of November, General Cartaux was removed to the command of the army in Italy, and General Dugommier succeeded him. General O'Hara arrived with reinforcements from Gibraltar, and took upon him the command of the town, under a commission from his Britannic majesty. On the 30th of November, the garrison made a powerful sally to destroy some batteries that were erecting upon heights which commanded the city. The French were surprised, and the allies succeeded completely in their object; but, elated by the facility of their conquest, the allied troops rushed forward in pursuit of the flying enemy, contrary to their orders, and were unexpectedly met by a strong French force that was drawn out to protect the fugitives. General O'Hara now came from the city to endeavour to bring off his troops with regularity. He was wounded in the arm and taken prisoner. The total loss of the allies in this affair was estimated at nearly one thousand men. The French had now mustered in full force around Toulon, and prepared for the attack. It was begun on the 19th of December in the morning, and was chiefly directed against Fort Mulgrave, defended by the British. This fort was protected by an entrenched camp, 13 pieces of cannon, 36 and 24 pounders, &c. 5 mortars, and 3000 troops. Such was the ardour of assault, that it was carried in an hour, and the whole garrison was destroyed or taken. The allies now found it impossible to defend the place; and in the course of the day embarked their troops, after having set on fire the arsenal and ships. A scene of confusion here ensued, such as has not been known in the history of modern wars. Crowds of people of every rank, age, and sex, hurried on board the ships, to avoid the vengeance of their enraged countrymen. Some of the inhabitants began to fire upon their late allies; others in despair were seen plunging into the sea, making a vain effort to reach the ships; or putting an end at once to their own existence upon the shore. Thirty-one ships of the line were found by the British at Toulon; thirteen were left behind; ten were burnt; four had been previously sent to the French ports of Brest and Rochefort, with 5000 republicans who could not be trusted; and Great Britain finally obtained by this expedition only three ships of the line and five frigates.

On the side of Spain the war produced nothing of importance; and in the mountainous country of Piedmont it went on slowly. Nice and Chambery were still retained by the French; but more terrible scenes were acting in other quarters. In La Vendée a most bloody war was persisted in by the royalists. In that quarter of the country the language of the rest of France is little understood. The people were superstitious, and had acquired little idea of the new opinions that had

lately been propagated in the rest of the empire. They were chiefly headed by priests, and regarded their cause as a religious one. Their mode of warfare usually was, to go on in their ordinary occupations as peaceable citizens, and suddenly to assemble in immense bands, inasmuch that at one time they were said to amount to 150,000 men. They besieged Nantz and the city of Orleans, and even Paris itself was not thought altogether safe from their enterprises. The war was inconceivably bloody. Neither party gave quarter; and La Vendée proved a dreadful drain to the population of France. On the 28th of June, the conventional general Biron drove the royalists from Lucon; and Nantz was relieved by General Beysser. After some success, General Westerman was surprised by them, and compelled to retreat to Parthenay. In the beginning of August the royalists were defeated by General Rossignol; but on the 10th of that month, under Charette their commander in chief, they again attacked Nantz, but suffered a repulse. It would be tedious to give a minute detail of this obscure but cruel war. The royalists were often defeated, and seemingly dispersed, but as often arose in crowds around the astonished republicans. At last, however, about the middle of October, they were completely defeated, driven from La Vendée, and forced to divide into separate bodies. One of these threw itself into the island of Noirmoutier, where they were subdued; another took the road of Maine and Brittany, where they struggled for some time against their enemies, and were at last cut to pieces or dispersed.

The royalists had long expected assistance from England; and an armament under the earl of Moira was actually fitted out for that service, but it did not arrive till too late, and returned home without attempting a landing.—The Mountain party always disgraced their successes by dreadful cruelties. Humanity is shocked, and history would almost cease to obtain credit, were we to state in detail the unrelenting cruelties which were exercised against the unfortunate royalists, chiefly by Carrier, a deputy from the convention, sent into this quarter with unlimited powers. Multitudes of prisoners were crowded on board vessels in the Loire, after which the vessels were sunk. No age or sex was spared; and these executions were performed with every circumstance of wanton barbarity and insult.

On the side of the Rhine a great variety of events occurred during the months of August and September. Several engagements at first took place, in which the French were, upon the whole, successful. In September, however, Landau was invested by the combined powers; and it was resolved to make every possible effort to drive the French from the strong lines of Weissembourg, on the river Lauter. On the 13th of October, the Austrian general Wurmsler made a grand attack upon these lines. The French say that their generals betrayed them, and suffered the lines to be taken almost without resistance. The general of the allies confessed that the lines might have held out for several days. The French retreated to Hagenau, from which they were driven on the 18th; and suffered two other defeats on the 25th and 27th. Some of the principal citizens of Strasbourg now sent a private deputation to General Wurmsler, offering to surrender the town, to be preserved as a deposit to be restored to Louis

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Toulon conditionally submits to Lord Hood,

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who is at length obliged to evacuate it.

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Proceedings of the royalists in La Vendée.

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Horrid cruelty of the Mountain party.

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Progress of the allies on the Rhine.

France. 1793. Louis XVII. General Wurmser refused to accept of it upon these terms, insisting upon an absolute surrender to his Imperial Majesty. In consequence of the delay occasioned by disagreement, the negotiation was discovered, and the citizens of Strasbourg engaged in the plot were seized by St Just and Lebas, commissioners from the convention, and brought to the scaffold. Prodigious efforts were now made by the French to recover their ground in this quarter. General Irembert was shot at the head of the army on the 9th of November, upon a charge, probably ill-founded, of treachery in the affair of the lines of Weissenbourg. On the 14th, however, Fort Louis was taken by the allies, not without suspicion of treachery in the governor. But here the success of General Wurmser might be said to terminate. On the 21st the republican army drove back the Austrians, and penetrated almost to Hagenau. An army from the Moselle now advanced to co-operate with the army of the Rhine. On the 17th the Prussians were defeated near Sarbruck. Next day their camp at Bliescastel was stormed, and the French advanced to Deux Ponts. On the 29th and 30th the French were repulsed with great loss in two violent attacks made on the duke of Brunswick near Lautern. But it now appeared that the French had come into the field with a determination to conquer whatever it might cost. Every day was a day of battle, and torrents of blood were shed on both sides. The allies had the advantage of possessing the ground, which, in that quarter, at such a late season of the year, is very strong on account of its inequalities and morasses. In military skill, the French officers and those of the allies were perhaps nearly equal; but the French army was by far the most numerous; and although not a match in point of discipline, yet it derived no small superiority from the enthusiasm with which the troops were animated. On the 8th of December, under the command of General Pichegru, the French carried the redoubts which covered Hagenau by means of the bayonet.

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The French at length successful in that quarter.

This modern instrument of destruction, against which no defensive weapon is employed, is always most successful in the hands of the most intrepid; and it was now a dreadful engine in the hands of French enthusiasm.—The finest troops that ever Europe produced were unable to withstand the fury of the republicans, which seemed only to increase in proportion to the multitude of companions that they lost. On the 22d the allies were driven with immense slaughter from Hagenau, notwithstanding the immense works they had thrown up for their defence. The entrenchments on the heights of Reilshoffen, Jaudershoffen, &c. were considered as more impregnable than those of Jemappe. They were stormed by the army of the Moselle and the Rhine, under Generals Hoche and Pichegru. On the 23d and 24th, the allies were pursued to the heights of Wrotte. On the 26th, the entrenchments there were forced by the bayonet, after a desperate conflict. On the 27th, the republican army arrived at Weissenbourg in triumph. General Wurmser retreated across the Rhine, and the duke of Brunswick hastily fell back to cover Mentz. The blockade of Landau, which had lasted four months, was raised. Fort Louis was evacuated by the allies, and Kaiserlatern, Germerheim, and Spires, submitted to the French.—During this last month of the year 1793, the loss of men on both sides

in this quarter was immense, and unexampled in the history of modern war. It is even said that it might amount to more than 70,000 or 80,000 men.

Thus far we have attended to the military affairs of the republic for some time past. Very violent efforts were in the mean time made at Paris by the new administration, established under the auspices of the Jacobin club, and of the party called the *Mountain*. The new republican constitution had been presented to the people in the primary assemblies, and accepted. The business, therefore, for which the convention was called together, that of forming a constitution for France, was at an end; and it was proposed that they should dissolve themselves, and order a new legislative body to assemble, according to the rules prescribed by that constitution. This was, no doubt, the regular mode of procedure; but the ruling party considered it as hazardous to convene a new assembly, possessing only limited powers, in the present distracted state of the country. It was indeed obvious, that France at this time stood in need of a dictatorship, or of a government possessed of more absolute authority than can be enjoyed by one that acts, or even pretends to act, upon the moderate principles of freedom. It was therefore determined that the convention should remain undissolved till the end of the war; and that a *revolutionary* government, to be conducted by its members, should be established, with uncontrolled powers. Committees of its own body were selected for the purpose of conducting every department of business. The chief of these committees was called the *committee of public safety*. It superintended all the rest, and gave to the administration of France all the secrecy and dispatch which have been accounted peculiar to a military government, together with a combination of skill and energy hitherto unknown among mankind. A correspondence was kept up with all the Jacobin clubs throughout the kingdom. Commissioners from the convention were sent into all quarters, with unlimited authority over every order of persons. Thus a government possessed of infinite vigilance, and more absolute and tyrannical than that of any single despot, was established; and the whole transactions and resources of the state were known to the rulers. On the 23d of August, Barrere, in name of the committee of public safety, procured the celebrated decree to be passed for placing the whole French nation in a *state of requisition* for the public service. "From this moment (says the decree) till that when all enemies shall have been driven from the territory of the republic, all Frenchmen shall be in permanent readiness for the service of the army. The young men shall march to the combat; the married men shall forge arms, and transport the provisions; the women shall make tents and clothes, and attend in the hospitals; the children shall make lint of old linen; the old men shall cause themselves to be carried to the public squares, to excite the courage of the warriors, to preach hatred against the enemies of the republic; the cellars shall be washed to procure saltpetre; the saddle-horses shall be given up to complete the cavalry; the unmarried citizens, from the age of 18 to 25, shall march first, and none shall send a substitute; every battalion shall have a banner, with this inscription, *The French nation risen against tyrants*." The decree also regulates the mode of organizing this mass. A decree more ty-

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376  
Violent efforts of the Mountain party.

377  
France decreed to be in a state of requisition.

rannical

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rannical than this was never made by an eastern despot; and when it was first published, foreigners were at a loss whether to regard it as a sublime effort of a powerful government, or as a wild project which could produce nothing but confusion. The effects of it, however, have been truly terrible. We have already mentioned some of them in the bloody contest which occurred upon the Rhine, and Europe was soon destined to bear witness to still more extraordinary events.

378  
General  
Custine  
tried and  
executed.

In the end of July, General Custine was brought to trial, and executed, in consequence of a variety of accusations of infidelity to his trust and disrespect to the convention. The queen was next brought to trial before the revolutionary tribunal, on the 15th of October. The charges against her were very various; but the chief tendency of them was to prove that she had always been hostile to the revolution, and had excited all the efforts that had been made by the court against it. On the 16th of October, this beautiful woman, whom fortune once placed so high, ended her days on a scaffold, after a mock trial, in which no regard was paid either to justice or decency. She behaved with much dignity and composure, and appeared deeply impressed with a sense of religion. The members of the convention who had been at the head of the Girondist party, and had either been detained in prison since the 31st of May, or seized in the departments to which they had retired, were afterwards brought to trial.

379  
Murder of  
the queen.

380  
Execution  
of the head  
of the Gi-  
rondist  
party,

On the 30th of October, 21 of them were executed, viz. Brislot, Vergniaud, Genfonné, Duprat, Lehardi, Ducos, Fonfrede, Boileau, Gardien, Duchatel, Sillery, Fauchet, Dufriche, Duperret, La Source, Beauvais, Mainville, Antiboul, Vigée, and Lacaze. Seventy-one were still detained in confinement. The duke of Orleans was afterwards condemned, on a charge of having aspired to the sovereignty from the beginning of the revolution. His execution gave satisfaction to all parties. His vote for the punishment of death upon the trial of the late king had done him little honour even in the opinion of the Mountain, and had rendered him odious to all the rest of mankind.

381  
and of the  
duke of Or-  
leans.

382  
Executions  
become  
prodigiously  
common.

The execution of persons of all ranks, particularly of priests and nobles, became now so common, that it would be in vain to attempt to give any detail of them. Every person brought before the revolutionary tribunal was condemned as a matter of course. The Jacobins seemed insatiable in their thirst after blood, and the people at large appeared to regard their conduct with unaccountable indifference.

383  
A new table  
of weights  
and mea-  
sures esta-  
blished.

When the human mind is once roused, its activity extends to every object. At this time a new table of weights and measures was established by the convention, in which the decimal arithmetic alone is employed. The court of Spain had the liberality, notwithstanding the war, to suffer M. Mechain to proceed in his operations for measuring a degree of the meridian in that country. He carried on his series of triangles from Barcelona to Perpignan; and from this place the mensuration was continued to Paris. M. de Lambre, and his pupil M. le Francois, also measured a degree of latitude in the vicinity of the metropolis. In all, 12 degrees of the meridian were measured; of which the mean is 57027 toises, and by this the universal standard of measure is calculated. M. M. de Borda and Cassini determined the length of a pendulum that swings se-

conds, *in vacuo*, and in a mean temperature at Paris, to be 3 feet and 8,06 lines. M. M. Lavoisier and Hauy found that a cubic foot of distilled water at the freezing point weighs *in vacuo* 70 pounds and 60 gros French weight. We shall insert a table of the measures and weights now established.

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LONG MEASURE.

Metres.		French Toises.
10,000,000	= a quadrant of the meridian which is the principle on which the new measure is founded	5132430
100,000	= an hundredth part of a quadrant, or decimal degree of the meridian	51324
1000	= a <i>milliare</i> , or mile	513
100	= a stadium	} Agrarian measure { 51.3243
10	= a perch	
		Feet. Inch. Lines.
1	= a <i>metre</i> , or rectilinear unit	3 0 11.44
$\frac{1}{10}$ or 0.1	= a <i>decimetre</i> , or palm	0 3 8.344
$\frac{1}{100}$ or 0.01	= a <i>centremetre</i> , or digit	0 0 4.434
$\frac{1}{1000}$ or 0.001	= a <i>millimetre</i>	0 0 .443

SUPERFICIAL MEASURE.

Sq. Metres.		Sq. Feet.
10,000	= an <i>are</i> , or superficial unit, being a square the side of which is 100 metres in length	94831
1000	= a <i>deciare</i> , or tenth of an <i>are</i> ; a superficies an hundred metres long, and ten broad	9483.1
100	= a <i>centiare</i>	948.31

MEASURES OF CAPACITY.

Cub. decimetres.		Paris Pints.	Paris Bush.
1000	= the cubic <i>metre</i> , or cade or tun	1051 $\frac{1}{2}$	78.9
100	= <i>decicade</i> , or <i>setier</i>	105 $\frac{1}{2}$	7.89
10	= <i>centicade</i> , or bushel	10 $\frac{1}{2}$	.789
1	= cubic <i>decimetre</i> , or pint	1 $\frac{1}{5}$	.0789

WEIGHTS.

Cub. decimetres of water.		French Pounds.
1000	= the weight of a cubic <i>metre</i> , or cade of water, is called a <i>bar</i> or <i>millier</i>	2044.4
100	= $\frac{1}{10}$ of a <i>bar</i> , or <i>decibar</i> , or quintal	204.44
10	= $\frac{1}{100}$ of a <i>bar</i> , or <i>centibar</i> , or <i>decal</i>	20.444
		lb. oz. gros. grains.
1	= the weight of a cubic decimetre of water is called a <i>grave</i> , or pound	2 8 5 49
.1	= $\frac{1}{10}$ of a <i>grave</i> , or <i>decigrave</i> , or ounce	0 3 2 12.1
.01	= $\frac{1}{100}$ of a <i>grave</i> , or <i>centigrave</i> , or dram	0 0 2 44.41
.001	= the weight of a cubic <i>centimetre</i> of water, is named a <i>gravet</i> , or <i>maille</i>	0 0 0 18.841
.0001	= <i>decigravet</i> , or grain	0 0 0 1.8841
.00001	= <i>centigravet</i>	8 0 0 0.18841

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A piece of silver coin weighing a *centigrave*, and a *franc* of silver, according to the former standard, will be worth 40 sols 10 $\frac{1}{2}$  deniers. The *milliare*, or thousand *metres*, is substituted for the mile; and the *are* for the arpent in land-measure. The latter two are to each other as 49 to 25. The astronomical circles with which M. M. de Borda and Cassini made the observations, are divided according to this plan. The quadrant contains 100 degrees, and each degree 100 minutes. Hence the minute of a great circle on our globe is equal to a *milliare*, or new French mile. If, for the reduction of this measure, we estimate the Paris toise, according to the comparison made with the standard kept in the Royal Society of London, at 6.3925 English feet, the *milliare* or minute will be equal to 1093.633 yards, and the *metre* 3.280899 feet.

384  
A new kalendar formed.

At the same period a new kalendar was formed.— By it the year is made to begin with the autumnal equinox, and is divided into 12 months. These are called Vindemiaire, Brumaire, Frimaire, Nivose, Ventose, Pluiose, Germinal, Floreal, Prairial, Messidor, Thermidor, and Fructidor. The months consist of 30 days each, and are divided into three decades. The days of each decade are known by the names of Primidi, Duodi, Tridi, &c. to Decadi; and the day of rest is appointed for every tenth day, instead of the seventh. The day (which begins at midnight) is distributed into ten parts, and these are decimally divided and subdivided. Five supernumerary days are added every year after the 30th of Fructidor. To these is given the absurd appellation of *Sans Culotides*, a word borrowed from a term of reproach (*sans culotte*), which had often been bestowed on the republican party from the meanness of their rank and fortune; but which that party now attempted to render honourable and popular. The childish folly of this innovation has struck every person with surprise, as it can serve no good purpose whatever. It is a wonderful instance of the waywardness of the human mind, which can occupy itself one moment with deeds of savage barbarity, and the next with a matter so unimportant as the artificial division of time.

385  
Decay of religion.

The religion of France had been gradually losing its influence; and on the 7th of November, Gobet, bishop of Paris, along with a great multitude of other ecclesiastics, came into the hall of the convention, and solemnly resigned their functions and renounced the Christian religion. All the clergymen, whether Protestant or Catholic, that were members of the convention, followed this example, excepting only Gregoire, whom we formerly mentioned as having been one of the first priests that joined the *Tiers Etat* after the meeting of the States General. He had the courage to profess himself a Christian, although he said that the emoluments of his bishopric were at the service of the republic. With the acclamations of the convention, it was decreed that the only French deities hereafter should be Liberty, Equality, Reason, &c. and they would seem to have consecrated these as a kind of new objects of worship.— What political purpose the leaders in the convention intended to serve by this proceeding does not clearly appear; unless, perhaps, their object was to render the French manners and modes of thinking so completely new, that it should never be in their power to return to the state from which they had just emerged, or to unite

in intercourse with the other nations of Europe. The populace, however, could not at once relinquish entirely the religion of their fathers. The commune of Paris ordered the churches to be shut up, but the convention found it necessary to annul this order; and Robespierre gained no small degree of popularity by supporting the liberty of religious worship on this occasion. Hebert and Fabre d'Eglantine, who led the opposite party, hastened their own fall by this ill-judged contempt of popular opinion.

For, now that the republic saw itself successful in all quarters, when the Mountain party and the Jacobins had no rival at home, and accounted themselves in no immediate danger from abroad, they began to split into factions, and the fiercest jealousies arose. The Jacobin club was the usual place in which their contels were carried on; and at this time Robespierre acted the part of a mediator between all parties. He attempted with great art to turn their attention from private animosities to public affairs. He spread a report that an invasion of Great Britain was speedily to take place. He therefore proposed that the Jacobin club should set themselves to work to discover the vulnerable parts of the British constitution and government. They did so: They made speeches, and wrote essays without number. And in this way was the most fierce and turbulent band of men that ever perhaps existed in any country occupied and amused for a very considerable time. What is no less singular, a great number of British subjects favoured the plans of these reforming Atheists, and, under the specious appellation of the *Friends of the People*, acted in concert with the French Jacobins.

386  
Quarrels between the Mountain and Jacobins.

The winter passed away in tolerable quietness, and no military enterprise was undertaken either by the allies or by the French. On the 1st of February, Barrere asserted in the Convention that the confederate powers were willing *provisionally* to acknowledge the French republic, to consent to a cessation of hostilities for two years, at the end of which a lasting peace should be ratified by the French people. But this proposal the convention declared itself determined to reject, as affording to the other nations of Europe the means of undermining their new government. In the mean time, the revolutionary government was gradually becoming more vigorous. Thirty committees of the convention managed the whole business of the state, without sharing much of the direct executive government, which rested in the committee of public safety. These different committees were engaged in the utmost variety of objects. The ruling party had no competitors for power. Without confusion or opposition, therefore, the most extensive plans were rapidly carried into effect. The convention was little more than a court in which every project was solemnly registered. In the same session 30 decrees would sometimes be passed upon objects the most widely different. The finances were under one committee, at the head of which was Cambon.— This committee found resources for the most lavish expenditure. The assignats were received as money throughout the state; and thus a paper mill was said to have become more valuable than a mine of gold. Their credit was supported by an arbitrary law regulating the *maximum* or highest price of all provisions, and by the immense mass of wealth which had come into the hands of the convention by seizing the church lands, and by

387  
A provisional acknowledgment of the republic by the allies rejected by the convention.  
388  
Vigorous state of the revolutionary government.

389  
Management of the finances and other resources of the nation.  
consignating

France. confiscating the property of royalists, emigrants, and persons condemned by the revolutionary tribunal. So 1794. unequally had property been divided under the ancient government, that by means of these confiscations about seven-tenths of the national territory was supposed to be in the hands of the public. To this was added the plunder of the churches, consisting of gold and silver vases, and utensils employed in divine worship, along with other articles of less value; among which may be mentioned the innumerable church bells, which were regarded as sufficient for the manufacture of 15,000 pieces of cannon. These resources formed a mass of property such as never was possessed by any government.

Other committees were engaged in very different objects. Highways were constructed, and canals planned and cut throughout the country. Immense manufactories of arms were everywhere established. At Paris alone 1100 muskets were daily fabricated, and 100 pieces of cannon cast every month. Public schools were assiduously instituted, and the French language taught in its purity from the Pyrenees to the Rhine. The French convention possessed immense resources, and they did not hesitate to lavish them upon their schemes. Every science and every art was called upon for aid, and the most accomplished men in every profession were employed in giving splendour to their country. The chemists, in particular, gave essential aid by the facility with which they supplied materials for the manufacture of gun-powder; and in return for their services, Lavoisier, the greatest of them, suffered death by a most iniquitous sentence. Not fewer than 200 new dramatic performances were produced in less than two years; the object of which was to attach the people to the present order of things. The vigour with which the committees of subsistence exerted themselves is particularly to be remarked. As all Europe was at war with France, and as England, Holland, and Spain, the three maritime powers, were engaged in the contest, it had been thought not impossible to reduce France to great distress by famine, especially as it was imagined that the country had not resources to supply its immense population. But the present leaders of that country acted with the policy of a besieged garrison. They seized upon the whole provisions in the country, and carried them to public granaries. They registered the cattle, and made their owners responsible for them.— They provided the armies abundantly, and, as the people were accurately numbered, they dealt out in every district, on stated occasions, what was absolutely necessary for subsistence, and no more. To all this the people submitted; and, indeed, throughout the whole of the mixed scenes of this revolution, the calm judgment of the historian is not a little perplexed. We cannot avoid admiring the patience with which the people at large endured every hardship that was represented as necessary to the common cause, and the enthusiastic energy with which they lavished their blood in defence of the independence of their country. At the same time, we must regard with indignation and disgust the worthless intrigues by means of which the sanguinary factions in the convention and the capital alternately massacred each other.

390  
Diffensions  
of the Ja-  
cobins in-  
crease.

During the winter the dissensions of the Jacobins still increased. They were divided into two clubs, of which the new one assembled at a hall which once belonged to the Cordeliers. The leaders of it were He-

bert, Ronfin, Vincent, and others; but the old society retained its ascendancy, and Robespierre was now decidedly its leader. This extraordinary man had gradually accumulated in his own person the confidence of the people and the direction of the government. As the committees were above the Convention, which was become little more than a silent court of record, so the committee of public safety was above the other committees. Robespierre was the leader of this ruling committee. Barrere, St Just, Couthon, and others of its members, only acted a secondary part. They laboured in the business of the state, but the radical power was with Robespierre. He surrounded the members of the Convention with spies. He was jealous and implacable, and set no bounds to the shedding of blood. On the 25th of March he brought to trial the following active Jacobins, who were condemned and executed on the following day: Hebert, Ronfin, Momoro, Vincent, Du Croquet, Koch, Col. Laumur, M. M. Bourgeois, Mazuel, La Bourcau, Ancard, Le Clerc, Proly, Desfieux, Anacharis Cloots, Pereira, Florent, Armand, Descombes, and Dubuiffon. Not satisfied with this, on the 2d of April he brought to trial nine of those who had once been his most vigorous associates, Danton, Fabre d'Eglantine, Bazire, Chabot, Philippcaux, Camille Desmoulins, Lacroix, Delaunay d'Angers, Herault de Sechelles, who, along with Westerman, were executed on the evening of the 5th.

Still, however, the preparations for the ensuing campaign were proceeding with unabated vigour. The committee for military affairs, at the head of which were Carnot, La Fitte, d'Anissi, and others, was busy in arranging along the frontiers the immense force which the requisition had called forth. Plans of attack and defence were made out by this committee; and when approved by the committee of public safety they were sent to the generals to be executed. On the other side, the allies were making powerful preparations for another attempt to subjugate France. The emperor himself took the field at the head of the armies in the Netherlands. The plan of the campaign is said to have been formed by the Austrian colonel Mack. West Flanders was to be protected by a strong body of men; the main army was to penetrate to Landrecies, and getting within the line of French frontier towns, it was to cut them off from the interior by covering the country from Maubeuge to the sea. The plan was *bold*. It belongs to military men to judge whether this was not its only merit. When attempting to put it in execution, the allies must have been ill informed of the immense force which the French were collecting against them. Even the town of Lille alone, which is capable of containing a numerous army within its walls, and which was to be left in their rear, should have seemed an insurmountable objection to the plan.

On the 16th of April the Austrian, British, and Dutch armies assembled on the heights above Cateau, and were reviewed by the emperor. On the following day they advanced in eight columns against the French, drove in their whole posts, and penetrated beyond Landrecies; which place the French attempted to relieve, but without success. The allied army now amounted to 187,000 men, who were disposed in the following manner; 15,000 Dutch and 15,000 Austrians, under the prince of Orange and General Latour, formed the

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Prepara-  
tions for  
the cam-  
paign of  
1794, and  
plan of the  
allies.

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State of  
the allied  
armies.

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siege of Landrecies; 15,000 British, and 15,000 Austrians, commanded by the duke of York and General Otto, encamped towards Cambray. The emperor and the prince of Saxe-Cobourg, at the head of 60,000 Austrians, were advanced as far as Guise; 12,000 Hessians and Austrians under General Worms were stationed near Douay and Bouchain; Count Kaunitz with 15,000 Austrians defended the Sambre and the quarter near Maubeuge; and, lastly, General Clairfait, with 40,000 Austrians and Hanoverians, protected Flanders from Tournay to the sea; 60,000 Prussians, for whom a subsidy had been paid by Great Britain, were expected in addition to these, but they never arrived.

The French now commenced their active operations. On the morning of the 26th of April they attacked the duke of York near Cateau in great force. After a severe conflict they were repulsed, and their general Chapuy was taken prisoner. At the same time they attacked the troops under his Imperial majesty, but were there also repulsed in a similar manner; losing in all 57 pieces of cannon. On the same day, however, General Pichegru advanced from Lisle, attacked and defeated General Clairfait, took 32 pieces of cannon; and, in the course of a few days, made himself master of Vervic, Menin, and Courtray. On the 29th of April, the garrison of Landrecies surrendered to the allies. When this event was known in the convention, it excited a considerable degree of alarm. It was, however, the last effectual piece of success enjoyed by the allies during this disastrous campaign. General Clairfait was again completely defeated by Pichegru in a general engagement; and it was found necessary to send the duke of York to his assistance. This movement was no doubt unavoidable; but the effect of it was, that it split down the allied army into a variety of portions, capable of carrying on a desultory warfare, but unfit for the vigorous objects of conquest. On the 10th of May the duke of York was attacked near Tournay by a body of the enemy, whom he repulsed; but he was unable to join Clairfait, upon whose destruction the French were chiefly bent: for at the same time that the duke of York was occupied by the attack upon himself, Pichegru fell upon Clairfait with such irresistible impetuosity, that he was compelled to retreat in confusion, and a part of his army appears to have fled to the neighbourhood of Bruges. While Pichegru was thus advancing successfully in West Flanders, General Jourdan advanced in East Flanders from Maubeuge, crossed the Sambre, and forced General Kaunitz to retreat. On the 18th, however, General Kaunitz succeeded in repulsing the enemy in his turn, and they re-crossed the Sambre with considerable loss.

The allies now found that no progress could be made in France while General Pichegru was advancing successfully and occupying West Flanders in their rear. The emperor, therefore, withdrew the greater part of his army to the neighbourhood of Tournay, and resolved to make a grand effort to cut off the communication between Courtray and Lisle, thus to prevent completely the retreat of Pichegru. On the night of the 16th, the army moved forwards in five columns for this purpose. Clairfait was at the same time directed to cross the Lys, to effect a general junction, if possible, and complete the plan. The attempt during that evening seemed to promise success; but, in the course of next

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day, the division under the duke of York was overpowered by numbers and defeated. The progress of the rest of the columns was stopped, and Clairfait completely defeated. In the confusion of the day, when attempting to rally the different parts of the division which he commanded, the duke of York was separated from his own troops by a party of the enemy's cavalry, and only escaped being made prisoner by the swiftness of his horse. The plan of the allies being thus frustrated, their army withdrew to the neighbourhood of Tournay.

Pichegru speedily attempted to retaliate against the allies. On the 22d of May he brought down at day-break his whole force against them. The attack was commenced by a heavy fire of artillery, and all the advanced posts were forced. The engagement soon became general; the attacks were repeatedly renewed on both sides; the whole day was spent in a succession of obstinate battles. All that military skill could do was performed on both sides. The French and the allied soldiers fought with equal courage and equal discipline. At nine o'clock in the evening the French at last reluctantly withdrew from the attack. The day on which a vanquished enemy flies from the field is not always that on which the victory is won. In this engagement the French were unsuccessful in their immediate object; but the weight of their fire, their steady discipline, and their violent obstinacy of attack, raised their military character high in the estimation of the officers and soldiers of the allied army. It was soon perceived, that in addition to these they possessed other advantages. Their numbers were immense; they implicitly obeyed their generals; who, being men newly raised from the rank of subalterns, as implicitly submitted to the directions of the committee of public safety. A combination of efforts was thus produced whose operation was not retarded by divided counsels. On the other side, the numbers of the allies were daily declining; their leaders were independent princes or powerful men, whose sentiments and interests were often very hostile to each other, and their exertions were consequently disunited.

On the 24th the French again crossed the Sambre, but were driven back with much loss. On the 27th an attempt was made to besiege Charleroi, but the prince of Orange on the 3d of June compelled them to raise the siege. On the 12th a similar attempt was made, and they were again repulsed. In West Flanders, however, Pichegru was sufficiently strong to commence the siege of Ypres. He was soon attacked by General Clairfait for the purpose of relieving it, but without success.—Ypres was garrisoned by 7000 men; reinforcements were therefore daily sent from the grand army to Clairfait for the purpose of relieving it. It is unnecessary to mention the bloody contests in which that unfortunate general was daily engaged with the French. It is sufficient to say, that they were uniformly unsuccessful, and were the means of wasting, in a great degree, the armies of the allies. Ypres held out till the 17th of June, when it capitulated: and such was the discipline of the French army at this time, that no notice could be obtained, for several days, of that event. But in consequence of this and of other events, the duke of York found it necessary to retreat to Oudenarde; for Jourdan, after storming the Austrian camp

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Fall of  
Landrecies.

394  
Success of  
Pichegru  
in West  
Flanders.

395  
He lays  
siege to  
Ypres, and

396  
Takes it.

France. of Betignies, now advanced with such strength upon Charleroi in the east that its immediate fall was feared. As this would have enabled the two French armies to encircle the whole of Flanders, the prince of Cobourg advanced to its relief. Charleroi surrendered at discretion on the 25th. This circumstance was not known by the prince of Cobourg when he advanced on the 26th to attack in their entrenchments the army that covered the siege near Fleurus: but the covering army being by this time reinforced by the accession of the besieging army, the allies were repulsed. Jourdan then drew his men out of their entrenchments; and, in his turn, attacked the Austrians. He was three times repulsed, but was at last successful: the loss of the vanquished army is said to have been prodigious; but no regular accounts of it have been published. The French unquestionably exaggerated their own success, when they said that it amounted to 15,000 men.

398 Further successes of the French in Flanders. The allies now retreated in all quarters. Nieuport, Ostend, and Bruges, were taken; and Tournay, Mons, Oudenarde, and Brussels, opened their gates. At this last place the French armies of East and West Flanders united. Landrecies, Valenciennes, Condé, and Quefnoi, were fruitlessly left with garrisons in them. The allied troops, evacuating Namur, formed a line from Antwerp to Liege to protect the country behind. The French advanced in full force, and attacked General Clairfait, cut to pieces half the troops that now remained under him, and broke the line. The allies retreated before them. The duke of York was joined by some troops under the earl of Moira that with much difficulty had made their way to him from Ostend; and with these and the Dutch troops he retired to the neighbourhood of Bergen-op-zoom and Breda for the protection of Holland. The prince of Cobourg evacuated Liege, crossed the Maese, and placed a garrison in Maestricht. He soon, however, sent back a part of his troops to the neighbourhood of Tongres; for here, to the astonishment of all Europe, the French armies made a voluntary pause in their career of victory, and ceased to pursue their retiring foes. Sluys in Dutch Flanders was the only foreign post that they continued to attack, and it surrendered after a siege of 21 days.

399 And on the Rhine. On the Rhine the war was equally successful on the part of the French. On the 12th, 13th, and 14th of July, repeated battles were fought; in which the French enjoyed their usual success. They had numerous armies in every quarter. Their mode of fighting was to make full preparation for accomplishing their object, and to fight in great bodies day after day till it was obtained. The Palatinate was thus overrun, and Treves taken, by General Michaud. Flanders and the Palatinate have always been accounted the granaries of Germany; and both of them, at the commencement of the harvest, now fell into the hands of the French.

400 Corsica subdued by Great Britain. During the course of this summer Corsica was subdued by Great Britain; and the whole of the French West India islands, excepting a part of Guadaloupe, yielded to the British troops under the command of Sir Charles Grey and Sir John Jarvis. On the first of June the British fleet, under the command of Earl Howe, gained a most splendid victory over the French fleet to the westward of Ushant. The French committee of safety were known to have purchased in America im-

mense quantities of grain and other stores. These were embarked on board 160 sail of merchantmen, conveyed by six sail of the line. Lord Howe failed to intercept this valuable convoy. The French fleet failed at the same time to protect it. On the morning of the 28th of May the fleets came in sight of each other. The British admiral had previously despatched six ships of the line under Admiral Montague to intercept the French convoy, while he should engage and detain the grand fleet. The French despatched eight sail to defeat this attempt. In the course of the 29th Lord Howe got to windward of the French fleet. His force was 25, and theirs was 26, sail of the line. The following day he bore down upon them, and broke their line. The engagement was one of the severest ever fought. The French admiral, in less than an hour after the close action commenced in the centre, crowded off with 12 of his ships. The British fleet was so much disabled, or separated, that several of the French dismantled ships got away under sails raised on the stump of their fore-masts. Seven sail of the line, however, remained in possession of the British, and two were unquestionably sunk. In the mean time, Admiral Montague fell in with the French convoy, but it was now guarded by 14 sail of the line. As he could not encounter such a force, he returned home, and it was safely conveyed into port. Thus, by one of those contradictions which so often occur in human affairs, the British fleet was victorious, and the French were left in some measure masters of the sea. As this engagement however testified that the British seamen had not lost their ancient superiority on their own element, the nation regarded the present victory as a pledge of its independence, and very general rejoicings took place in consequence of it.

In the mean time, the revolutionary system of government in the hands of committees of the convention at Paris, and of committees of the popular societies throughout the country, was arrived at its highest perfection, and proceeded without opposition in its severe and sanguinary measures.

On the 10th of May Madame Elizabeth, sister of the late king, was sacrificed by it in consequence of a decree of the revolutionary tribunal. Multitudes of others of every rank and sex were daily sacrificed in a similar manner; the rich in particular were the great objects of persecution, because the confiscation of their property added to the strength of the ruling powers. But neither were the poor safe from the bloody vigilance of this new and singular government. By the different executions Robespierre had contrived to destroy every avowed rival. All the constituted authorities consisted wholly of persons nominated with his approbation; and as the committees which conducted the business of the state were at his disposal, his will was irresistible throughout the republic. He met with no opposition in the convention; for that body was no longer the turbulent popular assembly which it had once appeared; it was little more than a name employed to give some fort of respectability to such schemes as were proposed to it.

Amidst this accumulation, however, of seemingly irresistible authority, Robespierre was at the brink of ruin. The whole of the old Girondist party was indeed subdued and silent; but many members of the convention still remained attached to it. The party of the Mountain,

France. 1794. 401 Splendid victory of the British fleet under Lord Howe.

402 The horrid executions in Paris continued.

403 Immense power of Robespierre.

404 Verging to ruin.

France. Mountain, by means of whom Robespierre had risen to power, with little satisfaction now found themselves not only disregarded, but ready at every instant to fall a sacrifice to that system of terror which they had contributed to erect. Even the Jacobins themselves, though neither timid nor cautious in the shedding of blood, began to murmur when they saw that awful privilege confined exclusively within a few hands, or rather monopolized by an individual. In this state things remained for some time; and it appeared how possible it is for an individual to govern a great nation even while the whole of that nation is hostile to his power. The banishment or imprisonment of all foreigners, which had long been rigorously practised, prevents us from possessing much accurate information concerning the internal state of France at this period; but it is certain, that one circumstance in particular tended much to accelerate the fall of Robespierre. He had procured a decree to be passed, authorising the committee of public safety to imprison at its pleasure, and bring to trial, any member of the convention. All the individuals of that body found themselves placed by this decree in the hands of a man whose severe and suspicious temper they well knew. Still, however, they were so much surrounded by spies, that it was difficult to form a party or plan of operations; even the majority of the committee of public safety were among the number of the discontented, but they dared not to withstand their chief. At last, on the 25th of July, the convention began to exhibit signs of agitation. It was understood, that in the course of a few days Robespierre would sacrifice a number of the members to his suspicions. On the following day the sitting of the convention was still more tempestuous. In a long speech Robespierre defended his own conduct against those who had reproached him with aspiring to the dictatorship of France. He attacked the party whom he styled *Moderates*, as wishing to overturn the revolutionary government, and to restore the feeble system of the Brissotines. The result of a long debate was, that Robespierre was apparently victorious, and his speech was ordered to be printed. On the 27th the convention appeared ripe for a change: St Just, a member of the committee of public safety, in attempting to defend Robespierre, was repeatedly interrupted; and Billaud Varennes stood forward and enumerated the crimes, and proclaimed the tyranny, of Robespierre. The speech was received with bursts of applause. Robespierre in vain attempted to defend himself; he was silenced by shouts of execration from every part of the hall. Tallien seconded the former speaker in his accusation. The sitting was declared permanent, and a decree of arrest was passed against Robespierre and a younger brother of his, along with St Just, Couthon, and Lebas. These men left the convention, and found security in the hall of the commune of Paris; where the municipal officers agreed to protect and stand by them. The tocsin was sounded; the armed force was under their command; an insurrection was therefore attempted against the convention: but the sections of Paris refused their support. Very few of the troops could be collected, and these were not firm; the late tyranny had become odious. The hall of the commune was therefore speedily surrounded; and about three o'clock in the morning of the 28th Robespierre and his associates were made prisoners. They had been outlawed

by the convention on account of their resistance. They were not therefore tried, unless for the purpose of identifying their persons; and, in the course of that day, they were executed: 60 of the municipal officers were also executed for joining in their rebellion; and in this way a storm passed over, which at one time threatened to involve the French capital in ruin, and filled all Europe with astonishment. Thus also terminated the career of the most extraordinary man that the French revolution had brought forward. His talents were undoubtedly considerable, and his ambition knew no bounds, bidding defiance to the ordinary feelings of humanity. Had Dumourier possessed his coolness and caution, or had he possessed the military talents of Dumourier, the convention would certainly have been overturned, and we should have seen a second Cromwell on the throne of his murdered sovereign.

After the fall of Robespierre, the convention exhibited no small change of appearance. Instead of that silence which formerly prevailed, all was bustle and noise; all accused each other. There was no longer any leader, and there was no formed party. The former system of terror was declared to be at an end, and a new system of *moderation* succeeded. This was carried to as great a height as the system of terror had formerly been; and all means were taken to render popular the fall of their late tyrant. The committees were organized anew, and their members ordered to be frequently changed. The correspondence between the affiliated Jacobin clubs was prohibited, and at last the Jacobin club itself was abolished. This last event was accomplished with ease; and that society which had been the great engine of the revolution, was itself without resistance overturned. Seventy-one deputies of the Girondist party, who had been imprisoned since the 31st of May 1793, were set at liberty. The name of Lyons was restored to it. Some of the agents of Robespierre were punished, particularly the infamous Carrier, whose cruelties in La Vendée we formerly mentioned. Still, however, the convention appeared so little united and so little decided with regard to objects of the first importance, that in all probability they would not have conducted the important struggle against the nations of Europe with more success than the Girondist party had formerly done, if the revolutionary government and the late system of terror had not already accumulated in their hands such vast resources, and traced out such a plan of procedure, as rendered it an easy matter to preserve their numerous armies in the train of success to which they were now habituated.

The allies in their retreat had left strong garrisons in the French towns which had surrendered to them. These were Condé, Valenciennes, Quesnoy, and Landrecies. They now surrendered to the republican armies with so little resistance, that the conduct of the emperor began to be considered as ambiguous, and he was suspected of having entered into some kind of compromise with the French. This idea proved erroneous; and as soon as the army which had besieged these towns was able to join the grand army under Pichegru and Jourdan, the operations of the campaign were resumed after a suspension of almost two months. The French army divided itself into two bodies. One of these under Jourdan advanced against General Clairfait, who had succeeded the prince of Cobourg in the command

France. in the neighbourhood of Maestricht. On the 15th of September the French attacked the whole Austrian posts in an extent of five leagues from Liege to Maestricht. On that and the following day the losses were nearly equal. On the 17th the French with 50 pieces of cannon attacked General Kray in his entrenched camp before Maestricht. M. de Kray was already retiring when General Clairfait arrived with a strong reinforcement, and after a severe combat the French were once more compelled to retire. On the 18th the French renewed the attack with tenfold fury upon every part of the Austrian line, and the whole was compelled to fly to the neighbourhood of Aix-la-Chapelle. General Clairfait now chose a strong position on the banks of the Roer, where he even declared it to be his wish that he might be attacked. But by this time the spirit of his army was humbled, desertions became numerous, and the want of discipline was extreme. On the 1st of October the French crossed the Maese and the Roer, and attacked the whole Austrian posts from Suremond down to Juliers. After a bloody engagement, the brave and active, though unfortunate, General Clairfait was compelled hastily to cross the Rhine, with the loss of 10 or 12,000 men. The French general did not attempt to cross that river, but one detachment of his army took possession of Coblenz, while others laid close siege to Venlo and Maestricht, which soon surrendered.

409  
And their  
progress in  
the con-  
quest of  
Holland.

The division of the French army, in the mean time, under General Pichegru came down upon Holland, and attacked the allied army under the duke of York between Bois-le-duc and Grave. They forced the advanced post of Boxel. Lieutenant-general Abercromby was sent to attempt to recover this post on the 15th of September, but he found the French in such force that he was obliged to retreat. Indeed the French were discovered to be no less than 80,000 strong in that neighbourhood. The duke of York was unable to contend against a force so superior, and retired across the Maese with the loss of somewhat less than 1500 men. Pichegru immediately laid siege to Bois-le-duc. On the 30th of September, Crevecoeur was taken, and Bois-le-duc surrendered in 10 days thereafter. In it 408 French emigrants were taken prisoners; and these, as well as 700 that had been taken at Nieuport, 500 at Sluys, and 1100 at Valenciennes, were all put to death, agreeably to the rigorous law formerly made by the convention. The French now followed the duke of York across the Maese. Upon this the greater part of the allied army under his royal highness crossed the Rhine and took post at Arnheim. The remaining part of the army followed soon after, and Nimeguen was occupied by the French on the 7th of November. The duke of Brunswick was at this time requested to take the command of the allied army, to protect Holland, if possible. He came to Arnheim for that purpose; but after examining the state of things there, he declined the undertaking. The allied troops had now so often fled before their victorious and almost innumerable enemies, they had so often been in want of every necessary, and had been received so ill by the inhabitants of the countries through which they passed, among whom the French cause was extremely popular, that they had lost that regularity of conduct and discipline which alone can afford a secure prospect of success in military affairs.

The French, on the contrary, well received, abounding in every thing, and proud of fighting in a popular cause, now acted with much order, and submitted to the strictest discipline. In addition to all these advantages, the French leaders had the dexterity to persuade the world that new and unknown arts were employed to give aid to their cause. At this period the *telegraphie* was first used for conveying intelligence from the frontiers to the capital, and from the capital to the frontiers. (See TELEGRAPH). Balloons were also used by the French during this campaign to procure knowledge of the position of the enemy. An engineer ascended with the balloon, which was suffered to rise to a great height, but prevented from flying away by a long cord. He made plans of the enemies encampment; and during an attack he sent down notice of every hostile movement. In the affairs of men, and more especially in military transactions, opinion is of more importance than reality. The French soldiers confided in their own officers as men possessed of a kind of omniscience, while the allied troops, no doubt, beheld with anxiety a new contrivance employed against them, whose importance would be readily magnified by credulity and ignorance. With all these advantages, however, after the capture of Nimeguen, they once more made a halt in their career, and abstained from the attack of Holland, which now seemed almost prostrate before them.

France.  
1794.  
410  
Conduct,  
discipline,  
and state  
of the  
French  
armies.

While these events occurred in the north, the French arms were scarcely less successful on the side of Spain. Bellegarde was taken; in the Western Pyrenees, Fontarabia surrendered, and also St Sebastian; the whole kingdom of Spain seemed panic struck. That feeble government, with an almost impregnable frontier, and the most powerful fortresses, could make little resistance; and the difficult nature of their country was their only protection. The history of this war is only a history of victories on the part of the French. In the Eastern Pyrenees, on the 17th of November, the French general Dugommier was killed in an engagement, in which his army was successful. On the 20th of that month the French again attacked the Spaniards, and routed them by means of the bayonet, without firing a single musket-shot. Tents, baggage, and cannon, for an army of 50,000 men, fell into the hand of the conquerors, along with a great part of the province of Navarre. Towards the end of the year, an army of 40,000 Spaniards, entrenched behind 80 redoubts, the labour of six months, suffered themselves to be completely routed; their general Count de la Union was found dead on the field of battle, and the whole Spanish artillery was taken. In three days thereafter, the fort Fernando de Figueres, containing a garrison of 9107 men, surrendered, although it mounted 171 pieces of cannon, and possessed abundance of provisions. The French continued their conquests; Rosas was taken, and the whole province of Catalonia was left at the mercy of the invaders.

412  
The con-  
quest of  
Holland  
completed.

The successes of this wonderful campaign were not yet terminated; and the last part of them is perhaps the most important, although no great effort was necessary to its execution. The winter now set in with uncommon severity. For some years past the seasons of Europe had been uncommonly mild; there had been little frost in winter, and no intense heat in summer. But during the late season the weather had long been remarkably

France. 1795. remarkably dry till the latter part of harvest, when there fell a considerable, though by no means unusual, quantity of rain. Towards the end of December a severe frost bound up the whole of the rivers and lakes of Holland. The Waal was frozen over in the beginning of January; a circumstance which had not occurred for 14 years past. Taking advantage of this, the French crossed that river, and with little opposition seized the important pass of Bommell, which at other seasons is so strong by its inundations. The allied army had been joined by 17,000 Austrians, and had received orders to defend Holland to the last. They did so, and were successful in repulsing the French for some days between the Waal and the Leck; but the republican army, amounting to 70,000 men, having at last advanced in full force, the allied troops were compelled to retire across the Yssel into Westphalia. In the course of their march through this desert country, in the midst of severe frost and a deep snow, they are said to have suffered incredible hardships, and to have lost a very great number of men. The French, in the mean time, advanced rapidly across the country to the Zuyder sea, to prevent the inhabitants from flying, and carrying off their property. On the 16th of January 1795, a party of horse, without resistance, took possession of Amsterdam. The other towns surrendered at discretion. In consequence of an order from the states general, the strong fortresses of Bergen-op-zoom, Williamstadt, Breda, &c. opened their gates to the French. The fleet and the shipping were fixed by the intense frost in their stations, and fell a prey to the enemy; who thus, with little effort, made a complete conquest of this populous and once powerful country. The French were well received by the people at large. The power of the stadtholder had been supported among them merely by the influence of Prussia and England. Through hatred to this office, which had now become odious chiefly to the mercantile aristocracy of Holland, they were little attached to their allies, and gave them, during the present war, as little support as possible. The stadtholder and his family now fled to England. The French declared, that they did not mean to make subjects but allies of the Dutch, and invited them to call together popular assemblies for settling their own government, under the protection of the French republic.

Thus terminated a campaign, the most astonishing, perhaps, that has been known in the history of mankind. In the course of it, even before the conquest of Holland, the French had taken 2000 pieces of cannon, and 60,000 prisoners. After that event, the conquered territories added to them a population of nearly 14 millions of people. Luxembourg and Mentz were the only places on this side of the Rhine that resisted them. The former was closely blockaded, for the purpose of compelling it to surrender; the latter was several times assaulted, but successfully held out.

At this period Europe seemed to be weary of such a bloody contest, and the Diet of Ratisbon intimated its resolution to adopt such measures as might tend to bring about a general pacification. A treaty was concluded between the grand duke of Tuscany and France. The convention declared their readiness to treat for peace with any of the powers of Europe upon honourable terms. Great Britain and Austria, however, seemed to be persuaded, that an honourable and permanent

peace could not be obtained with France, while her government was subject to such perpetual changes. For instance, such was the enmity of the Mountain party against the Gironde, that any treaty entered into by the latter would have been trampled upon by the former; and such, it was observed, might continue to be the aspect of affairs in that distracted country for an indefinite length of time.

As the constitution which had been framed in the year 1793, during the tyrannical dominion of Robespierre was justly deemed impracticable, a committee was appointed to frame one entirely new. It was composed of Sieyes, Cambaceres, Merlin of Douay, Thibaudeau, Mathieu, Le Sage of Eure and Loire, and Latouche. On the report of Cambaceres, the 19th of April, that the committee thought that a commission should be appointed for this important business, a number of qualified persons were accordingly chosen, while all citizens were invited to communicate their sentiments upon the subject, and the committee was to give orders for the best plan to be published. The feelings of the nation at large received additional gratification from the conduct of the convention towards Fouquier Tainville the president, and 15 judges and jurors, of the revolutionary tribunal. They were fully convicted on the 8th of May, and executed on the 9th, launched into eternity amidst the just execrations of a vast multitude of spectators.

Although the Jacobins were defeated on the 1st and 2d of April, they did not consider themselves as entirely subdued. They were plotting a more extensive insurrection, which was not to be confined to the capital, and fixed on the 20th of May as the period of revolt. On the morning of that day, the tocsin was accordingly sounded, and drums beat to arms in the suburb of St Antoine, in which the Jacobins had always enjoyed the greatest influence. Upon this the convention met; and although the insurrection was far from being a secret, the committee of public safety did not appear to have taken any measures to prevent it. It was only at the moment when the insurgents were approaching that General Hoche was appointed to the command of the armed force, and sent to collect the military and citizens for the protection of the convention. The hall was presently surrounded, the guards were overpowered, and the mob forced their way into the midst of the assembly. The multitudes of women who met upon this occasion shouted for bread, and the constitution of 1793. Vernier the president, a man far advanced in years, quitted the chair to Boissy d'Anglas, who kept it with commendable fortitude during the remainder of the day. The mob had cockades with this inscription upon them, "Bread, and the constitution of 1793." One of the party attached to the convention imprudently tore off the hat of one of the insurgents, whom the multitude attacked with swords; and as he fled towards the chair of the president, he was killed by a musket shot. The majority of the members gradually retired from this scene of lawless intrusion, and left the multitude masters of the hall. Four of the members who remained espoused the cause of the insurgents, whose triumph, however, was of very short continuance. A large body of the military and the peaceable citizens vanquished them in the evening, the powers of the majority were restored, and the four

France. puties who espoused the cause of the mob were arrested.

1795.

410  
Mean compliance of the convention.

It would appear that the convention and the citizens of Paris now believed their triumph to be complete, as no measures were adopted by them sufficient to prevent the repetition of a similar outrage. The Jacobins, however, were not yet determined to view their cause as desperate, for next day they collected in the suburbs, and in the afternoon made a second attempt. The Carousal was taken by them without opposition, when they pointed some pieces of cannon against the hall of the convention, the members of which being wholly unprotected, endeavoured to gain over the mob by flattery,—by promising them bread, and the constitution of 1793, or whatever else they thought proper to demand; and the president even gave the deputation the fraternal embrace. On the 23d the citizens assembled, and went to the Thuilleries to defend the convention from insult and violence. The military collected in considerable force; and the convention was at length encouraged to act on the offensive. It was decreed that if the suburb of St Antoine did not immediately surrender its arms and cannon, with the murderer of Ferrand, it would be declared in a state of rebellion. The generals of the convention received orders to reduce it by force; and the insurgents finding themselves unequal to the conflict, were forced by the inhabitants to make an unconditional surrender, to preserve their property from the depredations of the military. The soldiers found among the prisoners were put to death, on which occasion six of the members were tried and condemned by a military commission. Three of them were guilty of suicide, and the other three were publicly executed.

417  
Defeat of the Jacobins.

In the southern parts of France, the Jacobins were equally turbulent as their brethren in Paris, and formed an insurrection at Toulon on the 20th of May, seizing on the gates, upon which they planted cannon; they set at liberty such of their associates as had been incarcerated, and detained the fleet which was about to put to sea. From Toulon they proceeded to Marseilles, at which time they were 3000 strong, and had 12 pieces of cannon. On their march they were opposed by Generals Charton and Pactod, by whom they were defeated, 300 of them being sent prisoners to Marseilles, and Toulon was liberated.

418  
Hope to be successful.

The Mountain party, who were anxious to revive the terrific reign and measures of Robespierre, were now very much reduced, and exposed in many places to violent persecution. Associations were formed for the purpose of avenging the crimes they committed during the continuance of their power. When we reflect on the character of Robespierre's government and what all ranks of men suffered under it, we must consider it truly astonishing that any number of men should hazard their lives in attempting its restoration. The party was of course gradually abandoned by its adherents on the fall of its tyrant, and it sunk in the estimation of every one who examined it with attention. Still, however a small party remained, the members of which were men of superior activity and enterprise. They consisted of ferocious republicans who thought they beheld the revival of royalty and aristocracy in every attempt to establish a mild, sober, and regular government. Yet, amidst the universal odium cast upon them, the Jacobins expected to rise once more into power;

but what is most singular, the revival of their strength is to be dated from their unsuccessful insurrection just now mentioned. Their want of popularity began to affect the convention, as the people remembered how tamely that body submitted to the tyranny of Robespierre, of whose power the majority of the members had been the servile instruments. The press therefore, being now free, the most hideous picture of their conduct was held up to the public. The greater part of them now began to repent of their victory over the Jacobins, as they foresaw that the consequences in the end might prove fatal to themselves.

France.  
1795.

On the 23d of June, Boissy d'Anglas presented the report of the committee relative to the plan of a new constitution, 419  
New constitution, It was, like its predecessors, prefaced with a declaration of the rights of man, consisting besides of 14 chapters on the following subjects:—the extent of the republican territories, the political state of citizens, primary assemblies, electoral assemblies, the legislature, the judicial authority, the public force, public instruction, the finances, foreign treaties, the mode of revising the constitution, and an act that no rank or superiority should exist among citizens, but what might arise from the exercise of public functions.

The legislature was composed of two assemblies, the council of the Ancients, consisting of 250 members, as none but married men and widowers turned of 40 could be chosen members of it; the other council consisted of 500 members, and enjoyed the exclusive privilege of proposing the laws, while the council of Ancients might reject or oppose, without having power to alter the decrees. The executive power was intrusted to five persons who were to be 40 years of age at least, and to be denominated the *Executive Directory*. The two councils had the power of electing its members, the council of five hundred proposing 10 times as many candidates as could be chosen, and the council of two hundred and fifty selected the five members from among these 50 candidates. One member of the directory was to go annually out office, by which they were all changed in the course of five years. In enacting laws the directory had no vote, being appointed purely to superintend the execution of them, regulated the coining of money, and had the disposal of the armed force. The treaties made by the directory with foreign courts were not binding without the sanction of the legislature, and war could not be made without a decree of the two assemblies. The whole articles of the new constitution underwent a separate discussion, when they were to be transmitted to the primary assemblies for their approbation. Prior to this event, however, it was agreed on by a majority of the convention, in order to avert the danger which now threatened themselves, from the loss of public favour, that at the approaching general election, the electors should be bound to return two thirds of the present members, and if this failed, that the convention themselves might fill up the vacancies. These decrees accompanied the constitution; but at Paris the idea of re-electing two-thirds of the old members was rejected with contempt, and the absurdity of it pointed out with every expression of acrimony.

The convention in the mean time did not fail to publish the approbation of the decrees by the primary assemblies, as well as of the constitution, although it is certain 421  
Freedom abridged by the convention.

France. certain that vast numbers had confounded the two together, and given their approbation accordingly. Such was the rage of many against the convention in consequence of the decrees already mentioned, that it was even proposed to try the whole members before a new revolutionary tribunal, and punish each in proportion to his crimes. The sections remonstrated against the decrees to the convention, and the more eager they appeared in the business, the more persuaded was the convention of its own imminent danger. Every remonstrance, however, was disregarded, and the contending parties formed the resolution of settling it by force of arms. About 100 electors of Paris met in the hall of the theatre in the suburb of St Germain before the day of meeting which had been appointed by the convention, and having chosen De Nivernois for their president, began their debates, absurdly concluding that the sovereignty was vested in the hands of the electors, after these had been chosen by the primary sections. A body of troops was sent to dissolve them as an illegal assembly, which was accomplished without any difficulty, the citizens not having been unanimous in their sentiments respecting it.

422  
Jacobins  
courted by  
the conven-  
tion.

This, however, did not prevent the sections from presuming that by steady perseverance they would be finally victorious, having always found that the party favoured by the co-operation of the Parisian populace, had carried their point ever since the commencement of the revolution. The armed force with which the convention was surrounded gave the people very little alarm, as they endeavoured to persuade themselves that the military could never be brought to act against the citizens. As the members of the convention also appeared to suspect their fidelity, they applied for assistance to those very Jacobins whom they had humbled on the 24th of May. If the sections of Paris detested the members for their connexion with the atrocities of Robespierre, the Jacobins admired them from this very circumstance; a set of restless, bloody men, who were never satisfied with wars abroad nor revolutions at home. Hundreds of them were released from prison, and put in a state of requisition for assisting the legislative body.

423  
Struggle  
between  
the conven-  
tion and  
Parisians.

The sections of Paris having beheld the convention surrounded by men who had justly obtained the appellations of *terrorists* and *men of blood*, they exhibited a desire of engaging them which was altogether unbounded. Their leader designed to make the members prisoners, till they could be conveniently brought to trial, and in the interim conduct public affairs by committees of the sections, till a new legislative body could be chosen. General Miranda was to have the command of the armed force after the overthrow of the convention, but as it was still problematical which party would be triumphant, he retired to the country till the event should declare it, resolving to share the reward of a conquest to which he was to contribute nothing. The superior officers of the convention were unfaithful, yet the subalterns and soldiers might have continued firm, to which they would, no doubt, be strongly exhorted by their Jacobin auxiliaries. What was greatly in favour of the convention was, that the first moments of enthusiasm were permitted to pass away, after which the sections exhibited a conduct both undecided and weak.

France. Barras was appointed on the 4th of October by the convention to the command of the troops, Generals Menon, Raffet and some others, having been dismissed from office. Barras called in the aid of the most able officers, among whom we find Brune and Bonaparte, and made speedy preparations for a vigorous defence. Troops with cannon were planted in every avenue leading to the Thuilleries, and masked batteries were placed in situations of a more retired nature, if any of these should happen to be forced. The precaution was also taken of transporting the provisions and military stores to St Cloud, if the convention should be obliged to retreat from Paris. On the 5th of October both parties continued on the defensive for several hours, but about three o'clock in the afternoon, overtures were made by the general of the insurgents, Danican, in which he declared that the intention of the citizens was for peace, only they apprehended a massacre was to be begun by the armed terrorists surrounding the convention, and that if these were removed they would return to their duty; but it was resolved to try the issue of the dispute at the point of the sword, as the Jacobin party in the convention were now more fully persuaded of ultimate success. On this occasion the armed Jacobins without are generally understood to have been the first aggressors. The citizens on the south side of the river made an effort to reach the convention by the Quay de Voltaire, but were completely prevented by the cannon of the convention, while the consist was extremely obstinate on the other side of the river, near the convention. After an engagement of four hours continuance, the sections were repulsed, and driven to the post of St Roch, which being also taken after an obstinate resistance, the insurgents fled to their head quarters at the section of Le Pelletier; but the troops of the convention were, about midnight, in possession of the whole city.

425  
The violent  
Jacobins  
again take  
the lead.

The victors attributed this insurrection to the influence of the royalists; and whether they were right in their judgment or not, it is certain that the cause of royalty was now become less odious to the people in general than the bloody extravagance of republicanism; but the mob in fact seem to have looked no farther than the disarming of the Jacobins, and obtaining new representatives. The attempt failed, and the Mountain were again at the head of the state. The sittings of the convention were terminated on the 27th of October, and was succeeded by the new legislature in terms of the constitution. Among its last decrees, was one granting a general amnesty for all crimes and proceedings of a revolutionary nature, but the emigrants, transported priests, and every one concerned in the last insurrection, were excluded from the benefit of it. The agents of Robespierre in Paris and the departments were liberated from prison, and promoted to lucrative offices under the new government.

426  
Measures of  
the new  
legislature.

The next step of the new legislature was to divide itself into two councils, and proceed to the election of an executive directory. The council of five hundred was bound to present to the other council 50 candidates, of which a list was accordingly made out, consisting of no more than five whom they wished to be chosen, the other 45 consisting of obscure persons, farmers and peasants, which left no more power to the council of ancients than the form of an election, which must

France. must fall on Sieyes, Barras, Rewbell, La Reveillere  
 1795. Lepaux, and Letourneur de la Manche, none of the  
 rest being qualified for the office. The intriguing  
 Sieyes, however, did not deem it prudent to venture  
 on the possession of power; and on his declining to ac-  
 cept of this new dignity, Carnot was appointed in his  
 stead. The form of government now established did  
 not promise to be productive of much happiness or tran-  
 quillity, as the most important offices in the state were  
 filled by men whom the people could not endure. The  
 members too of the executive directory, except only  
 Reveillere Lepaux, had always been connected with  
 the Mountain party, and they employed the Jacobins  
 in almost every official department, which could not  
 fail to render the government peculiarly obnoxious. It  
 was feared that a directory chosen by the Jacobins, and  
 new legislators appointed by the people, might one  
 day be the means of totally subverting the constitution,  
 which actually took place.

427  
 Treaty of  
 peace with  
 Prussia.

On the 10th of April a treaty of peace with the  
 king of Prussia was presented to the convention, in order  
 to be ratified. By virtue of this treaty, it was agreed  
 that the republican troops should be immediately with-  
 drawn from the territories of Prussia on the right bank  
 of the Rhine, having power to retain, till a general  
 peace, the territories which France then possessed on  
 the left bank of that river. There was to be a mutual  
 exchange of prisoners of war, and the intercourse be-  
 tween the two countries was to be placed in its former  
 situation. Measures were also adopted to shift the  
 theatre of hostilities from the northern parts of Ger-  
 many. At the same time the king of Sweden acknow-  
 ledged the French republic, whose ambassador was re-  
 ceived at Paris with great solemnity. Another treaty  
 was concluded with Prussia in the month of May,  
 which had a special reference to the line of neutrality.  
 The cantons of Switzerland followed the example of  
 the king of Sweden, and a treaty of peace was con-  
 cluded at Basle on the 22d of July, between the repub-  
 lic and the court of Spain, in consequence of which  
 France gave up all the conquests she had made in that  
 country, and the original frontier was restored; in re-  
 turn for which the republic received all the Spanish part  
 of St Domingo. In this treaty the Dutch republic  
 was included, and the mediation of the king of Spain,  
 in favour of Portugal and the Italian princes, was ac-  
 cepted by France.

428  
 Death of  
 Louis  
 XVII.

On the 9th of June, the dauphin, the heir to the  
 throne of the unfortunate Louis XVI. and his only son,  
 died in the prison of the temple, where he was confined  
 with his sister since the death of the king. Some think  
 that his death was the consequence of disease, although  
 it is much more probable that he was poisoned, since  
 there is no crime in the annals of human depravity  
 which the French rulers would have trembled to per-  
 petrate, of which the numerous murders already detail-  
 ed afford indubitable evidence. His death, however,  
 interested the French nation so deeply in favour of his  
 barbarously used family, that the convention found it  
 prudent to liberate the prince. The committee of  
 public safety proposed to the emperor to give her up in  
 exchange for the commissioners whom Dumourier had  
 sent prisoners to the Austrians, together with Semon-  
 ville and Marat, who were seized on their way to Tur-  
 key as envoys extraordinary from the French republic.

The proposal was agreed to, and the exchange took  
 place at Basle in Switzerland.

France. If Britain was unfortunate in her affairs on the conti-  
 1795. nent, she still retained her superiority on the watery  
 429. element. A fleet under Admiral Hotham engaged a  
 Britain su- French fleet on the 14th of March, and took two fail-  
 perior by ica. of the line, the *Ca Ira* and *Censeur*; but this was  
 nearly counterbalanced by the loss of the *Berwick* and  
*Illustrious*. Three French ships of the line were cap-  
 tured by Lord Bridport on the 23d of June, in an at-  
 tack on the enemy's fleet off Port L'Orient, the rest  
 of the fleet effecting its escape. As Britain thus evinced  
 upon all occasions her superiority by sea, advantage was  
 taken of this circumstance to send assistance to the roya-  
 lists in the western departments, which unfortunately  
 for them came too late, for the convention had offered  
 them a treaty which was accepted and signed at Nantz  
 on the 3d of March, on the one part by deputies from  
 the convention, and on the other by Charette, Sapi-  
 neau, and other chiefs of the insurgents of La Vendée,  
 and by Cormartin, as representatives of the party called  
*Chouans* or *night owls*. Stofflet submitted to the repub-  
 lic on the 20th of April. The countenance given by  
 Britain to the royalists made them disregard these trea-  
 ties. The troops sent to their aid were composed of  
 emigrants in the pay of Great Britain, and a number  
 of prisoners who agreed to join the royal cause. Puisaye  
 commanded this motley army, and Count de Sombreuil  
 afterwards joined him with an inconsiderable reinforce-  
 ment. This expedition arrived in the bay of Quiberon  
 on the 25th of June. Arms were put into the hands of  
 the inhabitants of the country, but it was soon found  
 that they could not be of much advantage to regular  
 troops. A resolution was therefore adopted to withdraw  
 the emigrant army within the peninsula of Quiberon,  
 the fort of which name was taken on the 3d of July,  
 the garrison of which consisted of about 600 men, and  
 was afterwards occupied by the emigrants. All the  
 posts without the peninsula were carried by an army  
 under General Hoche, the emigrants and Chouans es-  
 caping into the boats of the British fleet, or flying for  
 protection under the cannon of Quiberon fort. The re-  
 publicans then began to erect formidable works on the  
 heights of St Barbe, which commanded the entrance of  
 the peninsula. To prevent these operations, a sally on  
 the 7th was made from the fort, but without effect,  
 and another with still greater force had no better suc-  
 cess. The whole forces in the peninsula amounted, in-  
 cluding Chouans, to about 12,000 men, 5000 of whom  
 were sent to make an attack on the heights of St Barbe,  
 where the republicans were entrenched in three camps,  
 two of which were taken without difficulty; but as the  
 emigrants rushed forward to attack the third, a masked  
 battery was opened upon them with grape shot, in con-  
 sequence of which a dreadful slaughter ensued, and very  
 few of the emigrants would have effected their escape,  
 had not the fire from the British ships compelled the re-  
 publicans to abandon the pursuit.

430 Failure of the Quibe-  
 ron expe-  
 dition.  
 It was now evident that a complete and ultimate fai-  
 lure would be the fate of this expedition, and desertion  
 among the emigrants became very frequent, especially  
 those who had been liberated from prison on condition  
 of serving against the republic. The weather was very  
 tempestuous on the evening of the 20th, which induced  
 the emigrants to indulge in a fatal security. The troops

France. of the republic were conducted in silence along an un-  
 1795. guarded quarter of the shore, and surprised one of the  
 posts, where they found the artillery men asleep. They  
 extinguished the lanthorn which was intended to give  
 the British fleet the alarm, and seized on their matches.  
 Some of the emigrants threw down their arms and joined  
 the republicans, while others maintained an obstinate  
 contest before they surrendered. Count de Sombreuil  
 was taken and put to death, together with the bishop  
 of Dol and his clergy, none being spared but such as  
 pretended that their appearing against the republicans  
 was purely owing to compulsion.

431  
 Continental  
 affairs.

But to return to the affairs on the continent. The  
 fort of Luxembourg surrendered on the 7th of June, after  
 having been besieged since the preceding campaign,  
 which put the French in possession of the whole left  
 bank of the Rhine, Mentz only excepted, because the  
 Austrians could conveniently supply it with every ne-  
 cessary from the opposite bank of the river. The republicans  
 therefore determined to cross the river, to invest  
 it on every side; but for some time the attempt was de-  
 layed, till the result of the Quiberon expedition should  
 be fully known. The passage of the Rhine at Duffel-  
 dorf was effected by General Jourdan in the month of  
 August, as commander of what was denominated the  
 army of the Sambre and Meuse. Having driven three  
 Austrian posts before him, he crossed the Maine, and  
 invested Mentz and Cassel, and Pichegru at the same  
 time took possession of Manheim, having crossed the  
 river near that city with the army of the Rhine and Mo-  
 selle. A strong detachment of this army having driven  
 Marshal Wurmsler from an important post, began to  
 plunder, and consequently run into confusion, of which  
 the Austrians took a proper advantage, returned to the  
 charge, and the republicans were vanquished. Jourdan  
 was pursued by Clairfait to Duffeldorf, where the for-  
 mer general made a stand, and Pichegru recrossed the  
 Rhine near Manheim, leaving a garrison in that city of  
 8000 men, which, after a vigorous siege, surrendered to  
 the Austrians; and the republicans were driven from  
 the vicinity of Mentz. Little more was either lost or  
 won by the contending parties at this time, and they  
 mutually agreed to an armistice of three months.

432  
 Treaty  
 with Ger-  
 man  
 princes.

The landgrave of Hesse Cassel entered into a treaty  
 of peace with France on the 28th of August, which  
 was agreed to, on condition that he would furnish Brit-  
 ain with no more troops during the war. Peace upon  
 similar terms was granted to the elector of Hanover;  
 and the duke of Wirtemberg and some other princes of  
 the German empire began to treat; but the negocia-  
 tions were broken off in consequence of the reverse of  
 fortune which the French now experienced.

433  
 Absurd  
 conduct of  
 the direc-  
 tory,

The directory, however, still resolved to prosecute  
 the war with vigour, and therefore made vast prepara-  
 tions during the winter for another campaign. The  
 Mountain party being again possessed of power, soon  
 began to discover their restless, turbulent disposition,  
 which could not long submit peaceably to any govern-  
 ment whatever, and became disgusted with that very  
 directory which they themselves had established. They  
 were perpetually disturbing the public tranquillity. The  
 people of Paris, after the 5th of October, durst not op-  
 enly avow their abhorrence of the Jacobins, but it was  
 understood that their wearing green cravats was a  
 token of contempt. This piece of dress was prohibited

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by the directory as a mark of attachment to royalty.  
 Of this they were soon ashamed, and recalled their edict  
 in a few weeks. In the southern parts of France, the  
 present authority of the Jacobins produced very serious  
 effects. Freron, by whom they had been abandoned  
 after the death of Robespierre, returned to their cause  
 before the 5th of October, and was sent to Toulon with  
 full powers of administration. He dismissed the muni-  
 cipality which had been chosen by the people, restored  
 the Jacobin clubs, and every person whom he suspected  
 he caused to be imprisoned. The directory was alarm-  
 ed at the numerous complaints which were made from  
 every quarter against the conduct of those turbulent  
 and bloody men, and resolved to obtain the confidence  
 and affections of the people by deserting them entirely.  
 Freron was recalled from Toulon, and more moderate  
 men were made choice of to succeed the restless, sangui-  
 nary Jacobins.

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The directory also made a public declaration that its  
 confidence had been abused. The police minister was  
 charged with the removal from Paris of the members  
 of former revolutionary tribunals, and such as were ac-  
 tive leaders of the Jacobins. Ten thousand men, called  
 the *legion of police*, who acted against the Parisians on  
 the 5th of October, and were decidedly the favourers  
 of the Jacobins, received orders from the directory and  
 legislative body to join the armies on the frontiers,  
 which orders they refused to obey, but were compelled  
 to submit by the interference of other troops brought  
 from a distant quarter to provide against that event.  
 This led the violent Jacobins to concert a plan for the  
 ruin of the directory and the majority of the councils,  
 who had now abandoned them. But as they were a  
 considerable time in being ready for action, their de-  
 signs were discovered and completely defeated. The  
 guards were increased on the 10th of May, and bodies  
 of cavalry were stationed round the Luxembourg and  
 Thuilleries. The council of five hundred was inform-  
 ed by the directory, that a terrible plot was ready to  
 burst forth on the ensuing morning. The conspirators  
 at the ringing of the morning bell, were to proceed in  
 small parties of three or four men each, to the houses  
 of those persons whom they had singled out for destruc-  
 tion. Having murdered these, they were then to unite  
 in one body against the directory, whose guard they  
 conceived themselves qualified to vanquish. The Jaco-  
 bins in the mean time had nominated a new directory  
 and legislature, from among the most turbulent and  
 abandoned of their own persuasion. Some of the lead-  
 ers of this conspiracy were arrested, among whom was  
 Drouet the postmaster of Varennes, who stopped the  
 unfortunate Louis on his way to the frontiers, and with  
 him ten others, who were condemned at Vendome, but  
 Drouet made his escape.

These defeats which the Jacobins experienced, and Moderate  
 the disgrace into which they were again brought, de-  
 435 party.  
 termined the moderate party in the two councils to at-  
 tempt to procure the repeal of the concluding decrees  
 of the convention, which had granted them an amnesty,  
 and confirmed the laws against emigrants, excluding  
 their friends from succeeding them. A number of  
 days were employed in the discussion of these topics,  
 but the moderate party gained nothing in favour of the  
 emigrants, and nothing against the Jacobins but this,  
 that such as owed their preservation to the amnesty,  
 should

France. should not be deemed competent to hold any public offices.

1796.

436  
Deplorable  
state of the  
finances.

Another matter of no less a serious nature now called for the attention of the republican government, which was the deplorable state of the finances. While the tyrannical usurpation of Robespierre continued, terror supported the credit of the assignats, which joined to the sale of the church lands, and the property of the emigrants, furnished ample resources in the mean time; and no provision was at all thought of for future exigencies. If money was wanted, more assignats were fabricated, and no enquiry was made concerning the public expenditure, as no taxes were demanded from the people. The directory complained to the councils of the great distress under which they laboured, and of the want of sufficient funds to meet the unavoidable expenses of the ensuing campaign. A law was in consequence passed on the 25th of March, giving authority to dispose of the remainder of the church lands at the value formerly fixed on them, which was 22 years purchase. A new paper currency, termed *mandats*, was to be received in payment, but government had now lost its credit. These rapidly lost a great part of their value, which increased the demand for national property; and to prevent this, the legislature decreed that one-fourth of every purchase should be paid in cash, which prevented the sale of the national property, and the circulation of *mandats*.

437  
National  
institute  
established.

During their preparations for the approaching campaign, the directory attempted to render themselves popular at home, by the establishment of the *National Institute*, or society of men of letters under the protection of government. Every man of erudition who had escaped the bloody persecution of the Mountain party, was invited to be a member. It was opened on the 4th of April, in the hall of the Louvre, when the ambassadors of Spain, Prussia, Sweden, Denmark, Holland, America, Tuscany, Genoa, and Geneva, were present, and the members of the directory in their robes of state. The president expressed the determination of the executive power to afford every encouragement to the improvement of literature and the arts; and the president of the institute replied that it was the determination of the members to endeavour to give lustre to the republican government by the exercise of their talents, and by publications. The speeches were enthusiastically applauded by 1500 spectators, and the general expectation was, that France was now to enter on a career of glory and prosperity wholly unprecedented.

438  
Proposal of  
peace by  
Britain.

About this time an approach towards a negotiation with France was made on the part of Great Britain, by Mr Wickham, ambassador to the Swiss Cantons; and on the 8th of March, a note was communicated to M. Barthelemy, ambassador from the French republic. It was asked, whether France would be willing to send ministers to a congress to negotiate peace with his Britannic majesty and his allies? Whether France would be inclined to communicate the general grounds on which she would be willing to conclude peace, that his majesty and his allies might consider them in concert? Lastly, whether France would desire to communicate any other mode of accomplishing a peace? Whatever answer should be returned was to be transmitted to the British court; but it was at the same time declared that Mr Wickham had no authority to discuss these subjects. An answer was

returned on the 26th of the same month, by Barthelemy in the name of the directory, complaining of the inferiority of the British court, as its ambassador had no authority to negotiate, and that the proposal of a congress made negotiation endless. It stated the wish of the directory to obtain peace, but that no portion of territory would be relinquished, which formed part of the republic by the constitutional decree. To this note no reply was made; but it was complained of to the foreign ministers resident at the court of London, and considered as leaving Britain no other alternative than the prosecution of the war, at once both just and necessary.

During the winter season, the directory found means to reduce the western departments to proper subjection. The expedition from England had tempted the royalists once more to try their fortune in the field of battle; but after a number of defeats, their leaders Charette and Stofflet were apprehended, and put to death on the 29th of March, which tended to suppress the insurgents in every quarter. Domestic enemies being thus subdued, the republican government was enabled to make the more vigorous exertions on the frontiers. Their military force was divided into three armies; the army of the Sambre and Meuse under Jourdan was principally stationed about Dusseldorf and Coblenz; the army of the Rhine and Moselle, commanded by the celebrated General Moreau, stationed on the Upper Rhine, and from Landau to Treves; and the third army occupied the Italian coast from Nice towards Genoa, the command of which was bestowed on Bonaparte, a native of Corsica, and one of the most extraordinary men that ever lived in any country, as our readers will perceive in the sequel.

439  
Royalists  
in the west  
subdued.

The army of Italy about this time was 56,000 strong, which Bonaparte, at his arrival, found very ill equipped, and in a state of mutiny for want of pay and necessaries. Wishing them to prepare for immediate action, he addressed them in the following manner: "If we are to be vanquished, we have already too much, and if we conquer, we shall want nothing." He was anticipated by the enemy. The Austrians employed in the defence of Italy under Beaulieu were more numerous than the army of Bonaparte, to which were added 60,000 regular troops belonging to his Sardinian majesty, the militia of the country, and about 2500 Neapolitan cavalry. On the 9th of April the campaign was opened by General Beaulieu, who attacked a post called *Voltri*, in the possession of the republicans, six leagues from Genoa. They defended themselves till the evening, after which they retreated to Savona. Next day Beaulieu succeeded in all his attempts, till he reached Montenotte, the last republican entrenchment, which contained 1500 men. Rampon, their commander, prevailed with them in a moment of enthusiasm, to swear that they would not surrender, in consequence of which they succeeded in arresting the progress of the Austrian general for the remaining part of the day. The right wing of the French army was, during the night, stationed in the rear of the redoubt of Montenotte, under La Harpe, while Bonaparte, Massena, Berthier, and Salicetti, advanced by Altara, to take the enemy on their flank and rear. Powerful reinforcements were in the mean time sent to Beaulieu, who, on the morning of the 11th again made an attack on La Harpe; but the approach of Massena soon made the Austrians and Sardinians

440  
Bonaparte  
takes the  
command  
of the army  
of Italy.

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France. 1796. nians give way on all sides. Two of their generals were wounded, 2500 were made prisoners, and the republicans pursued them beyond Cairo, which, on the following day, fell into their hands.

441  
Defiles of  
Millesimo  
forced by  
Angereau.

General Angereau, on the 13th, forced the defiles of Millesimo; and by a rapid movement General Provera was surrounded at the head of 1500 grenadiers; but instead of surrendering, this brave officer forced his way through the enemy, and entrenched himself in the ruins of an old castle at the top of the hill. Angereau, with his artillery, endeavoured to dislodge him; after which he arranged his troops into four columns, and made an attempt to carry Provera's entrenchments by storm, which proved unsuccessful, but the French had two generals killed, and Joubert was wounded. The adverse armies faced each other on the 14th, while a division was left to continue the blockade of Provera. The Austrians made an unsuccessful attack on the republican centre, while Massena turned the left flank of their left wing in the vicinity of Deگو, and La Harpe turned the right flank of the same wing. One column kept in check the centre of the Austrians, another attacked the flank of their left wing, and a third column gained its rear. The republicans took 8000 prisoners, and General Provera at last surrendered.

442  
Deگو re-  
taken by  
Bonaparte.

General Beaulieu, after he was defeated at Millesimo, made an effort similar to those which have been frequently found to change the fortune of war. With 7000 of his best troops he made an attack upon the village of Deگو, where the republicans after their success were indulging in security. He made himself master of the village, and the troops having rallied under Massena, that general employed the greater part of the day in his efforts to retake it. The republicans were three times repulsed, but Bonaparte having arrived in the evening with reinforcements, the post was retaken, and 1400 men were made prisoners. Bonaparte was now, by design, between the Austrian and Sardinian armies, his right wing being secured by the village of Deگو against the efforts of Beaulieu, while he could act against the Piedmontese troops with the greater part of his force. Angereau powerfully seconded his exertions, who had opened a communication with the Tanaro, where Serrurier was approaching the town of Ceva, in the vicinity of which there was a Piedmontese entrenched camp of 8000 men. The redoubts covering this camp were, on the 16th, attacked by General Angereau, capturing the greater part of them, on which the Piedmontese evacuated Ceva during the night, and, on the 17th Serrurier entered it in triumph. Count Colli repulsed Serrurier on the 20th; but Bonaparte, on the 22d, defeated him at Mondovi. The flying army endeavoured to make a stand at Fossano, its wings being at Coni and Cherasci, which latter place was taken by Massena on the 25th, when Fossano was taken by Serrurier, and Alba by Angereau.

443  
Armistice  
with Sar-  
dinia.

Prior to these movements, an armistice was requested by Count Colli on the 23d, which General Bonaparte granted, on condition that the fortresses of Coni, Ceva, and Tortona, should be given up to him, with their magazines and artillery, and that he should have permission to cross the Po at Valentia. The armistice was signed on the 29th of April, and a definitive treaty was concluded at Paris on the 17th of May. The conditions, in so far as they concerned his Sardinian majesty,

were unquestionably humiliating. The duchy of Savoy was given up to France for ever, as were also the counties of Nice, Jende, and Bretheuil. An amnesty was granted to all his subjects who were persecuted for political opinions, and he agreed that the French troops should have free access to Italy through his territory. He was to erect no fortresses on the side of France, to demolish those of Brunette and Susa, and confess that his conduct to the last republican ambassador had been disrespectful.

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The republican army, in the mean time, advanced towards the Po; but Beaulieu was deceived respecting one article of the armistice, which granted permission to Bonaparte to cross that river at Valentia. Concluding that the republican chief seriously intended to cross at this place, he made every possible preparation to oppose him, while Bonaparte hastily penetrated into Lombardy, and, on the 7th of May, was 60 miles down the river to Placentia before the enemy could obtain information of his route. He passed the river without difficulty. Six thousand infantry and 2000 cavalry were dispatched by Beaulieu to oppose the passage of Bonaparte across the river when it was too late, by whom they were met and defeated on the following day, at the village of Fombio. As 5000 more advanced to the assistance of these, they were repulsed by La Harpe, at which time that officer was killed. An armistice was granted by General Bonaparte on the 9th to the duke of Parma, on condition that he paid 2,000,000 of French money, and delivered 10,000 quintals of wheat, 5000 quintals of oats, and 2000 oxen for the use of the army. He likewise agreed to give up 20 of his best paintings, to be made choice of by the republicans. This last measure was strongly objected to by several men of literature and artists as soon as it was known; but the directory disregarded every remonstrance, and gave orders for similar stipulations to be inserted in every subsequent treaty.

444  
A formal  
treaty.

As General Beaulieu was forced to abandon the Po, he crossed the Adda at Lodi, Pizzighitine, and Cremona, leaving some troops to defend the approaches to Lodi, which were attacked by the advanced guard of the republicans on the 10th, who drove them into the town, and pursued them so rapidly, that there was no time left to break down the bridge over the Adda. Here the Austrians defended the passage with 30 pieces of cannon, and the republican officers, after holding a consultation, were of opinion that the bridge could not be forced. Bonaparte, however, having demanded of his grenadiers whether they were willing to make the attempt, they commended the proposal, on which he formed them into a close column, when they availed themselves of the darkness occasioned by the smoke of the enemy's artillery, and reached the middle of the bridge unperceived, where 700 of them perished by the Austrian cannon: but a number of republican officers flew to the head of the column, urged on the brave soldiers, broke into the Austrian ranks, and made them fly in all directions.

445  
Victory at

It appears that nothing more was expected from the campaign of Bonaparte in Italy, than to induce the different princes and states to abandon the coalition against France, which every one of them assisted either with troops, or with money and provisions. He made himself master of Ferrara, Bologna, and Urbino, granting

446  
And conse-  
quences of  
it.

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1796.

to his Holiness and the duke of Modena an armistice on the usual terms, we mean large contributions, paintings, and curiosities. The Neapolitan cabinet was so terrified in consequence of his march into the Roman territory, that it requested a peace; and Bonaparte agreed to an armistice without any of the humiliating conditions demanded from the other states of Italy. He next proceeded to Leghorn, in the neutral state of Tuscany, in order to drive out the English, and confiscate their property. In this manner did he finish the task assigned him, before the commencement of the campaign on the Rhine. It is true that Mantua was still in possession of the Imperial troops; but it was in a state of siege, and the rest of Italy was submissive to the French republic.

447  
Success of  
the French  
in Ger-  
many.

With a view to lessen the exertions of the republicans in Italy, the contest in Germany was renewed by the Austrians. General Jourdan was of consequence informed, that the armistice would terminate, and the war be renewed, on the 31st of May. Jourdan at this time had to contend with General Wartensleben, while the archduke was at the head of the army in the Hundsruck, to oppose General Moreau on the Upper Rhine. A singular stratagem distinguished the commencement of the campaign on the part of the French, with a view to decoy the whole of the Austrian forces to the Lower Rhine, that an opportunity might thus be afforded to General Moreau of suddenly entering Swabia, and carrying the war to the hereditary territories of Austria. Jourdan began to make vigorous exertions, and Moreau remained inactive. The lines of Dusseldorf were left on the 31st of May by the left wing of Jourdan's army, under the command of General Kleber, who defeated the Austrians in marching towards the Sieg. Advancing with his centre and right wing, Jourdan forced the Austrian posts on the Nahe, effected the passage of the Rhine, blockaded Ehrenbreitstein, and hastened forward as if he designed to form the siege of Mentz. These movements brought the archduke into the perilous situation of having Moreau in his front, and Jourdan in his rear. He therefore crossed the river in haste, leaving the fortresses of Mentz and Manheim to retard the progress of Moreau. The archduke attacked the advanced guard of General Jourdan, which, after an obstinate and bloody conflict, he forced to retire. Jourdan, upon this, retired to his former positions; and Kleber, on the 20th, entered the lines of Dusseldorf, from which he had taken his departure.

448  
Defeat of  
the arch-  
duke  
Charles.

The archduke had no sooner withdrawn from the Palatinate to force Jourdan down the Rhine, than Moreau marched speedily towards Straßburgh, by which the hostile armies seemed as fast as possible to be flying from each other. The passage of the river opposite to Kehl was effected by Moreau on the 24th of June, which was attended with considerable difficulty, a sudden swell having prevented the Austrians from being taken by surprise, which appears to have been the primary intention of the republican commander. The entrenchments on the islands occupied by troops, were instantly carried at the point of the bayonet, and 2600 republicans effected a landing on the opposite shore, where they were exposed to the Austrian cannon from the camp of Wilstedt, and to the cannon of the fort; still, however, they maintained their ground, and likewise acted on the offensive, till the boats returned with rein-

forcements, when the fort and redoubts were carried by storm, and the Austrians retreated towards Offenburgh.

France.  
1796.

In consequence of the archduke's departure to the Lower Rhine in pursuit of General Jourdan, and the detachments sent to Italy to check the victorious career of Bonaparte, General Moreau was in a situation for entering Swabia with a superior force. On the 26th of June he succeeded in compelling the Austrians to abandon their camp at Wilstedt, and next day proceeded with his army in three columns, against another body of 15,000 men before Offenburgh. A detachment from General Wurmsler was sent to their assistance, but these being defeated on their march by two republican columns, and Offenburgh was evacuated during the night. The mountain of Knubis was seized on the 2d of July by a body of French under General Laroche. This is the loftiest point in that ridge of mountains denominated the *Black Forest*. The Austrians were next day driven from the pass of Friedenstadt, after an obstinate resistance, by which their communication with the emigrants under the Prince of Condé was entirely cut off. The Austrians were attacked at Raftadt on the 8th by the left wing of the republican army, commanded by the gallant General Desaix, and, after a most obstinate resistance, were obliged to retreat to Ettingen.

449  
Austrians  
defeated  
by Moreau

The archduke now arrived with his army on the Lower Rhine, leaving Wartensleben to check the progress of General Jourdan, who began to act upon the offensive as soon as the archduke departed. General Kleber, as before, set off from the lines of Dusseldorf, and the centre and right wing crossed the Rhine in the vicinity of Coblenz. The French forced the posts of Ukareth and Altenkirchen, and the whole army under General Jourdan crossed the Lahn on the 9th of July, and next day Wartensleben was defeated with great slaughter, and the loss of 500 men taken prisoners; and the republicans entered Frankfort on the 12th. The two imperial armies were now not far from each other, being in the centre between those of Moreau and Jourdan. Had the archduke found it practicable to resist for a little one of these two armies of the French by a detachment, while he rushed upon the other with the main body of his army, it is not improbable that an end might thus have been put to any further invasion of the Germanic empire; but the activity of the republican officers was not so easily checked, nor could their progress be arrested by any partial exertions. His last resource, therefore, was to give battle to Moreau, which was most obstinately fought on both sides. The French, in their endeavours to force the heights of Rollensolhe, were four times repulsed, and, after a most terrible slaughter, they carried the field at the point of the bayonet.

450  
The French  
enter  
Frankfort.

In consequence of the loss they sustained at the battle of Ettingen, the two imperial armies retired eastward, the archduke retreating through Swabia towards Ulm, where he had magazines. At every post of any strength he made a stand, in order to obstruct General Moreau's progress as much as possible. Wartensleben, in his retreat through Franconia, made a similar opposition to the march of Jourdan. The archduke was forced by Moreau to cross the Neckar, and afterwards the Danube, by which means the whole circle of Swabia was in the rear of the republicans. Wartensleben was forced

451  
The arch-  
duke re-  
treats  
through  
Swabia.

France. to retreat through Aschaffenburg, Wartburg, Schweinfurt, and was obliged to cross the Rednitz, in order to shun the army of Jourdan, which was pressing on his rear. Jourdan continued to advance, till his right wing, commanded by General Bernadotte, was posted at Neumarck, his advanced posts at Teining, and the main body of the army pursued Wartenleben beyond the Nab, having arrived at Amberg on the 22d of August.

1796.

452  
Great alarm in Germany.

The three republican armies commanded by Moreau, Bonaparte, and Jourdan, were possessed of the whole country from the frontiers of Bohemia to the Adriatic, excepting only a part of the mountains of Tyrol, which caused an alarm through the whole of Germany. The payment of 4,000,000 of French money procured a peace for the duke of Wirtemberg; and the circle of Swabia obtained, on condition of paying 12,000,000 of livres, and delivering 8400 horses, 5000 oxen, 100,000 quintals of wheat, 50,000 quintals of rye, 100,000 sacks of oats, 100,000 pairs of shoes, and a large quantity of hay. Peace was granted to the margrave of Baden upon similar terms. Negotiations were also entered into by the elector of Bavaria and the circle of Franconia, having offered large sums in order to procure it. Even the diet of Ratisbon sent a deputation to the republican generals to treat for a neutrality. Spain made a treaty with France, both offensive and defensive, and war was in consequence soon after declared against Great Britain.

453  
The house of Austria in danger.

Bonaparte was detained still in Italy, whereas had it been in his power to cross the Tyrol at Inspruck, and reach the Danube, it is more than probable that the emperor of Germany would have been obliged to accept of a peace upon any terms which the conquerors thought proper to propose. He was now abandoned by every member of the coalition, Britain alone excepted, whose pecuniary aid enabled him to extricate himself from the dangers which surrounded him. A command of money raised one army after another to check the career of Bonaparte in Italy, while his German armies were recruited by extensive levies, and mercenary troops belonging to the states which had made peace with France.

454  
Able conduct of the archduke.

The archduke Charles having received strong reinforcements, came to the resolution of opposing Moreau at Umersheim. A desperate battle was of consequence fought, of 17 hours continuance, when one of the wings of the Austrian army succeeded in gaining about four leagues of territory in the rear of the republican army; but as the archduke was informed that Wartenleben could not maintain his ground against the efforts of General Jourdan, he deemed it prudent to retreat, and adopt new measures. On the 17th of August, he left General La Tour to be a check upon Moreau, and crossing the Danube at Ingolstadt, he marched to the relief of General Wartenleben, and with united forces determined to fall upon Jourdan. On the 23d he made an attack upon Bernadotte at Teining, whom he compelled to retreat towards Nuremberg. The archduke was now on the right of Jourdan, and Wartenleben was in front of him, which induced the French commander to retreat on the 24th. Such was the state of the French finances at the beginning of this campaign, that the armies of Jourdan and Moreau were under the necessity of plundering wherever they came,

to supply their immediate wants. This was particularly the case with Jourdan's army, which when it began to retreat, suffered almost as much from the exasperated inhabitants as from the opposing army. The archduke and Wartenleben having united their forces, the former was enabled to dispatch General Nauendorf with reinforcements to La Tour, to keep Moreau in check, while he continued his pursuit of Jourdan towards Wurtzburg, where the French made a stand, and a severe engagement took place on the 3d of September. In this, General Jourdan was the greatest sufferer, and he continued his retreat during the night. Having crossed the Lahn, he made a feeble resistance, and marched along the banks of the Rhine, till his army, on the 17th, arrived at Coblenz and Dusseldorf, from which it had formerly departed.

France. 1796.

The army of Moreau was now in a situation extremely perilous, yet he maintained his position till the 17th of September, the very day on which Jourdan reached Dusseldorf; but he was obviously in a wavering condition as to his future movements, and one of the greatest generals Europe ever beheld was now at a loss what step to take. He made an unsuccessful effort to draw the archduke from the pursuit of Jourdan. Many attacks were made upon him, but without effect; and the Austrian generals gave way to him wherever he turned. But finding that the retreat of Jourdan was irretrieveable, and that General Bonaparte was still detained in Italy, he finally resolved to retreat. To prepare for this arduous undertaking, he had crossed the Lech, which he suddenly underpassed, as if fully determined to penetrate farther into Austria, and compelled La Tour to fall back to Landsberg. Having thus obtained a free passage for his future movements, he began his ever memorable and unexampled retreat, passing between the Danube at Ulm and the lake of Constance, while La Tour continued pressing upon his rear. The passes of the Black Forest were occupied by numerous bodies of Austrians and armed peasantry, while his right flank was harassed by Generals Nauendorf and Petrasch, at the head of 24,000 men. He turned once more upon La Tour with terrible impetuosity, defeated him, and took 5000 prisoners, whom he was able to carry to France. He after this continued his retreat, checking Nauendorf and Petrasch with the right wing of his army under General Dessaix, and the rest of the army cleared the passages in front, till he reached the Valley of Hell, a narrow defile extending for some leagues between lofty mountains, and in particular parts of it not more than a few fathoms broad. This passage was forced by the centre of his army in a mass, and the wings opposed the enemy under Nauendorf and La Tour. After this dreadful effort, he arrived at Fribourg on the 13th of October. The archduke on his arrival from the pursuit of Jourdan, forced him to abandon his positions on the Swabian side of the Rhine, Kehl excepted, and a temporary fortification at Hunningen, called a bridge-head.

455  
Moreau's situation highly critical.

As the French frontier at this time was in a defenceless situation, the Imperial troops took advantage of it to cross the Rhine at Manheim, and to march in different detachments to Weissenburg, Seltz, Hagenau, and nearly to the very gates of Strasburgh, levying contributions, and demanding hostages wherever they came. When these detachments were recalled, the archduke

456  
His unparal- leled retreat.

457  
French frontier at this time defenceless.

France.  
1796.

archduke formed the resolution of terminating the campaign by the reduction of Kehl and the fortification at Huningen, which he found to be no easy task. At both these places a communication was open with the French side of the river, and the divisions of General Moreau's army did duty at them alternately. Much of the winter was spent by the Austrians in endeavouring either to carry them by storm, or to reduce them in consequence of a regular siege. The French at last agreed to evacuate Kehl on the 10th of January, and the fortification at Huningen was surrendered in the month of February.

458  
Bonaparte  
victorious  
in Italy.

Although the republicans in Germany experienced very considerable reverses of fortune, as we have just now seen, yet Bonaparte in Italy continued victorious. Having laid all Italy under contribution, he enjoyed the means of preserving a secure and steady discipline over a well paid army. The mode of fighting which he adopted in all desperate cases, was that of the close column; the favourite method of Epaminondas and Gustavus Adolphus. The stile, too, in which he addressed his army before any great action, was well adapted to inspire them with enthusiasm. His speech to his army when he first entered Lombardy, deserves to be remembered. "Soldiers, you have rushed like a torrent from the summit of the Appenines, you have driven back and dispersed all who opposed your march. Your fathers, your mothers, your wives, your sisters, your sweethearts, rejoice in your success, and boast with pride of being related to you. But remains there nothing more for you to effect? Shall posterity reproach us with having found a Capua in Lombardy? But I already see you rushing to arms; an unmanly repose fatigues you, and the days lost to glory are lost to your felicity. But let the people be tranquil; we are the friends of all nations, and more particularly of the descendants of the Brutuses, the Scipios, and the illustrious personages whom we have chosen as models. To restore the capitol, to replace with honour the statues of the heroes who rendered it renowned, and to rouse the Roman people, become torpid by so many ages of slavery, such will be the fruit of your victories; they will form an epoch to posterity, and you will have the immortal glory of renovating the fairest portion of Europe. The French nation, free and respected by all the world, will give to Europe a glorious peace. You will then return to your homes, and your fellow-citizens, who, when pointing to you, will say, "He was of the army of Italy."

459  
Siege of  
Mantua.

Bonaparte took up the first part of the month of July in commencing a regular siege against Mantua, expecting to be master of that city towards the end of the month. In this, however, he proved too sanguine, for the military efforts of Austria were very great, and the pecuniary aid of Britain was not refused. Twenty thousand troops were sent from the Rhine, besides vast numbers from different quarters, so that he was obliged to raise the siege, and provide for his own safety in the best manner he could. Massena was driven from his post at La Corona on the 29th of July, while 15,000 Austrians drove the republicans from Salo, and next from Brescia, with the whole of the stores and magazines belonging to the army of General Bonaparte. The Imperial troops, however, committed a fatal blunder in their plan of operations, by dividing into two

France.  
1796.

parts an army which, when united was a match for the enemy, and placing Bonaparte between them. Of this blunder the republican chief was fully aware, and did not fail to take advantage of it. He unexpectedly raised the siege of Mantua, and leaving a small body of troops to check the Austrians, he marched rapidly westward, and retook Brescia, with the magazines and hospitals, on the 1st of August. As he had the mass of his army with him, he exceeded his enemies in numbers wherever he attacked them. Forming a large body of his troops into close columns, the Austrians extended their line with the view of surrounding him, being not yet acquainted with his manner of fighting, by which means he penetrated their line in all directions, and threw them into the greatest confusion. He made 4000 prisoners, and took 20 pieces of cannon. A division of them finding Salo in possession of the republicans, wandered about in search of a road, by which to make their escape, when they summoned Lonado to surrender, believing that the bulk of the French army had gone in search of Wurmser to give him battle. This was indeed the case; but Bonaparte was in Lonado with no more than 1200 men. Although this event no doubt gave him much uneasiness, yet with great presence of mind he threatened to destroy their whole division for insulting the French army, by summoning its commander in chief to surrender. The Austrian officers believed that the whole army was in the place, so that by this singular stratagem 4000 men were induced to throw down their arms.

460  
Defeat of  
Wurmser.

Marshal Wurmser was attacked by Bonaparte on the 5th and 6th, and driven from Peschiera and the river Mincio. The Austrians were obliged to quit Verona on the 7th, and again to betake themselves to the mountains of Tyrol; losing in a contest of six days upwards of 20,000 men, but fortunately three-fourths of them were prisoners. The siege of Mantua was again begun by the French, whose works the enemy had destroyed in their absence, and taken 140 pieces of cannon into the city which they had left behind. By this loss, the French could not undertake a regular siege, and General Wurmser was in a condition to attempt the relief of it by the beginning of September. Bonaparte having been apprised of his approach, left troops behind him to carry on the blockade, while he directed his march northward with the main body of his army, drove the Austrians from St Marco and Roveredo to the pass of Calliano, where they made a stand. Here an engagement ensued, in which the Austrians lost 6000 men taken prisoners, and the French entered Trent in triumph. Instead of retiring from the hero who had vanquished him, Wurmser threw himself into Bassano, upon the flank and rear of Bonaparte, and then marched with rapidity towards Mantua. He endeavoured to make a stand at Bassano, but was defeated, with the loss of 5000 men taken prisoners. He crossed the Adige at Porto Legnago, and entered Mantua with no more than 8500 men, infantry and cavalry. Great as this veteran's loss was, it had the effect of detaining Bonaparte in Italy, to watch the numerous garrison of Mantua. He expected that its numbers would very soon reduce it by famine to the necessity of capitulating, but in this he found himself disappointed, as the flesh of the 4500 horses which Wurmser carried into it, afforded subsistence to the troops for a long time.

Such

France.  
1796.  
<sup>461</sup>  
Revolt of  
Corsica  
from Bri-  
tain.

Such was the fame of Bonaparte as a general, on account of the victories he obtained over the Austrians, that his countrymen, the Corsicans, discovered an inclination to throw off the British yoke, and be united to France. They became of course so mutinous, that the viceroy deemed it necessary to evacuate the island, the submission of Italy to the republic having greatly diminished its value. The imperial subjects in Italy, together with the inhabitants of Bologna, Ferrara, and Modena, now began to form themselves into republics, under the patronage of General Bonaparte; they sent deputies to the convention, raised troops, and abolished all orders of nobility.

<sup>462</sup>  
The Aus-  
trians par-  
tially suc-  
cessful.

The emperor soon after endeavoured to relieve Mantua, by sending another army into Italy, under the command of General Alvinzi, who having crossed the Piava, was met by the republicans, and compelled to repass the river. Davidovich with his division having driven the French down the Adige towards Verona, General Bonaparte found it necessary to concentrate his forces. He therefore left General Vaubois as a check to the progress of Davidovich, and marched in person against General Alvinzi, and was met by the Austrians at the village of Arcole. As this village could not be turned speedily, on account of a canal, the French were obliged to attempt the passage of a narrow bridge in the face of the Austrian fire. Their officers rushed to the head of the column which had undertaken it, but in vain endeavoured to rally them. Angereau advanced to the end of the bridge with a standard; but he was followed by none, when the commander in chief hastened to the bridge, and exclaimed, Grenadiers, follow your general! They followed till within 30 yards of the bridge, when they were intimidated by the tremendous fire of the Austrians, and Bonaparte judged it proper to fall back. In the evening General Guieux took the village at the head of 2000 men, but again left the Austrians in the possession of it. On the 16th of November a desperate engagement took place in the vicinity of Arcole; and next day the Austrians pressing on the centre of the republican army, were unexpectedly taken on their flank by the left wing of the enemy, which was lying in ambuscade. Bonaparte sent a party of horse and 25 trumpeters round to the rear of the Austrians, who concluded, from the terrible noise, that they were surrounded, and fled on all sides in the utmost confusion.

Having driven Alvinzi across the Brenta, Bonaparte returned; the positions of Rivoli and La Corona were resumed, and Davidovich driven back into Tyrol. General Wurmser still defended Mantua during the remaining part of the year; so that nothing farther may be said to have been gained by so many victories, but to consider Bonaparte as their only invincible commander.

<sup>463</sup>  
Negotia-  
tions be-  
tween  
Britain and  
France.

During these transactions in the field of battle, Great Britain made a laudable effort to negotiate with France. Passports were obtained from the directory, and Lord Malmesbury set out as ambassador to Paris. He began the negotiation with De la Croix, the minister for foreign affairs; but his lordship soon found that the directory had no serious intention of concluding a treaty with Britain. While the British ministry, as individuals, did not approve of a peace at that time, yet officially they considered it as proper, if it could be obtained up-

on honourable terms. It was proposed by Lord Malmesbury, that the principle of mutual restitutions should be agreed upon as the basis of the treaty, and the directory wished that the objects should be specified. Lord Malmesbury therefore said, that the French should give up the Austrian Netherlands, for which Britain would give up the foreign settlements belonging to the republic. Many of the Dutch possessions abroad were also to be relinquished, on condition that the authority of the stadtholder should be acknowledged. He was next required to give in the ultimatum of his conditions in 24 hours; and on complaining of this demand, he was informed on the 19th of December, that the directory would agree to no conditions repugnant to the French constitution; and he was informed that his farther residence at Paris was unnecessary.

During this year Great Britain maintained her accustomed superiority at sea. The Cape of Good Hope was taken by Admiral Elphinstone on the 16th of September 1795, which the Dutch were extremely anxious to recover, for which purpose they advanced money to the French to fit out a squadron to combine with them in an attempt to reduce it. Seven ships of war were sent to retake the Cape, under the command of Admiral Lucas, but having been caught between two fires, he could not effect his escape, and therefore he surrendered to the British admiral without firing a gun.

<sup>464</sup>  
Cape of  
Good Hope  
taken by  
the Bri-  
tish.

Although Britain was superior by sea, yet an invasion of Ireland was attempted by the French in the end of 1796; but as folly seemed to have concerted the plan, it was of consequence abortive. The whole was committed to one man, General Hoche, without any second to occupy his place on the event of an accident. The disaffected party in Ireland had received no information of their approach, and the fleet was sent towards a part of the country where the people were not very much disposed to receive them. In this expedition 18 sail of the line, 13 frigates, 12 sloops, and transports with 25,000 men, were employed. It was detained for some time when ready for sailing, in consequence of a mutiny. Hoche set sail on the 10th of December, but in working out of Brest, a ship of the line was lost, and some more of them considerably damaged. The frigate which had on board the commander in chief was separated from the fleet by a gale of wind, in consequence of which, when most of the fleet arrived at Bantry Bay, they were without instructions how to proceed. The officers and troops wished to land, but Admiral Bouvet refused to comply. After remaining for some days on the coast, he sailed for France, and reached Brest with part of the fleet on the 31st. General Hoche reached Bantry Bay when it was too late, and consequently could not land. One ship of the line and two frigates foundered at sea, a frigate was captured by the British, and a ship of the line was run ashore, to prevent her from being taken.

<sup>465</sup>  
The French  
make an  
unsuccessful  
attempt on  
Ireland.

In the beginning of the year 1797, the archduke Charles was still employed in his endeavours to reduce Kehl, and the fortifications opposite to Huningen, Moreau being still his antagonist. General Hoche was appointed to succeed Jourdan on the Rhine, and Bonaparte was still engaged in the siege of Mantua, while powerful efforts were making to recruit the army of Alvinzi. The youth of Vienna were requested to grant their assistance, when 6000 of them volunteered their services.

<sup>466</sup>  
Advantages  
gained by  
the Aus-  
trians.

France. services for Italy. General Alvinzi's army was now 50,000 strong, with which he continued to alarm the republicans in all directions, in order to conceal from them the plan of his future operations. Bonaparte was still at Bologna, to prevent the escape of General Wurmser by that quarter, which he understood, by an intercepted letter, was his design. Having been informed of the approach of the Austrian army, he hastened to Mantua, and from that city to Verona, where the centre of his line was opposed to Alvinzi; but as the Austrians continued to attack all quarters at once, he could not penetrate the design of their commander. On the 13th of January the movements of the enemy became more serious on the lower part of his line near Porto Legnago; but in the evening being informed that the upper extremity of it under Joubert, had been attacked by vastly superior numbers, there he concluded that the Austrians were in greatest force. Still the Austrians persisted in the absurd plan of dividing their army—an absurdity which melancholy experience had not taught them to correct. Ten thousand troops, including the Vienna volunteers, received orders to proceed to Mantua by Porto Legnago, at the lower end of the republican line, while Alvinzi in person advanced against Joubert, who was forced to retreat, and was reduced to such a situation, that the capture of his whole division on the following day (the 14th) seemed highly probable.

467  
They are  
defeated.

Bonaparte having received information respecting the state of affairs, left Verona on the 13th, having ordered Massena to follow him with the centre to Rivoli as fast as possible. On the 14th, at the break of day, the division of Joubert made an attack on the Austrians, at which they were very much surpris'd, not knowing that Bonaparte had arrived with reinforcements. The superior numbers of the Austrians defeated all the endeavours of the French troops to turn their divisions; and the two wings of the republican army were driven back upon the centre in considerable confusion. Alvinzi engaged the centre, which with difficulty maintained its ground; and the Austrian wings advancing on both sides, entirely surrounded the French. The victory seemed already won, and it is even reported that General Alvinzi sent a courier to Vienna, to announce the approaching capture of Bonaparte and all his army. There can be no doubt that the republican chief was now greatly alarmed, yet he still considered it in his power to make a last effort. Forming three strong columns, he dispatched them against the right wing of the Austrians, which they penetrated at various points, and made it fly in such confusion that, having met a party of republicans which had not arrived in time to join the army, 4000 Austrians laid down their arms, and surrendered themselves prisoners of war. Bonaparte apprehending that this part of his line was no longer in danger, left Joubert to prosecute the victory, and went to oppose the march of Provera. A party under General Murat having continued their march all the night of the 14th after the battle, seized on Montebaldo in the rear of the position at Corona, to which part of the Austrians retreated, while Joubert on the following morning attacked them in front. Being thus surrounded, they were thrown into confusion, 6000 of them were taken prisoners, and numbers perished in attempting to cross the Adige.

I

During this bloody conflict on the upper part of this river, General Provera forced his passage across the lower part of it near Porto Legnago, and obliged the republican general Guieux to retreat to Ronco. As Provera was marching rapidly to Mantua, General Angereau came up with his rear, and made 2000 prisoners; but the Austrian general reached the neighbourhood of that city on the 15th, which was blockaded at St George and La Favourite. He summoned the republican commander here to surrender, but he having refused to comply, Provera endeavoured, without success, to carry it by assault. He next made an attack upon La Favourite, and was seconded by Wurmser with the troops in the garrison, who had perceived his arrival; but as Bonaparte had arrived with reinforcements, General Wurmser was defeated, and Provera being surrounded by the French, surrendered himself and his troops as prisoners of war. In consequence of these engagements at Rivoli and Mantua, the Austrians lost 23,000 men taken prisoners, and 60 pieces of cannon. The surrender of Mantua was now inevitable, on account of absolute famine, and therefore it capitulated on the 2d of February. That Bonaparte might allow the French emigrants to escape, he allowed General Wurmser to select and take out of the garrison 700 men who were not to be examined, nor viewed as prisoners of war, and the general himself was to depart unconditionally.

France.  
1797.  
468  
Surrender  
of Mantua.

The most active and vigorous preparations were making by the emperor and the French, for recommencing their bloody contest on the German frontiers, and therefore it was of importance for Bonaparte to leave Italy in his rear in a state of tranquillity. He sent General Victor on the 1st of February, together with the *Lombard legion*, to enter the papal territories; and after the surrender of Mantua, General Bonaparte followed in person. The Lombard legion, after storming the entrenchments of the pope's troops, made 1000 of them prisoners, and took all their cannon. General Colli had carried away most of the treasure from the chapel at Loretto; but the republicans still found articles of gold and silver worth a million of livres, and the image of the virgin was sent to Paris as a curiosity. At Tolentino the republican chief was met by a messenger from the pope with an overture of peace, and a treaty was concluded on the 19th. The pope promised to pay 15,000,000 of livres, and to deliver 800 cavalry horses, with a like number of draught horses and oxen. He also agreed to pay 300,000 livres to the family of the French ambassador Bassville, whom the rabble had murdered at Rome, and to make an apology by his minister at Paris for that event.

469  
The pope's  
forces sub-  
dued.

The French having been so unfortunate in their invasion of Germany by the way of Swabia and Franconia, now determined to make their principal attempt from Italy under the command of General Bonaparte. Vast bodies of troops were therefore detached by the directory from those who had served under Moreau, and sent as secretly as possible towards Italy by the way of Savoy. The impending danger was however perceived by the court of Vienna, and therefore gave the command on the side of Italy to the archduke Charles, he being the only Austrian who had hitherto been successful against the republicans. The war was now about to be carried into new territories, where a

470  
Reinforce-  
ments sent  
to Bona-  
parte.

foe

France. foe had scarcely ever been seen by the house of Austria. It was necessary that Bonaparte should once more force his way over the Alps, that immense chain of mountains which rises in the neighbourhood of Toulon, and stretching northward, obtains the names of Piedmont and Savoy. It then takes an easterly direction, forming the countries of Switzerland, Tyrol, Carinthia, and Carniola. The three last of these passing along the Adriatic, constitute the frontier, in this quarter, of the hereditary states of Austria. The fertile and level country, which belonged to Venice, lies between the mountains and the sea. It is crossed by many streams which are increased by the melting snows of the Alps, and whose peculiar characteristic is this, that they are greatest in summer, and least in winter.

471  
Error of  
the court  
of Vienna.

The archduke, instead of making a stand in the defiles of the mountains, was sent into the plain to guard the passages of the rivers; a very important blunder which entered into the plan of defence adopted by the council of war at Vienna.

472  
Progress of  
Bonaparte's  
army.

While Bonaparte continued to advance to the territories of the pope, the arrangement of the Austrian army was going forward along the eastern bank of the Piava. The republicans were on the opposite side, and Bonaparte, after quitting the papal territories, hastened to join them. Having effected the passage of the Piava on the 12th of March, the Austrians retired, skirmishing for some days, till they crossed the Tagliamento, where they halted with their whole force. The republican army reached, on the 17th, Valvesone, on the opposite side of the river, which after some hesitation they determined to cross. The stream having been diminished by the frost, the French crossed it in columns at different points. Joubert with the left wing received orders to pass along the valley of the river Drave, beyond the highest chain of the *Noric Alps*. Massena at the head of the centre division, passed into the defiles of these mountains, and the right division, commanded by Bonaparte, marched along the coast of the Adriatic.

473  
Surrender  
of Gradisca.

On the 19th, the town of Gradisca, on the river Lisonzo, surrendered to the right wing of the army; and its garrison, consisting of 3000 men, were made prisoners. The same division entered Goritz on the 21st, where it found the principal magazines and hospitals belonging to the Austrians. Trieste was taken on the 23d, and materials worth 2,000,000 of livres were sent off by the French from the quicksilver mines of Ydria. On the 24th a large body of Austrians was confined by Massena, and a part of the right wing commanded by General Guieux; but they having procured reinforcements from the archduke, engaged the French next day, and were defeated, having lost 5000 prisoners and 400 baggage waggons. Equal success attended the left wing under Joubert, Baraguay, D' Hilliers, and Delmas. Four thousand Austrians were taken on the banks of the Lavis, and they were defeated at Clauzen, with the loss of 1500 prisoners. This division then directed its march eastward, along the valley of the Drave towards Clagenfurt, the metropolis of Carinthia, where it was met by General Massena, that officer having obliged the archduke to evacuate his headquarters, and proceed nearer to the capital of the empire, which now began to be in danger. In 15 days General Bonaparte took 20,000 prisoners, and effected the passage of the Alps, after which there was no place

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France. of sufficient strength to arrest his progress to Vienna. Yet it must be confessed that his own situation was not free from danger, and therefore he prudently embraced this moment of unprecedented success to make overtures of peace. He wrote to the archduke on the 31st of March, deprecating the continuance of the war, and entreating him to use his influence for putting a period to its ravages. This prince evasively replied, that it did not belong to him to investigate the principles on which the war was carried on, and that he had no power to negotiate.

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The Austrians raised the peasantry in the Tyrol, to harass the rear of the French army, by which they gained some advantages under General Laudohn, and drove out the republican troops which had been left at Botzen and Brixen. The people of the Venetian states acted a similar part against the troops left in them, and with the assistance of 10 Sclavonian regiments, they murdered every Frenchman they could find, not sparing even the sick in the hospitals, of whom 500 were massacred at Verona. The Austrians attempted to surround the invading army; but Bonaparte knew that the embarrassment of the court of Vienna was at least equal to his own. He was at the head of 95,000 men, hitherto irresistible; and the Austrians could not but know that to surround his army was not to vanquish it, on which account he persisted in advancing. On the 2d of April, after a bloody conflict, he forced the strong defiles between Freisach and Newmark, making 600 prisoners. His advanced guard reached Hunsmark on the 4th, where they again defeated the Austrians, which induced the cabinet of Austria to treat for peace, there being no place where the army of the archduke could make a stand, till it came to the mountains in the neighbourhood of Vienna. Bellegarde and Morveld requested a suspension of hostilities from Bonaparte, while care was taken to remove the public treasure and effects into Hungary. The French commander consented, on condition of getting possession of Gratz and Leoben, about 50 miles from Vienna. This was on the 7th of April, and the armistice which was to expire on the 13th, was afterwards renewed for a longer period. A preliminary treaty followed this on the 19th, by which the French were to retain the Austrian Netherlands, and the republic of Lombardy should be called the Cisalpine republic, comprehending the Milanese, Mantua, Modena, Ferrara, and Bologna. Bonaparte consented to return to Italy, if his army should be supplied with provisions during its march, and all farther disputes were to be settled by a definitive treaty of peace. He brought an accusation against the Venetian government for conniving at the murder of the French during his absence, and having possessed himself of the city and territories, he dissolved that ancient aristocracy.

474  
Partial success  
of the  
Austrians.

475  
Peace concluded  
between  
France and  
Austria.

During the approach of Bonaparte towards Vienna, the republican armies on the Rhine were pressing on the Austrians, that they might not have it in their power to send reinforcements against him. An armistice was offered by the Austrians, but since the French required Ehrenbreitstein as a compensation, both parties resolved to prosecute the war. The left wing of the army of General Hoche proceeded from Dusseldorf, while the centre and right wing crossed the river near Coblenz. On the 18th of April a fierce contest took place between

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tween the hostile armies near the Lahn, in which the Austrians lost 4000 taken prisoners. General Moreau having forced the passage of the Upper Rhine near Strasburg, attacked and carried the village of Diersheim. Next day the conflict was renewed with such vigour on the part of the republicans, that the fort of Kehl was taken, and 5000 Austrians were made prisoners. They were next pursued towards the Danube, when all military operations were instantly suspended by messengers dispatched through Germany from the archduke and Bonaparte, with the joyful news that peace was concluded. On the arrival of these messengers, the army of General Hoche was making a desperate attack upon Francfort on the Maine, which General Warnecht was employing every effort to protect. Both armies suddenly received the news, the hostile troops threw down their arms, and congratulated each other on the happy event.

476  
Changes in  
the direc-  
tory.

A contest of an alarming nature was now fast approaching between the legislative and executive branches of the French government. A third part of the legislative body was now to be changed. On the 19th of May, Letourneur went out of the directory by lot; on the 20th the new third took their seats, and on the 21st Barthelemy was chosen a member of the directory in the room of Letourneur. Pichegru, Jourdan and Willot, were among the members of the new third, so that a decided majority of both councils was of the moderate party; and two members of the directory, Carnot and Barthelemy, were understood to be men of the same description. Every measure was adopted which tended to render the Mountain party odious, or embarrass the directory.

477  
New plan  
of finance;

Gilbert Desmolieres, on the 14th of June, brought up a report from a committee on the state of the finances, in which he inveighed against the prodigality and profusion of the directory and its agents in the strongest language. A new plan of finance was proposed by the same committee on the 18th, which went to take from the directory the administration of the public money. On the preceding day Camille Jourdan presented a report of great length on the subject of religion, wherein he insisted on the impropriety of forbidding its ceremonies to be publicly displayed, and the iniquitous nature of that persecution which its ministers had suffered, because they could not take the oaths prescribed by the legislature. The council of five hundred decreed, on the 15th of July, that all the laws against refractory priests should be repealed; and on the following day a decree requiring from them an oath of fidelity to the constitution, was carried by a majority of no more than six members. Emery, a new member, proposed the repeal of those laws by which the property of emigrants had been confiscated, and that their relations should be considered as competent to succeed them. Such as had fled into foreign countries from Toulon and other parts of the nation, received encouragement to return home, and allowed to cherish the expectation that their names would be expunged from the list of emigrants.

478  
and lenient  
measures in  
favour of  
the priests.

479  
The royal-  
ists assume  
fresh cour-  
age.

The discussion which these topics underwent made the directory and the councils professed enemies to each other. The latter wished the former to be changed before the expiration of the legal time, and the directory wished to deprive many new members of their seats who had been elected by the people. As Barras was rather

the most odious member of the directory, an effort was made to deprive him of his seat, under the pretence that he was less than the legal age of 40; but his colleagues maintained that he was born in the year 1755, and it seems no proof of the contrary could be produced. Still the directory did not want a number of adherents. The resolution of the councils in favour of the priests had the appearance of a counter-revolution, which induced the royalists to resume courage, and journals were rapidly published in defence of their cause. The councils received information on the 20th of July, that a division of the army under General Hoche was within a few leagues of Paris, while the constitution declared that the directory incurred the penalty of ten years imprisonment, if it brought any troops nearer the residence of the legislative body than twelve leagues without its consent. An explanation was demanded, when the directory declared their ignorance of the march, having been undertaken without any orders from them, and purely owing to a mistake of the officer by whom it was conducted; but the councils paid little regard to such an allegation. The mutinous suburb of St Antoine adhered to the majority of the directory, which encouraged them so much, that they lost no time in proceeding to action. General Angereau had been sent for from Italy, under the pretext of delivering to the directory some standards taken from the enemy. The Thuilleries was surrounded by Angereau on the morning of the 4th, with a division of the troops, when the guard of the councils refused to act against them, and Ramel their commander was made prisoner. On entering the hall, he found Pichegru and twelve more of the chiefs of the opposite faction, whom he immediately sent prisoners to the temple. Carnot made his escape on the preceding evening, but Barthelemy remained and was put under arrest. When several members of the councils came to the hall at the usual hour, they were astonished to find that seals had been put upon the doors, and that they could not find admittance. They were ordered to go to the surgeon's hall, where the directory, it was said, had appointed them to meet. Of both councils not more than 120 members assembled, who sent to obtain from the directory an account of the late proceedings. They were given to understand that what had been done was absolutely necessary for the salvation of the republic, congratulating the duped councils on their escape from the machinations of the royalists. According to the report of Boullay de la Meurth, a vast royalist conspiracy, the centre of which was in the bosom of the councils, was endeavouring to subvert the constitution, but that the indefatigable diligence and activity of the directory had defeated all their attempts! It was proposed to transport the conspirators without a trial, and the councils were so completely imposed upon as to vote the transportation of 53 of their own members, and twelve other persons, among which number were included the directors Carnot and Barthelemy.

During the whole of these transactions the city of Paris remained in a state of tranquillity. Its unfortunate struggle on the 5th of October had so completely subdued the ardour of the inhabitants, that they allowed the national representation to be violated with impunity, and liberty to be trampled under foot, without a single exertion in its defence. The directory ex-  
cused

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France. 1797. cused their conduct to the nation under pretence of the existence of a royalist conspiracy. General Pichegru, it was said, had offered to join the emigrants under the prince of Condé, and the Austrians commanded by General Wurmser, and with this aggregate force to march directly to Paris, for the re-establishment of royalty. There are certain circumstances which lead us to suspect that this was a fabrication: for at the time when this supposed correspondence became public, it was denied to be genuine; and Moreau who was implicated in this conspiracy, was after this employed in the service of the republic, to whose military skill and fidelity the French rulers seemed willing to commit the salvation of the country.

480  
Treaty of  
Campo  
Formio.

The directory was now very powerful, but its members soon became giddy from the elevated nature of their situation, and seemed to act under the dangerous conviction, that there was nothing in which they might not venture to engage, whatever might be the rapacity or ambition attached to it. While contending with the councils, they prolonged the negotiations with Lord Malmesbury, acting in a similar manner respecting those which had been entered into between Bonaparte and the imperial ambassadors at Campo Formio. Great Britain offered to make peace with France, if permitted to retain possession of the Cape of Good Hope, together with the Spanish island of Trinidad. The negotiations with the emperor were speedily terminated, and on the 17th of October a definitive treaty was signed at Campo Formio. The Netherlands were given up to the republic, the Milanese to the Cisalpine republic, and his territories in the Brisgaw to the duke of Modena, to compensate for the loss of his duchy in Italy. It was likewise agreed by the emperor that the French should possess the Venetian islands in the Levant, namely, Corfu, Zante, Cephalonia, Santa Maura, Cerigo and others. The emperor was to have the city of Venice with its remaining territory, from the extremity of Dalmatia, as far as the Adige and the lake Garda. The Austrians accordingly left the Rhine, by which means the republicans were enabled to surround Mentz and Ehrenbreitstein, the former of which was captured in a short time, but the latter required a very tedious blockade before it would surrender. Venice was at the same time entered by the Austrians, the French having left it, and Bonaparte, when about to march out of Italy, left 25,000 men to garrison Mantua, Brescia, Milan, and some other places, and to preserve this new republic in a state of dependence upon France.

481  
A body of  
French  
troops land  
in Wales.

It is said that the directory about this time endeavoured to force America to purchase a forbearance from war by a large sum of money together with a private present of 50,000l. to the members of the directory. The last part of this charge was denied by the minister Talleyrand, but the general impression it produced could not be effaced, and the directory was thus very much injured in the estimation of such countries as were otherwise disposed to view it in a very favourable light. To lessen its reputation still more, it caused the councils to pass two laws, by which all neutral ships on their way to Britain or returning from it, should be liable to be seized. These, however, produced an effect very different from that which was intended; for having put all the trade of the western world into the power of the British, they enriched the very people

whom they were meant to ruin. Britain at this time held the empire of the seas in such an eminent, and perhaps we may add, unprecedented degree, that the republican fleets lay blockaded in their own ports during the greater part of the year. The expedition against Ireland having completely failed, the directory was at a loss how to dispose of the galley slaves who had made a part of Hoche's army destined against Ireland. It would have been cruel to remand them back to punishment; the troops would not serve with them in the army, and by the new laws of France they could not receive a pardon, neither was it prudent to give so many criminals liberty. Thus perplexed, the directory at last determined to send them over to England. They were landed from two frigates and some small vessels on the coast of Wales, with muskets and ammunition, but destitute of artillery. On the evening of the day on which they landed (23d of February), they were made prisoners of war by a party of militia, yeomanry, cavalry, colliers and others, under the command of Lord Cawdor.

482  
Destruction of  
a French  
fleet by Sir  
John Jervis.  
Although the navy of France continued in port, and therefore out of danger for the remainder of this year, yet the Dutch and Spanish allies of that country sustained very serious losses by sea. A Spanish fleet of 27 sail of the line, opposed to a British fleet of only 15 sail, under the gallant admiral Sir John Jervis, was completely defeated on the 14th of February, off Cape St Vincent. The British admiral passed twice through the enemy's line, and cut off part of their fleet from the rest. Four ships were taken, and the admiral's own ship made her escape with considerable difficulty. This fleet was on its way to Brest in order to effect a junction with the French fleet, but Jervis's victory rendered this object unattainable. In consequence of this memorable victory, Sir John was created earl St Vincent, and had an annuity of 2000l. settled upon him, receiving at the same time the thanks of both houses of parliament.

483  
A Dutch  
fleet de-  
feated by  
Admiral  
Duncan off  
Camperdown.  
The Dutch, if possible, were still more unfortunate, Admiral Duncan having blocked up the Texel where their fleet lay, during the whole summer, with the assistance of which it appears that the French meant to try the fate of another attack upon Ireland. A resolution having at length been adopted of risking an engagement with the British at sea, De Winter received positive orders to sail, a step against which he remonstrated, but without effect. Admiral Duncan was at this time refitting at Yarmouth, but on receiving intelligence of the sailing of the Dutch fleet, he set out in search of, and came up with it on the 11th of October, consisting of a force rather inferior to his own fleet, which amounted to 16 sail of the line and three frigates. The British admiral ran his fleet immediately through the Dutch line, commencing the attack between them and their own coast, about nine miles from Camperdown. As the Dutch are desperate fighters by sea, our readers will naturally conclude that this was a sanguinary conflict. It lasted for three hours, at which time the greater part of the Dutch fleet had struck; but owing to the shallowness of the water on the coast they could not all be seized. Eight ships of the line, two of 56 and one of 44 guns were taken, besides a frigate afterwards lost near the coast of Britain. Admiral De Winter was captured with his ship, and

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484  
Great disturbances  
at Rome.

Vice-admiral Rentjies. Admiral Duncan received honours similar to those which were bestowed upon Earl St Vincent, and an annuity to the same amount.

After the ratification of the treaty with the emperor at Campo Formio, Joseph Bonaparte, one of the brothers of the general, was sent to the city of Rome as plenipotentiary from the French republic. The pope having now no expectation of foreign assistance, submitted to every demand for the reduction of his troops, and for emancipating every person confined in prison on account of their political sentiments. On the 26th of December 1797, three men waited upon the ambassador, and requested the co-operation of France in bringing about a revolution which a party at Rome was anxious to establish. He rejected the proposal, and did every thing in his power to dissuade them from it; but he neglected to communicate the intelligence to the papal government, which was certainly his duty. He went to the secretary of state on the 28th, and shewed him a list of persons under his protection who had a legal authority to wear the French cockade, and consented at the same time that all others wearing it should be punished. He offered to give up six of the insurgents who had taken refuge in the palace. In the evening of the 28th a more serious tumult happened in the courts and vicinity of the French ambassador's palace, with which the pope, it is believed, was not personally acquainted; but the governor of the city endeavoured to disperse the insurgents by parties of cavalry and infantry. General Duphot, in attempting to make the military desist from firing upon the insurgents, was shot by a petty officer belonging to the troops of his holiness. The ambassador and his other friends now made their escape to the palace through a bye-way. The Spanish ambassador having been informed of this event, sent to the secretary of state, and protested against such a daring violation of the privileges of plenipotentiaries. The palace of the French ambassador was still surrounded by the military, when at last he demanded passports to enable him to leave the territories of the pope, which were soon granted, and accompanied by many protestations of the innocence of government, and its sorrow that such an unfortunate event should have taken place.

485  
The continental  
powers decline assisting  
the pope.

Joseph Bonaparte went to Florence and from thence to Paris. The protection of Vienna, Spain, Naples, and Tuscany was earnestly solicited by the pope, but they all seemed disposed to keep at a distance from his misfortunes. General Berthier experienced little or no opposition on his march to Rome, where he subverted the dominion of the pope, and proclaimed the sovereignty of the Roman people, with too many marks of wanton, unprovoked insult. The tree of liberty was planted on the very day on which the anniversary of the pope's election to the sovereignty was celebrated; intended, no doubt, to make him feel still greater mortification. While in the Sistine chapel receiving the congratulations of the cardinals, the commissioner general, and Cervoni, who commanded the troops within the city, during this ceremony entered the chapel, and announced to the sovereign pontiff on his throne, that his reign was at an end. He was removed to the territory of Tuscany, where he dwelt in great obscurity, till his enemies being in their turn driven from Rome, were pleased to remove him farther from the capital, to terminate his existence beyond the Alps.

The greatest curiosities found in Rome were conveyed to Paris, and sold by public auction, the directory having sacrificed national vanity at the shrine of avarice. Passports were offered to the natives of countries at war with France, if they inclined to become purchasers.

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486  
Conquest of  
Switzerland  
resolved on  
by the  
French.

But scenes of a different and sanguinary nature were in the mean time exhibited in Switzerland, a country which had preserved its neutrality during the conflict of France with the combined powers, thus defending the weakest part of her frontiers, and as a grateful return for past favours, it was now determined to subjugate Switzerland. About the end of the year 1797, an insurrection broke out in the Pays de Vaud, subject to the canton of Berne, which made the government perceive its critical situation, and issue a proclamation on the 5th of January 1798, requiring the people of the Pays de Vaud to appear in arms, renew their oath of allegiance, and reform every existing abuse. A commission of the senate at Berne was empowered to examine every complaint, and redress every grievance; but their motions were considered as too tardy by popular impatience, and the insurgents endeavoured to become masters of the strong places. Troops were sent against them by the government of Berne, but General Weis acted with hesitation, if not even with treachery, and a body of republicans appeared under General Menard, who sent an aid de camp and two hussars to General Weis. As the messengers returned, one of the hussars was killed, most probably by accident, but it was instantly magnified into a horrid breach of the law of nations. The French, therefore, continued to advance, and were masters of the whole Pays de Vaud by the end of January. The government of Berne prepared for war, while it at the same time used every effort in order to maintain peace. A truce was entered into with General Brune, the successor of Menard, and those who killed the hussar were delivered up. An army of 20,000 men was collected, the command of which was given to M. d'Erlach, once a field marshal in the service of France. But there was a prevailing disaffection in his army, and the people were far from being united among themselves. With this circumstance the French were well acquainted, and therefore they demanded a total change of government. As M. d'Erlach was apprehensive of a still greater defection in his army, he requested permission to put an end to the armistice. The French now refused to negotiate, and General Schawenberg on the 2d of March took possession of Soleure at the head of 13,000 men. Brune afterwards made himself master of Friburg, and forced the Swiss army to retreat. The government of Berne being now greatly alarmed, decreed the *landsturm*, or rising of the people in a mass, which their ancient customs justified in the time of necessity. The people assembled, dissolved the government, and offered to dismiss the army, if the republican troops would retire. This offer was rejected, without admitting a French garrison into Berne, and therefore they continued to advance. About 6000 from the army of M. d'Erlach had deserted, leaving him at the head of no more than 14,000 men; and although the rising had abundantly supplied him with numbers, yet he had not time sufficient to get them properly arranged. He was attacked on the 5th of March, and driven from Newenbeg and Favenbrun,

France. Favenbrun, but having rallied his troops, he made a stand for some time at Utèren. The conflict was renewed at Grauholtz, from whence they were driven four miles nearer the capital. Being completely defeated, they murdered many of their officers in a fit of despair, among whom was their commander in chief. Berne capitulated to the French, which induced the more wealthy and populous states to follow the example; but the poorer cantons made a dreadful effort to preserve their small possessions, and the independence of their country. They compelled Schawenberg to retire with the loss of 3000 men, but were at last totally vanquished by the superior skill and numbers of the republican army. The public magazines were plundered, and a new constitution was forced upon them after the model of France.

If the directory made no scruple to violate the independence of other nations, it was very reasonable to conclude that they would pay little regard to the liberties of their countrymen at home. A third of the legislature was changed in the month of April; one member of the directory went out by ballot, and Treilhard was chosen to succeed him. Nothing was left unattempted by the directory to influence the election in favour of their friends, but their success was not great. They complained to the council of five hundred on the 2d of May; they complained of plots of royalists, by which it was said that elections had been made to fall on men who were inimical to the interest of the republic. It was proposed on the 7th by the committee who reported on the message of the directory, that many electoral assemblies should be annulled; but General Jourdan opposed this plan as incompatible with the freedom of election, and as proceeding upon the supposition of conspiracies which had no existence.

We are now to be presented with the most extravagant project which perhaps the directory ever attempted to execute;—to send a formidable army to take possession of Egypt, and from thence to proceed by the Red sea to the East Indies, to take possession of the British settlements in that quarter of the globe. After peace was proclaimed between France and Germany, the directory made no secret of their determination to invade Great Britain. Whether this project was of Bonaparte's own devising, or intended as a snare in order to get rid of him and his victorious army, seems to be a matter which our readers must be left to determine for themselves. It might not be his project, and he might accept the command of the army of Egypt from this conviction, that he would be safer abroad in the most perilous undertaking, than be exposed at home to the malice of a government become jealous of his reputation, and which was far from being scrupulous of its conduct.

The meditated attack upon Egypt was certainly conducted with such a degree of secrecy as was calculated to mislead. Prodigious stories were circulated concerning large rafts of timber, by means of which the *army of England*, as it was called, was to be conveyed over to Britain; and to give the greater probability to this report, General Bonaparte, the commander in chief, made a journey to the western coast. The fleet was getting ready in the harbour of Toulon, and troops were collected in its vicinity. But Bonaparte embarked with 40,000 of his veteran troops, and on the 9th of June reached the

island of Malta. He quarrelled with the grand-master, because he would not permit so large a fleet to water all at once in his ports. The French commander landed his troops in different places, and attempted to make himself master of the island. It is said that many of the knights belonged to the illuminati, and were therefore ready to betray their government. After a very feeble opposition the grand-master capitulated, and thus gave up in a few days a fortress which, it is said, might have held out for weeks against all the troops of the French republic. Bonaparte left in the island a garrison of 4000 men, and sailed for Alexandria on the 21st.

Rear-admiral Nelson having distinguished himself in a very eminent degree, while in the station of commodore under Lord St Vincent, was sent in pursuit of Bonaparte. Being wholly ignorant of the destination of the French, he sailed for Naples, where he obtained information of the attack upon Malta, to which accordingly he steered his course. On his arrival, however, he found that Bonaparte was gone; but conjecturing that he had sailed for Alexandria, he immediately prepared to follow him. The French commander, instead of keeping a direct course towards that city, stood along the Grecian coast, till he made the easternmost point of the island of Candia. Then steering to the southward, he so protracted his voyage, that he did not reach the Egyptian coast till Admiral Nelson had left it. Having landed his troops, he took the city of Alexandria by storm on the 5th of July. It was desperately defended by the inhabitants, but without military skill. The republican transports were drawn up within the inner harbour of Alexandria, and the ships of war cast anchor along the shore of the bay of Aboukir. The republican army marched on towards the Nile, and in proceeding along the banks of that river, they suffered much from the intense heat of the climate. They soon came to action with the Mamelukes, or military rulers of the country; but the small degree of skill possessed by those barbarians, was by no means a match for European tactics. Cairo surrendered on the 23d, and two days after, another battle was fought, in which the inhabitants were defeated. They made a last effort on the 26th, near the celebrated pyramids, when 2000 of them were killed, 400 camels with baggage were taken, and 50 pieces of cannon.

Having proceeded thus far in his conquest of Egypt, Bonaparte framed for it a provisional government, and issued proclamations in the Arabian language, protesting that the French were friendly to the religion of Mahomet, owned the authority of the grand signior, and were only come to inflict punishment on the Mamelukes for doing so much injury to their trade with Egypt. Thus far the good fortune of Bonaparte seemed still to attend him; but on the 1st of August the fleet under Admiral Nelson appeared off the mouth of the Nile, who having discovered the position of the French fleet, prepared to attack it. In point of numbers the two fleets were upon a level, but as to weight of metal the French fleet was the stronger of the two. Admiral Nelson, by running some of his ships between the enemy and the land, surrounded one part of the fleet, while the rest were thus rendered entirely useless. The Culloden ran aground while this plan was carrying into effect; an advantage upon the whole, as it pointed out to the rest where the danger lay concealed. This memorable

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487  
The invasion of Egypt projected by the directory.

488  
Admiral Nelson goes in search of Bonaparte.

489  
Tyranny and duplicity of Bonaparte.

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1798.  
490  
Battle of  
the Nile.

morable action commenced with the setting of the sun, and continued, with occasional intervals, till the break of day. Nine sail of the line belonging to the French were taken; a ship of the line was burnt by her own commander, and the admiral's flag ship, L'Orient, was blown up during the action, few of her crew, consisting of 1000 men, having escaped destruction. Two ships of the line and two frigates were saved by flight, but afterwards captured.

If we confine ourselves to modern times, it will be difficult to point out any naval engagement productive of more interesting effects than this. The military exertions of France had by degrees destroyed the combination which the princes of Europe formed against her. The victories of Bonaparte had humbled the pride of Austria; the continent looked with dismay towards the new republic, and when the directory seized on Rome and Switzerland, no power ventured to interpose in their behalf. The aspect of affairs, however, had now undergone an almost total revolution. The once triumphant Bonaparte was shut up in a barbarous country, from which the fleets of Britain might prevent his return. Proposals were made by Great Britain to the northern powers, for the recommencement of hostilities against France, as it was not conceived possible that she could make such resistance as formerly. The states of Italy, too, determined to make a bold effort for the recovery of their independence. The court of Naples rejoiced at the destruction of the French fleet, and the king himself went to meet Admiral Nelson on his return from the Nile.

491  
General  
Humbert  
invades  
Ireland.

It is well known that the French had long promised encouragement to the Irish rebels; but as their expectations were not gratified in time, they broke out into open rebellion without the promised assistance; and when the spirit of rebellion was almost wholly subdued, the directory attempted to land troops in small divisions, such as that under General Humbert on the 22d of August, consisting only of 1100 men, who landed at Killybegs. Yet this force, small as it was, would have proved formidable but a month before. They were joined by a party of the most desperate of the rebels in the vicinity, and defeated General Lake at the head of a superior force, taking from him six pieces of cannon. Their next step was to march in different directions to announce the arrival of the republicans, and maintained their ground for three weeks. This able general receiving no reinforcements from France, finding the rebellion in a great measure crushed, and being informed that General Cornwallis was about to surround him with 25,000 men, he laid down his arms to a British column, four days after he had dismissed his Irish associates, that they might provide for their own safety. Active measures were now taken by the directory to send troops to Ireland when too late, as the vigilance of British cruizers defeated all their endeavours. La Hoche, a ship of 84 guns, and four frigates, were captured by Sir John Borlase Warren on the 12th of October, in attempting to reach Ireland with 3000 men. On the 20th another frigate was taken, destined for the same country, which induced the directory to abandon the attempt as altogether desperate.

492  
Imprudent  
conduct of  
the king of  
Naples.

The victory obtained by Admiral Nelson at the mouth of the Nile, made the king of Naples act the very imprudent part of preparing to commence hosti-

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ties against France. Without even waiting till the Austrians should commence the attack on the republican troops in the Roman territory, he procured General Mack to assume the command of his army. He began the war without any foreign aid, except the British fleet, and thus brought upon himself the vengeance of the French republic. The directory had no idea that he would adopt such conduct, and of consequence when General Mack appeared at the head of 45,000 men, the troops of France in that quarter were unable to contend with him. General Championet having justly complained of the attack made upon his posts, circumstanced as he was, he received for answer from the hostile commander, that his majesty had resolved to take possession of the Roman territory, and advised the French to retire quietly into the Cisalpine states, maintaining that their entrance into Tuscany would be considered as a declaration of war. Championet accordingly evacuated Rome, as he had no force against such a formidable army. He left a garrison in the castle of St Angelo, and concentrated what troops he could collect in the northern parts of the Roman state. General Mack entered the city of Rome without opposition in the end of November.

These transactions having been known at Paris, war <sup>493</sup> was immediately declared against their Neapolitan and Sardinian majesties, the latter of whom had committed no act of hostility against the French; but he was accused of disaffection to the republic, a charge which could scarcely fail to be true. He found himself placed in a very humiliating situation since the first entrance of Bonaparte into Italy, his strongest fortresses being in possession of the French, who levied on him what contributions they thought proper, and even placed a garrison in his metropolis. Being unable to go to war, he made a voluntary surrender of his continental dominions, and agreed to retire to the island of Sardinia.

A period was soon put to the dispute with Naples. As the French retreated, the country people gave them much trouble and uneasiness, and the Neapolitan troops scarcely observed the modern rules of war respecting such as they had taken prisoners. When General Bouchard, by orders from General Mack, commanded the castle of St Angelo to surrender, he maintained that he would view the prisoners in the light of hostages for the conduct of the garrison, and that a man should be put to death for every gun fired from the castle. It is scarcely to be imagined that the Neapolitan officers would have expressed themselves in such a shocking manner, if they had not calculated on the vigorous co-operation of the Austrian forces, in which, however, they were very much deceived. The consequence was, that the territory of Naples very soon fell into the hands of the French. Either the terror of the republican name was so great in Italy, or the cowardice of the Neapolitan troops, that they were defeated by one-fourth of their own numbers, at Terni, Porto Fermo, Civita Castellana, Otricoli, and Calvi. As the army of General Mack was gradually reduced to 12,000 men, in consequence of desertion and frequent defeats, he advised the king of Naples and his family to take refuge on board the British fleet, which was then lying at Leghorn. This advice was adopted, and they reached Palermo in Sicily on the 27th of December, in Admiral Nelson's ship. General Mack having requested an armistice,

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Desperate  
conduct of  
the Lazzar-  
roni.

Such is the mildness of the climate in the southern parts of Italy, that the people can subsist with fewer efforts of industry than in almost any other country of Europe. This naturally begets an indolent disposition, which is cherished by a number of charitable institutions originating from the Catholic religion. In Naples there had long been a body of men called Lazzaroni, or beggars, amounting to the astonishing sum total of near 40,000, who entirely subsisted on charity. They frequently threatened the state if they did not receive an immediate supply of their wants, which procured them very liberal contributions. Having been informed that the French, wherever they came, destroyed all monasteries and other sources of charity, they determined to oppose them to the utmost of their power, and appear the advocates for royal government. In the beginning of January 1799, they exhibited marks of discontent, and at last broke out into an open insurrection. They appointed Prince Militorni their commander in chief, who made many fruitless efforts to restrain their violence and love of plunder. They declared war against the French, forced the prisons open, and murdered all who had been incarcerated for disaffection to the kingly government. Their ravages now became so dreadful and boundless, that Prince Militorni abandoned them, set out to Capua, and requested Championet to take possession of the city, in order to rescue it from utter destruction. It was agreed that a column of French troops should take a circuitous route, and enter the city from the opposite quarter. Before this plan could be carried into execution, two-thirds of the Lazzaroni marched out on the 19th and 20th of January, with the daring resolution to attack the French in the fortifications of Capua. Multitudes of them perished by the French artillery; and in order to favour the capture of Naples by the party sent on that expedition, Championet made no sally out upon them, but continued on the defensive. The Lazzaroni being informed on the 21st that a French column had marched for Naples, returned to the city; and although Championet closely pursued them, they arrived in time to barricade the streets, and prepare for the defence of different quarters. A terrible conflict now commenced, which lasted from the morning of the 22d to the evening of the 23d of January. Having been driven from street to street, they finally rallied at one of the gates of the city, where they were almost totally cut off. It is certainly a reproach to the Neapolitan government, not to have been able to give a better direction to the undaunted courage of such men.

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The direc-  
tory be-  
comes just-  
ly unpopu-  
lar.

We may view this triumph as the last which the directory enjoyed, for the consequences of their past conduct were now rapidly gathering around them. They were with the greatest justice unpopular at home, both

from their mode of conducting public affairs, and their repeated violations of the constitution of their country. Their profusion was unlimited, as well as the exorbitant demands which they made upon conquered countries. Championet was so ashamed of them, that in Italy he endeavoured to restrain them, in consequence of which he was deprived of his command, and thrown into prison; Scherer, the war minister, being appointed his successor. Under him the rapacity of the government agents, and the embezzlement of the public stores, were carried as high as possible. Yet France still continued to be dreaded by foreign nations, to whom the true state of internal affairs was but obscurely known. An army of 45,000 Russians had arrived to the assistance of Austria, yet that cabinet was at a loss whether to declare war or not. Britain solicited the aid of Prussia with an offer of large subsidies; but Sieyes, the plenipotentiary at Berlin, artfully contrived to defeat the negotiation, and counteract the unpopularity of his country in Germany, by giving to the world the secret convention of Campo Formio. This determined the greater number of the German princes to maintain their neutrality under the guardianship of Prussia.

A note was presented to the congress at Rastadt on the 2d of January by the French plenipotentiaries resident there, intimating that if the entrance of Russian troops into Germany was not prevented, it would be considered as tantamount to a declaration of war. To this no satisfactory answer was returned. The strong fortress of Ehrenbreitstein surrendered on the 26th of that month, after being blockaded since the treaty of Campo Formio. This possession, together with Mentz and Dusseldorf, made the French a very powerful enemy on the Rhine. Switzerland also belonged to them, and all the fortified places of Italy, on which account they were qualified to commence active operations. At this period Jourdan commanded on the Upper Rhine from Mentz to Huningen; the eastern frontier of Switzerland was occupied by General Massena; Scherer had the chief command in Italy; Moreau acted under him, and Macdonald commanded the troops in the territory of Rome and Naples. Yet all these armies so scattered, did not exceed 170,000 men, a force greatly inferior to that of Austria, altogether independent of the Russian army. The directory, however, trusting the unity of its own plans, the wavering politics of the court of Vienna, and the slow movements of the imperial armies, was anxious to renew the war, a declaration of which against the emperor of Germany and the grand duke of Tuscany, was made on the 13th of March. Jourdan had actually crossed the Rhine at Strasburgh on the 1st of that month, and occupied many strong positions in Swabia. Mannheim was taken, and General Bernadotte summoned Philipsburg to surrender, while General St Cyr entered Stutgard. In order to oppose the march of this army, the archduke Charles crossed the Lech on the 4th of March; Massena marched into the territory of the Grisons, and surprising a strong body of Austrians, made the whole of them prisoners, together with their general and the whole of his staff, in consequence of which the country of the Grisons was reduced.

The republican plan of procedure was not completed without the junction of Massena's and Jourdan's armies, to accomplish which it was necessary to carry the im-  
portant

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portant post of Feldkirch, which was held by General Hotze. Defeated in his first attempt, Massena renewed the attack five times with fresh forces, but the determined bravery of the Austrians rendered them ineffectual. But as the French were in possession of the Grisons, the invasion of the Engadine was facilitated, where the Austrians being too weak to resist, retreated into the Tyrol, and were pursued by the republicans, who forced some of the defiles, and extended their inroads as far as Glurentz and Nauders.

The vanguard of the principal Austrian army pushed on to meet the French. It was attacked by Jourdan on the 20th of March, by whom the outposts were driven in; but the centre of his army was attacked on the following day, and forced to retire to Stockach during the night. The archduke encamped before Stockach on the 24th, and the republicans attacked him on the following day. His right wing under General Meerfeldt was their main object, which they succeeded in driving into a wood between Liptingen and Stockach. Meerfeldt renewed the conflict without success. The left wing having maintained its ground, sent reinforcements to General Meerfeldt, who in his turn obliged the French to retire. The French, however, made 4000 prisoners during the various movements of the day. Yet their loss was so great, and the Austrian force so vastly superior to their own, that General Jourdan durst not hazard another engagement. He retreated on the following day, and feeling that he was not a match for the enemy, he sent a part of his army to cover Kehl and Strasburg, and marched with the remainder towards Switzerland. By this event General Massena, who was forcing his way to the Tyrol and Engadine, was obliged to return to the protection of Switzerland. He was appointed to the chief command in this quarter, and Jourdan was removed.

497  
Success of  
the Auf-  
trians in  
Italy.

The Austrians were no less successful in Italy, notwithstanding they were attacked by the French before the termination of the armistice. General Kray obtained a complete victory over them at Legnago, and forced them to flee for protection under the walls of Mantua. On the 15th of April they were again attacked by the Austrians at Memiruolo, and again forced to retreat after an obstinate resistance. The loss sustained by the French in these different engagements was unquestionably great, but we should apprehend that the account which states it at 30,000 men in killed, wounded and prisoners, must surely be exaggerated. But the Austrians may be said to have purchased these victories at a dear rate. Scherer at first gained some advantages over them, but he had not skill to improve them, else they would have unquestionably given a new turn to the aspect of affairs. The Austrian posts were forced by a division of his army on the 26th of March, and 4000 prisoners taken; but on the other division being repulsed, he withdrew his troops, and thus relinquished the advantages he had obtained. On the 5th of April the division under Moreau performed wonders, and took 3000 prisoners; but by the unskillful measures of Scherer, he was not supported, and the triumph of the Austrians was of course complete.

498  
The Rus-  
sians and  
imperialists  
united un-  
der Su-  
warrow.

Prior to this period, a body of Russians joined the imperialists, and the command of this combined army was given to Field-marshal Suwarrow Rimmiski, who advanced towards the Adda on the 24th of April; and

after carrying the outposts of General Moreau, Suwarrow determined to attack him in his entrenchments. He maintained the appearance of attack along the whole line of Moreau, while he secretly threw a bridge over among the rocks at the upper part of the river, where such a thing had been considered as impossible. By means of this bridge a part of the combined army next morning turned the republican fortifications, and attacked their flank and rear, while the rest of the army forced the passage of the river at different points. The French fought with their usual intrepidity, but were soon driven from all their positions, and forced to retreat to Pavia, with the loss of 6000 men killed, 5000 made prisoners, including four generals, and 80 pieces of cannon.

General Moreau now established the poor remains of his army, amounting to 12,000 men, upon the Po, between Alessandria and Valentia. He forced, on the 11th of May, a body of Austrians to retreat, and took a number of them prisoners. On the 12th, about 7000 Russians crossed the Po at Bassignano, and marched on towards Pecetto, when Moreau fell upon them with fury, and they refusing to lay down their arms, about 2000 of them were drowned in repassing the river, and a few were taken prisoners. On the advance of Suwarrow, General Moreau was under the necessity of retiring to occupy the Bochetta, as well as other passes which lead to the territory of Genoa, when the combined army began the sieges of the fortified places in Italy then occupied by the French. Bellegarde drove the French from the Engadine; Massena was obliged to retire to the vicinity of Zurich, he was so pressed by the archduke; and nearly the whole of Piedmont had risen against the republicans. They received no reinforcements from the interior of France, and their officers were obliged to act on the defensive, to defend the frontiers as long as possible. In one instance only they had the power of making offensive war, and it was certainly done with great vigour. General Macdonald had still a considerable army in the southern parts of Italy, in the territories of Naples and Rome. The combined powers had made no effort to cut off his retreat, convinced, perhaps that this could scarcely be accomplished in the mountainous countries of Tuscany and Genoa. Knowing his situation to be secure, he was in no hurry to remove, although nearly the whole country between him and France was occupied by the combined army. His army amounted to about 30,000 men, and he received orders from the directory to leave the territories of Rome and Naples, and unite, if possible, with the army of Moreau. From the situation of the allies, however, he resolved to hazard an action by himself. With Moreau he had concerted a plan for dividing their enemies, and vanquishing them in detail, as Bonaparte had so often done in Italy before. Macdonald alone was in a situation for striking an important blow, yet it was necessary for Moreau to draw upon himself as many of the Austro-Russian forces as possible, that the remainder might be more completely exposed to the attack of Macdonald.

Moreau availed himself of the circumstance of the French and Spanish fleets being in the vicinity of Genoa, to spread a report that they had brought him a very powerful reinforcement, intending thereby to withdraw the attention of Suwarrow from Macdonald. The

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497  
Artful stratagem of  
Moreau.  
Russian

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Russian general was at Turin, his advanced posts at Sufa, Pignerol, and the Col d'Assiette, while General Hohenzollern was stationed at Modena with a considerable force, and General Ott at Reggio with 10,000 men. General Macdonald began his operations on the 12th of June, when his advanced divisions attacked and defeated Hohenzollern, taking 2000 of his men prisoners. General Ott was attacked at the same time, and being compelled to retreat, the French made their entry into Parma on the 14th. He was again attacked on the 17th, and forced to retire towards Giovanni, where the progress of General Macdonald was arrested.

498  
The French  
defeated by  
Suwarrow.

Suwarrow having received information of his approach, and of his successes, left Turin on the 15th of June, at the head of 20,000 men, and came up with Macdonald on the banks of the Tidone. The centre and right wing of Suwarrow's army were commanded by Rosenberg and Foerster, the Austrian general Melas commanded the left wing; Prince Procrations was at the head of the advanced guard, and Prince Lichtenstein of the reserve. An action immediately commenced, which was fought with desperate fury on both sides for three successive days, when victory declared in favour of Suwarrow. Driven from Tidone to the Trebbia, the French were finally vanquished on the 19th, after a greater slaughter on both sides than the oldest officer present recollected to have witnessed. Victory remained doubtful, till General Krav arrived with large reinforcements from the army besieging Mantua, and, in direct contempt of his orders, decided the fate of the day.

The republicans retreated during the night, and the next day they were pursued by the army of Suwarrow in two columns. Seldom could the French be overtaken in a march, but the army of Suwarrow accomplished this, when he surrounded the rear-guard of the fugitives, and obliged them to lay down their arms. The rest of the army defended themselves in the passes of the Appenines and territory of Genoa, after losing, it is said, no fewer than 17,000 in killed, wounded, and prisoners. Moreau, in the mean time, gave battle to the Austrians under Bellegarde, and though far superior to him in numbers, they were totally defeated. This temporary advantage, however, availed little, in consequence of the rapid return of Suwarrow from the pursuit of Macdonald. The fortresses in Italy surrendered in close succession, and it appeared as if the combined powers would soon be able to enter the territory of France.

499  
Fruitless  
siege of  
Acre by  
Bonaparte.

The affairs of the republic became equally critical in Palestine. After having defeated the Mamelukes, made himself master of Alexandria and Cairo, and avowed himself a Mahometan in Egypt, Bonaparte led an army into Palestine, to take possession of Jerusalem, and by rebuilding the temple, and restoring the Jews, to give the lie to the prophecies of the Christian religion. At the head of 10,000 men, with officers eminently skilled in the art of war, he reached the town of Acre on the sea-coast, 28 miles south of Tyre, and 37 north of Jerusalem. He laid siege to this town in due form, which was but indifferently fortified, and defended by a small garrison of Mussulmans, which the governor would have unconditionally surrendered, had he not

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been advised to make a vigorous resistance by an English naval officer. Sir Sidney Smith having received the command of the garrison, detained Bonaparte before Acre 69 days, although the number of the allies by whom it was defended did not exceed 2000 men. The French commander made eleven attempts to carry it by assault, all of which proved unsuccessful. He was at last obliged to raise the siege, after he had lost eight of his generals, 85 inferior officers, and almost one half of his army. His unsuccessful attempt upon Acre must indeed appear important, especially to Britain, if it be true that the Druses, to the number of 60,000 men, had promised to join him on the reduction of that town. Had this junction been effected, it is believed that Constantinople would have become their prey, which was first to have been plundered, and then reduced to ashes.

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While France experienced such reverses abroad, she was much disturbed also by internal commotions, and the directory found itself in a very critical situation. New elections were still unfriendly to their interest, and they could no longer secure a majority in the councils, they were sunk into such contempt. When they sought money, they obtained reproaches on account of their own profusion, and the agents they employed. Insurrections in the west and south were formed by the friends of royalty, and these were with difficulty subdued, on account of the absence of the military. In the midst of all these difficulties, the occurrence of one event seemed to promise the directory the return of their former influence. On the 28th of April, the French plenipotentiaries received orders to quit Rastadt in 24 hours. Having demanded a passport from Colonel Barbafey, they received for answer that none could grant it but the commander in chief. They at last began their journey, the three ministers, Bonnier, Roberjot, and Jean Debry, were in separate carriages, Roberjot having his wife, and Jean Debry his wife and daughters along with him, attended by the ministers of the Cisalpine republic. At a short distance from Rastadt they were met by 50 Austrian hussars, who stopped the carriage of Jean Debry, and demanded his name. Of this he informed them, adding that he was a French minister returning to France. He was immediately torn from his carriage, desperately wounded with sabres, and thrown into a ditch for dead. Bonnier and Roberjot were murdered on the spot. When the Russians departed, and the carriages returned to Rastadt, Jean Debry wandered all night in the woods, and next day returned to Rastadt. He demanded the restitution of the papers which the hired assassins had carried off when they plundered the carriages, but they were refused. Rastadt and its vicinity was occupied by French troops during the long sitting of congress, of which the Austrians had obtained possession but a few days before. The discipline, therefore, of the Austrian army was severely reproached by this event; but it is probable that more than the want of subordination was at the bottom of a crime so atrocious, unprecedented, and totally repugnant to the laws of nations. It is true, the archduke lost no time to declare his utter ignorance of the matter in a letter to Massena; but this was far from giving satisfaction to the French directory. In a message to the councils on

500  
The direc-  
tory sinks  
into con-  
tempt.

501  
Murder of  
the French  
ambassa-  
dors at  
Rastadt.

Z

the

France.

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<sup>502</sup>  
Sieyes  
chosen a  
member of  
the direc-  
tory.

the 5th of May, they made it the premeditated act of the Austrian government, to insult France by the murder of her ambassadors.

A violent opposition to the directory commenced by the introduction of the new third of this year. Sieyes, who was ambassador at Berlin, and had possessed considerable influence over all parties, was elected a member of the directory. This station, we have already seen, he refused to occupy at the first establishment of the constitution, and therefore his acceptance of it at such a critical juncture, excited great surprize. Treillard was removed from the directory, as it was said that he had held an office in the state within less than a year previous to his election. Merlin and Reveillere were under the necessity of resigning, to avoid an impeachment which was threatened to be brought against them; but Barras still retained his station. Moulins, Gohier, and Ducos, men who were but very little known, and, far from being leaders of the contending parties, were chosen members of the directory. The public spirit was attempted to be revived by the establishment of clubs, a liberty of which the restless Jacobins first took advantage. They soon proposed violent measures, and began to denounce the members and the conduct of government. But their intemperance having justly alarmed the directory, obtained permission from the councils to suppress their meetings, before they had time to corrupt the public mind.

<sup>503</sup>  
General  
Joubert is  
killed, and  
the French  
retreat un-  
der Mo-  
reau.

The directory now employed every effort to augment the armies which had lately suffered such dreadful diminutions. In the beginning of August their army in Italy amounted to 45,000 men, of which General Joubert had the chief command. Turin, Alexandria, Milan, Pechiera, and Ferrara, were captured by the allies with astonishing rapidity. Turin sustained a bombardment of only three days, Alexandria held out seven, and Mantua only fourteen, in which last place there were 13,000 who were dismissed on their parole. The combined powers next laid siege to Tortona, and General Joubert resolved on its relief, which object he expected to accomplish before the arrival of Kray with assistance to Suwarrow. The whole of the Austrian posts were driven in by the republicans on the 13th of August, who took possession of Novi. On the 15th they were attacked by Suwarrow, who by this time had received troops from Mantua under General Kray. The right wing was commanded by this officer, its left by Melas, and its centre by Prince Procratien and Suwarrow in person. The engagement commenced about five o'clock in the morning, soon after which, while General Joubert was urging his troops forward to charge with the bayonet, he received a musket shot in his body, and falling from his horse, he immediately expired. Moreau resumed the command, and after a bloody conflict, the allied army gave way in all directions. The Russians in particular suffered severely, from the obstinate manner in which they fought. The French line was attacked at three in the afternoon, but remained unbroken; and the whole would have terminated in the defeat of the allies, if General Melas had not turned the right flank of the republican line; and following up his advantages, he got possession of Novi, when the French army began to retreat under the command of General Moreau.

The Austrians say that the French upon this occasion

lost 4000 men killed, and the same number taken prisoners, confessing that their own loss was equal to this; but the loss of the Russians was never published. We have reason to believe that it was the greatest of the whole, since they will rather stand and be cut to pieces than think of retreating. The French lost all hope of being able to defend Genoa, and therefore prepared to evacuate that city and territory. It was now the apprehension of the directory that the south of France would immediately be invaded, but in this they were happily deceived. The conquered army was astonished to find itself unmolested after so signal a defeat, and in a few days ventured to send back parties to reconnoitre the movements of the allies. Championet, the successor of Joubert, was amazed to find that they had rather retreated than advanced, on which account he resumed the positions held by his army before the battle of Novi.

So far from prosecuting the advantages they had obtained in Italy, Suwarrow was persuaded to abandon that country with his Russian troops, and march to the deliverance of Switzerland from the yoke of France. The army of Massena in this quarter amounted to 70,000 men in the month of August, which not only prevented the archduke from pursuing his advantages, but the French even threatened to endanger his position. Massena's right wing under General Lecourbe had carried Mount St Gothard, the great pass leading from the eastern parts of Switzerland into Italy. Suwarrow's expectations were no doubt high, having never yet been vanquished, and being called upon to undertake an enterprise in which the Austrians had hitherto failed, even under their most fortunate general. When he was ready to march, the Austrian commander in Italy refused to give him mules for transporting his baggage. This officer had recourse to a most pitiful falsehood, when he asserted that he would be furnished with a competent number at Bellinzone, where Suwarrow could find none. Having no other alternative, he dismounted the cavalry, and made use of their horses to drag along the baggage. In spite of these obstacles, however, he arrived, by forced marches on the frontiers of Switzerland on the day which he and the archduke had fixed upon.

Either supposing that it would demean a prince of the house of Austria to serve under a Russian general, or not being daring enough to require the most experienced general in Europe to receive orders from so young a man as the archduke, that prince was sent into Swabia to attack a small body of republicans. He took with him 48,000, some say 60,000 men, although 20,000 would have been more than sufficient for the accomplishment of such an undertaking. It is not an easy matter to conceive upon what principle the council of war at Vienna could imagine, that such an able officer as Massena would continue inactive at the head of an army almost the double of that which was sent to oppose him. The archduke marched against the French in Swabia, who resisted him as much as the small number of their troops would permit; but they were gradually driven towards the Rhine. To carry on the deception, they made a serious stand in the vicinity of Manheim, where they lost 1800 men, and which the Austrians entered, seemingly determined to cross the Rhine.

Switzerland in the mean time was completely exposed

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<sup>504</sup>  
Suwarrow  
marches to  
the relief of  
Switzer-  
land.

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1799.

posed to the army of Massena. The right wing of the combined army in this country was commanded by General Hotze; the centre, composed of the newly arrived Russians, was headed by Korsakof; and the left wing by General Nauendorf. As soon as Massena understood that the archduke had entered Manheim, and that Suwarrow was approaching to Switzerland by the way of St Gothard, he began his movements. St Gothard was defended by Lecourbe, and in the mean time Massena determined to anticipate the arrival of Suwarrow. Having drawn the attention of the Russians to another quarter on the 24th of September, by a false attack, he suddenly crossed the Limmat, three leagues from Zurich. Some of the French troops engaged the Austrians, but the principal part of the army marched against the Russians. General Hotze fell in the beginning of the action, and Petrasch who succeeded him shunned a total defeat, by retiring in the night with the loss of 4000 men. The Russians fought with very singular obstinacy, being in a mountainous country to which they were strangers, and fighting against the most able commanders in Europe. It was in vain, however, to attempt putting them to flight, for even when surrounded they would not lay down their arms, but stood to be slaughtered on the spot. The Austrians having retreated on the 25th, the Russians on the 28th followed their example, retreating under General Korsakof in good order, and with the loss of 3000 men, which was not very great, considering his perilous situation.

505  
Suwarrow  
disgusted  
with the  
conduct of  
Austria.

During these transactions, General Suwarrow was proceeding by the way of Italy with an army of 18,000, but others say no more than 15,000 men. He carried the pass of St Gothard, and descended into the valley of Urseren, driving Lecourbe before him with great slaughter, and advanced as far as Altorf. He next day reached the canton of Glaris, and made 1000 of the French prisoners, and General Linken defeated another corps of 1300 men. Massena now turned upon Suwarrow, and by surrounding him on all sides, expected to take him and the grand duke Constantine prisoners. Suwarrow defended himself in a very masterly manner, and there being only one pass in the mountains unoccupied by the republicans, the aged hero discovered it, and by this he effected his escape, but lost his cannon and baggage among the dreadful precipices with which that country abounds. He made his way through the Grison country, and arrived at Coire with about 6000 men. Suwarrow felt truly indignant when he found in what manner affairs had been conducted, the perilous situation in which the Russians had been left by the archduke, and the destruction which of consequence they had met with. He considered himself and his men as treacherously betrayed, complained bitterly of the commander of the allies in Switzerland, and publicly charging the council of Vienna with selfishness and injustice, refused to co-operate farther with the Austrian army. He transmitted an account of the whole in a letter to Peterburgh, and withdrew his forces to the vicinity of Augsbourg to wait for further orders from his court.

506  
Britain pre-  
pares to in-  
vade Hol-  
land.

Great Britain in the mean time made active preparations to invade Holland, with an army of 40,000 men, composed of British troops and auxiliaries from Russia. The first division under General Sir Ralph Abercromby sailed in the month of August, protected by a fleet

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1799.

under Admiral Duncan. Bad weather prevented any attempt to land the troops till the 27th, on the morning of which day the debarkation was effected on the shore of Helder Point without opposition. They were not expected to land in North Holland, on which account the troops in that neighbourhood were few. But before the British troops had proceeded far on their march, they had to contend with a considerable body of infantry, cavalry, and artillery, hastily collected from the adjacent towns. The Dutch fought with great obstinacy, but became fatigued by the steady opposition of their antagonists, and fell back about two leagues. They evacuated the fort of Helder in the night, and it was taken possession of by the British on the morning of the 28th. Admiral Mitchell now entered the Zuyder sea with a detachment of the British fleet, in order to give battle to the Dutch under Admiral Story. Instead of retiring to the shallow water with which that sea abounds, he unaccountably surrendered his whole fleet on the 30th of August without firing a gun, pretending that from the mutinous disposition of his seamen, he could not prevail upon them to fight.

If this had terminated the expedition, it would have been extremely fortunate as establishing the power of the British fleet without a rival. But this victory, if it can be so called, was followed up by an endeavour to restore the authority of the stadtholder, and the ancient government of the United Provinces. As no more than the first division had arrived, the terror of an invading foe began to be dissipated, the enemies of the new government were disheartened, and time was allowed to prepare for defence. But these were not the only errors chargeable on the expedition. The British troops landed in the very worst place they could possibly have chosen, not only as it is everywhere intersected by ditches and canals, but it abounded more than any other part of Holland, with persons disaffected to the person and government of the stadtholder. In a word, this unfortunate expedition was undertaken towards the approach of the rainy season, when a campaign in Holland is next to impossible. When it was first spoken of, even the French directory hesitated to undertake the defence of that country; but when the time and place of landing came to be known, they were soon determined, being almost certain of success. General Brune was accordingly sent with what troops could be speedily collected, in order to co-operate with General Daendels.

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Which is ill  
conducted.

General Abercromby in the meantime could only act on the defensive, as no reinforcement had arrived. The enemy was encouraged by his want of activity, and ventured to attack him on the 10th of September. Two Dutch columns, and one of republicans, advanced upon him, but were repulsed in every direction, and forced to retreat to Alkmaer. Additional troops arrived on the 13th, under his royal highness the duke of York, who assumed the chief command. On the arrival of the Russians, offensive operations were immediately resolved on, and the army advanced on the 19th. The left wing under General Abercromby marched along the shore of the Zuyder sea to attack Hoorne; Generals Dundas and Pultney commanded the centre columns, and the Russians were led on by their own general D'Herman. Owing to some misunderstanding the Russians advanced to attack the enemy

France. 1799. about three o'clock in the morning, which was some hours before the rest of the army began its march. Their first efforts were crowned with success, and they made themselves masters of the village of Bergen; but as they pressed too eagerly forward without the co-operation of the other columns, the enemy nearly surrounded them. Their general was made prisoner; and notwithstanding the British troops came up in time to secure their retreat, they lost upwards of 3000 men. This defeat of the right wing made the commander in chief recal his troops from their advanced positions, notwithstanding General Abercromby was master of Hoerne and its garrison, and General Pultney had carried by assault the chief position of the Dutch army.

Such was the severity of the weather, that no fresh attack was made till the 2d of October, on which day a desperate action commenced between the British, and the united Dutch and French troops, at 6 o'clock in the morning, which did not terminate till the same hour at night, when the British gained possession of Alkmaer and the neighbouring villages. This engagement having been chiefly carried on among the sand hills near the ocean, the fatigue which the troops endured, prevented them from gaining any great advantage over the fugitives, who took a position between Baverwyck and Wyck-op-zee, where the duke of York again attacked them on the 6th, and kept possession of the field after a very sanguinary contest. This, however, was the last success gained by the invading army. The duke of York finding that he could make no farther progress, the enemy having been so rapidly reinforced, the difficulties presented by the face of the country and the badness of the weather also conspiring against him, retired to Schager Brug, where he waited for orders from England relative to his return home. Being in the mean time closely pressed by the enemy, his embarkation must have been accomplished with great danger, had he not entered into a convention with the Dutch and French, that his retreat should not be molested farther, in return for which he promised not to injure the country by demolishing any of the dykes which defended it from the sea, and that Great Britain would restore to France and Holland 8000 prisoners taken before the present campaign.

The affairs of the French republic now began, in consequence of these events, to wear a more favourable aspect. It is true, Championet was defeated in Italy in all his efforts against the Austrians, and Ancona surrendered on the 13th of November to General Frolich; but the French were still masters of the Genoese territory, Switzerland and Holland, and the new combination formed against them seemed about to be dissolved. Prussia withdrew at an early period, and still preserved a neutrality; and from existing circumstances it was natural to conclude, that the emperor of Russia would also desert the cause of the allies.

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The Turks  
defeated by  
Bonaparte  
near the  
Pyramids.

An event took place about this time which presented the revolution of France in a light never before seen. Our readers will recollect that General Bonaparte was obliged to retreat from Acre with great loss, after a siege of 69 days. At this time he received information that a Turkish army was about to invade Egypt by sea, and therefore he returned across the desert of Arabia by the way of Suez, and arrived in the vicinity of the Pyramids on the 11th of July, when an

France. 1799. army of 18,000 Turks landed at Aboukir, which they carried by assault, and put the garrison to death, consisting of 500 men. Bonaparte marched down the country against them on the 15th, and ten days after came in sight of them at six o'clock in the morning. Their troops were divided into two parts, encamped on the opposite sides of a delightful plain. The cavalry of Bonaparte advanced with rapidity into the centre of the Turkish army, cutting off the communication between its different parts. Struck with terror, the Turks endeavoured to gain their ships, when the whole of them perished in the sea. The left division made a more obstinate resistance, but it was at length defeated. About the end of September the news of this victory reached France, which recalled the memory of Bonaparte's conquests, as forming a striking contrast to the reverses experienced by the republic after that period. The directory received a despatch from him on the 10th of October, which was read to the councils; and on the 14th a message announced the arrival of Bonaparte in France, together with his principal officers. He was received at Paris with marks of distinction, although none could tell why he had left his army and returned home. At this time the parties in the government were equally balanced; and the assistance of Bonaparte was requested by both. The Jacobins were superior in the council of five hundred, and the Moderates in that of the Ancients. It was understood that Sieyes was attached to the latter party, on which account the Jacobins had made many unsuccessful efforts to dismiss him from his office. Intriguing as the Jacobins were, they were fairly outwitted by Sieyes, who had a plot ripe for execution, to overwhelm them in a moment. On the morning of the 9th of November, one of the committees of the council of Ancients gave in a report, that the country was in danger, proposing the sitting of the legislature to be adjourned to St Cloud, about six miles from Paris. The council of five hundred having no legal right to question the authority of this decree, and as the ruling party was clearly taken unawares, the members gave their silent consent, and both councils met at the place appointed on the 10th of November.

The council of five hundred received a letter from Lagarde, secretary to the directory, informing them that four of its members had resigned their offices, and that Barras was a prisoner by order of Bonaparte, whom the council of Ancients had appointed commander of their guard. In the midst of their deliberations, General Bonaparte entered the hall, accompanied by about 20 officers and grenadiers. He proceeded towards the chair where his brother Lucien sat as president, when great tumult ensued, and the epithets of a Cromwell, a Caesar, and a usurper, were conferred upon him. The members pressed forward upon him, and Arena a Corsican endeavoured to dispatch him with a dagger; but he was rescued by his military attendants. A party of armed men entered the hall, and carried off the president, when in a violent debate which ensued, it was proposed that Bonaparte should be declared an outlaw. Military music was soon heard approaching; a body of armed troops entered the hall, and the members were obliged to disperse. The council of Ancients set aside the constitution, and passed a number of decrees. The directory was abolished, and an executive commission substituted in its place, consisting of Bonaparte, Sieyes, and

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Who re-  
turns to  
France, and  
subverts  
the directo-  
rial go-  
vernment.

France. and Roger Ducos, under the denomination of consuls. The sittings were adjourned till the 20th of February 1800, and two committees, consisting of 21 members, chosen from both councils, to act as interim legislators. The greater part of the members composing the council of five hundred returned to Paris, having been expelled from the hall by the military, while part of them continued, and sanctioned all the decrees of the council of ancients. On the 17th of November the consuls decreed the transportation of a great number of Jacobins to Guiana, and cast a number of them into prison; but these decrees were soon after reversed, and every thing assumed an air of tranquillity.

The expedition to Egypt was in the mean time unsuccessful in every one of its objects. Tippoo Sultan, son and successor to the celebrated Hyder Ally, sovereign of the Mysore country, had, in the year 1792, been under the necessity of concluding a treaty of peace with Lord Cornwallis under the walls of Seringapatam, in which he resigned a portion of his territory to the invaders, and agreed to pay a very considerable sum of money. He was likewise obliged to deliver up two of his sons as hostages for the punctual performance of every thing stipulated. A war which terminated in this manner could not reasonably be expected to become the basis of much cordiality. He was indeed obliged to submit, but he only waited for a favourable opportunity to recover what he had lost, and to accomplish, if possible, the total expulsion of the British from India, which with him was a favourite object, as it had always been with his father. The ascendancy of Britain, however, was now so great, chiefly owing to the exertions of Warren Hastings, Esq. that Tippoo clearly perceived the impossibility of shaking it, without the assistance of an army from Europe. To no country but France could he look for an adequate force; but the foreign and domestic wars arising from the revolution, had prevented the rulers of that nation from attending to the interests of distant regions. In 1797, Tippoo determined to renew his intercourse with France by means of the islands of the Mauritius and Bourbon. One Ripaud, formerly a lieutenant in the French navy, who had resided for some time at Seringapatam, persuaded Tippoo that the French had a considerable force at the Mauritius, which with little difficulty might be sent to his assistance. Ripaud being sent to confer with the French upon the subject, he and two ministers from Tippoo were joyfully received by Malartic the governor, and vessels were sent to France to acquaint the directory with their proposals.

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The motions of  
Tippoo Saib  
watched by  
Britain.

The governor Malartic in the meantime, either from gross ignorance, from treachery, or a wish to involve Tippoo Sultan in a quarrel with Britain, adopted a measure which ultimately defeated the plans, and brought about the ruin of that prince. On the 30th of January 1798, he published a proclamation, containing the whole of Tippoo's confidential proposals, inviting all citizens of France to espouse his cause. Copies of this proclamation soon found their way into most quarters of the world. Accordingly the governor-general of India received orders to watch the motions of Tippoo, and even hostilely attack him if it could not be prudently avoided. The Indian government, however, had, before this, been apprised of the impending danger, and had made preparations for war without loss of time.

But Tippoo did not place his sole dependence on assistance from France. He invited one Zemaun Shah from the north-west, whose kingdom was composed of provinces taken from Persia and India, to make an attack upon the British and their allies. In hopes of direct aid from France, which Tippoo expected in consequence of Bonaparte's invasion of Egypt, and the important service which he looked for from the exertions of Zemaun Shah, he remained quiet, and endeavoured to temporise with the British. Military preparations on the part of the British being in a considerable degree of forwardness, Lord Mornington, the governor-general, informed Tippoo that he was not ignorant of his hostile designs, and of his connection with France, proposing, however, to send an ambassador, for the purpose of bringing about a reconciliation. This was not answered till the 18th of December, although written by his lordship on the 8th of the preceding month. Tippoo simply denied the charge, and refused to admit the ambassador. Unwillingly to sport with human blood, his lordship on the 9th of January 1799, again intreated Tippoo to receive the ambassador, to which no answer was returned during a whole month, during which interval 5000 men arrived from England, and General Harris received orders to advance at the head of the Madras army against the kingdom of Mysore. This seemed to bring Tippoo a little more to reason, who now offered to receive the ambassador, on condition he should come without any attendance; but as this was not deemed a satisfactory concession, the army continued to advance. An army from Bombay was also approaching on the opposite side of his dominions, which encountered part of Tippoo's forces, and defeated them; General Harris defeating the remainder of them on the 27th of March, who on the 7th of April sat down before Seringapatam. This officer received a letter from Tippoo on the 9th, in which he mentioned his adherence to treaties, and wished to be informed as to the cause of the war. The only answer he received was a reference to Lord Mornington's letters. He made another attempt on the 20th, and General Harris informed him that he had already been made acquainted with the only conditions which could or would be granted. The half of his dominions was to be surrendered, large sums of money were expected from him; he was to admit an ambassador to his court, to disclaim all connection with the French, and grant hostages for the faithful observance of every stipulation.

Tippoo wrote a letter to General Harris on the 28th, desiring leave to treat by ambassadors, which was refused him, as he was in possession of the *sine qua non* of the British government. It was believed that the besieging army would have been obliged to retreat, had it been possible for Seringapatam to hold out only a fortnight longer. On the last day of April the besiegers began to batter the walls of the city, and they got possession of it on the 4th of May. Tippoo hastened from his palace to the attack, when given to understand that a breach was made in the walls, where he fell undistinguished in the general conflict. His treasures and the plunder of the city were immense, with which the besieging army was enriched, after deducting a certain proportion for the British government and the East India company. His subjects immediately surrendered, and

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Proposals of  
Tippoo re-  
jected.

France.  
1799.

France.  
1800.

and that part of the country which formed the ancient kingdom of Myfore, was conferred on a descendant of the former race of its kings, and the remaining territories were divided among the British and their allies. The family of Tippoo were either taken or made a voluntary surrender, being removed from that part of the country, and allowed a decent annuity.

Zemaun Shah in the mean time invaded the country from the north-west, advancing to the vicinity of Delhi, and spreading terror and desolation wherever he came. Satisfied with plunder, however, he soon withdrew his forces; and the French army being detained in Egypt by a war with the Turks, as well as the want of shipping at Suez, Tippoo had to contend singly against the united force of Britain and her allies in those eastern regions.

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A consular  
government  
established  
in France.

The plan of a new constitution was presented to the public by the consuls in the month of December 1799. According to this plan, 80 men, who had the power of nominating their own successors, and were called the conservative senate, had likewise authority to elect the whole of the legislators and executive rulers of the state, while none of these offices could be held by themselves. One man, called the *chief consul*, possessed the sovereign authority, held his power for ten years, and was competent to be re-elected. Other two consuls were to assist in his deliberations, but had no power to controul his will. The legislative power was divided into two assemblies; the tribunate, composed of 100 members, and the conservative senate of 300. When the chief consul thought proper to propose a law, the tribunate might debate upon it, without having authority to vote either for or against it, while the members of the senate might vote, but were not enabled to debate. The consuls and the members of the legislative body, as well as of the conservative senate, were not responsible for their conduct, but ministers of state employed by them were understood to be accountable. The committees which framed the constitution, nominated the persons who were to execute the functions of government. Bonaparte was appointed chief consul, and Cambaceres and Lebrun second and third consuls. Sieyes, as formerly, declined taking any active part in the administration of public affairs, and he received, as a gratuity for his services, an estate belonging to the nation, called *Croisne*, in the department of the Seine and Oisne.

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Bonaparte  
proposes to  
treat with  
Britain.

Bonaparte had not long been in possession of the reins of government, till he sent overtures for negotiating peace with the allied powers at war with France; but it is to be presumed that he did not wish for a general peace. Separate proposals were made to the different belligerent powers, no doubt with a view to dissolve the coalition; but the decrees of the convention which declared war against all the powers of Europe, were not repealed by him. He departed from the forms sanctioned by the custom of nations in carrying on diplomatic correspondence, but addressed a letter directly to his Britannic majesty, the substance of which was contained in two questions; "whether the war, which had, for eight years, ravaged the four quarters of the globe, was to be eternal?" and "whether there were no means for Britain and France of coming to a good understanding?" Satisfactory, and we think, unanswerable replies, were made to these questions by the

British ministry, who dwelt much, and very justly, on the bad faith of revolutionary rulers, and the instability of the governments of France since the subversion of monarchy. The overture transmitted to Vienna was of a similar nature, and it experienced similar treatment; but the emperor of Russia abandoned the coalition, probably on account of the shameful manner in which Suwarrow had been treated, while carrying on the war in Italy and Switzerland.

Bonaparte on the 7th of March, sent a message to the legislative body, containing his own ideas of the conduct and designs of the British cabinet, and assuring them that he would invoke peace in the midst of battles and triumphs, and swear to fight only for the happiness of France and the repose of the world. This message was followed by two decrees; the one calling, in the name of honour, upon every soldier absent on leave from the armies of Italy and the Rhine, to join them before the 5th of April; and the other appointing a fresh army of reserve of 60,000 men to be assembled at Dijon, under the immediate command of the first consul.

About this time the belligerent powers were nearly ready for opening the campaign in Italy and on the Rhine. The Genoese republic was the only territory of any importance in Italy, which remained in the hands of the French, but the army by which they defended it was very much reduced since the preceding year, and might be considered as in a state of mutiny, from the want of pay, clothes and provisions. The Austrians eagerly wished to obtain possession of Genoa and all its dependencies, in which they could not fail to be seconded by the Genoese themselves, as they looked upon the republicans to be the destroyers of their commerce. Massena received the command of the army in Genoa, with extraordinary powers, and evinced himself to be a general of consummate abilities. Carrying a reinforcement of troops with him from Lyons and Marseilles, and reducing to order and obedience, all whom he found ready to desert their standards, he soon found himself at the head of a force sufficient to check the progress of the Austrians, and keep the Genoese in subjection. After a number of battles had been fought, he was obliged to retire into the city, where he must soon have been compelled to surrender by famine, if General Melas had immediately blockaded it.

The appearance of the British fleet on the 5th of April, was the concerted signal for Melas to make an attack upon Genoa, the communication between which and France was thus cut off. Prior to the arrival of Lord Keith, a quantity of wheat and other provisions had been thrown into the city, by which means the army and the inhabitants were rescued from the consequences of immediate famine. The surrounding country was soon vanquished by the Austrians; but as the gallant Massena still lived in the expectation of supplies from France, he obstinately refused to surrender the city. General Melas having nothing to apprehend from this army blocked up in Genoa, left General Ott to continue the blockade, and went with his own forces against Sauchet, who commanded another division of the French army.

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A British  
fleet ap-  
pears off  
Genoa.

A decisive battle was fought between Ceva and St Lorenzo,

France. Lorenzo, on the 7th of May, in which the republicans experienced a total defeat, having lost 1200 prisoners, and 19 pieces of cannon. This soon obliged General Sautchet to abandon his strong position of Col di Tenda, where he left behind him four pieces of cannon and 200 prisoners; and marching on towards Nice, the Austrians drove him from one post to another, till he was finally obliged to take refuge behind the Var; by which movements General Melas became master of the whole department of the Maritime Alps. But the campaign on the Rhine did not open in such a favourable manner to the Austrians. The court of Vienna directed the archduke Charles to resign the command of the army to General Kray, who distinguished himself in such an eminent manner in Italy, during the campaign of 1799. Of his military talents there could be only one opinion, and his integrity and zeal had been sufficiently tried; but he had the misfortune not to be so noble as some of the other generals! It is truly ridiculous to behold men contending about trifles, when engaged in matters of such vast importance as the salvation of their country. During the most propitious days of Rome, her greatest generals were plebeians.

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Moreau refuses to act as directed by Bonaparte.

It could not be reasonably expected that such a discordant army, commanded by an able officer who had the misfortune not to be a nobleman, would ever be able to make head against the veterans of France, led on by such an extraordinary general as Moreau. The Hungarian troops, finding themselves ready to be sacrificed to the party dissensions of their officers, would not fight against the enemy. The council of war at Vienna had sent General Kray instructions at the opening of the campaign, how he was to dispose of his forces, and having no general under him to support his own opinion, he was under the painful necessity of obeying his instructions, whether he could approve of them or not. Instructions of a similar nature had been transmitted to Moreau by the chief consul, but he indignantly refused to fight under such restraints. He was no doubt conscious that his own knowledge of the military art was at least equal to that of Bonaparte, while he was infinitely better acquainted with the country, and therefore he sent a courier to Paris to acquaint the consul, that if the orders sent him were to be rigidly obeyed, he should feel it his duty to resign his command, and accept of an inferior station. He accompanied his resignation with a plan of the campaign which he had framed for himself, the propriety of which instantly struck the chief consul, and therefore he was ordered to carry on the war, according to his own judgment.

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And is therefore left to his own judgment.

General Moreau being thus wisely left to adopt and execute his own measures, crossed the Rhine, and drove the Austrians from one post to another, till Kray, finding it impracticable to adopt offensive measures with a rebellious army, with disaffected officers to command them, resolved to maintain his position at Ulm, and wait for assistance from Vienna. He was defeated at Stockach, Engen, and Moskirch, although he exhibited fully the talents of an able general; but what talents were able to counteract the pernicious consequences of treachery? At one time, when 7000 men received orders to advance, they instantly threw down their arms. Kray too plainly perceiving that it was absolutely in vain to attempt any thing of an offensive na-

ture, entrenched himself strongly at Ulm, commanding both sides of the Danube, which makes it a place of great importance. Moreau perceiving his intentions, resolved to try the passage of the Danube, and force him to a general engagement, by cutting him off from his magazines at Donawert. For this purpose he gave orders to Lecourbe with one of the wings of his army, to take possession of a bridge between Donawert and Dillingen, which was not effected without considerable difficulty. The Austrians having perceived, when too late, that their all was in danger, disputed every inch of ground with the French commander. Between the time of marching to, and of crossing the Danube, Kray sent reinforcements to the left bank to oppose the passage, in consequence of which a battle was fought at Hochstet, in the vicinity of Blenheim, where victory again declared for the French, who made 4000 of the enemy prisoners, independent of the killed and wounded lost by the Austrians, of which we have seen no estimate.

General Kray, sensible that his situation was perilous, left a strong garrison at Ulm, and marched against the enemy, attacking them at Newburg, which both sides conducted with determined bravery; but the Austrians, after a long contest, fell back on Ingolstadt. It may not improperly be said, that this battle decided the fate of Germany. The electorate of Bavaria was now in the possession of the French, with other territories of less extent; and as they approached the hereditary dominions of the emperor, men of republican sentiments behaved with such effrontery, as to convince the court, that no dependence could be reasonably placed on armies composed of such men. The imperial family, and the British ambassador, were openly insulted in the theatre, and the cry of *peace, peace*, was vociferated from different quarters.

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The French cite such a spirit, because at this time the affairs of Germany were even in a more deplorable state in Italy than upon the Danube. When the campaign opened on the Rhine, the army of reserve under the command of Bonaparte, which was formed at Dijon, began its march. When the French government declared that this army was above 50,000 strong, and receiving daily reinforcements, few could be found who were disposed to give any credit to the report. Such as were friendly to the cause of the allies, were unwilling to allow the French government so much vigour, while it was industriously circulated by the Jacobins of Germany, that it could not amount to more than 6000 men. The first consul set out from Paris on the 5th of May, to take the command of an army, the strength and destination of which had given rise to so many conjectures, and on receiving the troops cantoned at Dijon, he proceeded towards Genoa. Having been a short time in the Pays de Vaud, he joined the army of reserve at the foot of St Bernard, of which he immediately assumed the command. It is certain that a very insignificant force would have been able to arrest the progress of Bonaparte while ascending the mountain; but either General Melas had heard nothing of its being in motion, or he had implicitly believed the report of the Jacobins. In consequence of this ignorance or credulity, the army of reserve encountered no opposition till it reached the town of Aost, of which the first consul very soon

France.  
1800.

France. 1800. soon gained possession. Having, with the most astonishing perseverance, passed the fort of Bard, he proceeded on his march down the valley of Aost with little opposition, till he arrived at the town of Yorea, where the Austrians were assembled in force, but were obliged to give way before the impetuosity of the republicans, and post themselves on the heights of Romano behind the Chinfella. It was of vast importance as commanding the passage of the river, and was occupied by 4000 cavalry, 5000 infantry, and a few pieces of cannon. It was taken on the 26th of May, and the fort of Brunette soon after, in consequence of which the road to Turin was now open. While the republicans were effecting a passage over St Bernard, the chief part of the Austrians under Melas were employed in the celebration of their victory over them at Nice, little suspecting how soon they were to experience a sad reverse of fortune, and that the victors would very soon be vanquished. General Melas, at length roused from his dream of security, marched towards Turin with all possible speed, in order to defend the Po, and prevent the invaders from arriving at Vienna. He naturally concluded that Turin would be the first important point of attack made by the French, but in this he was deceived; for while he prepared to dispute the passage of the Po with the republicans, Bonaparte suddenly turned to the left, and entered Milan on the 2d of June.

The army of Bonaparte was very numerous, but he wanted magazines, artillery, and stores of every kind; but understanding that Pavia was the great depot of the Austrian army, he sent his advanced guard against it under General Lannes, who made an easy conquest of it, and found in it more than 200 pieces of cannon, 8000 muskets, 2000 barrels of gunpowder, and a prodigious quantity of all sorts of provisions. Another of the chief consul's generals crossed the Po at Stradella; and having cut off the communication between General Melas and the country of Piedmont, gained possession of the Austrian magazines at Piacenza, Cremona, and a number of other places on the banks of the river.

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Massena in  
a critical  
situation at  
Genoa.

About this time it was that Bonaparte became acquainted with the fate of Genoa, by means of intercepted letters. Massena did every thing in the power of bravery and perseverance to keep possession of the city; but after he had witnessed 15,000 of the inhabitants perish with hunger, he surrendered to the British and Austrian commanders on the 5th of June, and obtained very favourable terms, when we consider that it was impossible for him to hold out any longer. The right wing of his army, consisting of 8110 men, was permitted to march into France by the way of Nice, and the rest were to be conveyed by sea to Antibes, at the expense of Britain; no man was to be deemed responsible for having held any public office under the government of the Ligurian republic; and all officers taken prisoners since the commencement of the campaign, were allowed to return to France on their parole, not to serve till they should be regularly exchanged. By the fall of Genoa, the Austrian army which besieged it was at liberty to co-operate with the commander in chief; and, accordingly, General Ott marched at the head of thirty battalions to check the progress of the French army in Piedmont. On the 9th of June he was met by generals Lannes and Victor at Montebello,

where a battle was fought with great fury on both sides, when the French were victorious, and General Ott retreated with great loss. Melas being unable to arrest the progress of the republicans by detachments of his army, collected his whole force between Alessandria and Tortona, that he might be able to open a way for himself to the Austrians on the Mincio, if he should find it impossible to crush the enemy. The consequence of this step was the ever memorable battle of Marengo, fought on the 14th of June, which has been variously described. The French accounts represented the army of General Melas as more numerous than that of the chief consul, to whose superior conduct and bravery alone the French were indebted for success. Others have believed that the superiority was on the side of the republicans, and think they can discover as much from comparing together the different bulletins of the army of reserve. On this point we pretend not to decide, only it is certain that the Austrians were victorious for nine hours, and the fate of that battle appears to have been decided by the masterly conduct of General Defaix, who died on the field. One false movement, made by General Melas, which enfeebled his centre, afforded the gallant Defaix an opportunity of making a vigorous discharge with a body of cavalry that had hitherto been unemployed. General Zach, a man worn out with age and fatigue, when about to take the command of the army from Melas, fell into the hands of the enemy, who remained masters of the field of battle.

France.  
1800.

The Austrians lost in this engagement above 9000<sup>520</sup> men, and the French upwards of 12,000, according to their own account. Enraged that the victory should be thus snatched from them, the Austrians were eager to renew the combat on the following day; but General Melas deemed it prudent to check the ardour of his troops, and concluded a capitulation, said by some to be unparalleled in the annals of war. He may have signed such a capitulation in consequence of instructions from the council of war at Vienna, or the fortresses given up by him may have been destitute of provisions. If we admit the first supposition, it follows that the council of war were determined enemies to the cause of the combined powers; and if we go upon the second, Melas himself was perhaps the most improvident commander that ever was charged with the defence of a country. The whole of Piedmont and Genoa were given up to the French, and an armistice was concluded, to last till the court of Vienna had time to return its opinion.

Great loss  
of the Aus-  
trians at  
the battle  
of Maren-  
go.

General Kray in Italy was anxious to avail himself of this armistice, to arrest the progress of Moreau's army; but that able general would not listen to any overtures upon the subject, till he should receive instructions from Paris. Count St Julien arrived with proposals of peace from the Imperial cabinet, in consequence of which the armistice was concluded in Germany and Italy, the posts then occupied by the respective armies being considered as constituting the line of demarcation. In opposition to the spirit of their stipulations with General Melas, the French reinforced their army in Italy, levied immense contributions, and raised troops in different states declared by themselves to be independent.

While France was everywhere victorious in Europe, her troops in Africa were subjected to hardships and disgrace. Their being abandoned by their chief made them

521  
Great dis-  
tress of the  
French  
troops in  
Egypt.

France. 1800. them complain bitterly; and Kleber is said to have declared, that the same *universe* should not contain him and Bonaparte. He continued the negotiations begun by General Bonaparte with the grand vizier for evacuating Egypt, between whom a convention was concluded on the 24th of January 1800, to which Sir Sidney Smith agreed on the part of Great Britain. By virtue of this convention the republican army, its baggage and effects, were to be collected at Alexandria, Rosetta, and Aboukir, to be conveyed to France in vessels belonging to the republic, and such as might be furnished for that purpose by the Sublime Porte. It would seem that nothing could have happened more injurious to the interest of the allies than the evacuation of Egypt upon such terms, since the consul would thus have been furnished with nearly 18,000 troops, which might have been advantageously employed, either in Italy or on the Rhine. It is strange how this important circumstance did not occur to Sir Sidney Smith, and no less so, how he took upon him the office of plenipotentiary. Mr Dundas clearly proved in the house of commons, that he exceeded any power with which he could reasonably conceive himself vested, that being lodged with Lord Elgin at Constantinople.

522  
General Kleber assassinated.

In the latter end of the year 1799, the British ministry had reason to believe that a negotiation would take place between the grand vizier and General Kleber, respecting the evacuation of Egypt by the troops of the latter; and as such an event was much to be desired, Lord Keith received orders to accede to it, on condition that General Kleber and his army should be detained as prisoners of war, instead of being sent back to France. This was bitterly complained of in France, and numbers even in England exclaimed against it as a flagrant breach of faith, while General Kleber himself did not consider it in such a light, although the only person who had reason to do so, could he have done it with fairness. On the 20th of March he attacked the Turks in the vicinity of Cairo, who fled before him in all directions, and left more than 8000 men dead and wounded on the field of battle. By this conquest Cairo was restored to the French, which in terms of the convention they had abandoned. Kleber again proposed to evacuate Egypt, on the terms agreed to by the grand vizier and Sir Sidney Smith, and Lord Keith being ordered to agree to them by the cabinet of St James's, a suspension of hostilities took place, and the Turks were ready to be delivered from enemies whom they were not able to expel, when General Kleber was suddenly assassinated.

523  
Of which Menou is unjustly suspected.

Both parties had reason to regret this event, as General Kleber appears to have been, not only the most honourable, but by far the ablest commander of the republicans, in that quarter of the globe. It is not certainly known by whom he was murdered, nor who were the contrivers of such a plot, but at Constantinople his successor Menou was strongly suspected. We must confess that he was not friendly to Kleber; but on the other hand we do not find General Reynier, in his "State of Egypt," insinuate any thing of this nature against Menou, although he treats his conduct and abilities with some degree of contempt; and we are informed that the assassin himself, previous to his execution, solemnly acquitted Menou from being in the least acquainted with the plot.

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As Menou refused to leave Egypt by capitulation, the British government formed the resolution of driving him out of it by force. Sir James Pulteney received the command of 12,000 men, to act in the Mediterranean in such a manner as might most effectually annoy the enemy; a plan which was disconcerted by the issue of the battle of Marengo. He was superseded by Sir Ralph Abercromby, who carried reinforcements along with him, together with a train of artillery from Gibraltar. He touched at Minorca and Malta, from whence he steered his course for the coast of Egypt, which he reached on the 1st of March 1801, and anchored next day in the bay of Aboukir; but the weather prevented him from attempting to land till the 7th of that month, at 10 o'clock in the forenoon. The first division effected a landing in the face of the French, to the amount of 4000 men, whose position was so very advantageous, that an eye witness thought they might have resisted the world; yet 2000 British troops drove them from it, with the loss of some field pieces, and the disembarkation was continued during that and the following day.

France. 1801. 524  
General Abercromby sails for Egypt.

The whole army of General Abercromby moved forward on the 12th, and coming in sight of the main body of the French, gave them battle on the 13th. The conflict was obstinate on both sides, and their loss very considerable, but victory in the end declared for the British. This advantage was followed up with vigour, and on the 21st a more interesting battle was fought with similar success, about four miles from the city of Alexandria. Sometimes the French had the advantage, and sometimes the British, but the latter were finally victorious. General Abercromby, that he might not damp the ardour of his troops, concealed for two hours the anguish of a mortal wound he received in this action:—a degree of magnanimity which has very seldom been equalled, and we believe never was surpassed. The loss of the British on this occasion was estimated at 1500, and that of the French at 4000 men.

525  
The French conquered by the British near Alexandria, and General Abercromby mortally wounded.

As it may be said that the fate of Egypt was decided in a great measure by these two battles, we beg leave to call the attention of our readers to affairs of great importance which about this time took place in Europe. The powers of the north, envious of the superiority of Britain by sea, and acting under the influence of the capricious Paul, were resolved to revive the armed neutrality of Catharine II. during the continuance of the American war, and claimed a right of trading to the ports of France, without being subjected to have their vessels searched. The ministry of Great Britain were determined to break such a confederacy; but to the astonishment of the nation they resigned at this period. Different causes have been assigned for an event which was so unexpected; but the ostensible reason was a difference in the cabinet relative to catholic emancipation. After the union of Ireland with Britain, it seems pretty clear that the minister did propose this subject in the cabinet, but his majesty, from a sacred regard to his coronation oath, put his negative upon it, in consequence of which Mr Pitt and his friends gave in their resignation. In general they were succeeded by men who had countenanced their administration during the war. Mr Addington was appointed first lord of the treasury, and chancellor of the ex-

526  
The Northern Confederacy.

527  
A change of ministry takes place in Britain.

A a chequer;

France. 1801. chequer; Lord Eldon, lord high chancellor; the earl of St Vincent, first lord of the admiralty; lords Hawkesbury and Pelham, secretaries of state, and the honourable Colonel Yorke, secretary at war. The former ministry was dissolved on the 11th of February; but owing to the indisposition of his majesty, none of the new ministry entered upon office before the middle of March, during which eventful interval Mr Pitt and his associates had the chief management of public affairs. The new ministry entered upon office by solemnly pledging themselves to the nation, that they would employ their united efforts in procuring a safe and honourable peace with France, while they never lost sight for a moment of the warlike plans of those who had preceded them.

About this time the most hostile measures were adopted by the powers composing the northern confederacy. The free city of Hamburgh was taken by a Danish army under Charles prince of Hesse, in order to injure the commerce of Great Britain; and the king of Prussia sent a numerous army into the electorate of Hanover. To punish this unaccountable conduct, and dissolve the northern confederacy, a fleet of 17 sail of the line, four frigates, four sloops, and some bomb vessels, was fitted out in the ports of Britain, which sailed from Yarmouth on the 12th of March, under the command of Admiral Sir Hyde Parker, Lord Nelson, and Rear-admiral Graves, and having passed the Sound, appeared before Copenhagen on the 30th of the same month. The Danes did not appear in the smallest degree agitated, for it was impossible to molest either the fleet or the city, without passing through a channel so extremely intricate, that it was once believed hardly safe to attempt it with a single ship, and without any enemy to oppose. This channel was founded by Lord Nelson, who undertook to conduct a large division of the fleet through it, requesting from Sir Hyde Parker the command of it, which was accordingly given him, and Rear-admiral Graves was his second in command.

528  
The Danes  
vanquished  
by Lord  
Nelson at  
Copenha-  
gen.

As the largest ships drew too much water for being employed in such a hazardous attempt, his lordship selected 12 of from 74 to 50 guns, together with four frigates, four sloops, two fire-ships, and seven bombs. A most prodigious force was opposed to this, consisting of six sail of the line, 11 floating batteries, each mounting from 26 twenty-four pounders to 18 eighteen pounders, one bomb-ship, and a number of schooners. These were supported by the Crown islands, mounting 88 pieces of cannon; by four sail of the line, moored in the mouth of the harbour, and by a few batteries on the island of Amak. Lord Nelson attacked this tremendous force on the 2d of April, and silenced the firing of the batteries after an obstinate and bloody action which lasted four hours, taking, burning, and sinking about 17 sail, including seven sail of the line. In killed and wounded the British lost 943 men, while that of the Danes must have been at least double the number. A suspension of hostilities was the immediate consequence of this brilliant victory, and a treaty of armed neutrality to last for 14 weeks.

529  
Who sails  
from thence  
to Carlscrona.

After repairing the ships that were damaged upon this occasion, the British fleet sailed for Carlscrona, and appeared before it on the 19th of April. The governor here was immediately informed by the British ad-

miral of what had happened at Copenhagen, requesting his Swedish majesty to give an explicit answer whether he meant to adhere to, or abandon the confederacy. The reply was very ambiguous; but having received the news of the sudden death of the emperor Paul, on the 23d of March, and Lord Nelson, now commander in chief, writing in a more peremptory tone than the officer whom he had superseded, the court of Stockholm deemed it prudent to follow the example of that of Copenhagen. Alexander, the son and successor of Paul, possessed of more honour and justice than his father, restored all the British property which he had confiscated, relinquished his absurd claim to the island of Malta, and agreed that neutral vessels should be searched, when bound for any one country at war with another, which proved the grave of the northern confederacy.

When the armistice was signed between the Austrian and French generals in the year 1800, the troops of the latter were in possession of Germany almost to the banks of the Inn, and of Italy to the frontiers of Venice; but the spirit of the emperor was yet unsubdued, and he would not abandon his allies by a confirmation of the preliminaries of peace which Count St Julian had agreed to at Paris, as he exceeded the powers with which he was entrusted. Kray having retired from service, the archduke John succeeded him, with whom the emperor in person repaired to the army; but they soon found it impracticable to act an offensive part against General Moreau, and therefore another armistice comprehending Italy, was agreed to. The emperor wished to include Britain in any treaty with France, but as Bonaparte would admit no plenipotentiary from that country without the benefit of a naval armistice, which it was truly absurd to expect, General Moreau received orders to go on with his military operations.

The army of Austria was now given to the command of generals whose very names were almost unknown beyond the confines of their own country, and who evinced themselves but very little acquainted with the military art. As Moreau was pondering on the plan of his winter campaign, the right wing of his army was attacked by the Austrians with such vigour, as had nearly reduced him to the necessity of acting on the defensive; and had General Klenau known how to make a temperate use of his victory on this occasion, the ruin of the French commander would have been inevitable. The case was otherwise. Elated with his success, he unaccountably abandoned his position on the Inn, and engaging his cautious and able antagonist at the village of Hohenlinden, was totally routed, with the loss of 80 pieces of cannon, 200 caissons, and 10,000 prisoners, independent of a prodigious number left dead on the field.

General Moreau allowing the enemy no time to rally, proceeded directly towards the Inn, crossing it on the 9th of December, 1800, and driving his enemies before him, struck the court of Vienna with consternation and dismay. Prince Charles was recalled to the command of the army, but after many fruitless efforts to retrieve its lost honour, he proposed an armistice on the 27th of December, which was granted by the French commander, on condition that it should be immediately followed by a definitive treaty. If the archduke could have had any dependence on his army, although

France.  
1801.

530  
The Auf-  
trians total-  
ly routed at  
Hohenlin-  
den.

France. 1801. although very much weakened, this armistice, in all probability, would not have taken place, for the position of Moreau was perilous in the extreme. In the very heart of Austria, he had behind him on his right, about 30,000 men in the Tyrol, with upwards of 50,000 on his left. But Austrian valour was now almost extinguished by so many sad reverses of fortune, and Austrian officers were not true to their trust.

531 Treaty of Luneville. This armistice was followed by a treaty of peace signed at Luneville on the 9th of February 1801, between the emperor for himself and the Germanic body, and the first consul of the French republic, in the name of the people of France. By it the emperor ceded the Brisgau to the duke of Modena, for the territories lost by that prince in Italy, and bound himself to find indemnities in the Germanic empire for all those princes whom the fate of war had deprived of their dominions. The grand duke of Tuscany was to renounce his dukedom for ever, with its dependencies in the isle of Elba, to the infant duke of Parma, for which the empire was to furnish him with an adequate indemnification.

On the 28th of March a treaty of peace was concluded between the French republic and the king of the Two Sicilies, by which his majesty obliged himself to shut all the ports of Naples and Sicily against ships of every description belonging either to the British or the Turks, till these powers should conclude a treaty with the French republic, and till Britain and the northern powers should come to a good understanding. He renounced for ever, Porto Longano in the isle of Elba, his states in Tuscany, and the principality of Piombino, to be disposed of in such a manner as the French republic might think proper.

532 Britain deserted by almost all Europe. Great Britain had now none to assist her in the contest with France, but the Turks in Egypt and the Portuguese in Europe, powers which rather diminished than increased her strength, by dividing it. The Spaniards had made an attack upon Portugal at the desire of France, conquering some of its provinces; but a treaty of peace was concluded between them on the 6th of June, by which the king of Spain restored all his conquests except the fortres of Olivenza, and the prince regent of Portugal and Algarva promised to shut the ports of his whole territories against the ships of Great Britain, and to make indemnification to his Catholic majesty for all losses and damages sustained by his subjects during the war.

533 Bonaparte threatens to invade Britain. When the chief consul had made peace with all his other enemies, he threatened Great Britain with an immediate invasion, which gave great uneasiness at first to a considerable part of the nation, but it gradually subsided. In order to diminish this alarm, Lord Nelson was sent to destroy the shipping and harbour of Boulogne. His success in this undertaking fell short of the expectations which many had formed; but he made such an impression on the enemy on the 4th of August, as evinced that Britain could annoy the coast of France with greater facility, than France could molest that of Britain. It was also highly satisfactory to find that the spirit of the British navy was not exclusively attached to the hero of the Nile; for Rear-admiral Saumarez having, in the month of July, come up with a combined squadron of French and Spanish ships of war bound for Cadiz, much superior to his own, he scrupled not to give them battle, the consequence of which

France 1802. was, that one of them was captured, and two more were burnt.

534 Britain attempts to treat with France. Attempts were again made by Britain during the summer of 1801, to negotiate with France. The first consul could not but see, from the total dissolution of the northern confederacy, that it was impossible for him to ruin the British commerce, and consequently that all the treaties he had made for the purpose of excluding our ships from neutral ports would signify nothing. He seemed determined, however, to keep possession of Egypt; and Britain, on the other hand, was as fully resolved to wrest it from him. On this account the negotiations were protracted, till the conquest of that country was known at London and Paris.

535 Rosetta, Cairo, and Alexandria, taken by the British. When Sir Ralph Abercromby died, General Hutchinson succeeded to the command of the British forces in Egypt, who was probably acquainted with the plan of his much lamented predecessor, as one spirit seemed to actuate both. Rosetta soon surrendered, which was followed by the conquest of Cairo; and Menou having accepted of similar terms for Alexandria, the whole of Egypt fell into the hands of the allies, and the republican troops and baggage were conveyed to the nearest French ports in the Mediterranean, in ships furnished them by the allies. After these events, the negotiations between Britain and France went on more agreeably; and, on the 1st of October, the preliminaries of peace were signed at London by Lord Hawkesbury on the part of his Britannic majesty, and M. Otto on that of the French republic. By it Great Britain engaged to give up all the conquests made during the continuance of the war, excepting the islands of Ceylon and Trinidad. France was to restore nothing. The Cape of Good Hope was to be free to all the contracting parties; the island of Malta was to be given to the knights of the order of St John of Jerusalem; Egypt was to be given to the Ottoman Porte; Portugal was to be maintained in its integrity, except what was ceded to the king of Spain by the prince regent; Naples and the Roman states were to be evacuated by the French, Porto Ferrajo by the British, with all the ports and islands occupied by them in the Mediterranean; and plenipotentiaries were appointed to meet at Amiens, for the purpose of drawing up and signing the definitive treaty. This was concluded on the 22d of March 1802, in consequence of which the French republic was acknowledged by the whole of Europe.

536 Peace concluded at Amiens between Britain and France. The restoration of peace, after so long and sanguinary a contest, gave the highest satisfaction to all ranks and denominations of men, with the exception, perhaps, of a few interested individuals; and it was certainly as honourable to Britain as could well be expected from the nature of the war. It was celebrated at Paris, in the cathedral of Notre Dame, with great pomp and magnificence. The celebration of the re-establishment of the Catholic religion in France, to which the majority of the people were warmly attached, gave additional importance to the scene in that country, and the measure evinced the most consummate political wisdom on the part of Bonaparte, whose popularity in consequence of it was very much increased. We must now lay before our readers the celebrated *Concordat*, or convention concluded between Bonaparte and the pope, by which the Catholic faith was again established in that country.

France.

1802.

*Copy of the late important Convention between the French Government and His Holiness the Pope, Pius VII. ratified the 23d Fructidor, year 9, (10th September, 1801).*

The chief consul of the French republic, and his holiness the sovereign pontiff, Pius VII. have named as their respective plenipotentiaries—

The chief consul, the citizens Joseph Bonaparte, counsellor of state; Cretet, counsellor of state; and Bernier, doctor of divinity, curate of St Laud d'Angers; furnished with full powers:

His holiness, his eminence Monseigneur Hercule Confalvi, cardinal of the holy Roman church, deacon of St Agathe *ad Suburram*, his secretary of state; Joseph Spina, archbishop of Corinth, domestic prelate to his holiness, attendant on the pontifical throne; and Father Caselli, his holiness's adviser on points of theology; in like manner furnished with full powers in due form:

Who, after exchanging their full powers, have concluded the following convention:

*Convention between the French Government and his Holiness the Pope, Pius VII.*

The government of the republic acknowledges that the Catholic, Apostolical, and Roman religion, is the religion of the great majority of French citizens.

His holiness, in like manner, acknowledges that this same religion has derived, and is likely to derive, the greatest benefit and the greatest splendour from the establishment of the Catholic worship in France, and from its being openly professed by the consuls of the republic.

This mutual acknowledgment being made, in consequence, as well for the good of religion as for the maintenance of interior tranquillity, they have agreed as follows:

Article 1. The Catholic, Apostolical, and Roman religion shall be freely exercised in France. Its service shall be publicly performed, conformably to the regulations of police, which the government shall judge necessary for the public tranquillity.

2. There shall be made by the holy see, in concert with the government, a new division of French dioceses.

3. His holiness shall declare to the titular French bishops that he expects from them, with the firmest confidence, every sacrifice for the sake of peace and unity—even that of their fees.

After this exhortation, if they should refuse the sacrifice commanded for the good of the church (a refusal, nevertheless which his holiness by no means expects), the fees of the new division shall be governed by bishops appointed as follows:

4. The chief consul shall present, within three months after the publication of his holiness's bull to the archbishoprics and bishoprics of the new division. His holiness shall confer canonical institution, according to the forms established in France before the revolution (*avant le changement de gouvernement*).

5. The nomination to the bishoprics which become vacant in future, shall likewise belong to the chief con-

ful, and canonical institution shall be administered by the holy see, conformably to the preceding article.

6. The bishops, before entering upon their functions, shall take, before the chief consul, the oath of fidelity which was in use before the revolution, expressed in the following words:

“ I swear and promise to God, upon the Holy Evangelists, to preserve obedience and fidelity to the government established by the constitution of the French republic. I likewise promise to carry on no correspondence, to be present at no conversation, to form no connexion, whether within the territories of the republic or without, which may, in any degree, disturb the public tranquillity: and if, in my diocese or elsewhere, I discover that any thing is going forward to the prejudice of the state, I will immediately communicate to government all the information I possess.”

7. Ecclesiastics of the second order shall take the same oath before the civil authorities appointed by the government.

8. The following formula of prayer shall be recited at the end of divine service in all the Catholic churches of France.

*Domine, salvam fac rempublicam.  
Domine, salvos fac consules.*

9. The bishops shall make a new division of the parishes in their dioceses, which, however, shall not take effect till after it is ratified by government.

10. The bishops shall have the appointment of the parish priests.

Their choice shall not fall but on persons approved of by government.

11. The bishops may have a chapter in their cathedral, and a seminary for the diocese, without the government being obliged to endow them.

12. All the metropolitan, cathedral, parochial, and other churches which have not been alienated, necessary to public worship, shall be placed at the disposal of the bishops.

13. His holiness, for the sake of peace and the happy re-establishment of the Catholic religion, declares that neither he nor his successors will disturb in any manner those who have acquired the alienated property of the church; and that in consequence, that property, and every part of it, shall belong for ever to them, their heirs and assigns.

14. The government shall grant a suitable salary to bishops and parish priests, whose dioceses and parishes are comprised in the new division.

15. The government shall likewise take measures to enable French Catholics, who are so inclined, to dispose of their property for the support of religion.

16. His holiness recognises in the chief consul of the French republic the same rights and prerogatives in religious matters which the ancient government enjoyed.

17. It is agreed between the contracting parties, that in case any of the successors of the present chief consul should not be a Roman Catholic, the rights and prerogatives mentioned in the foregoing article, as well as the nomination to the bishop's fees, shall be regulated, with regard to him, by a new convention.

The ratifications shall be exchanged at Paris in the space of forty days.

France.

1802.

Done

France.  
1802.

Done at Paris, the 26th Messidor, year 9 of the French republic.

(Signed) JOSEPH BONAPARTE.  
HERCULES, CARDINALIS CONSALVI.  
JOSEPH, Archiep. Corinthi.  
BERNIER.  
F. CAROLUS CASELLI.

REGULATIONS of the Gallican Church.

TITLE I.—Of the Regulation of the Catholic Church, as connected with the Policy of the State.

Article 1. No bull, rescript, decree, provision, or any thing in the place of a provision, or, in short, any other dispatch from the court of Rome, even though it should relate to individuals only, shall be received, published, printed, or otherwise put in force, without the authority of the government.

2. No individual, assuming the character of nuncio, legate, vicar, or apostolic commissary, or whatever other appellation he may assume, shall be allowed to exercise his functions in France, but with the consent of the government, and in a manner conformable to the liberties of the Gallican church.

3. The decrees of foreign synods, or even of general councils, shall not be published in France before the government shall have examined their form, their conformity to the laws, rights, and privileges of the French republic, and whatever might in their publication have a tendency to alter or to affect public tranquillity.

4. No national or metropolitan council, no diocesan synod, no deliberative assembly, shall be allowed to be held without the express permission of government.

5. All ecclesiastical functions shall be gratuitous, with the exception of those oblations which shall be authorized, and fixed by particular regulation.

6. Recourse shall be had to the council of state in every instance of abuse, on the part of superiors, and other ecclesiastical persons. The instances of abuse are usurpation, or excess of power, contravention of the laws and institutions of the republic; infraction of the rules consecrated by the canons received in France; any attack upon the liberties, franchises, and customs of the Gallican church; and any attempt, which, in the exercise of worship, can compromise the honour of citizens, arbitrarily trouble their conscience, or lead to oppression, injury, or public scandal.

7. There shall also be a right of appeal to the council of state, on the ground of any attempt being made to interrupt the exercise of public worship, and to infringe on that liberty which the general laws of the republic, as well as particular regulations, guarantee to its ministers.

8. An appeal shall be competent to any person interested; and in case no complaint is exhibited by individuals, the business shall be taken up officially by the prefects. The public functionary, ecclesiastical or individual, who shall wish to exercise this right of appeal, must address a signed memoir, containing a detail of the grievance complained of, to the counsellor of state presiding over religious affairs, whose duty it will then become to make, with the least possible delay, every inquiry into the subject; and upon his report the affair

shall be definitively settled, or sent back, according to the urgency of the case, to the competent authorities.

France.  
1802.

TITLE II.—Of the Clergy.—Sect. I.—General Regulations.

Article 9. The Catholic worship shall be exercised under the direction of the archbishops and bishops in their dioceses, and under that of the *curés*, in their parishes.

10. Every privilege derogating from ecclesiastical jurisdiction is abolished.

11. The archbishops and bishops may, with the permission of the government, establish in their dioceses cathedral chapters and seminaries. All other ecclesiastical establishments are suppressed.

12. Archbishops and bishops may adopt the title of citizen, or monsieur, as they shall judge most fit; all other qualifications are forbidden.

Sect. II.—Of the Archbishops, or Metropolitans.

Article 13. The archbishops shall consecrate and install their suffragans. In case of failure, or refusal on their part, their place shall be supplied by the eldest bishop of the metropolitan district.

14. They shall watch over the maintenance of doctrine and discipline in the dioceses dependent on their see.

15. They shall hear and judge of complaints and appeals against the conduct and decisions of the suffragan bishops.

Sect. III. Of the Bishops, the Vicars-General, and the Seminaries.

Article 16. No person can be named a bishop who is not a Frenchman, and who is not at least thirty years of age.

17. Before the decree for the nomination is dispatched, he shall be bound to produce an attestation of the correctness of his conduct and manners, furnished by the bishop of that diocese in which he shall have exercised the functions of the ministry; he shall undergo an examination respecting his tenets, by a bishop and two priests commissioned by the chief consul, and who shall address the result of their examination to the counsellor of state who presides over the department of ecclesiastical affairs.

18. The priest, nominated by the chief consul, shall endeavour without delay to procure installation from the pope; he shall be permitted to perform no function till the bull authorizing his installation shall have received the sanction of government, and till he shall have taken in person the oath prescribed by the convention entered into between the French government and the holy see. This oath shall be taken to the chief consul, and a minute of it shall be entered by the secretary of state.

19. The bishops shall nominate and install the *curés*; they shall not however make public their appointment, nor shall they give them canonical instruction, till their nomination shall have been agreed to by the chief consul.

20. They shall be bound to reside in their dioceses, and shall not be suffered to quit them without the permission of the chief consul.

France.  
1802.

21. Each bishop shall be empowered to appoint two, and each archbishop three, vicars-general: they shall make choice of them from among those priests who possess the requisite qualifications for being bishops.

22. They shall visit annually in person a certain portion of their diocese; and within the space of five years the whole of it. In case unavoidable circumstances shall prevent them from making this visit, it shall be made by a vicar-general.

23. The bishops shall be bound to organize their seminaries, and the rules of this organization shall be submitted to the approbation of the chief consul.

24. Those who shall be chosen teachers in these seminaries shall subscribe the declaration made by the French clergy in 1682, and published by an edict of the same year. They shall limit themselves to teach only the doctrine therein contained; and the bishops shall address a certificate of their abiding by this limitation, to the counsellor of state who presides over the ecclesiastical department.

25. The bishops shall send every year to this counsellor of state the names of the students of those seminaries who are destined to the holy ministry.

26. They shall appoint no ecclesiastic who does not possess a property of the annual value of 300 francs, unless he has attained the age of 25 years, and possess the qualities required by the canons of France.

The bishops shall perform no ordination before the number of persons to be ordained has been submitted to the government, and by them agreed to.

#### Seçt. IV. *Of the Curés.*

Article 27. The curés shall perform no ecclesiastical functions before they have taken, in the presence of the prefect, the oath prescribed by the convention entered into between the government and the holy see. A copy of this oath shall be made out by the secretary of the prefect-general, and regularly lodged with each party.

28. They shall be introduced to the possession of their benefice either by a curé, or by a priest whom the bishop shall point out.

29. They shall be bound to reside in their respective parishes.

30. The curés shall be directly subject to the bishops in the exercise of their functions.

31. The vicars, and the assistants performing their duties, shall be under the superintendance and direction of the curés.

They shall be approved by the bishop, and liable to be recalled by his authority.

32. No foreigner shall be employed in the functions of the ecclesiastical ministry, without the permission of the government.

33. Every ecclesiastic, though a Frenchman, is forbidden the exercise of ecclesiastical functions, unless connected with some diocese.

34. No priest shall quit his diocese to serve in another, without the permission of his bishop.

#### Seçt. V. *Of the Cathedral Chapters, and the Government of the Dioceses, during the Vacancy of the See.*

Article 35. The archbishops and bishops who shall wish to exercise the power which is given them, by establishing chapters, shall make no appointment without having previously obtained the authority of the govern-

ment, not only for the establishment itself, but for the number and choice of the ecclesiastics by whom they are to be formed.

36. During the vacancy of the see, the metropolitan, or, in his stead, the oldest of the suffragan bishops, shall watch over the governments of the dioceses.

The vicars-general of these dioceses shall continue their functions after the death of the bishop, till the installation of his successor.

37. It shall be the duty of the metropolitans and the cathedral chapters to communicate to the government information of the vacancy of sees, and the steps which may have been taken for the government of vacant dioceses.

38. The vicar-general, who shall govern during the vacancy, as well as the metropolitan and constituent members of chapters, shall suffer no innovation to be introduced into the usages and customs of the dioceses.

#### TITLE III. *Of Worship.*

Article 39. There shall be only one liturgy, and one catechism, for all the catholic churches of France.

40. No curé shall appoint extraordinary public prayers in his parish, without the special permission of the bishop.

41. No festival, with the exception of the sabbath, shall be established without the permission of government.

42. The ecclesiastics shall use, in the performance of religious ceremonies, the habits and ornaments suitable to their titles.

They shall in no case, or under any pretence, assume the colour and the distinctive marks reserved to the bishops.

43. All ecclesiastics shall dress according to the French fashion, and in black. The bishops shall add to this costume the pastoral cross, and violet stockings.

44. Domestic chapels and oratorios, for the accommodation of individuals, shall not be established without the express permission of the government, granted on the application of the bishop.

45. No religious ceremony shall be solemnized without the temples consecrated to the catholic worship, in places destined to different forms of worship.

46. The same temple shall be exclusively consecrated to the same system of worship.

47. There shall be in the different cathedrals and parochial churches, a place specially appointed for the civil and military authorities.

48. The bishop shall concert with the prefect the means of calling the faithful to religious worship by public bells, which are to be rung on no other occasion, without the permission of the local police.

49. When the government shall appoint public prayers, the bishops shall concert with the prefect, and the military commandant of the place, the day, the hour, and the manner in which these regulations are to be carried into effect.

50. The solemn instructions known under the appellation of *sermons*, and those distinguished under the name of *stations*, at the time of Advent and Lent, shall not be delivered but by priests who have obtained the special authority of the bishop.

51. The curés in the ordinary exercise of their parochial duties shall pray for, and shall cause prayers to

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France. 1802. be offered up in behalf of the prosperity of the French republic, and the safety of the French consuls.

52. They shall introduce into their instructions no censure, direct or indirect, either of individuals or of other forms of worship authorized by the state.

53. In their pulpits they shall introduce no publication foreign to the exercise of public worship, till it has at least received the authority of the government.

54. The nuptial benediction shall be given to those only who shall prove in due form, that their marriage has been contracted before a civil magistrate.

55. The registers kept by the ministers of religion, not being founded upon any thing but the administration of the sacraments, are in no case to supply the registers appointed by the law to ascertain the civil condition of the French people.

56. In all ecclesiastical and religious acts, the equinoctial calendar established by the laws of the republic is to be continued, and particular days shall retain the names which they possess in the solar calendar.

57. The day of repose for the public functionaries shall be Sunday.

*TITLE IV. Of the Arrangement of Archbishops, Bishops, Parishes, Edifices appropriated to public worship, and the salaries of the Clergy.*

*SECT. I. Of the Arrangement of Archbishops and Bishops.*

Article 58. There shall be in France 10 archbishops and 50 bishops.

59. The arrangement of the archbishoprics and dioceses shall be made in conformity to the subjoined plan.

*SECT. II. Of the Arrangement of Parishes.*

Article 60. There shall be at least one parish within the jurisdiction of a justice of peace. There shall be besides established as many subsidiary places of worship as circumstances may require.

61. Each bishop, in concert with the prefect, shall regulate the number and extent of these subsidiary establishments: the plan formed shall be submitted to the inspection of the government, and shall not be put into execution without its authority.

62. No portion of the French territory shall be formed into a district, subject to the administration of a curé, or to any subsidiary establishment, without the express authority of government.

63. The priests serving in these subsidiary establishments are to be named by the bishops.

*SECT. III. Of the Salaries of the Clergy.*

Article 64. The salary of the archbishops is to be 15,000 francs (about 625l. sterling.)

65. The bishops are to receive 10,000 francs (about 420l. sterling.)

66. The curés are divided into two classes. The salary of the curés of the first class is to be 1500 francs (about 62l. sterling;) that of the second class is to be 1000 francs (about 42l. sterling.)

67. The pensions they enjoy according to the regulations of the constituent assembly shall be deducted from their salaries.

The general councils of the larger communes shall be empowered to grant them an augmentation of salary, such as circumstances may require.

France. 1802. 68. The vicars, and those performing their functions, shall be chosen from among the ecclesiastics receiving pensions, in conformity to the laws of the constituent assembly.

The amount of these pensions, and the produce of oblations shall constitute their salary.

69. The bishops shall form a plan of regulations relative to the offerings which the ministers of religion shall be authorized to receive for the administration of the sacraments. The plan of the regulations furnished by the bishops shall not be published or otherwise put into execution till they have received the approbation of the government.

70. Every ecclesiastic now receiving a pension from the state shall be deprived of it on refusing, without sufficient reason, to take upon him the functions which he is required to discharge.

71. The general councils of the departments are authorized to procure for the bishops and archbishops suitable places of residence.

72. The parsonages and gardens pertaining to them which have not been alienated, shall be restored to the curés, and those officiating in the subsidiary places of worship. In cases where these parsonages cannot be procured, the general councils of the *commune* are authorized to procure for them a suitable lodging and garden.

73. The foundations which have for their object the maintenance of religion and the exercise of public worship, are to consist only of funds appointed by the state; they are to be accepted by the diocese and bishop, and are not to be enforced without the authority of the government.

74. The fixed property, except the buildings destined to the accommodation of the minister, is not to be affected by ecclesiastical titles, or possessed by the ministers of religion in consequence of their functions.

*SECT. IV. Of the Edifices appropriated to public worship.*

Article 75. The buildings formerly appropriated to the catholic worship, which are now at the disposal of the nation, shall be given up to the disposition of the bishops by decrees of the prefect of the department: a copy of these decrees shall be addressed to the counsellor of state who is intrusted with the regulation of religious affairs.

76. Offices shall be established for the purpose of superintending the support and preservation of temples, and the administration of charitable contributions.

77. In those parishes where there exists no buildings fit for being employed as a place of religious worship, the bishop shall consult with the prefect respecting the establishment of a suitable edifice.

*Table of the Arrangement of the new Archbishoprics and Bishoprics of France.*

*Paris.*—This archbishopric shall comprehend the department of the Seine.

Troyes—l'Aube and l'Yonne.

Amiens—la Somme and l'Oise.

Soissons—l'Aisne.

Arras—le Pas de Calais.

Cambray—le Nord.

Versailles—Seine-et-Oise, Eure-et Loire.

Meaux—Seine-et-Marne, Marne.

Orleans—Loiret, Loire-et-Cher.

*Malines*—

France. *Malines—Archbishopric—les deux Nettes, la Dyle.*  
 Namur—Sambre-et-Meuse.

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Tourney—Jemappe.  
 Aix-la-Chapelle—la Roer, Rhin et-Moselle.  
 Treves—la Sarre.  
 Gand—l'Escaut, la Lys.  
 Liege—Meuse-Inferieure, Ourthe.  
 Mayence—Monte Tonnerre.

*Besançon—Archbishopric—Haute-Saone, le Doubs, le Jura.*

Autun—Saone-et-Loire, la Nievre.  
 Metz—la Moselle, les Forets, les Ardennes.  
 Strasbourg—Haut-Rhin, Bas Rhin.  
 Nancy—la Meuse, la Meurthe, les Vosges.  
 Dijon—Cote-d'Or, Haute-Marne.

*Lyons—Archbishopric—le Rhone, la Loire, l'Ain.*

Mende—l'Ardiche, la Lozere.  
 Grenoble—l'Isere.  
 Valence—la Drome.  
 Chambéry—le Mont-blanc, le Leman.

*Nice—Archbishopric—le Var, les Bouches-du-Rhone.*

Nice—Alpes Maritimes.  
 Avignon—Gard, Vaucluse.  
 Ajaccio—le Galo, le Liamone.  
 Digne—Hautes-Alpes, Basses-Alpes.

*Toulouse—Archbishopric—Haute-Garonne, Ariège.*

Cahors—le Lot, l'Aveyron.  
 Montpellier—le Herault, le Tarn.  
 Carcassonne—l'Aude, les Pyrennees.  
 Agen—Lot-et-Garonne, le Gers.  
 Bayonne—les Landes, Hautes-Pyrennees, Basses-Pyrennees.

*Bordeaux—Archbishopric—la Gironde.*

Poitiers—les deux Sevres, la Vienne.  
 La Rochelle—la Charente Inferieure, la Vendée.  
 Angoulême—la Charente, la Dordogne.

*Bourges—Archbishopric—le Cher, l'Indre.*

Clermont—l'Allier, le Puy-de Dome.  
 Saint-Flour—la Haute-Loire, le Cantal.  
 Limoges—la Creuse, la Correze, la Haute Vienne.

*Tours—Archbishopric—Indre-et-Loire.*

Le Mans—Sarthe, Mayenne.  
 Angers—Maine-et-Loire.  
 Nantes—Loire-Inferieure.  
 Rennes—Ille-et-Villaine.  
 Vannes—le Morbihan.  
 Saint Brieux—Côtes-du-Nord.  
 Quimper—le Finisterre.

*Rouen—Archbishopric—la Seine-Inferieure.*

Coutances—la Manche.  
 Bayeux—le Calvados.  
 Seez—l'Orne.  
 Evreux—l'Eure.

#### ARTICLES relative to the Protestant Religion.

##### TITLE I. General Dispositions applicable to all Protestant Communions.

- Article 1. No individual shall officiate as a minister of religion who is not by birth a Frenchman.  
 2. Neither the Protestant churches nor their ministers

shall have any connexion with a foreign power or authority.

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3. The pastors or ministers of the different Protestant communions shall pray for the prosperity of the French republic and the safety of the consuls.

4. No doctrinal decision or formulary, under the title of a *confession*, or under any other title, shall be published or become a subject of instruction before its publication has been authorized by the government.

5. No change shall take place in the forms of their discipline without the same authority.

6. The council of the state shall take cognizance of all the plans formed by their ministers, and of all the dissensions which may arise among them.

7. It shall be understood, that to the support of pastors of consistorial churches, the property of these churches shall be applied, as well as the oblations established by usage and by positive regulations.

8. The regulations applied to the specific articles of the Catholic worship respecting the liberty of endowments, and the nature of the property which can be the object of them, shall be common to the Protestant churches.

9. There shall be two academies or seminaries in the east of France for the instruction of the ministers of the confession of Augsburg.

10. There shall be a seminary at Geneva for the instruction of the ministers of the reformed churches.

11. The professors in all the academies or seminaries shall be nominated by the chief consul.

12. No person shall be elected a minister or pastor of any church of the confession of Augsburg, who has not studied during a fixed period in one of the French seminaries appointed for ministers of this persuasion, and who shall not produce a certificate in due form of his capacity and regular conduct during the continuance of his studies.

13. No person is to be elected a minister or pastor of the reformed church without having studied in the seminary of Geneva, and without producing a certificate of the descriptions pointed out in the preceding article.

14. The regulation respecting the administration and internal police of these seminaries, the number and the qualifications of the professors, the mode of instruction, the subjects which are taught, together with the form of the certificates of application, good conduct, and capacity, are to be approved of by the government.

##### TITLE II. Sect. I.—Of the Reformed Churches.—Of the general Organization of these Churches.

Art. 15. The reformed churches of France shall have pastors, local consistories, and synods.

16. There shall be a consistorial church for every 6000 individuals of the same communion.

17. Five consistorial churches shall form a synod.

##### Sect. II.—Of Pastors and local Consistories.

Art. 18. The consistory of each church shall be composed of the pastor or pastors officiating in that church, and of a certain number of aged and respectable laymen chosen from among that class of citizens paying the greatest share of public contributions: their number shall not be under 10 nor above 12.

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19. The number of ministers or pastors in one consistorial church shall not be augmented without the authority of the government.

20. The members of the consistory shall watch over the maintenance of discipline, the application of the property of the church, as well as the funds arising from charitable contributions.

21. The pastor, or the oldest of the pastors, shall be the president of the consistorial assemblies: the office of secretary shall be filled by one of the elders.

22. The ordinary consistorial assemblies shall continue to be held on the days pointed out by long practice.

The extraordinary assemblies shall not be held without the permission of the sub-prefect, or of the mayor in his absence.

23. Every two years one half of the elders of the consistory shall be renewed. At this period the elders in office shall fix upon an equal number of Protestant citizens, heads of families, and chosen from among those paying the largest contribution to the state in the *commune* where the consistory is situated, and proceed to a new election: those going out are capable of being re-elected.

24. In those churches, where there is at present no consistory, one shall be formed by the election of 25 heads of Protestant families paying the largest contributions to the state. The election shall not take place without the authority, and unless in the presence of the prefect or sub-prefect.

25. Pastors can only be deposed after the reasons of such deposition have been confirmed by the government.

26. In case of the decease, the voluntary resignation, or the confirmed deposition of a pastor, the consistory shall, according to the 18th article, choose one to fill his place by a majority of voices.

The title of the election shall be presented to the first consul by the counsellor of state intrusted with the management of religious affairs, for the purpose of receiving his approbation.

After this approbation is given, he cannot enter upon the exercise of his function till he has taken before the prefect the oath exacted of the ministers of the Catholic worship.

27. All the pastors now employed are provisionally confirmed.

28. No church shall extend from one department to another.

### Sect. III.—Of Synods.

Art. 29. Each synod shall consist of a pastor and an elder from each church.

30. The synods shall superintend the celebration of public worship, the doctrines that are taught, and the conduct of religious affairs. All their decisions, of whatever description, shall be submitted to the approbation of government.

31. The synods shall not assemble without the permission of government. Previous notice shall be given to the counsellor of state intrusted with the management of religious matters, of the subjects which are to be discussed. The assembly shall be held in presence of the prefect or sub-prefect, and a copy of the minutes of the deliberations shall be addressed to the counsellor of state

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above-mentioned, who shall, with all possible speed, transmit a report to the government.

32. The meetings of the synod shall not be prolonged beyond six days.

### TITLE III.—Of the Organization of the Churches of the Confession of Augsburg.

#### Sect. I.—General Regulations.

Art. 33. The churches of the confession of Augsburg shall have pastors, local consistories, inspections, and general consistories.

#### Sect. II.—Of the Ministers, Pastors, and local Consistories of each Church.

Art. 34. With respect to pastors, the regulation of the consistorial churches, which was prescribed by the 2d section of the preceding title as applicable to the reformed pastors and churches, is to be observed.

#### Sect. III. Of Inspections.

Art. 35. The churches of the confession of Augsburg shall be subject to inspections.

36. Five consistorial churches shall form the bounds of an inspection.

37. Each inspection shall be composed of a minister and an elder from each church of the district. It shall not assemble without the permission of the government. At its first meetings, the oldest of the ministers of the district shall preside. Each inspection shall choose two laymen and one clergyman, who shall take the title of inspector, and whose duty it shall be to watch over the conduct of the ministers, and to preserve good order in the different churches: the choice of the inspector and the two laymen shall be confirmed by the first consul.

38. The inspection shall not assemble without the authority of government, in presence of the prefect or sub-prefect, or without having given previous intelligence to the counsellor of state, whose business it is to watch over religious affairs, of the subjects that are to come under discussion.

39. The inspector shall visit the churches of his district; and he may adopt the assistance of the two laymen named with him, as often as circumstances shall appear to require. He shall be charged with the convocation of the general assembly of inspection, no decree of which, however, shall be put in force till it has received the approbation of the government.

#### Sect. IV. Of general Consistories.

Art. 40. There shall be three general consistories: one at Strasburg for the Protestants of the confession of Augsburg, belonging to the departments of the Upper and Lower Rhine; the second at Mentz, for those of the departments of Lorraine and Mont Tonnerre; and the third at Cologne, for those of the departments of the Rhine and Moselle, and la Roer.

41. Each consistory shall be formed of one lay president, of two ecclesiastical inspectors, and a deputy from each inspection: the president and the two ecclesiastical inspectors shall be nominated by the chief consul. The president shall take the same oath before the chief consul, or a public functionary delegated for that purpose, which is imposed upon the ministers of the Catholic religion: the two ecclesiastical inspectors and the

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lay members shall have the same oath administered to them by the president.

42. The general consistory shall not be permitted to assemble without the consent of the government, and unless in presence of the prefect or sub-prefect, and after a notification of the subjects in discussion, as described in former articles.

43. During the interval between the different meetings, there shall be a directory, composed of the president, of the oldest of the two ecclesiastical inspectors, and of three laymen, one of whom shall be nominated by the chief consul; and the two others shall be chosen by the general consistory.

44. The privileges of the general consistory and the directory shall continue to be directed by the customs and regulations of the churches of the confession of Augsburg, in all points which have not been formally fixed by the laws of the republic or the present articles.

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Bonaparte  
chosen con-  
sul for life.

When Bonaparte was elected first consul for ten years, he was deemed competent to be re-elected for the same length of time; but he was afterwards chosen for life, with the strange power conferred upon him of nominating his successor, or, in other words, of governing beyond the grave, than which nothing can be conceived more ridiculous or unjust. Having advanced with such rapidity in the acquisition of power and authority, it was extremely natural to conclude, that the ambition of Bonaparte was not satiated, but that he would afterwards claim to himself, and influence an infatuated people to sanction, still higher degrees of dignity and grandeur. A book was accordingly published, either with his permission, or by his express command, pointing out the propriety and expediency of creating him *First Emperor of the Gauls!* At a subsequent period of the history contained in this article we shall see this extravagant proposition actually carried into effect, and Napoleon I. adorned with imperial honours. This verifies what Dumourier asserted concerning the French, at a time when such an event was highly improbable; "that a king they would have."

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The extent  
of his  
powers.

In the capacity of first consul, his power was similar to that of his Britannic majesty, in respect of criminals under sentence of death, that he could grant them at his pleasure a plenary pardon, and admit them to return again to the bosom of society; but his executive authority in almost every other case was dangerously greater, as there was in fact no other power in the state which could possibly controul him. While his authority was established thus firmly within his own dominions, he endeavoured to increase his influence over the rest of Europe, by forming an alliance with the court of Petersburg. At first it was believed to be purely of a commercial nature, but the active part taken by both in dismembering the Germanic body, clearly evinced that such an alliance was of a more interesting nature, notwithstanding the ostensible reason for such conduct was the indemnification of the sufferers during the war.

It will perhaps be admitted, that the state of France, after the dreadful convulsions occasioned by the revolution, required an executive government of considerable promptitude and vigour; yet it was surely possible, and it was no less a sacred duty binding upon him, to consult, in particular circumstances, the happiness and prosperity of the people much more than he did, without

endangering in the smallest degree the stability of his government. The French people should not have been deprived of the many blessings resulting from a representative government; and if not ripe for it then, it should have been conferred upon them at a subsequent period. If the hero of Marengo was afraid of facing a free parliament, he thus pronounced himself a tyrant, and if unable to moderate its deliberations, very deficient in political knowledge. He might find it expedient, for instance, to impose some restraints on the licentiousness of the press; but totally to annihilate its liberty was as unjust as it was impolitic. He should have recollected a saying of an historian and philosopher, "that a whisper may circulate as rapidly as a pamphlet."

Towards the termination of the year 1802, Bonaparte was very active in his visitations of the sea-port towns, where the most fulsome addresses were presented to him which were ever given to any mortal being. Various conjectures were formed as to the probable design of such visits. It was thought by some that he intended to conciliate the affections of the people, especially the military and the constituted authorities; others imagined that it was to make himself acquainted with the true state of public opinion; while a third class conjectured that it was with a view to increase the navy of France, and acquire an intimate knowledge of the different parts of the coast. Whatever his object was, it is more than probable that it was directed to one point, and that his complicated movements were purposely intended to mislead those who felt an interest in watching him. It is true, he made no secret of his determination to invade Great Britain; but we should greatly diminish that knowledge which he must unquestionably possess, were we to conclude that he ever seriously believed in the practicability of such an undertaking.

His abilities as a soldier will be disputed by no man, for when viewed only in this light, he is unquestionably *great*; but it would be a most unpardonable breach of truth to call him an able politician. While he promised to restore the commerce of France, it continued to languish, more, perhaps after the restoration of peace, than during the continuance of the war. This seems to be a subject fairly beyond his comprehension. Numbers in France drew a great part of their subsistence from the expenditure of such persons from the British dominions, as were disposed, after the return of peace, to pay a visit to the metropolis of the Gallic empire. But while we thus freely animadvert on the conduct of the first consul, and point out his errors or faults without any reserve, we wish not to conceal a single circumstance which redounds to his honour. When Cambaceres, the bishop of Caen, made application to the prefect of Rouen to have the Protestant churches forcibly shut; as soon as the request of the bishop was known to Bonaparte, he sent for the second consul and told him, that if the bishop had not been *his* brother, he would have struck him off the list. Such a reply was certainly worthy of a great man.

On the 21st of February 1803, a view of the state of France was laid before the legislative body and the tribunate, containing a comprehensive view of the relations of the republic, both with respect to colonies and foreign states; but the most important part of it had a reference

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Character  
of Bona-  
parte.

France. to Britain, which was charged with acting improperly in retaining troops in Malta and Egypt, after the signing of the definitive treaty. It divided the inhabitants of it into two parties, representing the one as having sworn implacable enmity to France, and the other as anxious to maintain the relations of peace and amity, concluding with singular bravado, "whatever may be the success of intrigue at London, it will never force other nations into new leagues; and the French government asserts, with just pride, that England alone cannot now contend with France."

540 Hostile pre-  
parations of  
France. It now began to be manifest, that the blessings of peace were not to be long enjoyed. The extensive warlike preparations going forward about this time in the ports of France and Holland, roused the jealousy of the British ministry; for although the ostensible reason was to reduce the revolted colonies to obedience, they could not help apprehending that much more was comprehended in such extensive armaments. We shall still be more inclined to adopt this opinion, if we advert to the following circumstance. When Bonaparte, on the 13th of March, found Lord Whitworth and M. de Marcoff standing together, he addressed them in these words: "We have fought for fifteen years, and it seems there is a storm gathering at London, which may produce another war of fifteen years more.—The king of England has said, in his message to the parliament, that France had prepared offensive armaments; he has been mistaken; there is not in the ports of France any considerable force, they having all set out for St Domingo. He said there existed some differences between the two cabinets; I do not know of any. It is true that his majesty has engaged by treaty that England should evacuate Malta. It is possible to kill the French people, but not to intimidate them." At the conclusion of the drawing-room, it is said that Bonaparte addressed the British envoy thus, when near the door: "The dukes of Dorset has passed the most unpleasant season at Paris; I most ardently wish she may pass the pleasant one also; but if it is true that we are to have war, the responsibility, both in the sight of God and man, will be on those who shall refuse to execute the treaty."

Much about the same time a paper was inserted in the *Hamburgh Correspondent*, containing much violent declamation against Great Britain, and believed by many to have been the production of Bonaparte. If our information be correct, the French minister requested, and obtained permission, from the magistrates of that city to make it thus public. Some alterations were made on the manuscript, which having given offence to the republican ambassador, it was, on the 30th of March, inserted without any alterations or supposed amendments. It contains many rancorous expressions against Great Britain, while part of it seems to be a designed apology for the insulting conversation which took place at Madame Bonaparte's drawing room already mentioned. It contains some reflections also on the freedom of discussion indulged in the British news-papers relative to the affairs of France, a circumstance far beneath the notice of the first consul, who, in this particular, did not advert to the freedom of the British press.

In the interior parts of France, the most active preparations for war continued to be made, and at the seaports, the different commanders received orders to put

the navy as fast as possible on a respectable footing. France. Vast bodies of the military received orders to leave the Netherlands, and march towards the frontiers of the Batavian republic, while the ships destined for the Newfoundland fishery were laid under an embargo. 1803.

As the island of Malta was, by the treaty of Amiens, to be surrendered to the knights of the order of St John of Jerusalem, upon certain conditions, De Thoma, the new grand master, sent M. de Bussy his lieutenant in the month of January, with full powers to demand possession of the island; to which the governor, Sir Alexander Jonathan Ball, replied, that as some of the powers who had, by the 10th article of the treaty of Amiens, been invited to guarantee the independence of Malta, had not as yet agreed to that measure, he could not terminate the government of his Britannic majesty without farther instructions.

As the long and tedious correspondence carried on between Great Britain and France, by means of Lord Whitworth and M. de Talleyrand, which was laid before both houses of parliament on the 18th of May 1803, did not terminate in such a manner as the lovers of peace most ardently wished, a fresh rupture between the two countries seemed unavoidable. Officers were sent to reside in the principal sea-ports of Great Britain, vested with the character of commercial agents, but they were in fact detected in sounding the harbours, and in drawing plans of the ports; a glaring proof that some desperate blow was meditated against this country.

In spite of the efforts of the British ministry to prevent a rupture, hostilities actually commenced on the 16th of May, and letters of marque were issued against the French republic. The ultimatum of Britain was conceived in these terms: "that the French government should not oppose the cession of the island of Lampedosa to his Britannic majesty; that the French forces should evacuate the Batavian and the Swiss territory; that a suitable provision should be made for the king of Sardinia; and, by a secret article, that Britain should be permitted to retain possession of Malta for ten years." Our readers will no doubt immediately conclude, that this was rejected; but France still made some feeble endeavours to negotiate, which appeared to the cabinet of St James's to be a pretext only to gain time, the war was considered as actually recommenced. All subjects belonging to Britain who were now found in France and Holland were arrested and detained; an event which was speedily followed by the march of a republican army towards Osnaburgh and Hanover, the former of which was taken possession of by General Mortier on the 26th of May, after which he took the town of Bentheim, and the Hanoverian garrison were made prisoners of war. Osnaburgh was abandoned by the Hanoverians on the 28th, and two days after the French got possession of Quackenbrook. His royal highness the duke of Cambridge was determined to stand or fall with the electorate; but as he was at the head of no more than a handful of troops compared with the army of Mortier, the regency urged him to retire from the command, as the probability of success was entirely against him. The duke, therefore, returned to Bremen, and reached Yarmouth on the 13th of June, along with Prince William of Gloucester.

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1803.

Much about this period, General Mortier was waited upon by deputies from the regency, both of a civil and military nature, who begged that he would suspend his march, and proposed a capitulation. By this the Hanoverian troops were permitted to surrender on their parole, and agreed not to take up arms against France during the continuance of the war. Sums were to be raised for maintaining the republican army, while private property was to be held sacred.

If this promise, however, was really made, it does not appear that it was considered as binding, for it has been said that more flagrant acts of cruelty and injustice were scarcely ever perpetrated by people professing to be civilized. The following, we are told, is part of the information upon this subject communicated by private letters. "In the city of Hanover, and even in the public streets, women of the highest rank have been violated by the lowest of the brutal soldiery, in the presence of their husbands and fathers, and subjected at the same time to such additional and undefinable outrages, as the brutal fury of the violators, inflamed by drunkenness, could contrive. Nor have we heard that the philosophers of Goettingen, the enthusiasts of equality and perfectibility, have been at all better treated." We suspect that this picture is too highly coloured; yet, if a thousandth part of the narration be true, of which we have only selected a specimen, we must allow it to be an indelible stigma on the French nation.

543  
Bonaparte  
labours to  
ruin British  
commerce.

It had always been a favourite object with Bonaparte, to do as much injury as possible to the commerce of Great Britain, and therefore he now determined to shut against this country the ports of the Weser and the Elbe; and also insisted on the ports of Denmark being shut against vessels belonging to Britain, proposing to plant a French garrison in the city of Copenhagen, while the other powers of Europe seemed to behold his conduct with indifference or stupefaction. The French having put themselves in possession of the exclusive navigation of the Elbe, Great Britain determined to blockade it with ships of war, as a report then prevailed that Bonaparte would make use of that port for the purpose of invading Scotland. In this view of the matter, the conduct of Britain was highly commendable.

About this time the French army in St Domingo was in a most melancholy condition, as appeared from the information contained in some intercepted letters. Although about 10,000 men reached the island, in three months after General Rochambeau's arrival, when they were landed in the different ports, scarcely any traces of a reinforcement could be perceived, so much had his army suffered. The atrocities of the troops in their turn were also said to be great, and complaints made to the commanding officers were answered with threats. It appears that Rochambeau was obliged to have recourse to absolute falsehood, in order to keep up the spirits of his troops, and allay their discontent; giving out, what he knew could not be the case, that a reinforcement of 20,000 men was daily expected.

544  
Britain put  
in a state  
of defence.

In the mean time, the ministry of Great Britain used every effort to place the country in a secure and respectable state of defence, should the insatiable ambition of Bonaparte lead him to a serious attempt to invade it. The intelligent part of the people indeed believed that he never seriously intended to hazard the consequences of what he threatened, yet it was certainly prudent to

prepare for the worst. The troops of the line were industriously and successfully recruited, the militia were called out and kept in active service, and an army of reserve was raised with the utmost expedition. Having almost 500,000 troops of different species, Britain had no just reason to apprehend an invasion, being able to accomplish the destruction of the boldest invader. These troops were encamped along the coast, garrison towns were properly supplied with men, the greatest force was concentrated wherever the probability of a landing was strongest, and care was taken of the health of the military, as well as the appointment of the ablest generals to command them. Provisions, ammunition and stores were collected in abundance. As it was natural to conclude that London would be the great object with an invading army, the utmost attention was paid to the defence of those parts of the coast which are most adjacent to it.

Similar efforts were made to annoy the enemy by sea, and render their designs wholly abortive. To Lord Keith and Admiral Montague was entrusted the command of the channel fleet; and an attempt was made at Granville to disconcert the preparations of France, by attachment of ships under the command of Sir James Saumarez, which was so far attended with success as to intimidate the inhabitants, damage a number of houses, and destroy some boats in the harbour. Similar attacks upon Calais and Boulogne also tended to convince the French residing on the coast that they were far from being secure, although total destruction was not the consequence of such exertions. Lord Nelson then guarded the Italian seas, and Sir Edward Pellew and Sir Robert Calder were stationed off Ferrol.

In the mean time the republican army in Hanover continued to oppress the inhabitants, and to devour the resources of that electorate. The Dutch were made to suffer almost as much from their new allies and pretended friends, as the inhabitants of a conquered country. They were dragged into a war of which they certainly wished to be the unconcerned spectators, compelled to raise and maintain a large body of native troops, to receive garrisons into all their strong towns, to give up their sea-ports to the French, and expose their whole country as a scene of passage and encampment to the armies of the republic. Their trade was ruined, and their ports blocked up by the British at sea, on account of their alliance with France. The inhabitants of the Belgic provinces belonging to France were also severe sufferers by the levies of conscripts, the interruption which their trade and manufactures met with from the war, and the rigour by which they were governed. It was reported that the first consul had 300,000 effective men in readiness along the coast and the places adjacent, and that 2800 men were incessantly employed, augmenting and repairing the fortifications at Boulogne.

545  
Cruelties of  
the French  
towards the  
Hanoverians.

During the month of November 1803, the sea-coasts of Great Britain and Ireland received fresh additions of strength, that if ever troops from France should dare to attempt a landing, they might be assured of meeting with a warm reception. The garrison of Plymouth was augmented to 13,700 land men, besides 1500 seamen and marines. A battery was erected at Paul Point, for the defence of the Humber, and two others were to be built opposite to it in Lincolnshire. Exertions equally spirited were continued by sea. Sir Sidney Smith cruised

546  
The British  
coasts are  
fortified.

France. ed off the Texel, and drove on shore on the coast of  
1804. Holland, 12 armed ships of the enemy, three of which  
were captured. During the month of February 1804,  
the French and Dutch ports continued to be blockaded  
by the British navy with the utmost vigilance, a measure  
which the tempestuous nature of the weather frequently  
rendered hazardous. The preparations for an invasion  
of this country were still continued on the part of  
France, but no force of any consequence found it prac-  
ticable to put to sea, owing to the vigilance of our  
cruisers. A number of gunboats were taken at dif-  
ferent times off Boulogne, and different other parts of  
the French and Dutch coasts, which might have convin-  
ced the people of these countries of the absurdity of ex-  
pecting to accomplish any thing decisive against Britain  
by such inadequate means.

A plan was suggested for filling up the ports of the  
enemy with stones and the hulks of old vessels, so as  
to render it difficult, if not wholly impracticable, ei-  
ther for ships or small craft to make their way out of  
them. The idea seems to have been taken from a fact  
well known, that harbours have been often ruined by the  
tides and currents of the sea, the deposition of sand  
from rivers, earthquakes, and other accidents; and  
therefore it was concluded that similar effects might  
be produced by artificial means. The accomplishment  
of such an object, if it were practicable, would be an  
ample compensation for the greatest expence.

It was the opinion of the discerning part of mankind,  
long before it happened, that the ambition of Bonaparte  
would not always remain satisfied with the dignity of  
first consul, even for life; for although he could re-  
ceive no fresh additions to his power and influence, yet  
there was reason to believe that the sound of such titles  
as have always been deemed higher and more dignified  
still, would be too fascinating for him to resist. Ac-  
cordingly, on the 25th of April 1804, the following  
decree was issued by the tribunate of France.

“ The tribunate, considering that at the breaking  
out of the revolution, when the national will had an  
opportunity of manifesting itself with the greatest free-  
dom, the general wish was declared for the individual  
unity of the supreme power, and for the hereditary suc-  
cession of that power :

“ That the family of the Bourbons, having by their  
conduct rendered the hereditary government odious to  
the people, forced them to lose sight of its advantages,  
and drove the nation to seek for a happier destiny in a  
democratical form of government :

“ That France having made a trial of different forms  
of government, experienced from these trials only the  
miseries of anarchy :

“ That the state was in the greatest peril, when Bo-  
naparte, brought back by providence, suddenly appear-  
ed for its salvation :

“ That the consulship for life, and the power grant-  
ed to the first consul of appointing his successor, are not  
adequate to the prevention of intrigues at home or  
abroad, which could not fail to be formed during the  
vacancy of the supreme power :

“ That in declaring that magistracy hereditary, con-  
formity is observed at once to the example of all great  
states, ancient or modern, and the first wish of the na-  
tion, expressed in 1789 :

France. “ That, enlightened and supported by this experience,  
1804. the nation now returns to this wish more strongly than  
ever, and expresses it on all sides :

“ That when France demands for her security an  
hereditary chief, her gratitude and affection call on Bo-  
naparte :

“ That France may expect from the family of Bo-  
naparte, more than from any other, the maintenance of  
the rights and liberty of the people :

“ That there is no title more suitable to the glory of  
Bonaparte, and to the dignity of the supreme chief of  
the French nation, than the title of emperor.

“ The tribunate have come to the following vote :

“ That Napoleon Bonaparte, the first consul, be  
proclaimed emperor of the French, and in that capacity  
be invested with the government of the French republic :

“ That the title of emperor and the imperial power  
be made hereditary in his family in the male line, ac-  
cording to the order of primogeniture.”

The foregoing decree having been put to the vote, it  
was carried by acclamation, with the single exception  
of the only member (Carnot,) who delivered his senti-  
ments against its adoption.

The senate presented an address to the first consul, in  
which they took great pains to convince him that the  
safety of France, and the happiness of Europe, depend-  
ed entirely upon his acceptance of the title of Emperor  
of the French, and upon its being made hereditary in  
his illustrious family. The different divisions of the  
army of course sent addresses to the first consul, intreat-  
ing him to condescend to become emperor of France.

Bonaparte requested them, in his answer, “ to make  
known to him the whole of their thoughts.” The se-  
nate then desired him to take the imperial and heredi-  
tary dignity. Bonaparte consented.

An address was presented by the senate to the first <sup>547</sup>  
consul, in which they employed many arguments to <sup>Bonaparte</sup>  
convince him (they might have spared themselves the <sup>is made</sup>  
trouble) that the preservation of France, and the repose <sup>emperor of</sup>  
of all Europe turned on his acceptance of the dignified <sup>France.</sup>  
title of the emperor of the French, which right to be  
hereditary in his august family. The different divisions  
of the army hoped also that he would be graciously  
pleased to *condescend* (what an instance of humility!)  
to become emperor of France. Whether or not it may  
excite the astonishment of our readers, we can assure  
them upon the most undoubted authority, that he was  
so *humble* as to accept of it, and the following is his  
address to the conservative senate.

“ SENATORS,

“ Your address of the 6th last Germinal has never  
ceased to be present to my thoughts. It has been the  
object of my most constant meditation.

“ You have judged the hereditary power of the  
supreme magistracy necessary, in order to shelter the  
French people completely from the plots of our ene-  
mies, and from the agitations which arise from rival  
ambitions. It even appears to you, that many of our  
institutions ought to be improved, in order to secure for  
ever the triumph of equality and public liberty, and  
present to the nation and to the government the double  
guarantee they are in want of.

“ In proportion as I fix my attention upon these great  
objects,

France.

1804.

objects, I am still more convinced of the verity of those sentiments which I have expressed to you, and I feel more and more, that in a circumstance as new as it is important, the councils of your wisdom and experience were necessary to enable me to fix my ideas.

"I request you then to make known to me the whole of your thoughts.

"The French people can add nothing to the honour and glory with which it has surrounded me; but the most sacred duty for me, as it is the dearest to my heart, is to secure to its latest posterity those advantages which it has acquired by a revolution that has cost it so much, particularly by the sacrifice of those millions of brave citizens who have died in defence of their rights. Fifteen years have past since, by a spontaneous movement you ran to arms, you acquired liberty, equality, and glory. These first blessings of nations are now secured to you for ever, are sheltered from every tempest, they are preserved to you and your children; institutions conceived and begun in the midst of the storms of interior and exterior wars, developed with constancy, are just terminated in the noise of the attempts and plots of our most mortal enemies, by the adoption of every thing which the experience of centuries and of nations has demonstrated as proper to guarantee the rights which the nation had judged necessary for its dignity, its liberty, and its happiness."

The new emperor was allowed to adopt the children or grand-children of his brothers, if arrived at the age of 18 years complete, and he without legitimate children of his own; but this privilege cannot be enjoyed by his successors. Failing both legitimate and adopted heirs, the crown shall be enjoyed by Joseph Bonaparte and his descendants; and failing Joseph and his descendants, it shall devolve on Louis Bonaparte and his descendants, &c. If a successor cannot be found in any of these channels, a *Senatus consultum*, proposed to the senate by the dignities (we presume it should have been dignitaries) of the empire, and submitted for the acceptance of the people, shall nominate an emperor. It was also decreed that the members of the imperial family should be called French princes, and the eldest son of the family, the imperial prince. Among other things it was enacted, that every emperor, two years after he comes to the throne, shall swear to maintain the integrity of the territory of the French republic! We have mentioned this last circumstance, wholly for this reason, that *the emperor of a republic* is no doubt a rarity to the greater part of our readers.

548  
Trial of  
State pri-  
soners in  
France.

The trial of the state prisoners commenced at Paris on the 29th of May 1804. They were charged with conspiring against the life and government of Bonaparte; but how great was our astonishment to find the justly celebrated General Moreau included in the number! Envy and jealousy of Bonaparte can alone have implicated this great man in such a charge, as he was heard to say on the arrival of the new emperor from Egypt;—"this is the man who is necessary to save France." Georges with 11 of his associates, were condemned and executed on the 25th of June; the gallant Moreau and four more, were sentenced to suffer two years imprisonment, and about 18 were acquitted. Some of those who were condemned were afterwards pardoned by imperial clemency, moved by the fascinating charms of female eloquence and female tears.

1

The sentence of imprisonment against Moreau was commuted to banishment for life to the United States of America.

France.

1805.

The coronation of Bonaparte took place in the month of December 1804, which was accompanied on the part of the people by such demonstrations of apparent satisfaction as evinced the degraded state of the public mind in that unfortunate country. After receiving a number of the most fulsome speeches, filled entirely with bombast and falsehood, his imperial majesty delivered the following address. "I ascend the throne, to which the unanimous wishes of the senate, the people, and the army have called me, with a heart penetrated with the great destinies of that people, whom, from the midst of camps, I first saluted with the name of Great. From my youth; my thoughts have been solely fixed upon them (so it appears); and I must add here, that my pleasures and my pains are derived entirely from the happiness or misery of my people. My descendants shall long preserve this throne (a very bold prediction). In the field they will be the first soldiers of the army, sacrificing their lives for the defence of their country. As magistrates they will never forget, that contempt of the laws, and the confusion of social order, are only the result of the imbecillity and uncertainty of princes. You, senators, whose counsels and support have never failed me in the most difficult circumstances, your spirit will be handed down to your successors. Be ever the prop and first counsellors of that throne, so necessary to the welfare of this vast empire."

On the 4th of February 1805, a letter written by Bonaparte to his Britannic majesty on the subject of peace, was laid before the legislative body by the counsellors of state, in which he observed that providence, the senate, the people, and the army, had called him to the throne of France. He admitted that the two countries, over which they presided as the chief magistrates, might contend against each other for ages, but denied that it was for the interest of either to continue the contest. He requested his Britannic majesty not to deny himself the inexpressible felicity of giving peace to the world; for should the present moment be lost, he did not see how all his efforts would be able to terminate the war, which he considered as without any object or presumable result. He concluded with observing that reason is sufficiently powerful to discover means of reconciling every thing, when the wish of reconciliation exists on both sides. On the 16th of the same month, a very splendid entertainment was given to the emperor and empress by the city of Paris.

Never was any naval victory more glorious or decisive than that which was gained by the British Vice-admiral Lord Nelson over the combined fleets of France and Spain, off Cape Trafalgar, on the 21st October 1805. The British commander in chief gave the signal for bearing up in two columns as they formed in the order of sailing, a mode of attack which had been previously ordered by his lordship, to prevent the delay and inconveniency of forming the line of battle in the manner usually adopted. The fleet of the enemy consisted of 33 ships, under the command of the French admiral Villeneuve. The Spanish division under Admiral Gravina, formed the line of battle with great coolness and skill, the heads of the ships being turned to the northward. The manner of attack was uncom-

mon,

France. mon, and the formation of their line was consequently  
1805. new. Few signals were necessary from the commander of the British fleet, because the flag officers and captains were made previously acquainted with the admiral's whole plan. The weather column was led by the commander in chief on board the *Victory*, and Lord Collingwood in the *Royal Sovereign* took charge of the leeward division. The leading ships of the British columns breaking through the enemy's line, was the signal for commencing hostilities, which began about 12 o'clock. The ships of the enemy were fought in such a manner as did the highest honour to the officers by whom they were commanded, but they opposed a force which was not to be vanquished. About 3 o'clock in the afternoon the enemy's line gave way, many of their ships having struck their colours. Admiral Gravina then steered for Cadiz; and 19 sail of the line, of which two were first rates, fell into the hands of the victors, and three flag-officers, Villeneuve, Don Ignatia Maria D'Aliva, and Don Baltazar Hidalgo Ciferos, were made prisoners.

552 Germany is overran by Bonaparte. About the same time that the British navy acquired the most signal victory over the combined fleets of France and Spain, the emperor Napoleon was carrying his victorious arms through the heart of Germany, and forcing the emperor of that country to abandon his metropolis. He left Paris on the 24th of September 1805, to join the grand army, and reached Strasburgh on the 26th, accompanied by the empress. Here he issued a manifesto to his army, in which he mentioned the commencement of the war of what he termed the *third coalition*, which he said was created and maintained by the gold and hatred of England. He declared he would fight till he had secured the independence of the Germanic body, and never again make peace without sufficient security of its continuance. He crossed the Rhine at Kehl on the 1st of October, and on the evening of the same day arrived at Ettlingen, where the elector of Baden was presented to him, along with his two sons. On the 2d he went to Stutgard, where the elector (now king) of Wirtemberg received him in the most magnificent manner, and the city was illuminated. The king of Wirtemberg agreed to furnish 6000 men for the assistance of France, and the elector of Baden 4000.

The French armies on the coast reached the banks of the Rhine in the month of September, and crossed that river on the 25th. General Bernadotte reached Franconia on the 23d, where he was joined by the Bavarian army of 20,000 infantry and cavalry; by the army of Holland under Marmont, and the Batavian division. This army of Bernadotte, about 40,000 strong, constituted the fifth division of the grand or imperial French army. It is remarkable that these three great men, Jourdan, Lecourbe, and Macdonald, were not employed; the reason assigned for which measure is, that Bonaparte suspected them of disloyalty ever since the condemnation of that singular officer Moreau. Bernadotte marched directly for the Danube on the 2d of October, and took a position at Ingolstadt. The rapidity with which the French forces moved seems to have disconcerted the Austrian commander completely, as no movements were made to oppose their progress.

Hostilities commenced on the 7th, when the Aus-

trians were defeated with the loss of many killed, wounded, and prisoners, in attempting to oppose the passage of General Vandamme across the bridge of Donawert. Field-marshal Auffenberg, while on his march to Ulm, was completely surrounded by the French, and obliged to surrender. It is said that the Austrians here lost two colonels, five majors, 60 officers, and 4000 men made prisoners. Memmingen surrendered on the 14th to Marshal Soult, after which he marched on to Biberach, in order to cut off the retreat of the Austrians by that road. Marshal Ney crossed the Danube, and made an attack upon Elchingen a little above Ulm. The Austrians made a sortie, but were driven back to their entrenchments before Ulm, with the loss, it is said, of 3000 men taken prisoners; and at Langenau their loss amounted to the same number, in an action with Prince Murat, who commanded the cavalry. This officer again brought them to action on the 17th, when their loss was computed at 1000 men, and next day General Werneck's division was obliged to capitulate. From Albeck to Nuremberg, Murat is said to have got possession of 1500 waggons and 16,000 prisoners; but Prince Ferdinand effected his escape.

Ulm surrendered by capitulation on the 17th, and this unaccountable step was taken by General Mack, because Berthier assured him that the Austrians were on the other side of the Inn; that Lannes was in pursuit of Prince Ferdinand; that Werneck had capitulated, and that it was impossible for any succours to reach Ulm. After the surrender of this place, the Austrian generals who were made prisoners, were sent under an escort through Bavaria to Vienna, and Mack was entrusted with some proposals to the emperor of Germany.

On the 28th of October a spirited proclamation was issued by the emperor at Vienna, declaring that the views of Austria and Russia were extremely moderate, and execrating the designs and views of Bonaparte. Every division of the French army, except that under General Ney, crossed the river Inn on the 1st of November. Bonaparte himself was with the right wing at Saltsburgh; and the centre, commanded by Prince Murat, marched towards Lintz with uncommon rapidity. The Austro-Russian army retreated to Maelk (50 miles from Vienna) as the enemy advanced. The Austrians and Russians made no stand between the Ens and Vienna, which latter place the French entered on the 12th of October. Bonaparte arrived on the 13th, and took up his quarters in the palace of Schoenbrun, about two miles from the city of Vienna. The French troops conducted themselves with the utmost propriety and decorum, which prevented any disturbance from taking place in the metropolis.

On the 27th of November, as Bonaparte perceived the dreadful carnage which was inevitable from the conflict of two such prodigious armies as that of the allies and his own, was extremely anxious to spare the effusion of human blood, and for this purpose he proposed an armistice, which was rejected with disdain. It was not long before Bonaparte discovered that the allies were acting from presumption, want of consideration, and imprudence, of which circumstances he was but too well qualified to take advantage. At sunrise the battle commenced, and a tremendous cannonade took place along the whole line. It is almost needless to remark, that 200 pieces of cannon and 200,000 men made a

most

France.  
1805.

553  
Surrender of Ulm

554  
The French enter Vienna.

555  
The dreadful battle of Austerlitz.

France.  
1805.

most tremendous noise. In less than an hour the whole left wing of the allies was cut off, their right being by that time at Austerlitz, the head quarters of the Russian and Austrian emperors. From the heights of this place the emperors witnessed the total defeat of the Russians by the French guard. The loss sustained by the allies during the whole of this battle was estimated at 150 pieces of cannon, with 45 stand of colours, and 18,000 Russians, and 600 Austrians were left dead on the field. On the 5th of December an interview took place between the emperors of Austria and France, which lasted for two hours. An armistice was mutually agreed to, which was to serve as the basis of a definitive treaty. The emperor of Russia was comprehended in this armistice, on condition of marching home his army in such a manner as the emperor Napoleon might think proper to prescribe. By virtue of the treaty of peace, the French agreed to evacuate Brunn on the 4th of January, Vienna on the 10th, and the whole Austrian states in six weeks after the signing of the treaty, except such as were ceded to Italy and Bavaria.

556  
The French account contradicted by the Russians.

It is certain, however, that the loss of the Russians in this terrible conflict was declared by the court of Petersburg to have been shockingly exaggerated by the French bulletins, which made the allied army amount to 105,000, while it appears that the Russians were only 52,000 strong, and the Austrians 17,000. According to the Russian statement, they had not a deficit of more than 17,000 men after that memorable battle, while the French papers made it 35,000 men killed on the field and taken prisoners, independent of 20,000 who were drowned. Which of these contradictory reports is to be believed, we shall leave entirely to the judgment of our readers, who will probably think with us, that the one is perhaps too much diminished, and the other rather exaggerated.

557  
Reflections on the conduct of the king of Prussia.

It would have required the invincible modesty of a Washington, not to be elated with the extraordinary success which attended the arms of Bonaparte in this last attack upon Germany;—a qualification which he seems never to have possessed. After the battle of Austerlitz, his conduct was of consequence marked with the most horrid injustice, tyranny, and rapine, both with respect to Hanover and the unfortunate king of Naples. The unexpected turn which the issue of that battle gave to continental affairs, likewise changed the sentiments of the cautious, the intriguing, and mysterious king of Prussia, on whose co-operation the allies at a former period had certainly some reason to calculate, although it does not appear that he was ever serious in his professions of attachment to the interest of Britain. He could drain her coffers without granting her that effectual assistance which he scrupled not to promise, but which he never intended to confer. Indeed it must be confessed, that after the battle of Austerlitz, when both Austria and Russia were humbled by the Corsican usurper, it would have been madness in Frederick to aim a blow against France; but why not aim it before, when in all probability it would have been eminently successful? We admire the king who wishes to make his subjects happy, by keeping war at a distance from them as much as possible; but we detest that sovereign as the worst of swindlers, who receives payment for such assist-

ance to other nations against their insatiable enemies as he never designs to grant.

France.  
1805.

The troops of his Prussian majesty took possession of Hanover; and the country of Anspach was ceded to the king of Bavaria, who received his royalty from the hands of Napoleon I. The king of Naples took refuge in Sicily, hoping there to be protected from the vengeance of the self-elected monarch of France, by the united exertions of the naval force of England, Russia, and Sicily. His Neapolitan majesty no doubt often violated the treaties which he made with France; but it ought in charity to be remembered, that these treaties were made under the impulse of fear, the prospect of impending destruction, and to prevent a band of robbers from plundering both him and his subjects of their last shilling. When the affairs of the continent at any time wore a more favourable aspect, he no doubt trampled on such extorted treaties, in the hope of regaining that of which he had been unjustly deprived; and under such circumstances even justice itself cannot condemn him, and the dictates of humanity commiserate his misfortunes.

While the arms of Bonaparte were victorious in Europe, his naval force in the West Indies received a fresh proof that Britain reigns triumphant on the seas. A squadron under the command of Admiral Duckworth, engaged and destroyed a French squadron on the 7th of February, about 36 miles from the town of St Domingo. Three of them, one of 84, and two of 74 guns, were taken by the gallant admiral; three of them made their escape, and two of them were committed to the flames, viz. of 84, and other of 120 guns. The loss sustained by the British on this occasion was comparatively small, considering the advantages of the conquest, the total amount of the slain being 74, and of wounded 264. Much about the same time the important news of the surrender of the Cape of Good Hope arrived in Britain, an expedition which had been wisely entrusted with Admiral Sir Home Popham, and General Sir David Baird.

558  
Admiral Duckworth defeats a French squadron in the West Indies.

From the humbled situation of the emperor of Germany after the memorable battle of Austerlitz, it was natural to expect that he would feel it his interest to make peace with the French emperor, and therefore we shall lay before our readers the treaty of Presburg, which was signed and ratified on the 26th and 27th of December, 1805. It consists of twenty-three articles, and forms no bad specimen of the kind of treaties the powers of Europe have to expect from Bonaparte, when the fortune of war enables him to dictate the terms.

#### *Treaty of Peace between Austria and France.*

His majesty the emperor of Germany and Austria, and his majesty the emperor of the French, king of Italy, equally animated with a desire to put an end to the calamities of war, have resolved to proceed without delay to the conclusion of a definitive treaty of peace. This treaty contains 24 articles, of which the following are the principal, and indeed the only ones that are interesting to those states who are not immediately concerned in the treaty.

Article 1. There shall be from the date of this day, peace and friendship between his majesty the emperor

of

France.  
1805.

of Germany and Austria, and his majesty the emperor of the French, king of Italy, their heirs and successors, their states and subjects respectively, for ever.

2. France shall continue to possess in property and sovereignty the duchies, principalities, lordships, and territories beyond the Alps, which were before the present treaty united and incorporated with the French empire, or governed by the laws and government of France.

3. The emperor of Germany and Austria, for himself, his heirs, and successors, recognizes the dispositions made by his majesty the emperor of France, king of Italy, relative to the principalities of Lucca and Piombino.

4. The emperor of Germany and Austria renounces, as well for himself as for his heirs and successors, that part of the states of the republic of Venice, ceded to him by the treaties of Campo Formio and Luneville, shall be united in perpetuity to the king of Italy.

5. The emperor of Germany and of Austria acknowledges his majesty the emperor of the French as king of Italy; but it is agreed that, in conformity with the declaration made by his majesty the emperor of the French, at the moment when he took the crown of Italy, that as soon as the parties named in that declaration shall have fulfilled the conditions therein expressed, the crowns of France and Italy shall be separated for ever, and cannot in any case be united on the same head. His majesty the emperor of Germany binds himself to acknowledge, on the separation, the successor his majesty the emperor of the French shall appoint to himself as king of Italy.

6. The present treaty of peace is declared to comprehend their most serene highnesses the electors of Bavaria, Wirtemberg, and Baden, and the Batavian republic, allies of his majesty the emperor of the French, in the present war.

7. The electors of Bavaria and Wirtemberg having taken the title of king, without ceasing nevertheless to belong to the Germanic confederation, his majesty the emperor of Germany and Austria acknowledges them in that character.

8. His majesty the emperor of Germany and Austria, as well for himself, his heirs and successors, as for the princes of his house, their heirs and successors respectively, renounces certain principalities, lordships, domains, and territories. [These are specified in the treaty, which declares also by whom they are hereafter to be held.]

14. Their majesties the kings of Bavaria and Wirtemberg, and his most serene highness the elector of Baden, shall enjoy over the territories ceded, as well as over their ancient estates, the plenitude of sovereignty, and all the rights resulting from it, which have been guaranteed to them by his majesty the emperor of the French, king of Italy, in the same manner as his majesty the emperor of Germany and Austria, and his majesty the king of Prussia, over their German states. His majesty the emperor of Germany and Austria, both as chief of the empire, and as co-estates, engages himself not to oppose any obstacle to the execution of the acts which they may have made, or will make, in consequence.

15. His majesty the emperor of Germany and Aus-

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tria, as well for himself, his heirs and successors, as for the princes of his house, their heirs and successors, renounces all the rights, as well of sovereignty as of paramount right to all pretensions whatsoever, actual or eventual, on all the states, without exception, of their majesties the kings of Bavaria and Wirtemberg, and of his most serene highness the elector of Baden, and generally on all the states, domains, and territories, comprised in the circles of Bavaria, Franconia, and Swabia, as well as to every title taken from the said domains and territories; and reciprocally, all pretensions, actual or eventual, of the said states, to the charge of the house of Austria, or its princes, are, and shall be, for ever extinguished.

17. His majesty the emperor Napoleon guarantees the integrity of the empire of Austria in the state in which it shall be in consequence of the present treaty of peace.

18. The high contracting parties acknowledge the independence of the Helvetic republic, as established by the act of mediation, as well as the independence of the Batavian republic.

20. All commercial communications and relations are re-established in the two countries on the same footing as before the war.

21. His majesty the emperor of Germany and Austria, and his majesty the emperor of the French, king of Italy, shall maintain between them the same ceremonial as to rank and etiquette as was observed before the present war.

23. Immediately after the exchange of the ratification of the present treaty, commissaries shall be named on both sides to give up and to receive in the names of their respective sovereigns, all parts of the Venetian territory not occupied by the troops of his majesty the emperor of the French and king of Italy. The city of Venice, the Langnes, and the possessions of Terra Firma, shall be given up in the space of 15 days; Venetian Istria, and Dalmatia, the mouths of the Cattaro, the Venetian isles in the Adriatic, and all the places and forts which they contain, in the space of six weeks from the exchange of the ratifications. The respective commissaries will take care that the separation of the artillery belonging to the republic of Venice from the Austrian artillery be exactly made, the former being to remain entirely to the kingdom of Italy.

Done and signed at Presburg the 26th of December, 1805.

(Signed) CH. MAUR. TALLEYRAND, (L. S.)

(Signed) JOHN, Prince of LICHTENSTEIN,  
(L. S.)

(Signed) IGNAC, Count DE GUYLAI.

We have approved, and do approve, the above treaty, in all and each of its articles therein contained; we declare, that it is accepted, ratified, and confirmed; and we promise, that it shall be inviolably observed. In faith of which, we have given these presents, signed with our hand, countersigned, and sealed with our imperial seal.

At the palace of Schoenbrun, 27th December, 1805.  
By the emperor, NAPOLEON, &c.

The following brief recapitulation by Bertrand de Moleville of the various revolutions which have agitated

France. ted France during a period of more than 15 years will, it is hoped, from its conciseness and perspicuity, be acceptable to our readers; and with this we conclude our historical detail of these remarkable events.

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Rise and  
progress of  
the revolu-  
tion.

“ Popular insurrections, and an army (says the author), have hitherto been the usual means, or chief instruments, of every revolution; but those insurrections being of the most ignorant and unthinking class of the people, were always fomented by a certain number of factious men, devoted to, and dependent upon, some ambitious chief, daring, brave, of military talents, sole and absolute conductor of every step of the revolt, and master of all the means of the insurrection. In the hands of this chief, the soldiers, or people armed, were but machines, which he set in motion or restrained according to his pleasure, and of which he always made use to put an end to revolutionary disorders and crimes, as soon as the object of the revolution was gained. So Cæsar and Cromwell, after they had usurped the supreme power, lost no time in securing it to themselves, by placing it on the basis of a wife and well-regulated government; and they employed, in quelling the troubles that had favoured their usurpation, those very legions, that same army, which they had used to excite them.

“ This was not the case in France: there, the revolution, or rather the first of those it experienced, and of which the others were the inevitable consequence, was not, whatever be supposed, the result of a conspiracy, or preconceived plan, to overturn the throne, or to place an usurper upon it. It was unexpectedly engendered by a commixture of weakness, ignorance, negligence, and numberless errors in the government. The states-general, however imprudent their convocation may have been, would have produced only useful reforms, if they had found the limits of their power marked out by a hand sufficiently firm to have kept them within that extent. It was, however, but too evident that, even before their opening, they were dreaded, and that consequently they might attempt whatever they pleased. From that time, under the name of clubs, various associations and factions sprang up; some more violent than others, but all tending to the subversion of the existing government, without agreeing upon the form of that which was to be substituted: and at that juncture also the projects of the faction, whose views were to have the duke of Orleans appointed lieutenant-general of the kingdom, began to appear.

“ This faction, or more properly this conspiracy, was indeed of the same nature as those that had produced all former revolutions, and might have been attended with the same consequences, had the duke of Orleans been possessed of that energy of character, that bravery and daring spirit, requisite in the leader of a party. The people had already declared in his favour, and he might very easily have corrupted and brought over a great part of the army, had he been equal to the command of it: but, on the very first occasion of personal risk, he discovered such cowardice and meanness, that he defeated his own conspiracy, and convinced all those who had entered into it, that it was impossible to continue the revolution, either in his favour or in conjunction with him. The enthusiasm the people had felt for him ended with the efforts of those who had excited it.

France. “ M. Necker, whom the multitude had associated with him in their homage, still preserved for some time his adorers, and that little cabal which was for ever exalting him to the skies. But as he was inferior even to the duke of Orleans in military talents and dispositions, he was as little calculated to be the leader of a revolution, or of a great conspiracy: for which reason his panegyrists then confined themselves in their pamphlets and placards, with which the capital was overrun, to insinuating that the only means of saving the state was to declare M. Necker *dictator*; or at least to confer upon him, under some title more consistent with the monarchy, the authority and powers attached to that republican office. In fact, if after his dismissal, in the month of July 1789, he had dared to make this a condition of his return to the ministry, it is more than probable that the king would have been under the necessity of agreeing to it, and perhaps of re-establishing in his person the office of mayor of the palace. At that moment he might have demanded any thing: eight days later, he might have been refused every thing; and very soon after, he was reduced to sneak out of the kingdom, in order to escape the effects of the general contempt and censure which he had brought upon himself.

“ General La Fayette, who then commanded the Parisian national guard, gathered the wrecks of all this popularity, and might have turned them to the greatest advantage, if he had possessed ‘ that resolute character and heroic judgment’ of which Cardinal de Retz speaks, and ‘ which serves to distinguish what is truly honourable and useful from what is only extraordinary, and what is extraordinary from what is impossible.’ With the genius, talents, and ambition of Cromwell, he might have gone as great a length; with a less criminal ambition, he might at least have made himself master of the revolution, and have directed it at his pleasure: in a word, he might have secured the triumph of whatever party he should have declared himself the leader. But as unfit for supporting the character of Monk as that of Cromwell, he soon betrayed the secret of his incapacity to all the world, and was distinguished in the crowd of constitutional ringleaders only by his three coloured plume, his epaulets, white horse, and famous saying— ‘ Insurrection is the most sacred of duties when oppression is at its height.’

“ The revolution, at the period when the faction that had begun it for the duke of Orleans became sensible that he was too much a coward to be the leader of it, and when La Fayette discovered his inability to conduct it, was too far advanced to recede or to stop; and it continued its progress, but in a line that no other revolution had taken, viz. without a military chief, without the intervention of the army, and to gain triumphs, not for any ambitious conspirator, but for political and moral innovations of the most dangerous nature; the most suited to mislead the multitude, incapable of comprehending them, and to let loose all the passions. The more violent combined to destroy every thing; and their fatal coalition gave birth to Jacobinism, that terrible monster, till then unknown, and till now not sufficiently unmasked. This monster took upon itself alone to carry on the revolution; it directed, it executed, all the operations of it, all the explosions, all the outrages: it every where appointed the most active leaders.

France. leaders, and, as instruments, employed the profligates of every country. Its power far surpassed that which has been attributed to the inquisition, and other fiery tribunals, by those who have spoken of them with the greatest exaggeration. Its centre was at Paris; and its rays, formed by particular clubs in every town, in every little borough, overspread the whole surface of the kingdom. The constant correspondence kept up between those clubs and that of the capital, or, to use their own expressions, *des Sociétés populaires affiliées avec la Société mère*—‘between the affiliated popular Societies and the parent Society,’ was as secret and as speedy as that of free-masons. In a word, the Jacobin clubs had prevailed in causing themselves to be looked up to as the real national representation. Under that pretence they censured all the authorities in the most imperious manner; and whenever their denunciations, petitions, or addresses, failed to produce an immediate effect, they gained their point by having recourse to insurrection, assassination, and fire. While Jacobinism thus subjected all France to its controul, an immense number of emissaries propagated its doctrines among foreign nations, and prepared new conquests for it.

“The national assembly, the capital, indeed we may say all France, was divided into three very distinct parties. The most considerable in number, but unhappily the weakest through a deficiency of plan and resolution, was the party purely royal: it was adverse to every kind of revolution, and was solely desirous of some improvements, with the reform of abuses and pecuniary privileges:—the most able, and most intriguing, was the constitutional party, or that which was desirous of giving France a new monarchical constitution, but modified after the manner of the English, or even the American, by a house of representatives. The third party was the most dangerous of all, by its daring spirit, by its power, and by the number of profelytes it daily acquired in all quarters of the kingdom: it comprised the democrates of every description, from the Jacobin clubs, calling themselves *Friends of the constitution*, to the anarchs and robbers.

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Constitution of 1791 completes the first revolution.

“The democratic party, which at first was only auxiliary to the constitutional one, in the end annihilated it, and became itself subdivided into several other parties, whose fatal struggles produced the subsequent revolutions, and may still produce many more. But in principle, the constitutionalists and the democrates formed two distinct, though confederate, factions; both were desirous of a revolution, and employed all the usual means of accomplishing it, except troops, which could be of no use to them, for neither of them had a leader to put at the head of the army. But as it was equally of importance to both that the king should be deprived of the power of making use of it against them, they laboured in concert to disorganise it; and the complete success of that manœuvre was but too fully proved by the fatal issue of the departure of the royal family for Montmedi. The revolution then took a more daring and rapid stride, which was concluded by the pretended constitution act of 1791. The incoherence of its principles, and the defects of its institutions, present a faithful picture of the disunion of its authors, and of the opposite interests by which they were swayed. It was, properly speaking, a compact between the faction of the constitutionalists and that of the demo-

France. crates, in which they mutually made concessions and sacrifices.

“Be that as it may, this absurd constitution, the everlasting source of remorse or sorrow to all who bore part in it, might have been got over without a shock, and led back to the old principles of monarchical government, if the assembly who framed it had not separated before they witnessed the execution of it; if, in imposing on the king the obligation to maintain it, they had not deprived him of the power and the means; and above all, if the certain consequence of the new mode of proceeding at the elections had not been to secure, in the second assembly, a considerable majority of the democratic against the constitutional party.

“The second assembly was also divided by three factions, the weakest of which was the one that wished to maintain the constitution. The other two were for a new revolution and a republic; but they differed in this, that the former, composed of the Brissotins and Girondists, was for effecting it gradually, by beginning with divesting the king of popularity, and allowing the public mind time to wean itself from its natural attachment to monarchy; and the latter, which was the least numerous, was eager to have the republic established as soon as possible. These two factions, having the same object in view, though taking different roads, were necessarily auxiliaries to each other; and the pamphlets, excitations to commotion, and revolutionary measures of both, equally tended to overthrow the constitution of 1791.

“Those different factions, almost entirely composed of advocates, solicitors, apostate priests, doctors, and a few literary men, having no military chief capable of taking the command of the army, dreaded the troops, who had sworn allegiance to the constitution and obedience to the king, and who moreover might be influenced by their officers, among whom there still remained some royalists. The surest way to get rid of all uneasiness on this subject, was to employ the army in defending the frontiers. For this purpose a foreign war was necessary, to which it was known that the king and his council were equally averse. No more was wanting to determine the attack which was directed, almost at the same time, against all the ministers, in order to compel them to retire, and to put the king under the necessity of appointing others more disposed to second the views of the parties. Unhappily this attempt was attended with all the success they had promised themselves; and one of the first acts of the new ministry was to declare war against the emperor. At the same time, the emigration that had been provoked, and which was almost everywhere applauded, even by the lowest class of people, robbed France of the flower of the royal party, and left the king, deprived of his best defenders, exposed to the suspicions and insults that sprang from innumerable calumnies, for which the disasters at the beginning of the war furnished but too many opportunities.

“In this manner was prepared and accelerated the new revolution, which was accomplished on the 10th of August 1792, by the deposition and imprisonment of the king, and by the most flagrant violation of the constitution of 1791. The latter, however, was not entirely abandoned on that day; for the project of the Girondists, who had laid the plot of that horrible conspiracy,

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The second revolution.

France. racy, was then only to declare the king's deposition, in order to place the prince royal upon the throne, under the guidance of a regency composed of their own creatures; but they were hurried away much farther than they meant to go, by the violence with which the most furious of the Jacobins, who took the lead in the insurrection, conducted all their enterprises. The prince royal, instead of being crowned, was shut up in the Temple; and if France at that moment was not declared a republic, it was less owing to any remaining respect to the constitution, than to the fear the legislative body was in of raising an army against it, and also the majority of the nation, who would naturally be angry to see a constitution which seemed to be rendered secure and stable by so many oaths, thus precipitately overthrown, without their having been consulted.

"It was on these considerations that the opinion was adopted, that a national convention should be convoked, to determine the fate of royalty. Prompt in seizing all the means that might ensure the success of this second revolution, the assembly, under pretence of giving every possible latitude to the freedom of elections, decreed, that all its members should be eligible for the national convention.

"From that moment the Girondists daily lost ground, and the most flaming members of the democratic party, supported by the club of Jacobins, by the new commune of Paris, and by the tribunes, made themselves masters of every debate. It was of the utmost importance to them to rule the ensuing elections; and this was secured to them by the horrible consternation which the massacres of the 2d of September struck throughout the kingdom. The terror of being assassinated, or at least cruelly treated, drove from all the primary assemblies, not only the royalists and constitutionalists, but moderate men of all parties. Of course, those assemblies became entirely composed of the weakest men and the greatest villains existing in France; and from among the most frantic of them were chosen those members of the convention who were not taken from the legislative body. Accordingly, this third assembly, in the first quarter of an hour of their first sitting, were heard shouting their votes for the abolition of royalty, and proclaiming the republic, upon the motion of a member who had formerly been a player.

"Such an opening but too plainly shewed what was to be expected from that horde of plunderers which composed the majority of the national convention, and of whom Robespierre, Danton, Marat, and the other ringleaders, formed their party. That of the Brissotines and Girondists still existed, and was the only one really republican. These semi-wretches, glutted with the horrors already committed, seemed desirous of arresting the torrent of them, and laboured to introduce into the assembly the calm and moderation that were necessary to give the new republic a wise and solid organization. But the superiority of their knowledge, talents, and eloquence, which their opponents could not dispute, had no power over tigers thirsting for blood, who neither attended to nor suffered motions but of the blackest tendency. No doubt they had occasion for atrocities upon atrocities to prepare the terror-struck nation to allow them to commit, in its name, the most execrable of all, the murder of the unfortunate Louis XVI.: and that martyrdom was necessary to bring about

a third revolution, already brewing in the brain of Robespierre. Fear had greatly contributed to the two former: but this was effected by terror alone, without popular tumults, or the intervention of the armies; which, now drawn by their conquests beyond the frontiers, never heard any thing of the revolutions at home, till they were accomplished, and always obeyed the prevailing faction, by whom they were paid.

"By the degree of ferocity discovered by the members of the convention in passing sentence upon the king, and in the debates relative to the constitution of 1793, Robespierre was enabled to mark which of the deputies were likely to second his views, and which of them it was his part to sacrifice.

"The people could not but with transport receive a constitution which seemed to realize the chimera of its sovereignty, but which would only have given a kind of construction to anarchy, if the execution of this new code had not been suspended under the pretext, belonging in common to all acts of despotism and tyranny, of *the supreme law of the safety of the state*. This suspension was effected, by establishing the provisional government, which, under the title of revolutionary government, concentrated all the powers in the national convention until there should be an end to the war and all intestine troubles.

"Although the faction, at the head of which Robespierre was, had a decided majority in the assembly, and might consequently have considered themselves as really and exclusively exercising the sovereign power, he was a demagogue of too despotic a nature to stomach even the appearance of sharing the empire with so many co-sovereigns. He greatly reduced their number, by causing all the powers invested in the national assembly by the decrees that had established the revolutionary government, to be transferred to a committee, to which he got himself appointed, and where he was sure of the sole rule, by obtaining for colleagues men less daring than himself, though equally wicked; such as Couthon, St Just, Barrere, and others like them. This committee, who had the assurance to style themselves the *Committee of Public Safety*, very soon seized upon both the legislative and executive powers, and exercised them with the most sanguinary tyranny ever yet heard of. The ministers were merely their clerks; and the subjugated assembly, without murmur or objection, passed all the revolutionary laws which were proposed, or rather dictated, by them. One of their most horrible and decisive conceptions was that of those revolutionary tribunals which covered France with scaffolds, where thousands of victims of every rank, age, and sex, were daily sacrificed; so that no class of men could be free from that stupifying and general terror which Robespierre found it necessary to spread, in order to establish and make his power known. He soon himself dragged some members of his own party, such as Danton, Camille des Moulins, and others, whose energy and popularity had offended him, before one of those tribunals, where he had them condemned to death. By the same means he got rid of the chief leaders among the Brissotines and Girondists; while he caused all the moderate republican party, who were still members of the assembly, except those who had time and address to escape, to be sent to prison, in order to be sentenced and executed on the first occasion.

France.  
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The fourth  
revolution  
produces

"In this manner ended the third revolution, in which the people, frozen with terror, did not dare to take a part. Instead of an army of soldiers, Robespierre employed an army of executioners and assassins, set up as revolutionary judges; and the guillotine, striking or menacing all heads indiscriminately, made France, from one end to the other, submit to him, by the means of terror or of death. Thus was this nation, formerly so proud, even to idolatry, of its kings, seen to expiate, by rivers of blood, the crime of having suffered his to be spilt who was the most virtuous of all their monarchs.

"In the room of that famous Bastile, whose celebrated capture and demolition had set only seven prisoners at liberty, two of whom had long been in a state of lunacy, the colleges, the seminaries, and all the religious houses of the kingdom, were converted into so many state prisons, into which were incessantly crowded, from time to time, the victims devoted to feed the ever-working guillotines, which were never suffered to stand still for a day, because they were at once the chief resource of supplies for the government, and the instrument of its ferocity. 'The guillotine coins money for the republic,' was said in the tribune by one of Robespierre's vilest agents\*. In fact, according to the jurisprudence of the revolutionary tribunals, the rich of every class, being declared suspected persons, received sentence of death, for no other reason than that of giving the confiscation of their property a show of judicial form.

"Still blood flowed too slowly to satisfy Robespierre; his aim was but partly attained by the proscription of the nobles, the priests, and the wealthy. He fancied, not only an aristocracy of talents and knowledge, but of the virtues, none of which would his trusty orators and journalists admit, save that horrid *patriotism* which was estimated according to the enormity of the crimes committed in favour of the revolution. His plan was to reduce the French people to a mere plantation of slaves, too ignorant, too stupid, or too pusillanimous, to conceive the idea of breaking the chains with which he would have loaded them in the name of liberty; and he might have succeeded in it, had not his ambition, as impatient as it was jealous, too soon unveiled the intention of resorting to the guillotine to strike off the shackles with which an assembly of representatives of the nation fettered, or might fetter, his power. He was about to give this decisive blow, which he had concerted with the commune of Paris, the revolutionary tribunal, the club of Jacobins, and the principal officers of the national guard, when the members of the convention, who were marked out to be the first sacrifices, anticipated him at a moment when he least expected it, by attacking himself in the assembly, with energy sufficient to rouse all the sections of the capital against him and against the Jacobins. The parties came to blows, and victory remained uncertain for several hours; but at length declared against Robespierre. In the space of a day, that execrable monster was dragged from the highest pitch of power ever attained by any tyrant, to the very scaffold that was still reeking with the blood of his last victims. His principal accomplices in the committee of public safety, in the commune, in the national guard, in the revolutionary tribunal, and many of his agents in the provinces, met the same

fate. The revolutionary tribunals were suppressed, and the prisons thrown open to all whom they had cast into them.

"This fourth revolution, in which the faction then esteemed the moderate party overthrew the terrorists, and seized the supreme power, was no less complete than those which had preceded it, and produced the constitution of 1795. All France received as a great blessing a constitution that delivered them from the revolutionary government and its infernal policy. Besides it had, in spite of great defects, the merit of coming nearer than the two preceding ones, to the principles of order, of justice, and real liberty; the violation of which had, for five years before, been the source of so many disasters and so many crimes. The royalists, considering it as a step towards monarchy, were unfortunately so imprudent as to triumph in it; and their joy, as premature as indiscreet, alarmed the assembly to such a degree, that they passed the famous law, ordaining the primary assemblies to return two-thirds of the members of the convention to the legislative body, which was to succeed that assembly. It was thus that the spirit of the convention continued, for the first year, to be displayed in the two councils.

"In the year following, the bias of the public mind, perhaps too hastily turned towards royalty, shewed itself in the elections of the members for the new third, so clearly as to alarm the regicides who composed the directory, and the conventionalists, who still made a third of the legislative body; nor did they lose a moment in devising means for their defence. That which appeared the surest to them was, to publish notices of plots among the royalists, and annex one or more denunciations, in terms so vague as to leave room for implicating, when necessary, all their adversaries; while by the help of this imposture they procured some secret information, artfully fabricated, and ever easily obtained through threats or rewards by those who have at command the guillotine and the public treasure.

"This masked battery was ready to be opened before the members of the new third took their seats. These at first confined themselves to the securing of a constant majority in the two councils in favour of the moderate opinions; but in a little time every sitting was marked by the repeal of some revolutionary law, or by some decree tending to restrain the executive authority within the limits fixed by the constitution.

"The directory, alarmed at the abridgement of their power, and dreading still more serious attacks upon it, came to a resolution of no longer postponing the blow they had been meditating against the legislative assembly: and they accomplished, in the manner already related, a fifth revolution, as complete as any of those by which it was preceded. It differed indeed from them essentially in the facility and promptness with which it was effected, although the party which prevailed, that is to say, the majority of the directory, and the minority of the legislative body, had to combat not only against the constitution, but against the opinion, and even against the indignation of the public. That moral force, on which the majority of the two councils had unluckily placed all their reliance, vanished in an instant before the physical force of a detachment of troops consisting of six or seven hundred men; so true is it that the power of the public opinion, ridiculouly

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France.

diculously exaggerated in these days, is and can be no more, under a firm and well ordered government, than a mere fancy. Men accustom themselves too easily to take for public opinion the private opinions made public by certain writers, whose caution or audaciousness depends always upon the energy or feebleness of the supreme authority. It is the same thing with popular commotions: they are easily excited under a weak government, which does not possess the wisdom to prevent or the spirit to suppress them; but a vigorous, just, and strict government has nothing to fear from them. The directory, compelled to withdraw the larger body of troops, which they had thought necessary to ensure the revolution they were meditating, discovered, no doubt, great ability in securing the two councils, by appearing to dread them: but it was chiefly to the energy of their measures, and to the concentration and promptness with which they were executed, that they owed their success. Two days before, the legislative body might, without obstruction, have impeached, arrested, and even outlawed, the majority of the directory, who were execrated by the public under the title of triumvirate; and, if requisite, they would have been supported by more than 30,000 armed citizens, who, with Pichegru and Villot at their head, would soon have dispersed, and perhaps brought over, the feeble detachments of troops of the line which the directory had at their command. The legislative body, relying too much upon its popularity, did not sufficiently consider, that the people, whose impetuosity is commonly decisive when allowed to take advantage in attack, are always feeble on the defensive, and totally unable to withstand every assault made previous to an insurrection, for it is always easy to prevent their assembling. It was on this principle that the directory founded their operations, and the 5th of September too well proves how justly. That day reduced the legislative body, by the most degrading subjugation, to a mere disgusting caricature of national representation; it invested the directory with the most arbitrary and tyrannic power, and restored the system of Robespierre, under a form less bloody, but not less pernicious; for the revolutionary tribunals which that monster had established, were scarcely more expeditious than the military ones of the directory. The power of arbitrary and unlimited transportation is, in time, as destructive as the guillotine, without possessing, like that, the advantage of exciting a salutary horror, which, by recovering the people from the state of stupor and apathy, the constant effects of terror, gives them both recollection and force to break their chains. Though, in violating the most essential regulations of the constitution, the directory obtained a temporary confirmation of their power, their example pointed out to Bonaparte and Sieyes the path which they pursued with infinite address, and in which they accomplished a sixth revolution."

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The sixth  
revolution,  
and consular  
government.

The changes which succeeded, from the consular to the imperial and despotic government of France, are fresh in the mind of every reader, so that the account of them need not be repeated.

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Climate of  
France.

In a country so extensive as that of France, it is not to be expected that the climate should be invariably the same; but it is certainly clearer and more salubrious upon the whole than that of Britain; and it is admirably

bly adapted to the cultivation of the vine, without which many parts of it would perhaps continue in a state of nature. The country presents to the eye a level appearance in general, but several mountains are met with in the southern parts of it, such, for example, as Auvergne, Languedoc, Dauphiné, and Provence. Some reckon the Limousin the most beautiful province in France, although many parts of it besides this exhibit a charming diversity of hills and valleys, and some of the rivers, but the Seine in particular, often assume a picturesque appearance. It cannot be said that agriculture has attained to the perfection which it has done in Britain; yet in different provinces the cultivation of the ground seems to keep pace with its fertility, and the husbandmen of others display a degree of industry which is deserving of commendation. As a striking proof of this, many mountains of the Cevennes, only remarkable for their sterility, have been rendered extremely fertile by the indefatigable exertions of industry.

568

The most remarkable rivers of France are commonly reckoned four in number, the Seine, Loire, Rhone, and the Garonne, although there are many others of inferior note. The Seine is universally allowed to be a beautiful river, which takes its rise in the department of Cote d'Or, and after, traversing a country of about 250 miles in extent, falls into the English channel at Havre de Grace. The source of the Loire is in Mont Gerbier, in what was formerly called Languedoc, and after running about 500 miles, empties itself into the sea beyond Nantes. The Rhone rises from the Glacier of Furea, and the Garonne in the vale of Arau in the Pyrenees. The inferior rivers are the Saone, Dordogne, and a number of lesser streams which form a junction with the Loire.

569

There are numerous mountains in France, but there are none which are of a great height. It is perhaps disputable whether we should consider Mont Blanc among the number, but if we do so, no other mountain in the vast chain of the Alps can exceed it in height. Those of Brittany consist chiefly if not wholly of granite, but there is nothing remarkable in their elevation. France is divided from Switzerland by Mont Jura; but the principal chain of mountains is that denominated Cevennes, running from north to south, and sending out ramifications from east to west. Some naturalists are of opinion, that certain volcanic appearances may be traced among the mountains in the departments of Cantal and the Upper Loire; but the basaltic columns of which they chiefly consist, either do not favour this conjecture, or leave the truth of it extremely problematical. The loftiest mountains in France are those called Monts D'Or, which constitute the centre, of which Puy de Sanfi forms the chief elevation, its height being computed at 6300 feet above the level of the sea. This mountain is covered with perpetual snow, from the sides of which issues the river Dordogne.

The Pyrenees have been known and celebrated in history since the time of Herodotus, and may with equal propriety be considered as belonging either to France or Spain; although they have been more ably and minutely described by the learned of the former country. Shells and skeletons of animals have been found among the Pyrenees, which may afford matter for ample discussion to the admirers of nature's productions. Marine productions

France. productions have been discovered on the top of Mont Perdu, which it is extremely difficult to ascend, because, in many places, it is almost perpendicular for nearly 600 feet; and near the summit there is a lake about 9000 feet above the level of the sea.

570  
Plants.

There are many forests in France, and of considerable extent, to the growth of which it becomes of importance to attend, as the chief fuel which the inhabitants can command is wood. The largest forests are those of Orleans and Ardennes, but our limits forbid us to give an enumeration of the rest, which could answer no important purpose.

Of the botanical state of this country nothing can be advanced with certainty; for although its productions of this nature may be said to have been examined around Paris, Lyons, and Montpellier, with considerable accuracy, yet much is still wanting to furnish any thing like a complete history of its vegetables. We have no certain accounts of what are purely indigenous or what are exotic, although the former must be more abundant in France than in any other European country.

571  
Animals.

The horses of this country are certainly inferior to those of Britain; and in former times its monarchs

were drawn by oxen to the national assemblies. Their cattle are of a beautiful cream colour, but their sheep are much inferior to the English, owing perhaps to their wretchedly ill management, their meat being straw during the winter season instead of green food. France in some places is infested by the wild boar and the wolf, while the ibex and chamois inhabit the Pyrenees and the Alps.

572  
Minerals.

At one period there were gold mines in the southern parts of France, and particles of that precious metal are still to be found in some of the rivulets. There are mines of silver in Alsace, and mines of copper in the departments of the Alps. The duchy of Deux Ponts contains mines of mercury; antimony is found in Ardeche; and abundance of iron, the most extensively useful of all the metals, is met with in the northern departments, for the working of which there were computed to be 2000 furnaces employed in the year 1798.

573  
Population.

The population of France has been variously estimated by different writers; but we hope our readers will find a pretty accurate account of it by inspecting the following table, which exhibits the number contained in each department, according to the republican division of it since the revolution.

<i>Ancient Provinces.</i>	<i>Departments.</i>	<i>Population.</i>	<i>Chief Towns.</i>
Flandre Françoise. . . . .	Nord.	578,435	Douai.
Artois. . . . .	Pas-de-Calais.	532,741	Arras.
Picardie. . . . .	Somme.	466,998	Amiens.
Normandie. . . . .	Seine Inferieure.	640,890	Rouen.
	Calvados.	484,212	Caen.
	Manche.	317,120	Coutances.
	Orne.	407,475	Alençon.
	Eure.	257,986	Evreux.
Isle de France. . . . .	Seine.	738,522	Paris.
	Seine and Oise.	437,604	Verfailles.
	Oise.	355,634	Beauvais.
	Aisne.	408,174	Laon.
	Seine and Marne.	291,159	Melun.
Champagne. . . . .	Marne.	291,484	Chalons-sur Marne.
	Ardennes.	253,902	Mezieres.
	Aube.	228,814	Troyes.
	Haute Marne.	222,585	Chammont.
Lorraine. . . . .	Meuse.	257,237	Bar-sur-Ornain.
	Moselle.	379,001	Metz.
	Meurthe.	336,895	Nancy.
	Vosges.	115,546	Epinal.
Alsace. . . . .	Haut-Rhin.	330,408	Colmar.
	Bas-Rhin.	448,483	Straßbourg.
Bretagne. . . . .	Isle and Vilaine.	511,840	Rennes.
	Cotes-du Nord.	530,441	St Brieux.
	Finisterre.	220,108	Quimper.
	Morbihan.	415,194	Vannes.
	Loire Inferieure.	451,336	Nantes.
Maine and Perche. . . . .	Sarthe.	381,241	Le Mans.
	Mayenne.	324,730	Laval.
Anjou. . . . .	Mayenne and Loire.	442,482	Angers.
Touraine. . . . .	Indre and Loire.	264,935	Tours.
Orleannois. . . . .	Loiret.	290,031	Orleans.
	Eure and Loire.	210,179	Chartres.
	Loire and Cher.	307,084	Blois.
Berri. . . . .	Indre.	216,882	Chateauroux.
	Cher.	219,459	Bourges.
			Nivernois.

France.	<i>Ancient Provinces.</i>	<i>Departments.</i>	<i>Population.</i>	<i>Chief Towns.</i>	France.
	Nivernois. . . . .	Nievre.	238,812	Nevers.	
	Bourgogne. . . . .	Yonne.	127,510	Auxerre.	
		Cote d'Or.	339,860	Dijon.	
		Saone and Loire.	440,773	Maçon.	
		Ain.	288,700	Bourg.	
	Franche-Comté. . . . .	Haute-Saone.	284,073	Vesoul.	
		Doubs.	216,878	Befançon.	
		Jura.	284,460	Lons-le-Saunier.	
	Poitou. . . . .	Vendée.	291,433	Fontenay-le-Peuple.	
		Deux-Sevres.	256,057	Niort.	
		Vienne.	318,511	Poitiers.	
	Marche. . . . .	Haute-Vienne, comprising part of			
		Limofin.	129,006	Limoge.	
		Creuze.	225,373	Guèret.	
	Limofin. . . . .	Correze, comprising part of Up- per Vienne.	254,502	Tulle.	
	Bourbonnois. . . . .	Allier.	266,105	Moulins.	
	Saintonge and Aunis. . . . .	Charente-Inférieure.	420,896	Saintes.	
	Angoumois and part of Saintonge.	Charente.	319,427	Angouleme.	
	Auvergne. . . . .	Puy-de-dôme.	505,332	Clermont.	
		Cantal.	243,708	St Flour.	
	Lyonnois, Foret and Beaujolois.	Rhone.	305,454	Lyons.	
		Loire.	322,965	Montbrison.	
		Ifere.	430,106	Grenoble.	
	Dauphiné. . . . .	Hautes-Alpes.	116,754	Gap.	
		Drome.	232,619	Valence.	
	Guyenne, comprehending	Dordogne.	441,380	Perigueux.	
	Gascogne. . . . .	Gironde.	557,585	Bordeaux.	
		Lot and Garonne.	404,936	Agen.	
		Lot.	387,019	Cahors.	
		Aveyron.	332,090	Rhodez.	
		Gers.	288,555	Auch.	
		Landes.	311,267	Mont-de-Marfau.	
		Hautes-Pyrenees.	180,093	Tarbe.	
	Bearn. . . . .	Basses-Pyrenees.	368,731	Pau.	
	Comté-de-Foix. . . . .	Arriege.	194,838	Tarascon.	
	Rouffillon. . . . .	Pyrenees-Orientales.	106,171	Perpignan.	
	Languedoc. . . . .	Haute-Garonne.	310,672	Toulouse.	
		Aude.	219,101	Carcassonne.	
		Tarn.	271,402	Castres.	
		Garde.	309,802	Nismes.	
		Lozere.	132,502	Mende.	
		Ardeche.	273,255	Privas.	
		Haute-Loire.	259,143	Le Puy.	
		Heraut.	273,452	Montpellier.	
	Provence. . . . .	Bouches-du Rhone.	323,177	Aix.	
		Basses-Alpes.	144,436	Digne.	
		Var.	262,926	Toulon.	
	Corfica. . . . .	Golo.	157,874	Bastia.	
		Liamone.	210,710	Ajaccio.	

574  
Religion,  
&c.

The established religion is that of the church of Rome, but entirely independent of the Holy see; and the revenues of the clergy are not so extensive as to render them formidable to the preservation of the state. Of its political constitution, as that is an ignis fatuus which eludes all description, little need be said. The government at present is a military despotism, and Bonaparte, once first consul, now emperor, owes his very existence, either as a man or a monarch, to the attach-

ment of the soldiery. Let him lose that, and he is inevitably undone.

Since the revolution, it is perhaps impossible to give a just account of the strength of the French army, for both themselves and their enemies made it, we believe, more numerous than it really was, although both parties must have been actuated by very different motives. The numerous defeats which the allies experienced, rendered it necessary to speak of their antagonists as a

575  
Army.

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# FRANCE.

French Leagues.  
 English Miles.



M. Bell. Paris. H. et. A. Sculp. fecit.



France. never-to-be-diminished swarm of men, and the French no doubt gave exaggerated reports of their own actual strength, in order to intimidate the allies. In the time of the old government, the army amounted to 170,000 infantry, 44,000 cavalry, and 11,000 artillery; and perhaps at no period of the revolution did it ever exceed 600,000 men, although it has been often magnified to the prodigious total of a million.

576 Navy. The naval force of France was once formidable even to Britain; but the decided superiority in this respect has been invariably possessed by the latter country ever since the battle of La Hogue. The combined naval strength of France and Spain could not resist the impetuosity of a British fleet off Trafalgar, under the command of the ever memorable Lord Nelson.

577 Revenue. The revenue of France, during the existence of the old government, has been estimated at thirty millions sterling, but the clear produce could not exceed eighteen millions, after the deduction of all expences. Under the present usurpation, however, it is impossible to make any estimate of its amount, as it is often augmented in an unknown and fluctuating ratio by plunder and rapine.

578 Learning. With respect to literature, France certainly holds a distinguished place among the nations of Europe; and if the palm has been adjudged to Italy and Britain by some authors, in point of bold invention and profound philosophical speculations, French authors are to be met with in great abundance who have done honour to human nature by their polite learning, and elegant as well as useful science. Altogether independent of a Corneille, a Racine, a Crebillon, a Moliere, or a Voltaire, this country has, at a more modern period, produced many distinguished writers in literature and philosophy, whose productions will continue to be read and admired, so long as men retain a sense of the value and importance of the sciences they respectively illustrate.

At one period there were no fewer than 21 universities in France, of which the Sorbonne at Paris was reputed the most celebrated, the fame of which drew numbers of students from distant countries. There were about 39 academies and literary societies, which produced many elegant and valuable dissertations on the different sciences, which have been long known to, and justly esteemed by, the learned world.

579 Cities, &c. The cities of France are very numerous, and many of them make a most conspicuous figure. Paris, which is still the metropolis, has been sometimes reckoned a third smaller than London, and its population stated at 600,000 souls. It has often been considered as superior to London in point of magnificence, but it is undoubtedly inferior, both in regard to convenience and cleanliness, the streets in general having very poor accommodations for passengers on foot;—a defect for which no elegance or magnificence can fully compensate. The next to Paris in importance, is the city of Lyons, the population of which is computed at 100,000; but the desolation which it suffered during the tremendous reign of Jacobin fury it will perhaps never recover, as the abolition of monarchy was the innocent cause of the ruin of its trade, which consisted chiefly in the manufacture of such splendid articles as were consumed by the court.

Next to Lyons we may mention Marseilles and Bour-

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deaux, each of which are computed to contain about 80,000 people; and the port of the former city is perhaps the best, as well as the most frequented, of any in the Mediterranean. Lisle and Valenciennes are both strongly fortified cities, the former of which has a population of about 60,000. It surrendered to the combined powers in the year 1793, but the French re-took it in the following year. The remaining cities, of which we can only give a bare enumeration, are Amiens, Rouen, Brest, Nantes, Orleans, Nancy, Metz, Strasbourg, Toulouse, Montpellier, &c. none of them having a population under 30,000 souls, many of them carrying on an extensive trade, and all of them abounding with elegant buildings.

There are several public edifices in France, which command the admiration of every beholder, such as the palace of Versailles, the beautiful and magnificent bridge of Neuillé, and the ancient cathedrals and castles, of which there are prodigious numbers. The bridge of Neuillé indeed has been reckoned superior to any in Europe.

Many exertions have been made at different periods, to improve the inland navigation of France. The great Henry IV. began the celebrated canal of Burgundy, which was finished by Louis XIII. and by which a communication is opened between the rivers Loire and Seine. It consists of 42 locks, and is of singular importance to the commerce of the western provinces. The canal of Picardy reaches from the river Somme to the Oise, taking its rise from St Quintin, and affording an intercourse to the provinces lying on the north-east. But the greatest and most expensive work of this nature in France, which was begun and finished by Louis XIV. is the canal of Languedoc, which was completed in 15 years. It is 144 feet broad, six feet deep, and about 180 miles long, and it cost upwards of half a million sterling.

580 Canals. The total amount of the exports of France in the year 1784, exclusive of the provinces of Lorraine and Alsace, and the trade with the West Indies which has been since carried on, was 307,151,700 livres, and her imports 271,365,000, leaving a balance of 35,786,700 livres, which amount to 1,565,668l. sterling. British commerce has been on the increase ever since the commencement of the revolution, while it may be justly said that the trade of France has been proportionally on the decline, although we cannot assert with a certain geographer, that it has been "almost annihilated."

581 Trade. *Ile of FRANCE*, a late province of France, but now divided into five departments, and so called, because it was formerly bounded by the rivers Seine, Marne, Oise, Aisne, and Ourque. It comprehends besides Paris, the Beauvoisis, the Valois, the county of Senlis, the Vexin, the Hurepois, the Gatinois, the Multien, the Goele, and the Mantois. Paris is the capital.

FRANCFORT *on the MAINE*, an imperial and hanseatic town of Franconia in Germany, where the emperors were formerly elected. It is a handsome, strong, and rich place, and has a great deal of commerce. Here the golden bull is preserved, which is the original of the fundamental laws of the empire. It is seated in a fine fertile plain; and well fortified with a double ditch, bastions, redoubts, and ravelins. The streets are remarkably wide, and the houses handsomely built.

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Frankfort  
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Franchise.

It has great conveniency for carrying on an extensive trade with the other parts of Germany, by means of the navigable river which runs throughout it. It was taken in October 1792, by the French, who were dispossessed of it by the Prussians in December following; it was again taken by the French in July 1796, but they evacuated it to the Austrians in September following. The suburb is called *Saxon-hausen*, and joined to the town by a stone bridge built over the Maine. E. Long. 8. 40. N. Lat. 49. 55.

*FRANCFORT on the Oder*, a rich and handsome town of Germany, in the middle marche of Brandenburg, formerly imperial, but now subject to the king of Prussia. It is remarkable for three great fairs, and a celebrated university. It lies about 45 miles south east of Berlin, and 72 south of Stetin. E. Long. 14. 39. N. Lat. 52. 23.

*FRANCHE-COMTE*, a late province of France, bounded on the south and west by Champagne and Burgundy; on the north by Lorraine; and to the east by the earldom of Mumplegard, and Switzerland. It is in length from north to south about 30 leagues; in breadth about 20. It is partly flat and partly hilly. The flat country is fruitful in grain, wine, hemp, and pasture; and the hilly country abounds in cattle, producing also some wine and corn, copper, lead, iron, and silver ores, mineral waters, and quarries of stone, marble, and alabaster. It now forms the three departments of Doubs, Jura, and Upper Saone.

*FRANCHISE*, in *Law*. *Franchise and liberty* are used as synonymous terms; and their definition is, "a royal privilege, or branch of the king's prerogative, subsisting in the hands of a subject." Being therefore derived from the crown, they must arise from the king's grant; or in some cases, may be held by prescription, which, as has been frequently said, presupposes a grant. The kinds of them are various, and almost infinite. We shall here briefly touch upon some of the principal; premising only, that they may be vested in either natural persons or bodies politic; in one man, or in many: but the same identical franchise, that has before been granted to one, cannot be bestowed on another, for that would prejudice the former grant.

To be a county palatine, is a franchise vested in a number of persons. It is likewise a franchise for a number of persons to be incorporated and subsist as a body politic; with a power to maintain perpetual succession, and do other corporate acts: and each individual member of such corporation is also said to have a franchise or freedom. Other franchises are, to hold a court leet; to have a manor or lordship; or, at least, to have a lordship paramount: to have waifs, wrecks, estrays, treasure-trove, royal fish, forfeitures, and deodands: to have a court of one's own, or liberty of holding pleas and trying causes: to have the cognizance of pleas; which is a still greater liberty, being an exclusive right, so that no other court shall try causes arising within that jurisdiction: to have a bailiwick, or liberty exempt from the sheriff of the county; wherein the grantee only, and his officers, are to execute all process: to have a fair or market; with the right of taking toll, either there or at any other public places, as at bridges, wharfs, or the like; which tolls must have a reasonable cause of commencement (as in consideration of repairs, or the like), else

the franchise is illegal and void: or lastly, to have a franchise forest, chase, park, warren, or fishery, endowed with privileges of royalty. See *CHASE, FOREST, &c.*

Franchise  
||  
Franciscans

*FRANCHISE* is also used for an asylum or sanctuary, where people are secure of their persons, &c. Churches and monasteries in Spain are franchises for criminals; so were they anciently in England, till they were abused to such a degree that there was a necessity for abolishing the custom. One of the most remarkable capitulars made by Charlemagne in his palace of Heristal, in 779, was that relating to the franchises of churches. The right of franchise was held so sacred, that even the less religious kings observed it to a degree of scrupulousness: but to such excess in time was it carried, that Charlemagne resolved to reduce it. Accordingly he forbade any provision being carried to criminals retired into churches for refuge.

*FRANCHISE of Quarters*, is a certain space or district at Rome, wherein are the houses of the ambassadors of the princes of Europe; and where such as retire cannot be arrested or seized by the sbirri or serjeants, nor prosecuted at law. The people of Rome look on this as an old usurpation and a scandalous privilege, which ambassadors, out of a jealousy of their power, carried to a great length in the 15th century, by enlarging insensibly the dependencies of their palaces or houses, within which the right of franchise was anciently confined. Several of the popes, Julius III. Pius XIV. Gregory XIII. and Sixtus V. published bulls and ordinances against this abuse; which had rescued so considerable a part of the city from their authority, and rendered it a retreat for the most abandoned persons. At length Innocent XI. expressly refused to receive any more ambassadors but such as would make a formal renunciation of the franchise of quarters.

*FRANCIS I.* king of France, the rival of the emperor Charles V. and the restorer of learning and politeness in France. See (*History of*) *FRANCE*.

*FRANCIS, Philip*, a very ingenious writer, of Irish extraction, if not born in that kingdom. His father was a dignified clergyman in Ireland, being dean of some cathedral; and our author, his son, was also bred to the church, and had a doctor's degree conferred on him. He was more distinguished as a translator than as an original writer. His versions of Horace and Demosthenes have been justly valued: the former is accompanied with notes, and is perhaps as complete and useful a work of its kind as hath yet appeared. He was also a considerable political writer; and in the beginning of the present reign is supposed to have been employed by the government: for which service he was promoted to the rectory of Barrow in Suffolk, and to the chaplainship of Chelsea hospital. He was also the author of two tragedies, *Eugenia* and *Constantia*; but, as a dramatic writer, not very successful. He died at Bath in March 1773; leaving a son, who was then one of the supreme council at Bengal.

*FRANCISCANS*, in *Ecclesiastical History*, are religious of the order of St Francis, founded by him in the year 1209. Francis was the son of a merchant of Assisi, in the province of Umbria, who, having led a dissolute life, was reclaimed by a fit of sickness, and afterwards fell into an extravagant kind of devotion, that

Franciscans. that looked less like religion than alienation of mind. Soon after this, viz. in the year 1208, hearing the passage repeated, Matt. x. 9. 10. in which Christ addresses his apostles, *Provide neither gold, nor silver, &c.* he was led to consider a voluntary and absolute poverty as the essence of the gospel, and to prescribe this poverty as a sacred rule both to himself and to the few that followed him. This new society, which appeared to Innocent III. extremely adapted to the present state of the church, and proper to restore its declining credit, was solemnly approved and confirmed by Honorius III. in 1223, and had made considerable progress before the death of its founder in 1226. Francis, through an excessive humility, would not suffer the monks of his order to be called *fratres*, i. e. brethren or friars, but *fraterculi*, i. e. little brethren, or friars-minor, by which denomination they still continue to be distinguished. They are also called *gray friars*, on account of the colour of their clothing, and *cordeliers*, &c. The Franciscans and Dominicans were zealous and active friends to the papal hierarchy, and, in return, were distinguished by peculiar privileges and honourable employments. The Franciscans, in particular, were invested with the treasure of ample and extensive indulgences; the distribution of which was committed to them by the popes, as a means of subsistence, and a rich indemnification for their voluntary poverty. In consequence of this grant, the rule of the founder, which absolutely prohibited both personal and collective property, so that neither the individual nor the community were to possess either fund, revenue, or any worldly goods, was considered as too strict and severe, and dispensed with soon after his death. In 1231, Gregory IX. published an interpretation of this rule, mitigating its rigour; which was farther confirmed by Innocent IV. in 1245, and by Alexander IV. in 1247. These milder operations were zealously opposed by a branch of the Franciscans called the *spiritual*; and their complaints were regarded by Nicholas III. who, in 1279, published a famous constitution, confirming the rule of St Francis, and containing an elaborate explanation of the maxims it recommended, and the duties it prescribed. In 1287, Matthew of Aqua Sparta, being elected general of the order, discouraged the ancient discipline of the Franciscans, and indulged his monks in abandoning even the appearance of poverty; and this conduct inflamed the indignation of the spiritual or austere Franciscans; so that from the year 1290 seditions and schisms arose in an order that had been so famous for its pretended disinterestedness and humility. Such was the enthusiastic frenzy of the Franciscans, that they impiously maintained, that the founder of their order was a second Christ, in all respects similar to the first; and that their institution and discipline were the true gospel of Jesus. Accordingly, Albizi, a Franciscan of Pisa, published a book in 1383, with the applause of his order, entitled, *The book of the Conformities of St Francis with Jesus Christ*. In the beginning of this century, the whole Franciscan order was divided into two parties; the one, embracing the severe discipline and absolute poverty of St Francis, were called *spirituals*; and the other, who insisted on mitigating the austere injunctions of their founder, were denominated *brethren of the community*. These wore long, loose, and good habits, with large hoods;

the former were clad in a strait, coarse, and short dress, pretending that this dress was enjoined by St Francis, and that no power on earth had a right to alter it. Neither the moderation of Clement V. nor the violence of John XXII. could appease the tumult occasioned by these two parties; however, their rage subsided from the year 1329. In 1368 these two parties were formed into two large bodies, comprehending the whole Franciscan order, which subsist to this day; viz. the *conventual brethren*, and the *brethren of the observance or observation*, from whom sprung the capuchins and recolects. The general opinion is, that the Franciscans came into England in the year 1224, and had their first house at Canterbury, and their second at London; but there is no certain account of their being here till King Henry VII. built two or three houses for them. At the dissolution of the monasteries, the conventual Franciscans had about 55 houses, which were under seven custodies or wardenships; viz. those of London, York, Cambridge, Bristol, Oxford, Newcastle, and Worcester.

FRANCOIS, or FRANCAIS, *Port Des*, the name of a bay or harbour discovered by Peyrouse on the north-west coast of America, is situated in N. Lat. 58. 37. and in Long. 139. 50. W. from Paris. This harbour was from three to four leagues deep: he entered it with his two frigates in July 1786, and came to an anchor in an island near the middle of it, in 20 fathoms water, with a muddy bottom. The bottom of the bay, he observes, is one of the most extraordinary places in the world; the water is so deep that it could not be fathomed, and surrounded by peaked mountains of a great height, covered with snow, without vegetation, and seemingly condemned by nature to perpetual sterility. He never saw the surface of the water ruffled with the smallest breath of air, or in the least disturbed but by the falling of enormous pieces of ice, which continually detach themselves from five different glaciers. The air was so calm, and the silence so profound, that the voice of man might be heard at the distance of half a league, as well as the noise of sea-birds which hatch their eggs in the cavities of the rocks.

He found the variation of the compass to be 28° E. and the dip of the needle 74°. At full and change of the moon, when it is high water at one o'clock, the sea rose seven feet and a half. The current of the channel at the entrance of the harbour, during the sea breeze, came in like a rapid river, so that it must be impracticable to take the channel when the winds blow violently from the southward; and indeed the currents at all times render the entrance difficult. This harbour possesses many advantages, but is also subject to several inconveniences. It seems not to be convenient for ships to anchor, which are employed in trafficking in skins, because such ships ought to enter many bays, making in each a short stay, since the whole stock of the Indians is very soon disposed of; but it seems to be a very commodious place for the establishment of a factory, and this commercial settlement, it is suggested, should be made on Cenotaph island, a name given to an island in the middle of the harbour, from the monument erected on it to the memory of some of the crew of Peyrouse's ships, which were lost in the channel. This island is about a league in circumference, abounds with wood and water, and seems capable of cultivation. The quantity

Franconia  
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Frank.

tity of otter skins far exceeded any thing which Peyrouse had observed in any other part of America.

The climate of this coast, according to Peyrouse, seemed much milder than that of Hudson's Bay. For three or four months of the year vegetation was very vigorous; there was found abundance of celery, endive, lupin, and yarrow, with most of the plants which are common in the meadows and mountains of France. Gooseberries, raspberries, and strawberries, were also common in the woods; poplars, willows, hornbeam, and pines, some of which measured six feet in diameter, and 140 feet high, fit for masts of the largest ships. The river seemed to be filled with trout and salmon, and different kinds of fish were found in the bay itself. The variety of birds was not great; but bears, martens, and squirrels, were frequent in the woods. The inhabitants are said to be considerably different from the Californians, being taller, stouter, of a more agreeable figure, having greater vivacity of expression, and a greater share of courage and sense. Their colour is olive, and the hair in general is neither so coarse nor black as that of the South Americans. It is supposed that they are worshippers of the sun, for they were frequently observed addressing themselves in their prayers to this planet; but neither temple nor priest, nor trace of public worship, was seen. It is said that they burn their dead.

FRANCONIA, a circle of Germany, bounded on the north by the circle of Upper Saxony, on the east by that of Bavaria, on the south by that of Swabia, and on the west by the circles of the Rhine. The middle is fertile in corn, wine, and fruits, but the borders are full of woods and barren mountains.

This country was overrun by the French republicans in the summer of 1796; but in September the Austrians compelled them to retreat. The Franks, who conquered France, came from this province, and gave their name to this kingdom.

FRANGULA. See RHAMNUS, BOTANY *Index*.

FRANK LANGUAGE, *Lingua Franca*, a kind of jargon spoken on the Mediterranean, and particularly throughout the coasts of and ports of the Levant, composed of Italian, Spanish, French, vulgar Greek, and other languages.

FRANK, or *Franc*, an ancient coin, either of gold or silver, struck and current in France. The value of the gold franc was something more than that of the gold crown: this coin has been long out of use, though the term is still retained as the name of a money of account; in which sense it is equivalent to the livre, or 20 sols.

FRANK, or *Franc*, meaning literally *free* from charges and impositions, or exempt from public taxes, has various significations in the ancient English customs.

FRANK-ALMOIGNE, (*libera elemosyna*), or "free alms;" a tenure of a spiritual nature, whereby a religious corporation, aggregate or sole, holdeth lands of the donor to them and their successors for ever. The service which they were bound to render for these lands was not certainly defined: but only in general to pray for the souls of the donor and his heirs, dead or alive; and therefore they did no fealty (which is incident to all other services but this), because this divine service was of a higher and more exalted nature. This is the tenure by which almost all the ancient monas-

teries and religious houses held their lands; and by which the parochial clergy, and very many ecclesiastical and eleemosynary foundations, hold them at this day; the nature of the service being upon the Reformation altered, and made conformable to the purer doctrines of the church of England. It was an old Saxon tenure; and continued under the Norman revolution, through the great respect that was shown to religion and religious men in ancient times. This is also the reason that tenants in frank almoigne were discharged of all other services except the *trinoda necessitas*, of repairing the highways, building castles, and repelling invasions; just as the Druids, among the ancient Britons had *omnium rerum immunitatem*. And even at present, this is a tenure of a very different nature from all others; being not in the least feudal, but merely spiritual. For, if the service be neglected, the law gives no remedy by distress, or otherwise, to the lord of whom the lands are holden; but merely a complaint to the ordinary or visitor to correct it.

FRANK-Chase is defined to be a liberty of free chase, whereby persons that have lands within the compass of the same, are prohibited to cut down any wood, &c. out of the view of the forester.

FRANK-Fee, signifies the same thing as holding lands and tenements in fee-simple; that is to any person and his heirs, and not by such service as is required by ancient demesne, but is pleaded at common law. See FEE.

FRANK-Law, a word applied to the free and common law of the land, or the benefit a person has by it.

He that for any offence loseth this frank-law incurs these inconveniences, viz. He may not be permitted to serve on juries, nor used as an evidence to the truth; and if he has any thing to do in the king's court, he must not approach it in person, but appoint his attorney; his lands, goods, and chattels, shall be seized into the king's hands; and his lands be estreated, his trees rooted up, and his body committed to custody.

FRANK-Marriage, in Law, is where tenements are given by one man to another, together with a wife, who is the daughter or cousin to the donor, to hold in frank-marriage. By such gift, though nothing but the word *frank-marriage* is expressed, the donees shall have the tenements to them, and the heirs of their two bodies begotten; that is, they are tenants in special tail. For this one word, *frank-marriage*, denotes, *ex vi termini*, not only an inheritance, like the word *frank-almoigne*, but likewise limits that inheritance; supplying, not only words of descent, but of procreation also. Such donees in frank-marriage are liable to no service but fealty: for a rent reserved therein is void until the fourth degree of consanguinity be past between the issues of the donor and donee.

FRANK-Pledge, in Law, signifies a pledge or surety for the behaviour of freemen.

According to the ancient custom of England, for the preservation of the public peace, every freeborn man, at the age of fourteen, except religious persons, clerks, knights, and their eldest sons, was obliged to give security for his truth and behaviour towards the king and his subjects, or else be imprisoned. Accordingly, a certain number of neighbours became interchangeably bound

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Frankfort.

bound for each other, to see each person of their pledge forthcoming at all times, or to answer for the offence of any one gone away: so that whenever any person offended, it was presently inquired in what pledge he was, and there the persons bound either produced the offender in 31 days, or made satisfaction for his offence.

*FRANK Tenement.* See *TENURE.*

*FRANKED LETTERS.* The privilege of letters coming free of postage to and from members of parliament was claimed by the house of commons in 1660, when the first legal settlement of the present post office was made; but afterwards dropped, upon a private assurance from the crown, that this privilege should be allowed the members. And accordingly a warrant was constantly issued to the postmaster general, directing the allowance thereof to the extent of two ounces in weight: till at length it was expressly confirmed by 4 Geo. III. c. 24. which adds many new regulations, rendered necessary by the great abuses which had crept into the practice of franking; whereby the annual amount of franked letters had increased from 23,600l. in the year 1715, to 170,700l. in the year 1763. Further regulations have since taken place; in particular, franks must be dated (the month written at length), and put into the office the same day; notwithstanding which, the revenue still loses by this privilege a very considerable annual revenue.

*FRANKEN, FRANCISCUS,* commonly called *Old Frank*, a famous Flemish painter, supposed to have been born about the year 1544; but though his works are well known, very few of the circumstances of his life have been transmitted to posterity. This master painted historical subjects from the Old and New Testaments; and was remarkable for introducing a great number of figures into his compositions, which he had the address to group very distinctly. Vandyck often commended his works, and thought them worthy of a place in any collection.

*FRANKEN, Franciscus,* distinguished by the name of *Young Frank*, was the son of the former, born in the year 1580. He was instructed by his father; whose style he adopted so closely, that their works are frequently mistaken. When he found himself sufficiently skilled at home, he travelled into Italy for improvement in colouring; and, on his return, his works were much coveted. The most capital performances of this painter are, a scriptural performance in the church of Notre Dame at Antwerp; and an excellent picture, in a small size, of Solomon's idolatry. Young Frank died in 1642.

*FRANKENDAL,* a strong town of Germany, in the dominions of the Elector Palatine, situated near the Rhine, about seven miles south of Worms. It was taken by the Spaniards in 1623, by the Swedes in 1632, burnt by the French in 1688, and finally taken by the allies in the year 1794. E. Long. 8. 29. N. Lat. 49. 25.

*FRANKENIA;* a genus of plants belonging to the hexandria class; and in the natural method ranking under the 17th order, *Calycanthemæ.* See *BOTANY Index.*

*FRANKFORT,* the name of several townships in different places of North America; such as Frankfort, a township in Hancock, and district of Maine, with a few

houses regularly built. It contains 891 inhabitants, and lies about 238 miles north-east of Boston. Frankfort, a thriving village in Philadelphia; the name of another in Hampshire, of one in Virginia, and the name of the metropolis of Kentucky.

*FRANKINCENSE.* See *INCENSE.*

*FRANKLIN, THOMAS, D. D.* chaplain in ordinary to his majesty, was born in London about the year 1720, and was the son of Richard Franklin, well known as the printer of an anti-ministerial paper called *The Craftsman*; in conducting which he received great assistance from Lord Bolingbroke, Mr Pulteney, and other excellent writers, who then opposed Sir Robert Walpole's measures. By the advice of the second of these gentlemen, young Franklin was devoted to the church, with a promise of being provided for by the patriot; who afterwards forgot his undertaking, and then entirely neglected him. He was educated at Westminster school; from whence he went to the university of Cambridge, where he became fellow of Trinity college, and was some time Greek professor. In December 1758, he was instituted vicar of Ware and Thundridge; which, with the lectureship of St Paul, Covent Garden, and a chapel in Queen street, were all the preferments he held till he obtained the rectory of Brasted in Kent. This gentleman was possessed of no inconsiderable share of learning and poetical abilities, and was long a favourite in the literary world. His translations of Phalareus, Sophocles, and Lucian, equally evince his learning and his genius, as they are not more distinguished for fidelity in the version, than congeniality with the spirit of the admirable originals. Dr Franklin, like Mr Foote, suffered a translation from the French to be printed in his name; but the Orestes and Electra are supposed to be all that were really by him. It was a translation of Voltaire's works, to which also Dr Smollett's name appears. His own dramatic compositions, of which the principal are the tragedies of The Earl of Warwick and Matilda, are universally known, and deservedly esteemed by the public. He died in March 1784.

*FRANKLIN, Benjamin,* a philosopher and a statesman of considerable eminence, was born in the year 1706, at Boston in New England. His family derived their origin from Ecton in Northamptonshire, where his ancestors had an inconsiderable freehold for many generations. The persecution of the nonconformists in the reign of Charles II. induced his father to take refuge in New England; and in the city of Boston he followed the occupation of a soap-boiler and tallow-chandler. Franklin drew up a history of his own life from his nativity to the 25th year of his age; but as at that period he had made no very conspicuous figure in the world, it is to be lamented that we have not the assistance of his own pen to the meridian of his career. This defect we have endeavoured to supply in the subsequent narrative from the most authentic materials, avoiding as much as possible the exaggerated panegyric of friends, and the unmerited detraction of enemies.

Our author, from his very infancy, discovered the strongest propensity towards literary pursuits, which determined his father to qualify him for the ministry; but he was thwarted in his designs by a numerous and increasing family,

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Franklin. family, and therefore Benjamin was taken from school at ten years of age, to take part in the drudgery of his father's trade. This greatly mortified the aspiring mind of young Franklin, who wished to prefer a seafaring life to such an employment; but from this he was dissuaded by the influence of his father, who was a man of some knowledge, and possessed a solid understanding. He made it his chief aim to inspire his children with the love of knowledge and the principles of moral rectitude. He had few books; yet from among these Benjamin selected a number of voyages and travels, as well as different histories, a species of reading for which he had a strong predilection. By going through a course of controversial divinity in this unaided manner, he greatly strengthened his argumentative powers, which was most probably all he had in view. Defoe upon projects, according to his own account, made such impressions upon his mind as in a great measure directed the subsequent events of his life.

He was now chosen to an employment which accorded much better with the natural bent of his mind than the business of his father's shop. A brother of his own had a printing-office in Boston, to whom Benjamin was bound apprentice at 12 years of age. With the mechanical part of the business he was soon acquainted; and the opportunities thus afforded him of procuring new books to read, were eagerly seized, and the greater part of the night frequently spent in the perusal of them. He soon became anxious to imitate the works which he most admired, and his first attempts were of a poetical nature. He composed and printed ballads, which were well received by those who love such a species of reading; yet his father had the address to convince him that nature never designed him for a poet. He therefore turned his whole attention to the cultivation of prose composition, in which he succeeded infinitely better; and he thus became superior to his brethren of the press, and raised himself to stations of public importance. As his passion for reading and writing was very strong, so he became in a short time a powerful disputant, which was strengthened by his intimacy with a young man of a similar disposition. He perused, with uncommon attention, a translation of Xenophon's Memorabilia, which enabled him either to confute or confound an adversary by a number of questions. It is also certain that he became a sceptic as to the religion in which he had been educated, and propagated his unbelief with zeal and assiduity. The fatal consequences which this produced on the deportment of some of his intimate companions, at length happily convinced him that it is extremely dangerous to destroy the salutary influence of religion, without being able to substitute any thing in its place of equal importance and efficacy. He seems, however, to have continued a sceptic in his own mind, yet he still retained a love for moral rectitude, which led him to adopt honourable means in the prosecution of valuable ends. Much to his honour be it spoken, he acquired, at a very early period of life, that triumph over his sensual appetites, which is so essentially necessary to a life of dignity, usefulness, and virtue. Having read Tyron's recommendation of a vegetable diet, at 16 years of age, he abandoned the use of animal food; and on offering to his brother to support himself on half the money which was paid for his board, he was allowed to adopt his own

Franklin. plan, by which means he was enabled to save a considerable sum for the purchase of books. Although he relaxed considerably as to a vegetable diet, yet he thus acquired the habit of being satisfied with little, and a contempt of the gratifications of the palate was frequently of singular advantage to him through the whole of life.

When his brother began a news-paper, Benjamin sent a number of pieces on various topics to be inserted, which met with the approbation of the most competent judges;—a satisfaction he enjoyed without being known, as they were all anonymous. His brother treated him with the harshness of a master, which he bore with the utmost impatience, as the public had already pronounced him to be possessed of merit. The states of America having prohibited James Franklin from publishing this paper, on account of some political offence, the name of Benjamin was employed as publisher, in consequence of which he procured his indentures, although he agreed privately with his brother to serve out his time. But as he did not deem this agreement obligatory, he went to New York by sea, and from that place to Philadelphia, in the seventeenth year of his age. He himself acknowledges this to have been a fault, and therefore has averted that censure which he would otherwise have deserved. At Philadelphia he engaged with a printer of the name of Keimer, whose affairs he soon placed on a more respectable footing; and here also he became acquainted with several young men of a literary turn of mind, by whose company his taste for knowledge was greatly improved.

He soon after became acquainted with Sir William Keith the governor of that province, who powerfully recommended it to him to commence business on his own account, and promised to give him all the encouragement in his power. Encouraged by this gentleman to adopt such a plan, he set out for Boston on a visit to his parents, in order to procure from them some pecuniary aid; but a welcome reception was all he could obtain. Having returned to Philadelphia, Sir William generously offered to take the whole burden upon himself, and advised Franklin to make a voyage to England, in order to procure every thing necessary for a printing-office. He set sail in the year 1725, and took with him his intimate companion Ralph, whose name has been rendered memorable by being celebrated in the Dunciad. Unfortunately for Franklin, Sir William Keith, on whose letters of recommendation and credit he entirely relied, basely deceived him, and he was obliged to work as a journeyman in London for his immediate subsistence. His friend Ralph could only live by his head, and his income of consequence was extremely circumscribed, as well as precarious, which made him a heavy burden on the pocket of Benjamin. In that dissolute metropolis he one forgot his wife and child in America, and the other the solemn promises of fidelity which he had made to a Miss Read, prior to his departure;—another step of his conduct which he himself severely censures. By a dissertation on liberty and necessity, pleasure and pain, he acquired considerable reputation, and it was the means of introducing him to the celebrated Dr Mandeville, author of the Fable of the Bees. In the second printing-office in which he worked, he laboured incessantly to convince his fellow workmen that a pint of porter does not contain half

Franklin. half so much nourishment as a penny roll, for which he obtained the ludicrous epithet of the *American aquatic*; yet he was finally enabled to make many converts to his doctrine;—a proof that he possessed strong persuasive powers, when we consider the deep-rooted attachment of those with whom he had to treat to their favourite libation.

After eighteen months residence in London, he returned to Philadelphia in the year 1726, and became clerk to a Mr Denham, a man of respectability, who had opened a warehouse in that city. He soon became acquainted with the principles of commerce, and led a very happy life in this new situation, till the connection was dissolved by the death of Mr Denham, which happened the following year. This again obliged him to become journeyman printer, and he was afterwards overseer in the office of Keimer, whom we have already mentioned. Here he acquired great esteem, and at length conceived the idea of setting up for himself, which he accomplished by entering into partnership with one Meredith, a fellow workman, whose father was in circumstances to enable him to advance them some money. His industry was habitual, but the idea that he was now working for himself, gave it additional energy. He was chiefly instrumental in the institution of a club which went by the name of the *junto*, and which was highly conducive to the intellectual improvement of its members. Before the admission of a candidate, the following questions were put to him. "Do you sincerely declare that you love mankind in general, of what profession or religion soever? Do you think any person ought to be harmed in his body, name, or goods, for mere speculative opinions, or his external way of worship? Do you love truth for truth's sake; and will you endeavour impartially to find and receive it yourself, and communicate it to others?" Franklin and his copartner began a newspaper, which the labours and talents of the former brought into repute, and by them the votes and laws of the assembly came afterwards to be printed. The partnership being dissolved by the departure of Meredith, Franklin, by the generous aid of friends, was enabled to take the whole business upon himself, to which he added the business of a stationer. When the increase of paper money engaged the attention of the American government, Franklin wrote an anonymous pamphlet in defence of the measure, by which he acquired considerable reputation, the countenance of men in power, and it placed his prosperity on a permanent basis. About this time he kept up a criminal correspondence with different females, chiefly owing, perhaps, to the disappointment he met with in the first object of his love, Miss Read, who by this time was married to another in consequence of his neglect. But we forget the faults of the man in the ingenuous confession of the penitent. A report prevailing that Miss Read's husband was married to another woman, he retired to the West Indies where he died, and Franklin married the object of his first love in the month of September 1736, being then about 24 years of age. She proved a valuable wife, and in every sense of the word, an "help meet for him."

To him we are to ascribe the establishment of a public library at Philadelphia, which he accomplished in the year 1731, and had the satisfaction of seeing it ar-

rive at that flourishing condition which it has long since attained. His "Poor Richard's Almanac," was begun in 1732, and became remarkable for the many prudential maxims with which it abounded; and the proverbial manner in which they were expressed made them take fast hold of the memory. His political career commenced in 1736, when he was chosen clerk to the general assembly of Pennsylvania, to which he was re-elected for several years, and at last became a representative. In 1737, he was made postmaster of Philadelphia, and in the subsequent year he greatly improved the police of the city, by the formation of a fire-company, and afterwards an insurance-company against losses by fire. In the war with France, which broke out in 1744, when the best means of defending the province against the inroads of the enemy, and when the militia bill was thrown aside from its being obnoxious to the people, Franklin suggested the idea of a voluntary association for their mutual defence, which was instantly signed by 1200 persons, and 10,000 subscriptions were obtained in a short time by circulating it through the province. By this and similar means America had an opportunity of ascertaining her own strength, and how to make use of it with advantage in cases of emergency.

About this time he began his interesting experiments on electricity, by the result of which he justly acquired a distinguished reputation. The library society of Philadelphia having received from Mr Peter Collinson in the year 1745, an account of the facts respecting electricity which at that time engrossed the attention of philosophers in Europe, Franklin set about studying the subject with the greatest assiduity. He gave the account of his researches, the title of "New experiments and observations in electricity, made at Philadelphia in America," and addressed to Mr Collinson in the form of letters, bearing date from 1747 to 1754. They were everywhere read with avidity, and universally admired; Dr Priestley speaks of them in the following terms. "It is not easy to say whether we are most pleased with the simplicity and perspicuity with which the author proposes every hypothesis of his own, or the noble frankness with which he relates his mistakes, when they were corrected by subsequent experiments." Not to swell this article with a detailed account of all his discoveries on this subject, we shall content ourselves with mentioning that most interesting of the whole, his grand discovery that lightning and electric fire are identically the same. This identity had begun to be suspected, and experiments had been made in France to ascertain the fact; but it was reserved to Franklin to demonstrate this fact by his own experiments. He obtained his first decisive proof of this in the month of June 1752, by setting up a silken kite into the air with a point of iron, and a key fastened to the end of the hempen string by which he held it. In this manner he drew down from a thunder cloud a sufficient quantity of electric fire to emit sensible sparks from the key. By means of an insulated iron rod which he fixed upon his house, he drew down the lightning, and was thus furnished with an opportunity of discovering whether it was positive or negative. As he firmly believed that philosophical discoveries were only valuable in so far as they could be productive of benefit to man, he made them subservient to the protection of buildings from the effects.

Franklin.

Franklin. effects of lightning, which are truly alarming in North America. He applied physics to the purposes of common life, and in 1745 invented his Pennsylvania fire-places, in which the qualities of an open grate were combined with that of a stove.

He turned his attention very much to the subject of politics, which was extremely natural for a man of a public spirit living under a popular government. He was chosen a representative of the city of Philadelphia for the provincial assembly in 1747. At this time a contest subsisted between the assembly and the proprietaries, as to the claim of the latter to be exempted from public burdens. Franklin took the popular side of the question, by which he acquired great influence, and was regarded as the head of the opposition. This was not the offspring of eloquence, for he seldom spoke, and never in the form of an harangue; but his pointed observations, his unadorned good sense, frequently destroyed the effect of the most elaborate orations.

He drew up the plan of an academy to be founded at Philadelphia, from a conviction that education in a free state is of the utmost importance. It was carried into effect in the year 1750, by virtue of a subscription, to which the proprietors afterwards liberally contributed. He discharged the duties of his office as postmaster of Philadelphia with so much punctuality, that he was appointed deputy postmaster general for the British colonies in 1753, and the revenue was soon bettered by his unwearied exertions. A plan for conciliating the Indians, and forming an alliance with them, was drawn up by Franklin in 1754, to which the commissioners at Albany agreed, and a copy of it was transmitted to the British privy council. It is a singular circumstance, that this plan was rejected by the assemblies as giving too much power to the crown, while the British ministry declared that it gave too much influence to the representatives of the people. In the year 1757, Franklin set sail for London, as agent for Pennsylvania, the assembly of that province being involved in disputes with the proprietary. It was agreed on by the privy council, that landholders should pay their share of the public burdens, on condition Franklin would engage that they should be fairly proportioned. He continued at the British court as agent for his province, and acquired so great reputation, that the same trust was reposed in him for Massachusetts, Maryland, and Georgia. His merit as a philosopher was now justly appreciated in Europe, and he was made a fellow of the Royal Society of London. The degree of L. L. D. was also conferred upon him at St Andrews, Edinburgh, and Oxford.

In the year 1762 he returned to America, where he received the thanks of the assembly of Pennsylvania, and a handsome recompense in money for his important services. When the stamp act occasioned so much disturbance in America, Dr Franklin was summoned to the bar of the house of commons, to give evidence respecting the dispositions of the people, whether he thought they could be induced to submit to it; and the energy and clearness of his representations were instrumental in procuring the repeal of that obnoxious measure.

On the commencement of hostilities between Great Britain and the colonies in 1775, he returned to America, and was chosen a delegate to congress by the legislature of Pennsylvania. In 1776 he treated with

Franklin. Lord Howe on the subject of a reconciliation, and in one of his letters expressed in strong terms the temper of the British nation, to which he imputed the fatal extremity then arrived. When the question of independence came to be discussed, he was decidedly in favour of the measure, and was highly instrumental in bringing over the public mind to the same opinion. When a negotiation with France was opened, Dr Franklin was chosen one of the personages to reside at that court. His political abilities eminently qualified him for such a station, and his character as a philosopher gained him great esteem in a country where knowledge is revered. He brought about a treaty with France of an offensive and defensive nature in 1778, the immediate consequence of which was a war with Britain. He was one of those who signed the provisional treaty the year following. Prior to his leaving Europe he concluded a treaty with Sweden and Prussia. He was recalled from that active station in 1785, which he had filled with so much ability, and chosen president of the supreme executive council. He was chosen president of a society for alleviating the miseries of prisons, and abolishing slavery. His increasing infirmities made him withdraw from all public business in 1788; and on April the 17th 1790, he terminated his active and useful life, in the 85th year of his age.

Perhaps no man ever exceeded Dr Franklin in that solid practical wisdom which consists in pursuing valuable ends by the most appropriate means. His cool temper and sound judgement secured him from erroneous expectations. He saw things in their true light, and predicted consequences with nearly a prophetic spirit. He said of himself "I have always set a greater value on the character of a *doer of good*, than any other kind of reputation." In 1779, his "Political, Miscellaneous, and Philosophical pieces," were published in 4to and 8vo. His essays, humorous, moral, and literary, were published after his death, in two small volumes.

He was by no means inattentive to his own interest, of which his rapid advancement in life furnishes an ample proof; yet he never neglected the interest of society, or the good of mankind in general. The delicate situations in which he frequently stood, unavoidably exposed him to the censure of his enemies; yet his general conduct has long ago received the approbation of his countrymen, by whom he was considered as the best and most valuable of citizens. When we view him as a philosopher, we must ascribe his chief merit to his electrical discoveries, yet on many other topics, such as meteorology and mechanics, he evinced himself a man of considerable penetration. As a political writer, his great merit is clearness, energy, and simplicity; and as a miscellaneous author he possesses a fund of humour which cannot fail to be at once both entertaining and impressive.

FRANKLIN, the name of several counties in America, such as Franklin county in Pennsylvania, computed to contain 800 square miles, or 512,000 acres. It contains 11 townships, and 15,655 inhabitants. Franklin, a county in Kentucky; the name of one in Halifax, of one in Virginia, and of another in Georgia, which contains 1041 inhabitants, including 156 slaves. It is also the name of a township in Massachusetts; of one in Pennsylvania, another in New York, and of another in Connecticut,

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Fraternal.

Connecticut, as well as of a small isle at the mouth of St George's river.

FRANKS, FRANCS, FRANKIS, or FRANQUIS, a name which the Turks, Arabs, Greeks, &c. give to all the people of the western parts of Europe. The appellation is commonly supposed to have had its rise in Asia, at the time of the croisades; when the French made the most considerable figure among the croisées: from which time the Turks, Saracens, Greeks, Abyssinians, &c. used it as a common term for all the Christians of Europe; and called Europe itself *Frankistan*. The Arabs and Mahometans, says M. d'Herbelot, apply the term *Franks* not only to the French (to whom the name originally belonged, but also to the Latins and Europeans in general.

But F. Goar, in his notes on Condinus, cap. 5. n. 43. furnishes another origin of the appellation *Franks*, of greater antiquity than the former. He observes, that the Greeks at first confined the name to the *Franci*, i. e. the German nations, who had settled themselves in France or Gaul; but afterwards they gave the same name to the Apulians and Calabrians, after they had been conquered by the Normans; and at length the name was farther extended to all the Latins.

In this sense is the word used by several Greek writers; as Comnenus, &c. who to distinguish the French, call them the *western Franks*. Du Cange adds, that about the time of Charlemagne they distinguished eastern France, western France, Latin or Roman France, and German France, which was the ancient France, afterwards called *Franconia*.

FRASCATI, or FRESCATI. See FRESCATI.

FRASERSBURGH, a small sea-port town in the county of Aberdeen, situated on the point of land called *Kinnaird's Head*, which is the southern extremity of the Murray frith. It has a small but excellent harbour, made and kept up at a considerable expence by the proprietor and the town, and well adapted for building small vessels. According to the tide, there are from 11 to 15 feet water within the harbour, and 20 feet immediately without at spring tides: without is a tolerable road for shipping, in a bay nearly a league in length and half a league in breadth, with good anchorage in a sandy bottom. Vessels of about 200 tons burden can enter the harbour. Frasersburgh contains about 1000 inhabitants, and is well situated for trade with the east coast of Europe. The only manufacture carried on in Frasersburgh is in linen yarn, of which there is annually exported to the amount of 3000l. or 4000l.

FRATERNAL, something belonging to the relation of brother.

*FRATERNAL Affection* is the love and attachment subsisting among, or due to one another by, children of the same family.

Though all mankind sprung from the same head, are bound to cultivate a mutual good will to each other; yet this duty is not so obvious and striking as that which is incumbent on those who belong to the same family. Nothing can approach nearer to self love than fraternal affection: and there is but a short remove from our own concerns and happiness, to theirs who come from the same stock, and are partakers of the same blood. Nothing, therefore, can be more horrible than discord and animosity among members so allied; and nothing so beautiful as harmony and love.

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Fraternity  
||  
Fratricelli.

This relation is formed by nature, not by choice; and though it has many things in common with, yet it is prior to, the obligations of friendship: consequently nature and reason dictate that there should be a peculiar affection between brethren. We are not obliged, however, to make a brother or sister an intimate or so-far friend in preference to one who is not akin. Diversity of temper, and want of suitable qualifications, may render it unsafe and improper. But where friendship and fraternity meet in the same persons, such a conjunction adds a lustre to the relation.

Among brethren, a hearty benevolence, an ardent concern for each other's welfare, a readiness to serve and promote it, are the peculiar offices of this relation; and though friends are to have their share, yet the claim of kindred is first and ordinarily strongest. "Necessaria præsidia vitæ debentur iis maxime (says Cicero), quos ante dixi, i. e. propinquis): vita autem, victusque communis, concilia, sermones, &c. in amicitiiis vigent maxime." *De Officiis*.

FRATERNITY, BROTHERHOOD, the relation or union of brothers, friends, partners, associates, &c.

FRATERNITY, in a civil sense, is used for a guild, association, or society of persons, united into a body, for some common interest or advantage. See COMPANY and GUILD.

FRATERNITY, in the Roman Catholic countries, signifies a society for the improvement of devotion. Of these there are several sorts; as, 1. The fraternity of the rosary, founded by St Dominic. It is divided into two branches, called the *common rosary*, and the *perpetual rosary*; the former of whom are obliged to confess and communicate every first Sunday in the month, and the latter to repeat the rosary continually. 2. The fraternity of the scapulary, whom the blessed Virgin, according to the sabbatine bull of Pope John XXII. has promised to deliver out of hell the first Sunday after their death. 3. The fraternity of St Francis's girdle, are clothed with a sack of a gray colour, which they tie with a cord, and in processions walk bare-footed, carrying in their hands a wooden cross.— 4. That of St Austin's leathern girdle comprehends a great many devotees. Italy, Spain, and Portugal, are the countries where one sees the greatest number of these fraternities, some of which assume the name of *arch-fraternities*. Pope Clement VII. instituted the arch-fraternity of charity, which distributes bread every Sunday among the poor, and gives portions to 40 poor girls on the feast of St Jerome their patron. The fraternity of death buries such dead as are abandoned by their relations, and causes masses to be celebrated for them.

FRATRES ARVALES. See ARVALES.

FRATRIAGE, the partition among brothers, or coheirs, coming to the same inheritance or succession.

FRATRICELLI, in ecclesiastical history, an enthusiastic sect of Franciscans, which rose in Italy, and particularly in the marquise of Ancona, about the year 1294. The word is an Italian diminutive, signifying *fraterculi*, or "little brothers;" and was here used as a term of derision, as they were most of them apostate monks, whom the Italians call *fratelli*, or *fratricelli*. For this reason the term *fratricelli*, as a nickname, was given to many other sects, as the Catharists, the Waldenses, &c. however different in their opinions and in their conduct. But this denomination applied to

**Fratricide.** the austere part of the Franciscans was considered as honourable. See FRANCISCANS.

The founders were P. Maurato, and P. de Fossombroni, who having obtained of Pope Celestin V. a permission to live in solitude, after the manner of hermits, and to observe the rule of St Francis in all its rigour, several idle vagabond monks joined them, who, living after their own fancies, and making all perfection to consist in poverty, were soon condemned by Pope Boniface VIII. and his successor, and the inquisitors ordered to proceed against them as heretics: which commission they executed with their usual barbarity. Upon this, retiring into Sicily, Peter John Oliva de Serignan had no sooner published his Comment on the Apocalypse, than they adopted his errors. They foretold the reformation of the church, and the restoration of the true gospel of Christ, by the genuine followers of St Francis, and declared their assent to almost all the doctrines which were published under the name of the abbot Joachim, in the "Introduction to the everlasting Gospel," a book published in 1520, and explained by one of the spiritual friars whose name was Gerhard. Among other enormities inculcated in this book, it is pretended that St Francis was the angel mentioned in Rev. xiv. 6. and had promulgated to the world the true and everlasting Gospel of God; that the Gospel of Christ was to be abrogated in 1260, and to give place to this new and everlasting Gospel, which was to be substituted in its room; and that the ministers of this great reformation were to be humble and bare-footed friars, destitute of all worldly employments. Some say they even elected a pope of their church; at least they appointed a general, with superiors, and built monasteries, &c. Besides the opinions of Oliva, they held, that the sacraments of the church were invalid; because those who administered them had no longer any power or jurisdiction. They were condemned afresh by Pope John XXII. in consequence of whose cruelty they regarded him as the true antichrist; but several of them returning into Germany, were sheltered by Lewis, duke of Bavaria, the emperor.

There are authentic records, from which it appears that no less than 2000 persons were burnt by the inquisition, from the year 1318 to the time of Innocent VI. for their inflexible attachment to the poverty of St Francis. The severities against them were again revived towards the close of the 15th century by Pope Nicolas V. and his successors. However, all the persecutions which this sect endured were not sufficient to extinguish it; for it subsisted until the times of the reformation in Germany, when its remaining votaries adopted the cause and embraced the doctrine and discipline of Luther. And this has led Popish writers to charge the Fratricelli with many enormities, some of which are recounted by M. Bayle, art. *Fratricelli*.

The Fratricelli had divers other denominations: they were called *fratricelli*, according to some, because they lived in community, in imitation of the primitive Christians, or rather through the humility of the founder of the Franciscan order, to which the Fratricelli originally belonged; *Dulcini*, from one of their doctors; *Bisochi*, *Beguins*, and *Beghardi*.

**FRATRICIDE**, the crime of murdering one's brother. See PARRICIDE.

**FRAUD**, in *Law*, signifies deceit in grants, or conveyances of lands, &c. or in bargains and sales of goods, &c. to the damage of another person.

Fraud  
#  
Freats.

A fraudulent conveyance of lands or goods to deceive creditors, as to creditors is void in law. And a fraudulent conveyance in order to defraud purchasers, is also to such purchasers void; and the persons justifying or putting off such grants as good, shall forfeit a year's value of the lands, and the full value of the goods and chattels, and likewise shall be imprisoned. See CHEATING.

**FRAUSTADT**, a town of Silesia, on the frontiers of Poland, remarkable for a battle gained by the Swedes over the Saxons in 1706. E. Long. 15. 50. N. Lat. 51. 45.

**FRAXINELLA**. See *DICTAMNUS*, *BOTANY Index*. —It is remarkable of this odorous plant, that, when in full blossom, the air which surrounds it in a still night may be inflamed by the approach of a lighted candle. Dr Watson doubts whether this inflammability proceeds from an inflammable air which is exhaled by the plant, or from some of the finer parts of the essential oil of the plant being dissolved in the common atmospheric air. The latter is the most probable supposition; for were it the pure inflammable air, as Mr Cavallo observes, it would, on account of its small specific gravity, leave the plant as soon as it was produced. Common air acquires the property of becoming inflammable, by being transmitted through several essential oils.

**FRAXINUS**, the *ASH*; a genus of plants belonging to the polygamia class; and in the natural method ranking under the 44th order, *Sepiariae*. See *BOTANY Index*.

**FRAY** literally signifies to fret; as cloth or stuff does by rubbing, or over much wearing.

Among hunters a deer is said to fray his head, when he rubs it against a tree, to cause the skins of his new horns to come off.

**FREA**, or *FRIGGA*, the wife of Odin, was, next to him, the most revered divinity among the Heathen Saxons, Danes, and other northern nations. As Odin was believed to be the father, Frea was esteemed the mother of all the other gods. In the most ancient times, Frea was the same with the goddess Herthus, or Earth, who was so devoutly worshipped by the Angli and other German nations. But when Odin, the conqueror of the north, usurped the honours due only to the true Odin, his wife Frea usurped those which had been formerly paid to mother Earth. She was worshipped as the goddess of love and pleasure, who bestowed on her votaries a variety of delights, particularly happy marriages and easy childbirths. To Frea the sixth day of the week was consecrated, which still bears her name.

**FREAM**, a name given by farmers to ploughed land worn out of heart, and laid fallow till it recovers.

**FREATS**, or *FREITS*, a term used in Scotland for *ill omens*, and sometimes denoting accidents supernaturally unlucky. King James VI. in his *Dæmonologie*, *MS. pen. Edit.* B. I. ch. iv. p. 13. "But I pray you forget not likewise to tell what are the Devill's rudiments? E. His rudiments I call first in general all that quhilk is called vulgairlie the vertu of woode, herbe,

**Freckles** herbe, and staine; quhilk is used by unlawful charmis without natural causis. As lykeways all kynd of pratiques, freitis, or uther lyk extraordinair actions, quilk cannot abyde the trew twiche of naturall raison. It occurs again in the same sense in p. 14. marg. note; and in p. 51. speaking of Sorcerers, "And in generall that naime was gevin thaim for using of sic chairmis and freitis, as that craft teachis thaim."

Frederick.

**FRECKLES, LENTIGINES**, spots of a yellowish colour, of the bigness of a lentile seed, scattered over the face, neck, and hands. Freckles are either natural, or proceeding accidentally from the jaundice or the action of the sun upon the part. Heat or a sudden change of the weather, will often cause the skin to appear of a darker colour than natural; and thereby produce what is called *tan, sunburn, and morpew*, which seem to differ only in degree; and usually disappear in winter.

Persons of a fine complexion, and whose hair is red, are the most subject to freckles, especially in those parts which they expose to the air.

To remove freckles, put juice of lemons in a glass phial, and mixing it with sugar and borax finely powdered, let it digest eight days, and then use it. Homberg proposes bullocks gall mixed with alum, and, after the alum has precipitated, exposed three or four months to the sun in a close phial, as one of the best remedies known for the removing of freckles.

**FREDBERG.** See FREYBERG.

**FREDERICA**, a town of North America, in Georgia, seated at the mouth of the river Alatomaha, lately built and fortified by General Oglethorpe. The island it stands upon is called *St Simons's*; and is about 13 miles in length, and 4 in breadth. W. Long. 81. 35. N. Lat. 31. 0.

**FREDERICK II.** the Great, of Prussia, one of the greatest warriors of the age in which he lived, was the son of Frederick-William then hereditary prince of Brandenburg, and Maria Dorothea a princess of the house of Brunswick. He was born in 1712, the year before his father Frederick I. mounted the throne of Prussia. The latter was so far from being a patron of literature, that he regarded nothing but what related to the military art; and most of his generals, whatever their merits in their own line might be, scarce knew how to sign their names. So great indeed was the ignorance of the monarch himself, that he banished from his dominions a philosopher of the name of *Wolf*, merely because he maintained the doctrine of pre-established harmony; upon which a theologian named *Lange*, asserted, that on such principles his majesty's grenadiers were not culpable when they deserted, it being only the necessary consequence of the impulse their machine had received from their Creator. His son was of a disposition the very reverse of his father. Being put from his birth under the care of Val de Recoule a French lady of great merit and understanding, he acquired, in his early years, not only a taste for literature in general, but a predilection for the French language, which was not obliterated throughout his whole life.

It is not to be supposed that a prince of the disposition above mentioned, would suffer his son to be long engaged in literary pursuits. At seven years of age, young Frederick was taken out of the hands of Madame de Recoule, and put under the care of military tutors. General count de Finckstein, an old warrior, was ap-

pointed his governor; his sub-governor was Colonel de Kalkstein, an officer renowned for his courage and experience; he was taught mathematics and fortification by Major Senning; Han de Jendun, a Frenchman, instructed him in other branches of knowledge; and a cadet of the name of *Kenzel*, taught him his exercise. At eight years of age he was furnished with a small arsenal stored with all sorts of arms proportioned to his age and strength, of which his father left him absolute master. In a short time he was named captain and chief of the corps of cadets; and, the young prince performed every day, in miniature, with his little soldiers, all the evolutions with which his father exercised his giants. At last he received the command of a company in his father's regiment famous throughout all Europe, and which was composed of men of whom scarce one was short of seven French feet.

Born, however, with a taste for the arts, he devoted to their cultivation every moment he could escape from the vigilance of his guardians. He was more particularly fond of poetry and music, and when he could find a moment's leisure, he read French authors, or played on the flute; but his father as often as he surprised him playing or reading, broke his flute and threw his books into the fire. The prince, chagrined at such injurious treatment, and having a great desire to visit Germany, England, France, and Italy, desired permission to travel. This, however, his father would not allow, but permitted him to accompany himself in the little journeys he made from time to time into Germany; and, in 1728, took him to Dresden to see the king of Poland. By these little expeditions the desire of the prince to visit other countries was only the more inflamed, so that at last he formed a design of setting out without his father's knowledge. The design was intrusted to two of the prince's young friends, named *Kat* and *Keit*; money was borrowed for the occasion, and the day of their departure fixed, when unluckily the whole project was discovered. The old king, implacable in his resentment, and considering his son as a deserter, determined to put him to death. He was shut up in the fortress of Custrin; and it was with the utmost difficulty that the count de Seckendorf, sent for the purpose by the emperor Charles VI. was able to alter the king's resolution. Certain vengeance, however, was determined on both the intended associates in Frederick's journey. Keit escaped the danger by flying into Holland; but Kat had not that good fortune. The king first directed that he should be tried by a court martial; but as they, contrary to his expectation, only sentenced the criminal to perpetual imprisonment, the revengeful monarch by an unheard-of exercise of the royal prerogative caused him to be beheaded. The execution was performed under the windows of the prince royal, whose head was held towards the scaffold by four grenadiers; but no sooner did he approach the window, and see his friend in the hands of the executioner, than he stretched out his arms towards him, crying out, "Kat! Kat!" and instantly fainted away. During the remainder of his life he considered capital punishments with a great degree of horror, and they were rare throughout the Prussian dominions while he continued to reign. When the emperor had succeeded in preventing the execution of Frederick, the king remarked, that

Frederick. "Austria would one day see what a serpent she had nourished in her bosom." The royal prisoner remained a year at Custrin; during which time his father wished that he should learn the maxims of government and finance. For this purpose M. de Munchow, president of the chamber of domains and finances, was ordered to make him assist at all their assemblies, to consider him as a simple counsellor, to treat him as such, and make him work like others. The young counsellor, however, though he assisted at their meetings, did not trouble himself with reading acts or copying decrees. Instead of this, he amused himself sometimes with reading French pamphlets, and at others with drawing caricatures of the president or members of the assembly. M. Munchow himself was likewise very favourable to the prince at this time, by furnishing him with books and other articles of amusement, notwithstanding the express prohibition of his father; though in this he certainly ran great risk; for the old king, who set but a very light value on human life, would undoubtedly have put him to death had he received intelligence of his complaisance.

Frederick, after passing the time above mentioned in confinement, was recalled to Berlin, on pretence of being present at the celebration of his eldest sister's marriage with the hereditary prince of Bareith; but the true reason was, that the king had now prepared a match for the prince himself. This was the princess Elizabeth Christina of Brunswick, niece to the empress. Frederick, who was not only totally indifferent to the fair sex in general, but particularly prejudiced against this princess, made some objections; his father, however, overcame all obstacles with "his usual arguments (says the author of the life of Frederick), viz. his cane, and a few kicks."

The coldness which Frederick at this time showed for the fair sex appears not to have been natural; for as early as the year 1723, though then only in the 11th year of his age, he is said to have fallen in love with the princess Anne, daughter of George II. Even at this early period he entered into vows to refuse every other but her for his consort; nor were these ever broken, as far as depended on himself. The marriage perhaps would have taken place, had it not been for some differences which arose between the courts of Prussia and Hanover about a few acres of meadow land, and two or three Hanoverians enlisted by the Prussian recruiters. It is supposed also, that it was intended at one time to marry him to Maria Theresa of Austria; but, as in that case it would have been necessary to change his religion, Frederick derived from thence a plausible pretence for refusing the match. The princess whom he espoused had a large share of beauty; and, what was still better, an excellent heart: but Frederick is said to have suffered so much in his former amours, that certain natural and unsurmountable impediments remained to the completing of his marriage with any woman. Scarcely therefore was he in bed with his young spouse, when a cry of *Fire!* was raised by his friends. Frederick got up to see where the conflagration was: but finding it to be a false alarm, he sent messengers to compose the princess; but neither that night, nor any other, did he think proper to disturb her rest.

On occasion of this marriage, Frederick received from his father the county of Rupin. He resided in

the capital of this county, named also *Rupin*, for some time; but afterwards chose Rheinsberg for his place of abode. This is a little town built in the sands, on the confines of Mecklenburg, and at that time containing only 1000 inhabitants; but it was soon greatly improved by Frederick. Having put over the great gate of the castle, however, the following inscription, *FREDERICO TRANQUILLITATEM COLENTI*, his father was displeased with it, and therefore hurried him from his peaceful retreat into the noise and tumult of war. At this time the succession to the crown of Poland had kindled a general war throughout Europe, and the king of Prussia was to send 10,000 auxiliaries to the Imperial army, then commanded by Prince Eugene. The king conducted his troops in person, and resolved to take this opportunity of giving his son an idea of war. At this time, however, he learnt but little; and only saw, as he himself expresses it, the shadow of the great Eugene. That consummate general, nevertheless, did not overlook his merit; but predicted that he would one day be a great captain. Frederick having gone to reconnoitre the lines at Philipsburg, in his return through a very open wood, was exposed to the cannon of the lines, which thundered incessantly. The balls broke a number of branches on every side of him: notwithstanding which, he never caused his horse to move quicker; nor did his hand which held the bridle ever alter its motion even for a moment. He continued to converse quietly with the generals who attended him, and never showed the smallest sign of apprehension. Being one night at supper with Field-Marshal Grumkow, the conversation turned on the young Prince Eugene who died on the Rhine; and he was asked whether that prince would ever have become a great man? Frederick decided in the negative, on account of young Eugene's not having known at any period of his life how to choose a friend who dared to tell him the truth.

During this campaign the health of the old king was so much impaired, that he was obliged to leave the army; and Frederick, on his return, was for some time intrusted with signing all the orders in his father's name. On the king's recovery the prince was sent to Stettin, under the care of the prince of Dessau, that he might see the fortifications of that town. He was afterwards permitted to go to Konigsberg to see the unfortunate Stanislaus, who had taken refuge in that place, and who was no less remarkable for his philosophy and constancy than for his misfortunes. With him Frederick remained for some weeks, and contracted a friendship which was not dissolved but by the death of Stanislaus. At last he was allowed to return to his peaceful mansion at Rheinsberg, where he remained till the death of his father. In this place his time was occupied alternately by the study of the sciences, the cultivation of the arts, and the pleasures of friendship. Philosophy, history, politics, the military art, poetry, and music, agreeably succeeded each other, and had each its stated period. The prince passed the greatest part of the day in his library; and the remainder in the society of a select company of agreeable and learned men. The principal of these were Chafot, a French officer; Kayserling, a gentleman of Courland, on whom the prince bestowed the name of *Casarian*; Jordan, a French refugee; and Knobelsdorf, director of the build-  
ings

Frederick. ings and gardens; but who could converse on all the arts of designing with great taste and judgment.—In these meetings, gaiety generally presided; there were generals to speak of war, musicians to form concerts, and excellent painters to decorate the apartments. Whilst Knobelsdorf was executing landscapes and laying out the gardens, Pefne was immortalizing himself by his cielings, and Du Buiffon by his pictures of flowers. The two Grauns composed excellent music, or directed the orchestra; and Benda, one of the first violins of Europe, accompanied the prince who played extremely well on the flute. The morning was usually dedicated to study; gaiety and agreeable conversation prevailed at every repast; and every evening there was a little concert.—In this retreat Frederick conceived that ardent passion for military glory and the aggrandizement of his kingdom for which he became at last so remarkable; and here he is supposed to have formed the most sublime and daring projects. He was fired with a desire of imitating the celebrated heroes of antiquity, of whom he read in the ancient authors, and for which he set apart some hours every day. Amongst the works which he read almost every year were Herodotus, Thucydides, Xenophon, Plutarch, Tacitus, Sallust, Livy, Quintus Curtius, Cornelius Nepos, Valerius Maximus, Polybius, Cæsar, Vegetius, &c. He never spoke but with enthusiasm of the great warriors of Greece and Rome; and when seated on the throne thought he could never distinguish an able soldier in a more honourable manner than by conferring on him a Roman surname. Hence he distinguished by the name of *Quintus Icilius* M. Guichard, who had written some treatises on the military art of the ancients; giving him at the same time a free battalion. This name of *Quintus Icilius* was retained by M. Guichard as long as he lived.

In his pursuit of glory Frederick found that it was not improper to cultivate the friendship of celebrated poets, philosophers, and others of the literary class; for which purpose he flattered, commended, and complimented all the most celebrated literati of Europe at that time. “The philosophers (says the author of his life) answered him as a mad lover writes to his mistress. They wrote to him that he was a great poet, a great philosopher, the *Solomon* of the north. All these hyperboles were printed; and Solomon was not sorry for it, though he had too much understanding to believe in them. Wolf, Rollin, Gravefande, Maupertuis, Algarotti, Voltaire, were honoured with his correspondence. The last especially, accustomed to offer up incense to the idol of the day, were it transported from the dunghill to the altar, did not fail to exalt as the first man of the universe a prince who was in expectation of the throne, and who assured him that he was the greatest philosopher of the age and the first poet in the world.”

That Frederick might keep up his character with the literati, or perhaps from a real predilection for his principles, he patronized the Apology of Wolf, and had his principal treatises translated into French. He even prevailed upon his father to relax a little in favour of that philosopher. A commission of reformed and Lutheran theologians was appointed in 1736, to examine into the tenets of that unfortunate philosopher. Wolf was declared innocent, and a letter was sent to him at

Marpourg containing an invitation to return; but the Frederick. philosopher did not think proper to make his appearance till the year 1740, when his protector was seated on the throne.

During his residence at Rheinsberg, Frederick composed his refutation of the principles of Machiavel, under the title of *Anti-Machiavel*: of which he sent the manuscript to Voltaire to correct, and to get printed.

The old king, now almost worn out with infirmity, saw with regret the predilection his son entertained for men of letters; and, in his peevish fits, often threatened the whole society with confinement in the fortress of Spandau. These threats frequently occasioned a violent alarm among the joyous company at Rheinsberg, which it required all the eloquence of Frederick to quiet. Their apprehensions on this account, however, were soon removed. At the commencement of the year 1740, the king's disorder increased to a great degree, and in the month of May his case became desperate. He lived, however, till the 31st of that month, when he expired, and left the throne to his son Frederick II.

The acquisition of a kingdom did not abate Frederick's passion for literature, though to this he was now obliged to superadd the qualities and labours of a great king. A consideration of his transactions in this character falls under the article PRUSSIA, to which we refer: these, indeed, so totally engrossed the remaining part of his life, that little more remains to be said under this article, than to relate some anecdotes by which we may be in some measure able to trace the character of this great and singular personage.

It has already been mentioned, that in the early part of his life, Frederick had conceived a great inclination to travel. This passion seems not to have been extinguished by the splendour of his new situation; for having, soon after his accession, gone into Prussia and Westphalia to receive the homage of the inhabitants, he formed a resolution of proceeding *incognito* as far as Paris. Being discovered at Strasbourg, however, he laid aside the design of proceeding to Paris, and went to see his states in Lower Germany. Here he wrote the celebrated Voltaire, that he should come *incognito* to visit him at Brussels; but being seized with an indisposition in the little palace of Meuse, two leagues from Cleves, he wrote again to that philosopher, informing him that he expected he should make the first advances. The following curious account is given by him of his reception, &c. “The only guard I found at the gate was one soldier. The privy counsellor, Bambonet, was cooling his heels in the court: he had large ruffles of dirty linen; a hat full of holes; and an old magisterial peruke, one end of which descended as low as his pockets, and the other scarcely reached his shoulder. I was conducted into his majesty's apartment, where there was nothing but bare walls. I perceived in a cabinet, by the glimmering of a taper, a truckle bed, two feet and a half wide, on which lay a little man muffled up in a night gown of coarse blue cloth. This was the king, in a strong perspiration, and even trembling, under a wretched blanket in a violent fit of the ague. I bowed to him; and began by feeling his pulse, as if I had been his first physician. The fit over, he dressed himself and sat down to table. Algarotti, Kayserling, Maupertuis, the king's minister to the States General, and myself, were of the party; where

Frederick. we conversed profoundly on the immortality of the soul, on liberty, and the androgynes of Plato."

This rigid economy, and contempt of every luxury with regard to his own person, was maintained by Frederick as long as he lived. The following account, taken likewise from Voltaire, will give an idea of his manner of living. "He rose at five in the morning in summer, and six in winter. A lacquey came to light his fire, and dress and shave him; and indeed he almost wholly dressed himself. His room was not inelegant. A rich baillustrade of silver, ornamented with little cupids, seemed to enclose an alcove bed, the curtains of which were visible; but behind them, instead of a bed, there was a library: the king slept on a truckle bed with a slight mattress concealed behind a screen. Marcus Aurelius and Julian, those apostles of Stoicism, did not sleep in a more homely manner. At seven his prime minister arrived with a great bundle of papers under his arm. This prime minister was no other than a clerk who had formerly been a foldier and valet-de-chambre. To him the secretaries sent all their despatches, and he brought extracts of them, to which the king wrote answers in two words on the margin: and thus the affairs of the whole kingdom were expedited in an hour. Towards eleven the king put on his boots, reviewed his regiment of guards in the garden, and at the same hour the colonels were following his example in their respective provinces. The princes his brothers, the general officers, and one or two chamberlains, dined at his table; which was as good as it could be in a country where there is neither game, tolerable butchers meat, nor a pullet, and where the very wheat is brought from Magdebourg. After the repast, he retired alone into his cabinet, where he made verses till five or six o'clock. Then came a young man named D'Arget, formerly secretary to Valory the French envoy, who read to him. A little concert began at seven, in which the king played on the flute with as much skill as the first performer; and pieces of his composition were frequently executed. Supper was served in a little hall, the singular and striking ornament of which was a picture, the design of which he had given to Pefne, one of our best colourists. It was a fine picture of Priapus. These repasts were not in general the less philosophic on that account. Never did men converse in any part of the world with so much liberty respecting all the superstitions of mankind, and never were they treated with more pleasantry and contempt. God was respected; but none of those who had deceived men in his name were spared. Neither women nor priests ever entered the palace. In a word, Frederick lived without a court, without counsel, and without religious worship."

As Frederick had espoused his princess entirely contrary to his inclination, it was imagined that on his accession to the throne he would embrace the opportunity of setting himself free from engagements so disagreeable to himself. The queen was not without suspicions of this kind, inasmuch that she was on the point of fainting away when he made his first visit to her. To the surprise of all parties, however, he made her a very affectionate speech, apologizing for his indifference, and inviting her to participate with him the throne of which she was so worthy. In the first year of his reign he restored the academy of sciences at Berlin which had

been founded in 1700; but he soon became disgusted with its members, whom he endeavoured at all times to ridicule rather than encourage. His war with the queen of Hungary, however, which took place almost immediately after his accession, for some time prevented him from taking such an active part in literary matters as he was naturally inclined to do. After the peace, being at liberty to follow his inclination, he gave full scope to his passion for literature; and in the interval betwixt the conclusion of the first war and beginning of that of 1756, he composed most of the works which are now ascribed to him. At this time he wrote his *History of my own Times*, afterwards announced among his posthumous works. In writing history he acquired a taste for historians; and justly gave the preference to the ancients, the most celebrated of whose works he perused every year. Voltaire was his principal literary correspondent, whom he invited to reside with him. Afraid of losing his liberty, however, that philosopher hesitated, excused himself, and entered into pecuniary treaties, first for himself, and afterwards for his niece Madame Dennis, whom he wished to accompany him. At last he was determined by seeing a poem from Frederick to M. d'Arnaud, in which the latter was compared to the rising, and Voltaire to the setting sun. By this Voltaire was so much piqued, that he set out for Berlin without delay, and arrived there in June 1750. He was received in the most magnificent and affectionate manner, and for some time his situation was very agreeable; but the disputes and rivalry which took place betwixt him and Maupertuis soon threw every thing into confusion. In these the king interfered in such a manner as was certainly below his dignity; and he often exercised himself in making a jest of the other men of letters in a way exceedingly disgusting, and which induced many of them to leave him. The squabbles with Voltaire were sometimes very diverting; an account of some of which is given under the article VOLTAIRE. They ended at last in a final quarrel with that wit, and his departure from the kingdom. The restless disposition of Frederick showed itself after his departure, by his attempts to provoke the literati who remained at his court to quarrel with him as Voltaire had been accustomed to do. But they were of too passive a disposition to gratify him in this respect, choosing rather to suffer the most mortifying strokes of raillery, or to leave the kingdom altogether, than to contend with him. This proved so uneasy to the king, that he one day exclaimed, "Shall we have no more quarrels then?" The breaking out of the war in 1756, however, put a stop to this diversion, and afforded him as many enemies as he could wish. The exploits he performed during the seven years which this unequal contest lasted, are almost incredible\*; and it is amazing how the fortitude and resolution of any person could enable him to sustain the difficulties which during this period he had to encounter. In one fatal moment, indeed, even the resolution of Frederick was on the point of giving way. This happened after the battle of Colin, when his affairs seemed altogether desperate, before they were retrieved by the victory at Rossbach. At this time he wrote to his sister at Bareith, that he was on the point of putting an end to his own life; but as this resolution did not extinguish in him the love of glory, he wished

Frederick. wished to have it said that he made verses on the brink of the grave. With this view he wrote a long poetical epistle to the marquis d'Argens, in which he communicated to him his design, and bade him farewell.

Happily, at last, the king's affairs took a better turn, and such desperate thoughts were laid aside. His constitution, however, was irreparably injured by the excessive fatigues he had sustained. Soon after the conclusion of the peace, his body began to bend, and his head to incline to the right side: by degrees he became very infirm; he was tormented with the gout, and subject to frequent indigestions. All his distempers, however, were born with invincible patience; and, till a very short time before his death, he never ceased to attend his reviews, or visit the different provinces of his dominions. He has been known to review his troops, and gallop through all the ranks, as if he felt no pain, notwithstanding that an abscess which had broken out upon him, and approached to a suppuration, frequently, upon such occasions, touched the saddle. In August 1785 he impaired his health still farther by assisting at a review, where he was exposed without even a cloak to a heavy rain for four or five hours. On his return to Potsdam he was seized with a fever; and, for the first time, became unable to assist at the military exercises of Potsdam, which take place in September. His malady, however, did not prevent him from dictating the disposition of these exercises during the three days they lasted, and he always gave the word in presence of his generals and the foreigners of distinction then at Potsdam. About the end of autumn the fever left him, but was succeeded by a violent cough; and he continued free from the gout which had usually attacked him at this season. He was greatly weakened by the cough, which prevented him from sleeping; but this did not in the least interrupt him in the execution of business. Every morning, at four or five o'clock, he ordered the three cabinet secretaries to enter his apartment, where he dictated answers to their papers. It was not till after the despatch of all his affairs that he saw a surgeon or sometimes a physician, though he had a bad opinion of the physicians in general, whom he consulted on his distemper. In the evening he amused himself from five to eight with some of his society; and after that hour he passed the remainder of the time before he went to rest, in hearing some ancient authors read to him; and thus he continued to employ himself till the very day before he died. On the 17th and 18th of May 1786, he was unable to assist at the ordinary reviews, but still he hoped to be present at those of Silesia. He several times attempted to mount his horse to go to the parade at Potsdam; but finding his powers insufficient, he was obliged to return, after having proceeded a few paces. He made other attempts, but with as little success; and at last his disorder terminated in a dropsy. Being now no longer able to remain in bed, he sat day and night in an arm chair with springs which could be moved at pleasure. For near a month before his death the swelling of his feet gave him violent pain, so that he wished an incision to be made; but the surgeon refused to perform the operation, suspecting that it might hasten his death. Nature, however, accomplished his desires; his right leg opened, and discharged such a quantity

of matter, that he was greatly relieved: and those unacquainted with the medical art began to entertain hopes of his recovery. The physicians, however, were of a very different opinion; and the event justified their apprehensions. On the 16th of August 1786 his throat began to rattle violently, and his attendants expected every moment that he would breathe his last. In this situation his three secretaries entered the room for the despatch of business as usual. Even then Frederick made an effort to collect his force, giving them a sign to wait, as if he would speak with them in a short time. This, however, was the last he could make: for he soon after fell into a stupor; though from this he recovered so far as to be able to speak. In the evening he asked what o'clock it was? and on being answered that it was nine, he said, "Well then I am going to rest." His respiration and voice became gradually more feeble; and he expired on Thursday at 19 minutes after two in the morning, without any convulsion or symptom of pain.

This great monarch was of the middle size, had large blue eyes and a piercing look. He spoke German incorrectly, and in a very rough manner; but talked French very fluently, and his voice was then mild and agreeable. His constitution was naturally feeble, but he had greatly improved it by his activity and laborious life. He had the art of relieving every one from that embarrassment which frequently occurred in accosting such a celebrated monarch; and it seems probable that he himself considered on what he should say to any illustrious person who happened to come to his court. His universal knowledge enabled him to converse on all subjects; and thus he talked of war with military men, of verses with the poet, of agriculture with the farmer, jurisprudence with the lawyer, commerce with the merchants, and politics with the Englishman. He had a very retentive memory; was fond of solitude and gardening; and likewise took great pleasure in dogs, of which animals he constantly kept a number about him, giving them little balls covered with leather to play with. In company, he was fond of asking questions and jesting; in which last he proceeded such lengths as undoubtedly were unbecoming in a superior towards his inferiors, who would not have failed to resent such jokes from persons more on an equality with them. In military affairs he was excessively severe, not to say cruel; of which the following anecdote may serve as an instance. In the first war of Silesia, wishing to make some alterations in his camp during the night, he forbade every person, under pain of death, to keep, after a certain hour, a fire or other light in his tent. He himself went the rounds; and in passing the tent of a Captain Zietern he perceived a light. Entering the tent, he found the captain sealing a letter to his wife, for whom he had a great affection. "What are you doing there? (says the king :) Do you not know the order?" The captain fell on his knees and asked pardon, but did not attempt to make any excuse. "Sit down (says Frederick), and add a few words I am going to dictate to you." Zietern obeyed; and the king dictated, "Tomorrow I shall perish on a scaffold." The unfortunate man wrote them, and next day was executed. In matters of domestic legislation, he was more arbitrary than just; of which we have a notable example in the famous

Frederick,  
Frederickf-  
burg.

famous case of Arnold the miller. The man had refused to pay the rent of the mill he possessed, on pretence that the stream which turned it had been diverted into a fish pond. This was evidently a frivolous excuse; because the water which ran into the pond also ran out of it into the same channel as before, so that nothing could be lost except what evaporated from the surface of the fish pond. The judges therefore gave sentence against the miller; but the king not only reversed their sentence, but disgraced them. For this he was celebrated through all the newspapers in Europe; and yet he was in the wrong, and afterwards even acknowledged himself to have been so: but, notwithstanding he knew his error, he not only made no reparation to the parties he had injured, but allowed them to lie in prison at Spandau all his lifetime, so that they were not released till the commencement of the succeeding reign. He entertained certain and almost unaccountable prejudices against certain places and persons, which neither conduct nor merit could eradicate. One of these unfortunate places was Westphalia, on which he never conferred any bounty: and one day a native of that country, a man of great merit, being proposed to him for a place, he refused, saying, "He is a Westphalian; he is good for nothing." Voltaire accuses him of ingratitude to the count de Seckendorf; who, as we have already seen, saved his life, and against whom he afterwards conceived most implacable hatred. His indifference towards those who afforded him the most essential service, was evident: when a robust butcher prevented him from falling, horse and all, over a precipice, where both would have undoubtedly been killed, the king, sensible of the assistance that had been afforded him, turned about, and saying, "Thank you, friend," rode off without ever enquiring farther about the person who had just preserved him from destruction.

With regard to the literary merits of this monarch, we certainly cannot pronounce them extraordinary. Voltaire boasts of having corrected his works, and others of having furnished him with materials for his history. He has been accused of borrowing whole hemistichs of poetry from Voltaire, Boileau, Rousseau, and others; nor does the charge appear to be at all void of foundation. Such of his verses as appear to have undergone no correction, are very indifferent, nor indeed can we pronounce any of his poetic works to be of the first rate. In the former part of his life he entertained a great partiality for the French learning and language; but as he advanced in years, he entirely lost this predilection, and inclined much more to favour the English and Germans. Towards the end of his life, indeed, he affected a contempt for the French, without whom it is said he would scarcely ever have made any figure except in military affairs.

FREDERICK, is the name of two counties, and of several townships in America, such as the county of Frederick in Maryland, which contains 30,791 inhabitants, in which are included 3641 slaves. It is also the name of a county in Virginia, 30 miles long and 20 broad, with a population of 19,681 souls, including 4250 slaves.

FREDERICKSBURG, a fort and colony of Brandenburg, on the gold coast of Guinea, in Africa, near Cape Threepoints, and about 75 miles from

Cape Coast. It mounts 46 pieces of cannon on four batteries; and formerly belonged to the Prussians, but is now subject to Denmark. W. Long. 1. 15. N. Lat. 4. 30. Frederick-  
shall  
Free stone.

FREDERICKSHALL, or FREDERICKSTADT, a strong town of Norway, in the prefecture of Agerhuys, where Charles XII. king of Sweden was killed by a musket ball in 1718, when he was besieging this town. It is seated on the coast of the Catagate, in E. Long. 10. 45. N. Lat. 59. 2.

FREDERICKSODE, a town of Denmark, in Jutland, taken by the Swedes in 1657, but now subject to Denmark. It is seated near the sea, in E. Long. 10. 0. N. Lat. 55. 42.

FREDERICKSTADT, a town of Denmark, in South Jutland, built in 1621. It is seated on the river Eyder, in E. Long. 9. 23. N. Lat. 55. 32.

FREDERICKSTADT, a town of Norway, in the province of Agerhuys, seated on a bay of the sea, near the frontiers of Sweden, in E. Long. 11. 6. N. Lat. 59. 12.

FREE, in a general sense, is used in opposition to whatever is constrained or necessitated. When applied to things endowed with understanding, it more peculiarly relates to the liberty of the will.

*FREE Bench*, signifies that estate in copyhold which the wife, being espoused a virgin, has after the decease of her husband for her dower, according to the custom of the manor.

In regard to this free bench, different manors have different customs: and in the manor of East and West Enbourne in the county of Berks, and in other parts of England, there is a custom, that when a copyhold tenant dies, the widow shall have her free bench in all the deceased husband's lands, *dum sola et casta fuerit*, "while she lives single and chaste;" but if she is found to be guilty of incontinency, she shall forfeit her estate. Nevertheless, upon her coming into the court of the manor riding backwards on a black ram, with his tail in her hand, rehearsing a certain form of words, the steward is bound by custom to restore her to her free bench. The words are,

Here I am,  
Riding on a black Ram,  
Like a whore as I am;  
And for my crinum crancum  
Have lost my bincum bancum,  
And for my tail's game  
Have done this wordly shame:  
Therefore, pray Mr Steward, let me have my  
land again.

*FREE or Imperial Cities* in Germany, are those not subject to any particular prince; but governed, like republics, by their own magistrates.

There were free cities (*liberæ civitates*) even under the ancient Roman empire: such were those to whom the emperor, by the advice or consent of the senate, gave the privilege of appointing their own magistrates, and governing themselves by their own laws. See CITY.

*FREE Fishery.* See *Free FISHERY*.

*FREE Warren.* See *WARREN*.

*FREE Mason.* See *MASON*.

*FREE Stone*, a whitish stone, dug up in many parts of

Freebooter of Britain, which is hard and durable, and of excellent use in building, &c. It is a kind of the grit stone, but finer sanded and smoothed; and is called *free*, from its being of such a constitution as to cut freely in any direction.

Freehold.

The qualities of the several kinds of free stones used in the different parts of Europe are very different. They all agree in this general property indeed, that they are softer while in the quarry than when they have been some time exposed to the air: but even this general property differs greatly in degree. There is a sort of gray free stone in use at Paris (of which we do not yet seem to have met with any in this country), which has the above mentioned quality in so great a degree, that the expence of working it is in a great measure saved.

This stone lies everywhere on the south side of the river Seine, and is of a coarse and large grit. It is so soft when newly taken out of the strata, that they fashion it very conveniently with a sort of broad axe, and form as many stones for building in this manner in an hour, as an equal number of our people do in a day or two. Though this stone is as soft as dry clay when first taken up, it is found to harden so considerably in the air, that it becomes more than equal to our ordinary free stone.

The Portland free stone of Britain of the finest kind, which is white, and of a close grit, is very fit for hewing and carving; but it will neither resist water nor fire, which is a very singular instance in so dense a stone; while the free stone of Kent, which is less beautiful to the eye, and is of a grayish colour, and considerably close, though of a larger grain, resists the air and water very well. The free stone of Derbyshire, on the other hand, is so brittle as to be unfit for any fine working; and so coarse and open in its texture, that it lets water through: yet it bears the fire extremely well, and is fit for ovens, hearths, &c.

**FREEBOOTER**, or **FLIBUSTER**, a name given to the pirates who scour the American seas, particularly such as make war against the Spaniards. See **BUCA-NIER**.

**FREEDOM**, in general, the state or quality of being free. See **LIBERTY**.

**FREEDOM of a Corporation**, the right of enjoying all the privileges and immunities belonging to it. See **CORPORATION**.

The freedom of cities, and other corporations, is regularly obtained by serving an apprenticeship; but it is also purchased with money, and sometimes conferred by way of compliment.

**FREEDOM of Conscience**. See **TOLERATION**.

**FREEDOM of the Will**, that power or faculty of the mind, whereby it is capable of acting or not acting, choosing or rejecting whatever it judges proper †. Of this every man must be sensible, who finds in himself a power to begin or forbear, continue or end several actions, barely by a thought or preference of the mind.

**FREEHOLD**, **FRANK TENEMENT**, (*liberum tenementum*), is land, or tenement, which a man holds in *fee-simple*, *fee-tail*, or for term of life. See **FEE** and **TAIL**.

Freehold is of two kinds, in *deed* and in *law*.

The first is the real possession of land or tenement

in fee, fee-tail, or for life: the other is the right a man has to such land or tenement before his entry or seizure.

Freethinker  
Freezing.

A freehold, by the common law, cannot commence *in futuro*, but it must take effect presently, either in possession, reversion, or remainder. Whatever is part of the freehold goes to the heir; and things fixed thereto may not be taken in distress for rent, or in execution, &c. No man shall be disseised of his freehold by stat. Magna Charta, cap. 29. but by judgment of his peers, or according to the laws of the land: nor shall any distrain freeholders to answer for their freehold in any thing concerning the same, without the king's writ. Freehold estates, of certain value, are required by statutes to qualify jurors, electors of the knights of the shire in parliament, &c.

**FREEHOLD** is likewise extended to such offices as a man holds in fee, or for life.

**FREEHOLD** is also sometimes taken in opposition to villenage.

Lambard observes, that land, in the Saxons time, was distinguished into *bockland*, i. e. holden by book or writing; and *folkland*, held without writing. The former, he says, was held on far better condition, and by the better sort of tenants, as noblemen and gentlemen; being such as we now call *freehold*: the latter was mostly in possession of peasants; being the same with what we now call *at the will of the lord*.

In the ancient laws of Scotland, freeholders are called *milites*, "knights." In Reg. Judicial. it is expressed, that he who holds land upon an execution of a statute merchant, until he hath satisfied the debt, *tenet ut liberum tenementum sibi et assignatus suis*; and the same of a tenant *per elegit*: the meaning of which seems to be, not that such tenants are freeholders, but as freeholders for the time, till they have received profits to the value of their debt.

**FREETHINKER**. See **DEIST**.

**FREEZE**, **FRIEZE**, or *Frize*, in *Commerce*. See **FRIZE**.

**FREEZE**, in *Architecture*, that part of the entablature of columns, between the architrave and cornice.

The freeze is properly a large flat face, or member, separating the architrave from the cornice.

The ancients called it *zoophorus*, (*Ζωφορος*) because it was usually enriched with figures of animals; and our denomination *freeze* has a like origin, being formed of the Latin *phrygio*, "an embroiderer," because it is commonly adorned with sculptures in basso relievo, imitating embroidery.

**FREEZING**, in *Philosophy*, the same with congelation. See **CONGELATION**, **FROST**, and **ICE**.

**FREEZING Rain**, or *Raining Ice*, a very uncommon kind of shower, which fell in the west of England, in December 1672; whereof we have divers accounts in the Philosophical Transactions.

This rain, as soon as it touched any thing above ground, as a bough or the like, immediately settled into ice, and by multiplying and enlarging the icicles, broke all down with its weight. The rain that fell on the snow immediately froze into ice, without sinking in the snow at all.

It made an incredible destruction of trees, beyond any thing in all history. "Had it concluded with some gust of wind (says a gentleman on the spot), it

F f

might

† See *Me-  
saphysica*.

Freight  
||  
French.

might have been of terrible consequence. I weighed the sprig of an ash tree, of just three quarters of a pound; the ice on which weighed 16 pounds. Some were frightened with the noise in the air; till they discerned it was the clatter of icy boughs, dashed against each other." Dr Beale observes, that there was no considerable frost observed on the ground during the whole; whence he concludes, that a frost may be very intense and dangerous on the tops of some hills and plains, while in other places it keeps at two, three, or four feet distance above the ground, rivers, lakes, &c. and may wander about furious in some places and renish in others not far off. The frost was followed by glowing heats, and a wonderful forwardness of flowers and fruits.

**FREIGHT**, in *Navigation and Commerce*, the hire of a ship, or a part thereof, for the conveyance and carriage of goods from one port or place to another; or the sum agreed on between the owner and the merchant, for the hire and use of a vessel. See *Maritime Laws*.

**FREIND, JOHN**, a most learned English physician and writer in the 18th century, was born at Croton, Northamptonshire, in 1675. In 1696, he published, in conjunction with Mr P. Foulkes, an edition of two Greek orations, one of *Æschines* against Ctesiphon, and the other of *Demosthenes de Corona*, with a new Latin version. In 1699, he wrote a letter to Dr Solane concerning an *Hydrocephalus*, published in the *Philosophical Transactions*; and another letter in Latin to the same gentleman, *De spasimis rarior. historia*, printed in the same *Transactions*. In 1703, his *Emmenalogia* appeared, which gained him great reputation. In 1704, he was chosen professor of chemistry in the university of Oxford. In 1705 he attended the earl of Peterborough to Spain, as physician to the army there; and, upon his return in 1707, published an account of the earl's expedition and conduct. In 1709 he published his *Chemical Lectures*. In 1712 he attended the duke of Ormond in Flanders, as his physician. In 1716 he was admitted a fellow of the College of Physicians in London. This year he published the first and third books of *Hippocrates De morbis popularibus*, with a *Commentary on Fevers*, written by himself. He sat member for the borough of Launceston in Cornwall in 1722, where he distinguished himself by his opposition to the administration. March 1722, he was committed to the Tower on a charge of high treason; and while he was under confinement, he wrote a Latin epistle to Dr Mead, *De quibusdam variolarum generibus*; and began his *History of Physic*, the first part of which was published in 1725, and the second in 1726. Upon the accession of George II. to the throne, he was appointed physician in ordinary to the queen, who showed the utmost regard and esteem for him. He died at London in 1728. His works were published together in Latin at London, 1733, in folio, and dedicated to the queen.

**FREITS**. See **FREATS**.

**FRENCH**, in general, something belonging to France: thus we say, the French language, French custom, polity, &c.

The French language, as it now stands, is no original or mother language, but a medley of several. Those that prevail most, and which are, as it were, the basis

thereof are, 1. The Celtic; whether that were a particular language itself, or whether it were only a dialect of the Gothic, as spoke in the west and north. 2. The Latin, which the Romans carried with them into Gaul, when they made the conquest thereof. And, 3. The Teutonic, or that dialect of the Teutonic spoke by the Franks, when they gassed the Rhine, and established themselves in Gaul. Of these three languages, in the space of about thirteen hundred years, was the present French formed, such as it is now found. Its progress was very slow; and both the Italian and Spanish were regular languages long before the French.

Pasquier observes, it was under Philip de Valois that the French tongue first began to be polished; and that, in the register of the chamber of accounts of that time, there is a purity seen almost equal to that of the present age. However, the French was still a very imperfect language till the reign of Francis I.: the custom of speaking Latin at the bar, and of writing the public acts and instruments of the courts of justice in that language, had made them overlook the French, their own language. Add that the preceding ages had been remarkable for their ignorance, which was owing, in a good measure, to the long and calamitous wars which France had been engaged in; whence the French noblesse deemed it a kind of merit not to know anything; and the generals regarded little whether or not they wrote and talked politely, provided they could but fight well.

But Francis I. who was the restorer of learning, and the father of the learned, changed the face of things; and after his time, Henry Stevens printed his book, *De la Precellence du Langage François*. The change had become very conspicuous at the end of the 16th century; and under Henry IV. Amyot, Coeffeteau, and Malherbe, contributed towards bringing it to its perfection; which the Cardinal de Richelieu completed, by the establishment of the French academy; an assembly, wherein the most distinguished persons of the church, the sword, and the gown, have been members. Nor did the long reign of Louis XIV. contribute a little to the improvement of the language; the personal qualities of that prince, and his taste for the fine arts, and that of the princes of the blood, rendered his court the politest in Europe. Wit and magnificence seemed to vie; and his generals might have disputed with the Greeks, Romans, &c. the glory of writing well, if they could not that of fighting. From court, the elegance and purity of the language soon spread itself into the provinces; and now there is scarce anybody there who does not write and speak good French.

One of the characters of the French language is, to be natural and easy. The words are ranged in it much in the same order as the ideas in our minds; in which it differs exceedingly from the Greek and Latin, where the inversion of the natural order of words is reputed a beauty. Indeed the Hebrew surpasses even the French in this point; but then it comes short of it in copiousness and variety.

It must be added, however, that as to the analogy of grammar, and the simplicity wherewith the moods of verbs are formed, the English has the advantage not only over the French, but over all the known languages

French.

*Fresco.* in the world; but then the turns, the expressions, and the idioms of the English, are sometimes so quaint and extraordinary, that it loses a good deal of the advantage which its grammatical simplicity gives it over the rest.

The French has but few compound words; wherein it differs widely from the Greek, High Dutch, and English. This the French authors own a great disadvantage in their language; the Greek and Dutch deriving a great part of their force and energy from the composition of words, and frequently expressing that in one sounding word, which the French cannot express but by a periphrasis. The diminutives in the French are as few as the compounds; the greatest part of those remaining in use having lost their diminutive signification; but what distinguish the French most, are its justness, purity, accuracy, and flexibility.

French is the most universal and extensive language in Europe. The policy of states and courts has rendered it necessary for the ministers of princes, and their officers, &c. and the taste of arts and sciences has had the same effect with regard to the learned. In Germany, and elsewhere, the princesses and persons of distinction value themselves on understanding French; and in several courts of Europe, French is almost as much known as the language of the country.

FRESCATI, or FRASCATI, a small town, situated on the brow of a hill, about twelve miles to the eastward of Rome. It derives its name from the coolness of the air, and *fresh* verdure of the fields around. It is built of the ruins of the ancient Tusculum; and the Tusculan villa where Cicero wrote his famous questions is at a place now called *Grotta Ferrata*, about two miles distant. E. Long. 11. 43. N. Lat. 41. 48. There is a very fine prospect from this town into the neighbouring country, which abounds with the seats of cardinals and other nobility. It is the see of a bishop, who is one of the six senior cardinals, and is surrounded by some of the most beautiful villas in Italy; the principal of which are the villa Aldobrandini, belonging to Prince Pamfili; the villa Taberna, belonging to Prince Borghese; and villa Ludovisi, to the family of Colonna. The villa Aldobrandini, called also *Belvedere* from its beautiful prospect, is the most remarkable, on account of its fine situation, extensive gardens, airy terraces, its grottoes, cascades, and water-works. Over a saloon, near the grand cascade, is the following inscription:

*Huc ego migravi musis comitatus Apollo;  
Hic Delphi, hic Helicon, hic mihi Delos erit.*

The walls are adorned with a representation of Apollo and the Muses; and some of that god's adventures are painted in fresco by Domenichino. The villa Taberna is one of the finest and best furnished of any in the neighbourhood of Rome. From this you ascend through gardens to Monte Dracone, another palace on a more lofty situation, belonging also to that prince, and deriving its name from the arms of his family. From hence you may see Rome, and the whole extent of the plain; it has a noble ascent, with a broad paved walk; and among other curiosities there is a hall adorned with the pictures of a vast number of men eminent for learning and arms. The gardens, laid out by Vignola,

contain three miles in compass; and have many delightful walks, and curious water-works. Near this place are the monks of Camaldoli and the capuchins, and higher up are ruins of the ancient Tusculum. Ascending towards the plain, two miles on the right hand, you find the famous abbey of Grotta Ferrata, belonging to the monks of St Basil, and situated on the ruins of Cicero's house. The Virgin Mary of the great altar is an ancient Greek picture; in the chapel the pictures of St Nilus and St Bartholomew the abbot, are by Annibal Caracci; and all the paintings in fresco of this chapel are by Domenichino. Villa Ludovisi has a charming walk going up to it, where you see the ruins of Lucullus's palace. The house is small; but the gardens are large, embellished with a great variety of walks and fountains, and a beautiful cascade.

FRESCO, a method of painting in rilievo on walls, so as to endure the weather. It is performed with water colours on fresh plaster, or on a wall laid with mortar not yet dry. This sort of painting has a great advantage by its incorporating with the mortar, and drying along with it, becomes very durable. The Italians, from whom we borrow the term, call it *fresco*; because it is frequently used for walls, alcoves, and other buildings in the *open air*. Vitruvius, lib. vii. cap. 4. calls it *udo tectorio*.

Painting in fresco is very ancient, having been practised in the earliest ages of Greece and Rome. It is chiefly performed on walls and vaults, newly plastered with lime and sand; but the plaster is only to be laid, in proportion as the painting goes on; no more being to be done at once than the painter can despatch in a day, while it dries. Before he begins to paint, a cartoon or design is usually made on paper, to be chalked, and transferred to the wall, about half an hour after the plaster is applied.

The ancients painted on stucco; and we may remark in Vitruvius what infinite care they took in making the incrustation or plastering of their buildings to render them beautiful and lasting; though the modern painters find a plaster of lime and sand preferable to it; both as it does not dry so hastily, and as being a little brownish, it is fitter to lay colours on, than a ground so white as stucco.

In this kind of painting, all the compound and artificial colours, and almost all the minerals, are set aside, and scarce any thing is used but earths; which are capable of preserving their colour, defending it from the burning of the lime, and resisting its salt, which Vitruvius calls its bitterness.

For the work to come out in all its beauty, the colours must be laid on quick, while the plaster is yet moist; nor should they ever be retouched dry, with colours mixed up with the white of an egg, or size, or gum, as some workmen do; because such colours grow blackish; nor do any preserve themselves, but only such as were laid on hastily at first.

The colours used are white made of lime flaked long before, and white marble dust; ochre, both red and yellow; verditer; lapis lazuli; smalt; black chalk, &c. All which are only ground, and worked up with water; and most of them grow brighter and brighter as the fresco dries.

The brushes and pencils for this work ought to be

Fresh  
Water  
||  
Fret.

long and soft, otherwise they will rake and raise the painting. The colours should be full, and flowing from the brush; and the design perfect: for in this work you cannot alter or add upon any colour.

FRESH WATER, is that not tinctured or impregnated with salt or saline particles enough to be discovered by the sense. Such generally is that of springs, rains, wells, lakes, &c.

The dulcifying or making of salt water fresh is a secret that has been long sought with great attention. For an account of the principal attempts that have been made with this view. See *Sea WATER*.

*Fresh WIND* signifies strong, but not violent; hence when the gale increases, it is said to freshen.

FRESHES, in sea language, denotes the impetuosity of an ebb tide, increased by heavy rains, and flowing out into the sea, often discolouring it to a considerable distance, and forming a line that separates the two colours, and which may be distinctly perceived for a great length along the coast.

FRESHES, a local term signifying annual inundations, from the river being swollen by the melted snows and other fresh waters from the uplands, as is the Nile, &c. from periodical or tropical rains. As a sailor's term, it is opposed to marine or salt water floodings, tides, &c. The word is of common use in America, where the inundations so called are of great service. They bring down the soil to the intervals below, and form a fine mould, producing corn, grain, and herbage, in the most luxuriant plenty. They also afford another benefit, in regard to many rivers in America, viz. in equalizing the surface of the stream (where rapid falls, or cascades, obstruct the navigation), so that rafts of timber and other gross produce are then floated down to the sea ports in great quantities.

FRESNOY, CHARLES ALPHONSE DU, an excellent poet and painter, was born at Paris in 1611. He was instructed there by Perrier and Simon Vouet in painting: but he did not long adhere to Vouet's manner of colouring; for as soon as he fixed himself at Rome, he made the works of Titian the models for his imitation. He was, however, more celebrated as a poet than as a painter; and gave more attention to the theory than to the practice of the pencil. Accordingly, he is better known by his incomparable poem *De arte graphica*, than by his performances on the canvass: and on this poem he bestowed so much pains, that he died in 1665, before it was published. It was printed afterwards with a French prose translation and notes by M. de Piles; and was translated into English by Mr Dryden, who prefixed to it an original preface containing a parallel between painting and poetry.

FRET, or FRETTE, in *Architecture*, a kind of knot or ornament, consisting of two lists or small fillets variously interlaced or interwoven, and running at parallel distances equal to their breadth.

FRET, in *Heraldry*, a bearing composed of six bars, crossed and variously interlaced. Some call it the *true-lover's knot*. See *HERALDRY*.

FRET, in *Music*, signifies a kind of stop on some instruments, particularly bass viols and lutes. Frets consist of strings tied round the neck of the instrument, at certain distances, within which such and such notes are to be found.

*FRET-Work*, that adorned with frets. It is sometimes used to fill up and enrich flat empty spaces; but it is mostly practised in roofs, which are fretted over with plaster work.

Fret  
||  
Friburg.

FRETTS, in *Mineralogy*, a term used by our miners to express the worn side of the banks of the rivers in mine countries, where they search for the shoad stones or grewts washed down from the hills, in order from thence to trace out the running of the shoad up to the mine.

FRETTS, *Freats*, or *Freits*. See *FREATS*.

FREYBERG, or FRIEDBERG, a town in the circle of Upper Saxony, containing upwards of 60,000 people. There are mines of copper, tin, lead, and silver, in its vicinity, which afford employment to a considerable number of workmen, and produce an annual revenue of more than 10,000 rix-dollars. The princes of the house of Saxony are usually buried here, where there is also an academy for the study of mineralogy, instituted in the year 1765, and reckoned the most famous for that science of any in Germany. It is situated on a branch of the Muldau, 15 miles south-west of Dresden, in N. Lat. 51. and W. Long. 11. 10.

FRIABLE, among naturalists, an appellation given to bodies that are easily crumbled to pieces: such are pumice and all calcined stones.

FRIAR, or FRIER, by the Latins called *frater*, the Italians *fra*, and the French *frere*, that is, *brother*: a term common to the monks of all orders; founded on this, that there is a kind of fraternity or brotherhood presumed between the several religious persons of the same convent or monastery.

Friars are generally distinguished into these four principal branches, viz. 1. Minors, Gray friars, or Franciscans. 2. Augustines. 3. Dominicans, or Black friars. 4. White friars or Carmelites. From these four the rest of the orders descend. See *FRANCISCANS*, *AUGUSTINES*, &c.

FRIAR, in a more peculiar sense, is restrained to such monks as are not priests; for those in orders are usually dignified with the appellation of *father*.

*Friars Observant (fratres observantes)*, were a branch of the Franciscans; thus called, because not combined together in any cloister, convent, or corporation, as the conventuals are; but only agreed among themselves to observe the rules of their order, and that more strictly than the conventuals did, from whom they separated themselves out of a singularity of zeal, living in certain places of their own choosing.

FRIBURG, a large town of Germany, and capital of Brisgaw; remarkable for the steeple of the great church, which, next to that of Strasburg, is the finest in Germany; and for its university. The inhabitants are famous for polishing crystal and precious stones. It has been several times taken and retaken; particularly by the French in 1744, who demolished the fortifications. It was also taken by them in June 1796. It is seated on the river Triset, ten miles east of Brisach, and 26 south of Strasburgh. E. Long. 7. 57. N. Lat. 48. 4.

FRIBURG, a town of Switzerland, and capital of the canton of the same name, seated on the river Sane, in E. Long. 7. 5. N. Lat. 46. 50. Its situation is most singular and picturesque: "It stands partly in a small plain, partly on bold acclivities on a  
Cove's  
Travels in  
Switzer-  
land.  
ridge

Friburg,  
Fricassee.

ridge of rugged rocks, half encircled by the river Sane; and is so entirely concealed by the circumjacent hills, that the traveller scarcely catches the smallest glimpse, until he bursts upon a view of the whole town from the overhanging eminence. The fortifications, which consist of high stone walls and towers, enclose a circumference of about four miles, within which space the eye comprehends a singular mixture of houses, rocks, thickets, and meadows, varying instantly from wild to agreeable, from the bustle of a town to the solitude of the deepest retirement. The Sane winds in such a serpentine manner as to form in its course, within the space of two miles, five obtuse angles, between which the intervening parts of the current are parallel to each other. On all sides the descent to the town is extremely steep: in one place the streets even pass over the roofs of the houses. Many of the edifices are raised in regular gradation like the seats of an amphitheatre; and many overhang the edge of a precipice in such a manner, that on looking down, a weak head would be apt to turn giddy. But the most extraordinary point of view is from the Pont-neuf. To the north-west, part of the town stands boldly on the sides and the piked back of an abrupt ridge; and from east to west a semicircle of high perpendicular rocks is seen, whose base is washed and undermined by the winding Sane, and whose tops and sides are thinly scattered with shrubs and underwood. On the highest point of the rocks, and on the very edge of the precipice, appears, hanging in the air, the gate of the town called *Bourguillon*: a stranger standing on the bridge would compare it to Laputa, or the Flying Island in Gulliver's Travels; and would not conceive it to be accessible but by means of a cord and pulleys. The houses, constructed with a gray sand stone, are neat and well built; and the public edifices, particularly the cathedral, are extremely elegant. The inhabitants are Roman Catholics, as are those of the whole canton. The bishop of Laufanne, called here the bishop of Friburg, resides in this city. He is appointed by the pope, usually at the recommendation of the French court; and his revenues, including a small pension from France, and from the abbey of Hauterive, of which he was abbot, amount to about 4000l. per annum. His diocese extends over the whole canton, and part of that of Soleure. In all his acts and deeds he signs himself bishop and count of Laufanne, and prince of the German empire. The sovereign power resides in the great council of two hundred; comprising the two advoyers, the chancellor, the grand sautier, the senate or little council of twenty-four, the sixty, from which body are chosen the bannerets and principal magistrates, and the remaining hundred and twelve members, who are simply denominated burghers."

FRIBURG, *the canton of*, one of the 13 republics of Switzerland. It is surrounded on all sides by the canton of Bern. The land is fertile in corn, fruits, and pastures; and it is said the canton can send 18,000 men into the field. This canton is entirely Catholic.

FRICASSEE, a dish or mess hastily dressed in a frying pan, and seasoned with butter, oil, or the like. The word is French, formed of the Latin *frixatura*, "frying." Others will have fricassee formed in imitation of the noise made by butter, or other fat, when melted in the pan. We say a fricassee of pullets,

rabbits, of tench, of tripe, of frogs, of eggs, of peas, &c.

FRICENTI, an episcopal town of Italy, in the kingdom of Naples, and in the farther principato, near the river Tripalto, in E. Long. 14. 13. N. Lat. 40. 59.

FRICITION, the act of rubbing or grating the surface of one body against that of another, called also *attrition*. The phenomena arising upon the friction of divers bodies, under different circumstances, are very numerous and considerable. Mr Hawksbee gives us a number of experiments of this kind; particularly of the attrition or friction of glass, under various circumstances, the result of which was, that it yielded light and became electrical. All bodies by friction produce heat; many of them emit light; particularly a cat's back, sugar, beaten sulphur, mercury, sea water, gold, copper, &c. but, above all, diamonds, which, when briskly rubbed against glass, gold, or the like, yield a light equal to that of a live coal when blowed by the bellows. See ELECTRICS and ELECTRICITY.

FRICITION, in *Mechanics*, denotes the resistance a moving body meets with from the surface on which it moves. Friction arises from the roughness or asperity of the surface of the body moved on, and that of the body moving: for such surfaces consisting alternately of eminences and cavities, either the eminences of the one must be raised over those of the other, or they must be both broke and worn off; but neither can happen without motion, nor can motion be produced without a force impressed. Hence, the force applied to move the body is either wholly or partly spent on this effect; and consequently there arises a resistance or friction, which will be greater, *ceteris paribus*, as the eminences are the greater and the substance the harder: and as the body, by continual friction, becomes more and more polished, the friction diminishes. See MECHANICS.

FRICITION, in *Medicine and Surgery*, denotes the act of rubbing a diseased part with oils, unguents, or other matters, in order to ease, relieve, and cure it. Frictions are much used of late in venereal cases. They prefer the applying of mercury externally by way of friction, to that of giving it internally, to raise a salivation.

There are also frictions with the flesh brush, a linen cloth, or the hand only. These frictions are a sort of exercise which contributes greatly to health; as they excite and stir up the natural warmth, divert defluxions, promote perspiration, open the pores of the skin, and carry off stagnant humours.

The flesh brush (Dr Cheyne observes) is an exercise extremely useful for promoting a full and free perspiration and circulation. Every body knows the effect of currying horses; that it makes them sleek, gay, lively, and active; so as even to be judged equivalent to half the feeding. This it can no otherwise effect, but by assisting nature to throw off the recrements of the juices, which stop the free circulation, and, by constant friction, irritation, and stimulation, to bring the blood and spirits to the parts most distant from the seat of heat and motion; and so plump up the superficial muscles. And the same effect it would have in other creatures, and man himself, if managed in the same manner, and with the same care and regularity.

Persons,

Fricenti,  
Friction.

Friday  
||  
Friendly  
Islands.

Persons, therefore, of weak nerves and sedentary lives, would do well to supply the want of other exercise with spending half an hour, morning and night, in currying and rubbing their whole body, especially their limbs, with a flesh brush. But this means of health is most advantageously used when the *prima vie* are most empty.

FRIDAY, the sixth day of the week; so named of *Freya*, a Saxon deity. By the Romans it was called *dies Veneris*. See *FREA*.

*Good-FRIDAY*. See *Good-Friday*.

FRIDSTOL, mentioned, in our ancient writers, among the immunities granted to churches, signifies a seat, chair, or place of peace and security, where criminals might find safety and protection: of these there were many in England; but the most famous were that at Beverly, and that in St Peter's church at York, granted by charter of King Henry I.

FRIEDENSHUETTEN, a Moravian settlement whose name signifies *tents of peace*, situated on the Susquehannah river in Pennsylvania, about 24 miles below Tioga point, which owed its origin to the united brethren, in the year 1765. At that period it contained 13 huts belonging to the Indians, besides 40 houses constructed after the European manner, and a very neat chapel.

FRIENDLY ISLANDS, a cluster of islands in the Pacific ocean, so named by Captain Cook in the year 1773, on account of the friendship which appeared to subsist among the inhabitants, and from their courteous behaviour to strangers. Abel Jansen Tasman, an eminent Dutch navigator, first touched here in 1643, and gave names to the principal islands. Captain Cook laboriously explored the whole cluster, which he found to consist of more than 60. The three islands which Tasman saw he named *New Amsterdam*, *Rotterdam*, and *Middleburgh*. The first is the largest, and extends about 21 miles from east to west, and about 13 from north to south. These islands are inhabited by a race of Indians, who cultivate the earth with great industry. The island of Amsterdam is intersected by a straight and pleasant road, with fruit trees on each side, which provide shade from the scorching heat of the sun. The chief islands are Annamooka, Tongataboo (the residence of the sovereign and the chiefs), Lefooga, and Eooa. Lefooga is about seven miles long, and in some places not above two or three broad. It is in many respects superior to Annamooka. The plantations are both more numerous and more extensive; and enclosed by fences which, running parallel to each other, form fine spacious public roads, which would appear beautiful in countries where rural conveniences have been carried to the greatest perfection. They are, in general highly cultivated, and well stocked with the several roots and fruits which these islands produce; and Captain Cook endeavoured to add to their number by planting Indian corn, and the seeds of melons, pumpkins, and the like. Eooa, when viewed from the ship at anchor, formed one of the most beautiful prospects in nature, and very different from the others of the Friendly Isles; which being low and perfectly level, exhibit nothing to the eye but the trees which cover them: whereas here, the land rising gently to a considerable height, presents us with an extensive prospect, where groves of trees are only interspersed at

irregular distances, in beautiful disorder, and all the rest is covered with grass, except near the shores, where it is entirely covered with fruit and other trees; amongst which are the habitations of the natives. In order to have a view of as great a part of the island as possible, Captain Cook and some of his officers walked up to the highest point of the island. From this place they had a view of almost the whole island, which consisted of beautiful meadows of prodigious extent, adorned with tufts of trees, and intermixed with plantations. 'While I was surveying this delightful prospect (says Captain Cook), I could not help flattering myself with the pleasing idea that some future navigator may, from the same station, behold these meadows stocked with cattle, brought to these islands by the ships of England; and that the completion of this single benevolent purpose, independent of all other considerations, would sufficiently mark to posterity, that our voyages had not been useless to the general interests of humanity. 'The next morning,' says our benevolent commander, 'I planted a pine apple, and sowed the seeds of melons and other vegetables in Taofa's plantation. I had indeed some encouragement to flatter myself that my endeavours of this kind also would not be fruitless; as I had this day a dish of turnips served up at my dinner, which was the produce of seeds I left here in my former voyage.'

The natives of these islands seldom exceed the common stature; but are very strong and well made, especially as to their limbs. They are generally broad about the shoulders; and though the muscular disposition of the men, which seems a consequence of much action, rather conveys the appearance of strength than of beauty, there are several to be seen who are really handsome. The women are not so much distinguished from the men by their features as by their general form, which is for the most part destitute of that strong fleshy firmness that appears in the latter. The features of some are so delicate, as not only to be a true index of their sex, but to lay claim to a considerable share of beauty and expression: for the bodies and limbs of most of the females are well proportioned; and some absolutely perfect models of a beautiful figure. But the most remarkable distinction in the women is the uncommon smallness and delicacy of their fingers, which may be put in competition with the finest in Europe. The general colour is a cast deeper than the copper brown; but several of the men and women have a true olive complexion; and some of the last are even a great deal fairer. Their countenances very remarkably express the abundant mildness or good nature which they possess; and are entirely free from that savage keenness which marks nations in a barbarous state. They are frank, cheerful, and good natured.

There are, upon the whole, few natural defects or deformities to be found amongst these people. The most common is the tetter or ring worm, that seems to affect almost one half of them, and leaves whitish serpentine marks everywhere behind it; but this is of less consequence than another which is very frequent, and appears on every part of the body. Captain Cook had the mortification to learn that all the care he took when he first visited these islands, to prevent the venereal disease from being communicated to the inhabitants,

Friendly  
Islands.

Friendly  
Islands.

tants, had proved ineffectual. What is extraordinary, they do not seem to regard it much; and as there appeared few signs of its destroying effects, probably the climate, and the way of living of these people, greatly abated its virulence. There are two other complaints frequent amongst them; one of which is an indolent firm swelling, that affects the legs and arms, and increases them to an extraordinary size in their whole length. The other is a tumor of the same sort in the testicles, which sometimes exceeds the size of the two fists. But in other respects they may be considered as uncommonly healthy.

Their hair is in general straight, thick, and strong, though a few have it bushy or frizzled. The natural colour is black; but the greatest part of the men, and some of the women, have it stained of a brown or purple colour, and a few of an orange cast. They wear it variously cut. Some have it cut off on one side of the head only; others have it entirely cut off except a single lock; the women in general wear it short. The men have their beards cut short; and both men and women strip the hair from the armpits. The men are stained from about the middle of the belly to about half way down the thighs with a deep blue colour. The women have only a few small lines or spots thus imprinted on the inside of their hands. Their kings, as a mark of distinction, are exempted from this custom.

The men are all circumcised, or rather supercised, as the operation consists in cutting off only a small piece of the foreskin at the upper part: which by that means is rendered incapable ever after of covering the glans. This is all they aim at, as they say the operation is practised from a notion of cleanliness.

The dress of both men and women is the same: and consists of a piece of cloth or matting (but mostly the former) about two yards wide and two and a half long: at least so long as to go once and a half round the waist, to which it is confined by a girdle or cord. It is double before, and hangs down like a petticoat, as low as the middle of the leg. The upper part of the garment above the girdle is plaited into several folds; so that, when unfolded, there is cloth sufficient to draw up and wrap round the shoulders; which is very seldom done. The inferior part are satisfied with small pieces; and very often wear nothing but a covering made of leaves of plants, or the maro, which is a narrow piece of cloth or matting like a sash. This they pass between the thighs and wrap round the waist; but the use of it is chiefly confined to the men. The ornaments worn by both sexes are necklaces, made of the fruit of the pandanus, and various sweet smelling flowers, which go under the general name of *kahulla*. Others are composed of small shells, the wing and leg-bones of birds, sharks-teeth, and other things; all which hang loose upon the breast; rings of tortoise shell on the fingers; and a number of these joined together as bracelets on the wrists. The lobes of the ears (though most frequently only one), are sometimes perforated with two holes, in which they wear cylindrical bits of ivory about three inches long.

Cleanliness induces them to bathe in the ponds, which seem to serve for no other purpose. They are sensible that salt water hurts their skin; and when necessity obliges them to bathe in the sea, they commonly have some cocoa nutshells filled with fresh water poured over

them to wash it off. People of superior rank use cocoa nut oil, which improves the appearance of the skin very much.

The employment of the women is of the easy kind, and, for the most part, such as may be executed in the house. The manufacturing their cloth is wholly confined to their care; as is also that of their mats, which are esteemed both for their texture and their beauty. There are many other articles of less note that employ the spare time of their females; as combs, of which they make vast numbers, and little baskets with small beads; but all finished with such neatness and taste in the disposition of the various parts, that a stranger cannot help admiring their assiduity and dexterity.

The province allotted to the men, as might be expected, is far more laborious and extensive than that of the women. Agriculture, architecture, boat building, fishing, and other things that relate to navigation, are the objects of their care. Cultivated roots and fruits being their principal support, this requires their constant attention to agriculture, which they pursue very diligently, and seem to have brought almost to as great perfection as circumstances will permit. In planting the plantains and yams, they observe so much exactness, that, which ever way you look, the rows present themselves regular and complete. The cocoa nut and bread fruit trees are scattered about without any order, and seem to give them no trouble after they have attained a certain height.

The houses of the lower people are poor huts, and very small; those of the better sort are larger and more comfortable. The dimensions of one of a middling size are about 30 feet long, 20 broad, and 12 high. Their house is, properly speaking, a thatched roof or shed, supported by posts and rafters, disposed in a very judicious manner. The floor is raised with earth smoothed, and covered with strong thick matting, and kept very clean. A thick strong mat, about two and a half or three feet broad, bent into the form of a semicircle, and set upon its edge, with the ends touching the side of the house, in shape resembling the fender of a fire hearth, encloses a space for the master and mistress of the family to sleep in. The rest of the family sleep upon the floor, wherever they please to lie down; the unmarried men and women apart from each other: Or if the family be large, there are small huts adjoining, to which the servants retire in the night; so that privacy is as much observed here as one could expect. The clothes that they wear in the day serve for their covering in the night. Their whole furniture consists of a bowl or two, in which they make kava; a few gourds; cocoa nut shells; and some small wooden stools, which serve them for pillows.

They display much ingenuity in the building of their canoes, as well as in the navigating them.

The only tools which they use to construct them, which are very dexterously made, are hatchets, or rather thick adzes, of a smooth black stone that abounds at Toofoa; augres, made of sharks teeth, fixed on small handles, and rasps of a rough skin of a fish, fastened on flat pieces of wood, thinner on one side, which also have handles. The cordage is made from the fibres of the cocoa nut husk, which, though not more than nine or ten inches long, they plait, about the size of

Friendly  
Islands.

Friendly  
Islands.

a quill, or less, to any length that they please, and roll it up in balls, from which the larger ropes are made by twisting several of these together. The lines that they fish with are as strong and even as the best cord we make, resembling it almost in every respect. Their other fishing implements are large and small hooks made of pearl shell. Their weapons are clubs of different sorts, (in the ornamenting of which they spend much time), spears and darts. They have also bows and arrows; but these seemed to be designed only for amusement, such as shooting at birds, and not for military purposes. The stools are about two feet long, but only four or five inches high, and near four broad, bending downward in the middle, with four strong legs, and circular feet; the whole made of one piece of black or brown wood, neatly polished, and sometimes inlaid with bits of ivory.

Yams, plantains, and cocoa nuts, compose the greatest part of their vegetable diet. Of their animal food, the chief articles are, hogs, fowls, fish, and all sorts of shell fish; but the lower people eat rats. The two first vegetable articles, with bread fruit, are what may be called the basis of their food, at different times of the year, with fish and shell fish; for hogs, fowls, and turtle, seem only to be occasional dainties, reserved for their chiefs. Their food is generally dressed by baking, and they have the art of making, from different kinds of fruit, several dishes which most of us esteemed very good. The generality of them lay their victuals upon the first leaf they meet with, however dirty it may be; but when food is served up to the chiefs, it is commonly laid upon green plantain leaves. The women are not excluded from eating with the men; but there are certain ranks or orders amongst them that can neither eat nor drink together. This distinction begins with the king; but where it ends could not be learnt. They seem to have no set time for meals. They go to bed as soon as it is dark, and rise with the dawn in the morning.

Their private diversions are chiefly singing, dancing, and music performed by the women. The dancing of the men has a thousand different motions with the hands, to which we are entire strangers; and they are performed with an ease and grace which are not to be described but by those who have seen them.

Whether their marriages be made lasting by any kind of solemn contract, our voyagers could not determine with precision; but it appeared that the bulk of the people satisfied themselves with one wife. The chiefs, however, have commonly several women, though it appeared as if one only was looked upon as the mistress of the family.

When any person of consequence dies, his body is washed and decorated by some woman or women, who are appointed on the occasion; and these women are not by their customs, to touch any food with their hands for many months afterwards; and it is remarkable, that the length of the time they are thus proscribed, is the greater in proportion to the rank of the chief whom they had washed.

The concern of these people for the dead is most extraordinary. They beat their teeth with stones, strike a shark's tooth into the head until the blood flows in streams, and thrust spears into the inner part of the thigh, into their sides below the armpits, and

through the cheeks into the mouth. All these operations convey an idea of such rigorous discipline, as must require either an uncommon degree of affection, or the grossest superstition, to exact. It should be observed, however, that the more painful operations are only practised on account of the death of those most nearly connected.

Their long and general mourning proves, that they consider death as a very great evil. And this is confirmed by a very odd custom which they practise to avert it. They suppose that the Deity will accept of the little finger, as a sort of sacrifice efficacious enough to procure the recovery of their health. They cut it off with one of their stone hatchets. There appeared scarcely one in ten of them who was not thus mutilated in one or both hands. According to Captain King, it is common also for the inferior people to cut off a joint of their little finger on account of the sickness of the chiefs to whom they belong.

They seem to have little conception of future punishment. They believe, however, that they are justly punished upon earth; and consequently use every method to render their divinities propitious. The Supreme Author of all things they call *Kallafootonga*; who, they say, is a female residing in the sky, and directing the thunder, wind, rain, and in general all the changes of weather. They believe that when she is angry with them, the productions of the earth are blasted; that many things are destroyed by lightning; and that they themselves are afflicted with sickness and death as well as their hogs and other animals. When this anger abates, they suppose that every thing is restored to its natural order. They also admit a plurality of deities, though all inferior to *Kallafootonga*. They have less absurd sentiments about the immateriality and the immortality of the soul. They call it *life*, the living principle; or, what is more agreeable to their notions of it, *Otooa*; that is, a divinity or invisible being.

Of the nature of their government no more is known than the general outline. According to the information received, the power of the king is unlimited, and the life and property of the subject are at his disposal; and instances enough were seen to prove that the lower order of people have no property, nor safety for their persons, but at the will of the chiefs to whom they respectively belong. When any one wants to speak with the king or chief, he advances and sits down before him with his legs across; which is a posture to which they are so much accustomed, that any other mode of sitting is disagreeable to them. To speak to the king standing would be accounted here as a striking mark of rudeness.

Though some of the more potent chiefs may vie with the king in point of actual possessions, they fall very short in rank and in certain marks of respect, which the collective body have agreed to pay the monarch. It is a particular privilege annexed to his sovereignty, not to be punctured nor circumcised, as all his subjects are. Whenever he walks out, every one whom he meets must sit down till he has passed. No one is allowed to be over his head; on the contrary all must come under his feet; for there cannot be a greater outward mark of submission than that which is paid to the sovereign and other great people of these islands

Friendly  
Islands.

**Friendship.** by their inferiors. The method is this: the person who is to pay obeisance squats down before the chief, and bows the head to the sole of his foot; which, when he sits, is so placed that it cannot easily be come at; and having tapped or touched it with the under and upper side of the fingers of both hands, he rises up and retires. The hands, after this application of them to the chief's feet, are in some cases rendered useless for a time; for, until they be washed, they must not touch any kind of food. When the hands are in this state, they call it *taboo rema*. *Taboo*, in general, signifies "forbidden," and *rema* is their word for "hand." Their great men are fond of a singular piece of luxury; which is, to have women sit beside them all night, and beat on different parts of their body until they go to sleep; after which they relax a little of their labour, unless they appear likely to awake; in which case they redouble their drumming until they are again fast asleep.

1  
Definition  
of friend-  
ship.

FRIENDSHIP may be defined, a mutual attachment subsisting between two persons: and arising, not merely from the general principle of benevolence, from emotions of gratitude for favours received, from views of interest, or from instinctive affection or animal passion; but from an opinion entertained by each of them, that the other is adorned with some amiable or respectable qualities.

2  
Illustration  
of the above  
definition.

The object of the general principle of benevolence is *mankind*, not any particular individual. Gratitude regards the person from whom he who feels its emotions has received a favour, whether that person be a virtuous or vicious, a respectable or a contemptible, character: it prompts the person obliged to make a suitable return to his benefactor, but not to enter into any particular intimacy with him, merely on account of the favours which he has received. Many connections are formed, and dignified with the name of *friendship*, upon no other principle but the sordid hope which one or perhaps each of the parties entertains of accomplishing some selfish purpose through the assistance of the other: but such a connexion is so base in its nature, and so transitory in its duration, as to render it unnecessary for us to spend time in demonstrating it to be unworthy of the name of friendship. The instinctive affection which a parent entertains for his child, as well as that which the child feels for his parent, seems intended by nature to form an union between the persons thus related to each other: but the union between parents and children, when supported by no other principle but instinct, is different from friendship: it extends no farther than to cause the parent to provide for his child during his helpless years, and the child to look up to his parent for protection and support. We need not mention that appetite which is the foundation of love, and is the provision which nature has made for the continuation of our species. This appetite alone, and unassisted by some nobler principle, cannot give rise to any connexion worthy of an honourable name.

After excluding these principles, we can refer the origin of friendship only to "an opinion entertained by each of the parties between whom it subsists, that the other is adorned with some amiable or respectable qualities." A connexion founded on different principles we cannot honour with the name of friendship;

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but that which flows from this pure source must be noble and virtuous. When two persons of virtue and abilities contemplate each the other's character and conduct, they cannot but view them with complacency and esteem. Habits and actions displaying prudence, fortitude, moderation, integrity, benevolence, and piety, naturally command the approbation of the impartial spectator, and even affect him with delight. But as we are disposed to revisit a landscape the beauties of which we have contemplated with rapture, and read with frequent delight a poem in which genius has faithfully delineated some of the most enchanting scenes or the most interesting events in nature; so we also become desirous to enjoy frequent opportunities of contemplating a character distinguished for eminent abilities and illustrious virtues. The society of such a person is preferred to his who is disgraced by the opposite qualities. Hence, whenever men of truly respectable characters enjoy opportunities of mutual intercourse, an attachment naturally takes place between them; entirely disinterested, and founded solely on the approbation with which the one cannot avoid regarding the conduct of the other. The esteem which the one is thus induced to entertain for the other will lead them to seek frequent opportunities of enjoying each other's society, mutually to ask and listen to advice, to trust their most secret and important purposes to each other's confidence, and to be no less concerned each of them for the other's interest and honour than for his own. This, and this alone, is genuine friendship; founded on virtue, and on that approbation which virtue never fails to command: it is a natural consequence of intercourse between virtuous men.—Where it is once established, it cannot die, while those virtues to which it owes its origin continue to adorn the persons between whom it subsists.

But, perhaps, such a pure and sublime attachment can scarce be expected to exist among beings of so mixed and imperfect a character as mankind. The wise man of the ancient Stoics, or the Christian who fully obeys the precepts and follows the steps of his Saviour, might be capable of it; but, unfortunately, humanity never reaches such perfection. Virtue and vice are so blended together in every human character, that while none is so worthless as to excite no other sentiment but abhorrence, there is scarcely any so uniformly virtuous as to command unvaried esteem or admiration. Even the purest and most disinterested of those friendships which prevail among men, owe their origin to other meaner principles, as well as to that which has been mentioned as the principle of genuine friendship. There are certain circumstances favourable, and others adverse, to the formation and continuance of friendship. These, making amends, as it were, for the imperfection of human virtue and human knowledge, lead men to overlook each other's faults and follies, and to unite in the bonds of friendship; a friendship which, though less solid, less generous, and less lasting, than that which we have above described, is yet attended with effects favourable to the happiness of individuals, and to the interests of society in general.

*Equality of age* is favourable to friendship. Infancy, manhood, and old age, differ so considerably from each other in their views, passions, and pursuits, that the man will seldom be disposed to associate with the boy.

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Friendship. or the *youth*, in preference to one who has had equal experience in the world with himself; and the *old man* will generally wish for the company of some ancient friend with whom he may speak of "the days of former years."

They who cultivate the *same trade or profession*, enjoy opportunities favourable to the formation of friendship. Being engaged among the same objects, and acquiring skill in the same arts, their knowledge, their sentiments, and habits, are nearly the same: they cannot avoid frequent intercourse with each other; they naturally enter into each other's prejudices and views, and therefore cannot but take pleasure in each other's conversation and society. Physicians, lawyers, and divines, form each of them a distinct body; and the members of each of those bodies associate with one another more readily than with men of a different profession. It is related by Swift or Addison, that, in the beginning of the present century, there was a particular coffeehouse in London which clergymen used to frequent, and that a son of the church scarcely ever ventured to show his head in any other. In the days of Dryden, poets, and all who pretended to poetical genius or taste, resorted to *Will's*, as to another Parnassus, to sip cups of coffee, and now and then perhaps to drink of some more inspiring liquor, instead of the waters of the fountain Hippocrene.

*Equality of rank and fortune* is also favourable to friendship. Seldom will a man of fortune be able to gain the sincere friendship of any of his dependants. Though he treat them with the most obliging condescension, and load them with favours; yet still, either the sense of dependence, or resentment for imaginary injuries, or impatience of the debt of gratitude, or some other similar reason, will be likely to prevent them from regarding him with cordial affection. Servants are but rarely faithful even to the most indulgent master: Shakespeare's old Adam is a very amiable but a very uncommon character. Indeed you may as soon expect to find the virtues and the generous courage of the chevalier Bayard among our military men of the present age, as to find an old Adam among the present race of servants. It is no less vain for the poor man to hope to acquire a sincere friend among his superiors in rank and fortune. The superior is generally disposed to exact such profound deference, such gratitude, such respect, even from the inferior whom he admits into his intimacy, that the equal amicable intercourse of friendship can scarce ever take place between them. Among the letters of the younger Pliny, we are pleased to find many monuments of the goodness of his heart. A number of his epistles addressed to friends in meaner circumstances appear to have been accompanied with very considerable presents, which by his opulence he was well enabled to bestow. But he takes care to let those humble friends know the weight of the obligations which he conferred, and the vastness of the debt of gratitude which they owed to him, in such plain, nay even indelicate terms, that though they might receive his favours with gratitude and regard him as their benefactor, yet they could never regard him as a man with whom they might cultivate the free easy intercourse of friendship. Some one or other of the Greek writers mentions a singular instance of cordial friendship subsisting between two persons in

unequal circumstances. One of them dying before Friendship. the other, and leaving a wife and daughter to whom he had no fortune nor even means of subsistence to bequeath, enjoined his rich friend, in his will, to take the charge of them on himself, and to support them in a liberal manner: nor did he entreat this from his humanity, but demanded it from his friendship. He had made a sure provision for his family. His rich friend delayed not to comply with his dying injunction. He readily took upon himself the charge of the wife and daughter of his deceased friend, treated them with kindness, and at last divided his whole fortune equally between his own only daughter and the child of his friend. This is an agreeable instance of the power of friendship: but such instances are not to be expected to occur frequently in ordinary life, any more than the Stoic virtue of Cato, or the modest piety of a Nelson.

*Similarity of taste and temper* will generally be found favourable to friendship. Two peevish men, indeed, will not long endure each other's company with much satisfaction; but two persons of mild, humane dispositions will naturally take delight in each other's society and conversation. They who are charmed with the bustle of a gay and active life, avoid the haunts of the indolent and contemplative, and join hand in hand to climb the heights of ambition, or tread the round of amusement and dissipation. Those whom taste leads to cultivate the elegant objects of literature amid the sweets of a rural retirement, to wander through the grove, or recline on the brink of some romantic rill, and peruse the pages of one of those geniuses who have shown themselves able to enlighten the understanding, and to kindle the glow of generous sentiment in the breast;—those children of taste frequently associate in their elegant pursuits. We are pleased to read the correspondence of Pliny and Tacitus, of Locke and Molineux, of Swift and Pope. We rejoice to find, that notwithstanding the rivalry of learning and genius, taste and philosophy have a natural tendency to promote benevolence and friendship among their votaries. The bustle of the world must be acknowledged to be generally unfavourable to friendship. When the heart is occupied with the fordid objects of ambition, or avarice, or gay dissipation, there is no room left for the pure and generous sentiments of friendship. Interests often interfere, competitions and jealousies arise, fatal to all the sweets of social intercourse. It is in active life that virtue shines with the most brilliant lustre; but seldom, alas! does pure virtue appear in the scenes of active life. How beautifully does the character of Atticus shine amid the characters of his illustrious cotemporaries! *ut Luna inter minores ignes!* Sylla, Cæsar, Cicero, Brutus, Antony, and Augustus, were eminent for their abilities and virtues; but being engaged in the bustling pursuits of ambition, they seem to have been strangers to the calm and elegant happiness which Atticus enjoyed. Though those of them who were cotemporaries could not avoid perceiving and admiring each other's merits, yet never did cordial friendship subsist between them. Even Cicero, who could so well define the duties and describe the happiness of friendship, yet appears to have but seldom enjoyed its delights. But Atticus, who constantly declined entering the scenes of public life,

Friendship. life, experienced such happiness in a private condition, as must have been more than an ample reward to him for shunning all the splendid pursuits of ambition. He was the disinterested friend of all those eminent men, and enjoyed their esteem and friendship. So upright was his character, so amiable his manners, that they who were mortal enemies to each other, yet agreed in cultivating at the same time the friendship of Atticus. None of them appear to have hated him on account of his attachment to their enemies: and while he was the friend of Cicero and Octavius, he was at the same time the protector of the wife of Antony. Perhaps the virtue of such a character may be regarded as problematical. It may be alleged, that while such inveterate dissensions arose among his friends, the neutrality which he preserved was inconsistent with integrity. He has indeed been rashly branded by some writers as an avaricious time-serving man. But no evidence appears to justify their assertions; on the contrary, the most respectable testimony, the nicest scrutiny, exhibit his character in those amiable colours in which we have chosen to view it. Atticus is indeed no ordinary character. The general principles of human nature, and the examples which most frequently occur in the world, naturally suggest a suspicion, that had he been a man of genuine integrity, he must have observed a different tenor of conduct. But there is one circumstance which tends to strengthen considerably the respectable testimony of his cotemporaries in his behalf. In Cato, in Epictetus, in the philosopher, who, while suffering under all the violence of an acute distemper, maintained to Pompey that pain was no evil, we have instances of the tenets of philosophy opposing and repressing the principles of nature. We know how often religious enthusiasm has produced the same effects. But Atticus was the votary of the mild and elegant philosophy of Epicurus; which, though there appears to have been a palpable inconsistency between its principles and the superstructure raised upon them, was yet in its general tendency not unfriendly to virtue, and recommended to its votaries that calm and innocent mode of life which Atticus cultivated. There is no small resemblance between the character of Atticus and that of Epicurus, the founder of this philosophy. The same tenets seem to have produced the same effects on both; and we will venture to pronounce so high an encomium on the Epicurean philosophy, as to assert, that it chiefly contributed to form the character of this amiable Roman.

4  
Sex.

We know not if we may venture to affirm, that friendships are most naturally contracted among persons of the same sex. We believe they often are. If similarity of taste, of sentiments, of manners, be favourable to friendship, this cannot but happen. The distinction which nature has established between the two sexes, the new distinctions which are introduced by the different views with which their education is conducted, and the different duties which they are called to perform in life, have all a tendency to dispose men and women to enter into habits of intimacy with persons of their own sex rather than with the other. Young girls have their peculiar amusements, as boys have theirs: they knit and sew together, consult each other concerning their dress, and associate at their idle hours. Young men, in the same manner,

prefer the society of their equals of the same sex till such time as their hearts begin to feel the impulse of a new passion. This soft passion, indeed, causes the youth to prefer the company of his favourite maid to that of his dearest companion; and it perhaps causes the virgin to view her female companions with a jealous eye, while she fears that their charms may win the heart of the youth whose fond regard she herself wishes to engage. But the fears, the jealousies, the timidity, nay even the fondness of love, are incompatible with friendship. Though the lover and his mistress be dear to each other, yet the free confidence of friendship cannot take place between them. They dare not yet venture to trust to each other all the secrets of their hearts. But if their mutual wishes be crowned by marriage; then, indeed, as their interests become the same, if the transports of love are not succeeded by the calm delights and the free confidence of friendship, they must be unhappy. The marriage state is peculiarly favourable to friendship. Persons whose relations to each other are more remote, will often find circumstances concurring to induce them to cultivate a friendly intercourse with each other. But here indifference is almost impossible. It is absolutely requisite, in order that they may not render each other miserable, that the husband and the wife be united in the bonds of friendship. This seems even to be one of the great laws of nature, by means of which provision is made for the happiness and the preservation of society. But though the wife and the husband be particularly attached to each other by the ties of friendship no less than by those of love, yet their mutual affection will not detach them from the rest of the world; their relations to the society around them will still remain; the husband will still cultivate the intimacy of those of his own sex, and the wife will still choose female in preference to male friends. Upon even a superficial view of life, we find reason to declare without hesitation, that acquaintance and intimacy most naturally take place among persons of the same sex. The husband and the wife are more than friends; they are *one bone and one flesh*. It has been sometimes slightly insinuated, and sometimes more openly asserted, by people who have but carelessly viewed the phenomena of social life, or have been disposed to cavil against the fair sex, that women are incapable of sincerity or constancy in friendship with each other. But it seems unnecessary to offer a serious refutation of this cavil. Neither is the general character of the female sex so inferior to that of the male, nor are their circumstances so very different from ours, as to render them totally incapable of those virtues which are necessary to establish and support mutual friendship. They are in general possessed of more exquisite sensibility, nicer delicacy of taste, and a juster sense of propriety, than we: nor are they destitute of generosity, fidelity, and firmness. But such qualities are peculiarly favourable to friendship; they communicate a certain charm to the manners of the person who is adorned with them; they render the heart susceptible of generous disinterested attachment; and they elevate the soul above levity, insincerity, and meanness. Competitions and jealousies must no doubt arise now and then even among the most amiable of the female sex, as well as among us. These will preclude or destroy

Friendship. friendship. But the rivalry of beauty, of dress, of fashion, is not oftener fatal to friendship among the fair sex, than the contests of pride, avarice, vanity, and ambition, among their haughty lords. If friendship be ranked among the virtues, it is not less a female than a male virtue.

5  
Relations  
of consan-  
guinity.

The delightful intercourse and intimacy of friendship may be naturally expected to subsist not only between the husband and the wife, but among all who are connected by any of the relations of consanguinity. The power of instinct does not always continue to unite the parent and the child. Its offices are of a temporary nature; but when these are performed, it ceases to operate. During the infancy, the childhood, and even the youth, of his son or daughter, the parent watches over them with fond affection, and labours with anxious assiduity to promote their welfare, for no other reason but because the yearnings of paternal affection draw him towards them. But as they advance farther in life, and become able to care for themselves, it has been so ordered by the wisdom of nature, that the attachment of the parent almost dies away, unless the grateful affection and the merit of his children afford him reason to rejoice over them and bless them. How shocking, how miserable, the condition of that family, whose members are not united by the mutual esteem and confidence of friendship! where the parent views his children with jealousy, shame, indignation, or sorrow: and the children anxiously avoid the society of their parents! Their interests are so nearly connected; they have so many occasions for acting in concert, and must live so long together; that we may almost venture to affirm, that the parent and the child, like the husband and the wife, must be either friends or enemies. But the ties of nature, the influence of habit, sentiments, and circumstances, all concur to form between them the sacred connexion of friendship. Brothers and sisters, the children of the same parents, and for a while members of the same family, may be expected to regard each other through life with kindness and esteem; and these we would rather choose to attribute to a rational attachment, founded on certain principles, than to a blind instinctive affection.

These are a few of the distinctions and relations in society which appear most favourable to friendship.— Were we to descend to minuter particulars, we might enumerate all the varieties of taste, of temper, and of circumstances, by which mankind are distinguished from one another, and distributed into particular classes. But this would be too tedious, and does not appear necessary.

6  
Laws of  
friendship.

As friendship is an attachment which takes place between certain human characters when placed in certain circumstances, there must therefore be laws for supporting the attachment and regulating the intercourse of friendship. Mutual esteem is the basis on which true friendship is established; and the intercourse of friendship ought surely to be connected in such a manner that this foundation be not injured. Friendship must diminish neither our benevolence nor prudence: it must not seduce us from an honest attention to our private interest, nor contract our social affections.

*Sincerity* may be considered as the first law of friendship. Artifice and hypocrisy are inimical to all social

intercourse. Between the deceitful and the honest, friendship can never subsist. For a while, the one may impose on the other; unsuspecting integrity may not be able to see through the mask under which the hideous features of selfish cunning are veiled; but the deceitful friend must ever be a stranger to the delightful sentiments of genuine friendship. To enjoy these, your virtues must be sincere, your affection for the person whom you call your friend unfeigned; in communicating to each other your sentiments, in offering and listening to mutual advice, in joining to prosecute the same designs, or share in the same amusements, candid sincerity must still be observed between you. Attempt not to persuade each other, that your mutual affection is more ardent, or your mutual esteem more profound, than it really is. If the sentiments or opinions which the one expresses appear to the other improper or ill-founded, let not a false delicacy prevent him from declaring his reasons against them; let him not applaud where, if he were sincere, he must blame. Join not even your friend in an undertaking which you secretly dislike, or an amusement insufferably disagreeable to you. You cannot, consistently with sincerity and candour: and you will soon begin to think the blessings of friendship too dear, when bought at the price of such sacrifices.

But though sincerity is to be faithfully observed in the intercourse of friendship; yet the harshness of contradiction must be carefully avoided. Those obliging manners which are so agreeable in an acquaintance or casual companion, are still more so in a friend. If they are necessary to recommend the advantages of social intercourse in general to the members of society, they are no less necessary to communicate a charm to the intercourse of friendship. People often think themselves entitled to behave to those whom they call their friends, and whose interests they profess to regard as their own, with harshness, negligence, and indiscreet familiarity; but nothing can be more fatal to friendship. It is a well known maxim, established by general and uniform experience, that *too much familiarity occasions mutual contempt*. And indeed how can it be otherwise? Mild obliging manners are understood as the natural and genuine expressions of kindness and affection: boisterous rudeness, petulance, and neglect, are naturally considered as expressive of opposite sentiments. But if friendship assume the tone, the carriage and the language of enmity or indifference, it must soon lose all its native charms and advantages. Let the friend, as well as the casual companion, when he finds reason to disapprove of the sentiments and conduct, or to dissent from the opinions of his friend, express himself in the gentlest terms, with honesty and sincerity, but without carelessness or harshness. Let no frequency of intercourse nor union of interests ever tempt to careless or contemptuous familiarity. Stiff and unmeaning ceremony may be banished; but ease, and delicacy, and respectful deference, and obliging attention, must supply its room. Much of the unhappiness of the marriage state, and much of the mutual uneasiness which arises among those who are related by the endearing ties of consanguinity, is occasioned by the parties who are thus closely connected, thinking it unnecessary to observe the ordinary rules of good breeding in their mutual intercourse. Even kindness

puts

*Friendship* puts on a disgusting garb, and assumes a harsh aspect. But mutual kindness cannot there long subsist. Home, which ought to be a sanctuary to shelter from the anxieties and ills of life, a little paradise where those pure and innocent pleasures might be enjoyed which afford the most genuine happiness, and which are not to be tasted in the bustle of the busy and the dissipation of the gay world; home thus becomes a place of torment, which is never entered but with pain and unwillingness; and from which the son, the daughter, the husband, and the wife, eagerly seize every opportunity to escape.

*Mutual confidence* is the very soul of friendship. If friendship be rightly defined to be a mutual affection founded on mutual esteem, those who are united in the bonds of friendship cannot but repose mutual confidence in each other. Am I conscious of none but generous worthy sentiments, and none but upright honest intentions? I readily disclose all the secrets of my soul to him whom I regard as capable only of similar designs and similar sentiments. But it may be asked, how far the confidence of friendship ought to be carried? Must I reveal to my friend all my sentiments, opinions, and designs? Must I communicate to one friend the secrets which have been intrusted to me by another? Or must I rather observe the most suspicious caution in my intercourse with my friends, remembering that he who is now my friend may one day become my enemy? It seems most prudent to observe a medium between suspicious caution and unlimited confidence. Were human virtue perfect, and were there no instances of friends ever becoming enemies, those who regard each other with friendly affection might very reasonably be required to set no bounds to their mutual confidence. But as this is far from being the case, different measures are to be observed. Contract no friendships, if you think it necessary to treat a friend with the same reserve as an enemy. Yet venture not to disclose to your friend all the foolish or evil designs which the wantonness of imagination may seduce you to form. When you feel the emotions of pride, of vanity, or of any evil passion, if you are able to repress them by the strength of reason and conscience, it seems unnecessary for you to tell the struggle, or to boast of the victory. If, at any former period of life, you have been so unfortunate as to commit actions which you cannot now recollect without shame and contrition, there can be no reason why you may not, as far as possible, bury the remembrance of them in your own breast. In short, not to become tedious by descending to minute particulars; the laws of friendship do not require friends to unbosom themselves to each other any farther than is necessary—to give them just ideas of each other's character and temper,—to enable them to be serviceable to each other in the prosecution of honest designs,—and to afford each of them proper opportunities of exciting the other to virtue and wisdom, and of interposing his influence to preserve him from vice and folly. Whatever is necessary for any of these purposes ought to be mutually communicated; whatever is not, may be concealed without violating the laws of friendship. As mutual esteem is the foundation of friendship, and as human friendships are not always lasting, you ought not to pour into the ear of your friend all the inpertinences

which you may happen to conceive, nor even all the projects which may float in your imagination: but as much of the felicity of friendship arises from the mutual confidence to which it affords room, call not any man your friend in whose presence you find it proper to observe the same suspicious caution as if he were your enemy. The ancients, who talked of friendship with enthusiasm as one of the most elevated among the virtues, required still a closer union and a more disinterested attachment among friends than we dare venture to insist upon. The mutual duties which they have described as incumbent on friends, appear somewhat extravagant. Among other things, some of them have gone so far as to require a degree of mutual confidence which would soon destroy all confidence, and could not fail to counteract all the purposes of friendship: they have required one friend to communicate to another, not only all his own thoughts and purposes, but even those secrets which have been confided to his honour by any other friend. But the evil consequences which would result are easily to be foreseen. Perhaps, like Atticus, you enjoy the friendship of men who are mutual enemies; and by communicating the secrets of the one to the other, you will then become the betrayer of both. Or, though not absolutely enemies, yet those who are *your* friends may happen not to be in habits of friendship with each other; and they may then perhaps not scruple to divulge those secrets of one another which you have imprudently blabbed to them. Indeed, might we suppose all mankind absolutely faultless, and not liable to moral imperfection, we need not fear these bad consequences from unbounded confidence in our friends. But friendship would in such a state of society be unknown: just as in the golden age of the poets there are supposed to have been no distinctions of property. We cannot here forbear dropping an observation, which will readily be acknowledged as just by all who have any tolerable knowledge of the morality of the philosophers of ancient Greece. All their doctrines and precepts appear calculated for a different order of beings than mankind. They glanced carelessly at the phenomena of the moral world; and gleaned a few facts, immediately set themselves to erect systems: From these, however wild and theoretical, they then pretended to deduce laws for the regulation of human conduct; and their rules are generally such as might be expected from the means which they appear to have employed in order to arrive at them. An apology has however been offered for some of them, which, in our opinion, could occur only to superficial observers of human life: It has been alleged in behalf of the Stoics, that their system indeed required more exalted virtue than human nature is capable of attaining; but that, notwithstanding this, it could not fail to produce the happiest effects on the manners and sentiments of its votaries. Instances, too, have been produced in support of this assertion; a Cato, an Epictetus, an Antoninus. When we contemplate a model of perfection beyond what we can hope to reach, say the advocates of the Stoic philosophy, though we despair of attaining, yet we are prompted to aspire after it. Now, the most natural way of reasoning here seems to lead to a very different conclusion. If an object is set before me which I must not hope to obtain, I am unwilling to waste my time and

exhaust

Friendship. exhaust my vigour in the pursuit of it: bid me ascend an inaccessible height, I view the vale below with new fondness. Philosophy, as well as superstition and enthusiasm, might in a few instances triumph over the principles of nature; but was it always equally powerful? Were all the disciples of Zeno, Cato or Epictetus? Have all the monks and anchorites of the Roman church been holy as the founders of their orders? No: The Greek philosophers who infested Rome, and taught those whimsical doctrines which we hear frequently dignified with the name *sublime*, were singularly corrupted and licentious in all their manners. If those of the regular clergy of the church of Rome have been always more pure, they have been cruelly calumniated. Ask, then, only what I am capable of performing: if you demand what is above my strength, I sit still in indolence. In its general tendency, the Stoic philosophy was favourable rather to vice than to virtue.

But we have not yet exhausted all the duties of friendship. We have inculcated sincerity, and mutual respect and obligingness of manners; we have also endeavoured to ascertain what degree of mutual confidence ought to take place between friends. But an important question still remains to be considered: how far is an *union of interests* to take place between friends? Am I to study the interest of my friend in preference to my own? May I lawfully injure others, in order to serve him? Here, too, we must consider the circumstances and the strength of human nature; and let us beware of imposing burdens too heavy to be borne. The greater and more perfect the union which reigns in society, the greater will be its strength and happiness; the closer the union of friends, the more advantages will each of them derive from their union. Where other ties besides those of friendship concur to unite two individuals, their interests will be more closely conjoined than if they were connected by the ties of friendship alone. The order of nature seems here to be,—the husband and wife—the parent and child—brothers and sisters, the offspring of the same parents—friends, connected by the ties of friendship alone. And, if we may presume to guess at the intentions of the Author of nature from what we behold in his works and read in his word, the closest union in society ought to be that between the husband and the wife; their interests are altogether the same; they ought mutually to forego convenience and gratification for each other's sake. The interests of parents and children are somewhat less closely connected; much is due from the one to the other, but somewhat less than in the former relation; their interests may sometimes be separate, but never ought to be opposite. Next come brethren, and other more distant relations; and next, the friend. In these cases, where we suppose the attachment of friendship to operate together with the ties of nature, we perceive that interests are variously united, and various duties are due; scarce in any of them does it appear that the interests of two can become entirely one. Still less can that be expected to happen, where the ties of friendship act not in concert with those of nature. We give up, therefore, all those romantic notions, which some have so earnestly insisted on, of requiring the friend to consider his friend as himself. We cannot expect any two individuals to possess pre-

cisely the same degree of knowledge, to entertain exactly the same sentiments, or to stand in circumstances precisely similar. But till this happen, the interests of two can never be precisely the same. And we will not, therefore, require the friend actually to prefer his friend to himself; nay, we will even allow him to prefer himself to his friend; convinced that such is the design of nature, and that by presuming to counteract the principles of nature we shall be able to serve no useful purpose. But as far as the first principles of human action and the institutions of society permit; we may reasonably require of friends, that they mutually endeavour to contribute each to the other's interest. You will not desert your own family, nor neglect what is absolutely necessary for your own preservation, in order that you may serve a friend. It is not requisite that you be either a Damon or a Pythias. Away with what is romantic; but scruple not to submit to what is natural and reasonable. When your friend needs your direction and advice, freely and honestly give it: does he need more than advice; your active exertions in his behalf? the laws of friendship require you not to refuse them. Is it necessary for him to receive still more substantial assistance? You may even be expected to aid him with your fortune. But remember, that even the amiable principle of benevolence must be subject to the directions of prudence: if incapable of taking care of ourselves, we cannot be expected to contribute to the good of others: society would not be favourable to the happiness of the human race, if every individual studied the general interest so far as to neglect his own. We are not born to be citizens of the world; but Europeans, Britons, Englishmen or Scotchmen. Let every one, then, seek the interest and happiness of his friends with whom he is connected by the laws of friendship alone, in subordination to his own particular interest and happiness, and to the interest and happiness of those with whom he is connected by the ties of nature and the general institutions of society. Engage not in the service of your friend, nor lavish your fortune in his behalf, if by that means you are likely to injure either yourself or your family. Still less will you think it requisite to carry your friendship to such romantic excess as to commit crimes in the service of your friend. The ancients, whose ideas of the nature and duties of friendship were romantic and extravagant, have, some of them, required that a friend should hesitate at no action, however atrociously wicked, by which he can be useful to his friend. Have I been guilty of theft or murder, or any other heinous violation of the laws of morality or the institutions of society: when I am brought to justice for my crime, if you, being my friend, are appointed to sit as my judge, the laws of friendship, say those admirable masters of morality, require that you pronounce me innocent, though convinced of my guilt. But we need not declaim against the absurdity of enjoining such base deeds as duties of friendship. The idea of a connection, the laws of which are inimical to the order of society, must strike with horror every person who thinks of it. Such a connection is the union of a knot of villains, conspiring against the peace, nay even the existence of society.

Such we apprehend to be the nature of rational friendship; such the circumstances in the order of nature

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General  
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Friendship ture and of society which are most favourable to this union; and such the duties, by the performance of which it may be maintained. When founded on these principles, and regulated by these laws, friendship is truly virtuous, and cannot but be highly beneficial to the individuals between whom it subsists, and to the interest of society in general. How delightful to have some person of an amiable and virtuous character in whom you can confide; who will join with you in the prosecution of virtuous designs, or will be ready to call you back when you heedlessly stray into the paths of vice and folly! who will administer to you honest, upright advice; will rejoice in your prosperity, will glory over your virtues, and will be ready to console and relieve you when sinking under the pressure of distress! Must not your connexion with such a person be favourable to your virtue, your interest, and your happiness? When we survey any sublime or beautiful scene in nature, we wish for some person of congenial taste and feelings to participate with us in the noble enjoyment which the prospect affords; when we read any fine piece of composition, the pleasure which we receive from it is more exquisite if others join with us in applauding it. The landscape which we have often surveyed, the poem which we have often read, please us anew, with all the charms of novelty, when we have an opportunity of pointing out their beauties to some person to whom they have been hitherto unknown. Friendship communicates new charms and a more delicate relish to all our most refined and elegant pleasures. It enlivens our joys, it soothes and alleviates our sorrows. What Cicero has said of polite letters and philosophy, may be with still stronger propriety said of friendship. In every condition of life the influence of virtuous friendship is favourable to our welfare and our happiness: in prosperity, in adversity; in the silence and tranquillity of retirement, as well as amid the hurry of business; in the bosom of your family, and when surrounded by your nearest connections, no less than when removed to a strange country. Indeed, whatever advantages society bestows above what are to be enjoyed in a savage state, not less numerous nor less important are those which we may derive from uniting in the bonds of friendship, rather than living in a state of enmity or indifference.

<sup>8</sup> Mistakes in forming friendships, and consequent inconstancy. But though friendship, when founded on mutual esteem, and regulated by the laws of prudence, benevolence, and honesty, be productive of so many happy effects; yet many instances occur in the world, in which connexions dignified with the name of friendship are unfavourable both to the virtue and the happiness of those between whom they subsist. When men associate from views of convenience; when their union is hastily formed without a knowledge of each other's temper and character. when they are drawn together by accident, as when they happen to agree in the pursuits of the same interests or pleasures; when the young and the gay resort together to the haunts of dissipation, and the covetous and ambitious find it convenient to toil in concert for riches and power: on all such occasions, the connexion which is formed and dignified with the name of friendship is unworthy of that honourable appellation. It is not virtuous; it is productive of no happy effects, and is quickly dissolved. He, therefore, who is not incapa-

ble of virtuous friendship, and is desirous of enjoying its advantages, must carefully consider the nature of the connexion which he wishes to form, gain a thorough acquaintance with the character of the person whose esteem and affection he wishes to acquire, and attend to those rules by the observance of which true friendship may be maintained.

Many instances are related, which show what power it is possible for friendship to acquire over the human heart. We need not here repeat the well-known story of Damon and Pythias, whose generous friendship afforded a spectacle which softened even the savage heart of Dionysius. It is known to every school-boy; and after the affecting narrative of Valerius Maximus, has been studiously detailed and commented on by almost every succeeding story-teller or moralist. Addison, in one of his Spectators, gives a beautiful little relation, we know not upon what authority, which finely illustrates the power of both friendship and love. Two male negroes, in one of our West Indian islands, nearly of the same age, and eminent among their fellows in slavery for gracefulness of figure, strength, agility, and dexterity, were also distinguished for their mutual friendship and for their common attachment to a young female negro, who was generally esteemed the most beautiful of her complexion in the whole island. The young female appeared to be equally pleased with both her lovers; and was willing to accept either of them for a husband, provided they could agree between themselves which of them should yield to the pretensions of the other. But here lay the difficulty; for while neither would treacherously supplant, neither of them was willing to yield to his friend. The two youths, therefore, long suffered the severest affliction, while their hearts were torn between love and friendship. At length, when they were no longer able to endure the agony of such a contest, being still unable to repress their passion for their lovely countrywoman, and incapable of violating the laws of friendship,—on a certain day, they both, in company with the object of their ill-fated love, retired into a wood adjoining to the scene of their labours. There, after fondly embracing the maid, calling her by a thousand endearing names, and lamenting their own unhappy fate, they stabbed a knife into her breast; which, while still reeking with her blood, was by each of them in his turn plunged into his own. Her cries reached the people who were at work in the next field: some of them hastening to the spot, found her expiring, and the two youths already dead beside her.

We have introduced this little narrative as a striking instance of the noble effects which naturally result from genuine friendship. Here we see it superior to the force of the most violent of passions. Had the elevated souls of those negro youths been refined and enlightened by culture and education in the principles of morality and true religion, we may reasonably suppose that their friendship would have triumphed over their love, without prompting them to the rash and desperate deed which they committed.

Friendship, thus amiable in its character, thus beneficial in its influence and effects, the theme of unbounded panegyric to the philosophers and moralists of every age, has been said by some respectable modern writers to be inconsistent with the spirit of that holy religion

<sup>9</sup> Relation illustrating the power of friendship over the human heart.

<sup>9</sup> not inconsistent with the spirit of Christianity.

Friendship.

religion which we profess, and which we regard as the revelation of heaven. General benevolence is frequently inculcated through the gospel: "Jesus often earnestly intreated his disciples, "to love one another;" and directed them in what manner to display their mutual love, by telling them, that "whatsoever things they could reasonably wish to receive from others, the same ought they to do to them." The writers of the epistles often enlarge on the topics of charity and brotherly love. But private friendship is nowhere recommended in the code of Christianity. Nay, it is so inconsistent with that universal benevolence which the gospel enjoins, that where the one is recommended and enforced, the other may be understood to be tacitly forbidden. But can that religion be true, or can it be favourable to the happiness of its votaries, which is inimical, nay, which is even not friendly to virtuous friendship? Such are the suggestions of Lord Shaftesbury and Soame Jenyns on this head.

We must grant them, that the system of morals or religion which discourages a connexion so noble in its origin, so amiable in its character, and so beneficial in its influence, as virtuous friendship, is rather unfavourable to the happiness and virtue of its votaries. But we must consider the genius of Christianity with more careful attention, before we suffer ourselves to be persuaded that friendship is inconsistent with it. Universal benevolence is, indeed, inculcated in the gospel: we are required to love our neighbours as ourselves: and our Saviour seems to insinuate, in the story of the humane Samaritan, that we ought to regard as neighbours all our brethren of the human race, however separated from us by any of the distinctions of society. But it would be unfair to conclude from this, that the great Author of the gospel meant to abolish the order of social life, or to oppose the ties of nature. These may still be respected, though the laws of this benevolence be obeyed. The parent is not required to desert his child, in order that he may assist or relieve his neighbour; nor the child to leave his parent to perish under the infirmities of old age, while he hastens to lend assistance to a stranger. The gospel was not intended to dissolve communities, or to abrogate the distinctions of rank. In Jesus, the end of the ceremonial law was accomplished: by him, therefore, that burden of types and ceremonies with which the Jews had been loaded was taken away. But he who abolished the ceremonial law declared, that the obligations of the moral law should be more permanent than heaven or earth: The duties which it enjoined were still to be religiously discharged: The precepts of the gospel were to illustrate and enforce, not to contradict, the institutions of the moral law. The relative duties of parents and children were still to be performed; though men were directed not to confine all their sentiments of benevolence to domestic relations. Jesus, in his conduct, did not set himself to oppose the order of society. In various parts of the New Testament all the social duties are defined and enforced; the mutual duties of parents and children, of husbands and wives, and of masters and servants. The submission of all the members of a community to that power which is vested with the authority of the whole, is also strictly enjoined in the gospel. Jesus, when in his last moments he recommended his mother to the protection of his beloved disciple, chose

to ask *him* to consider *her* as a parent; and directed *her* to expect from *him* the respect and kindness of a son. These facts and observations teach us in what sense to understand that universal benevolence which is inculcated in the gospel. Though we are to love all mankind, yet it is not necessary that all the individuals of the human race share our affection alike. Were we powerful, and wise, and benevolent, as the Deity, such extensive benevolence might be required of us: But our sphere of action and observation is narrow; we cannot extend our acquaintance or influence beyond a very limited circle. Were we to endeavour to be equally useful to all mankind, we should become incapable of being useful to any individual. We cannot become citizens of the world in the sense in which some philosophers have affected to call themselves such, without becoming outcasts from every particular society. A son, a brother, a countryman, a stranger, lie around you, each in circumstances of extreme distress; you pity their misfortunes, and would gladly administer relief; but such is your benevolence, that you feel precisely the same degree of compassion for each of them; you cannot determine to whom you should first stretch out an helping hand; and you therefore stand like that venerable ass of the schoolmen, whose tantalizing situation between two bundles of hay has been so long celebrated and lamented by metaphysicians; and suffer son, and brother, and countryman, and stranger, to perish, without relieving any of them by your kind offices. It is therefore the design of the gospel, that we should submit to the laws of nature, and comply with the institutions of society. First, attend to self-preservation; next, perform the duties of a wife or husband,—a parent,—a child,—a brother,—a citizen—, an individual of the human race. You will do well, indeed, to regard all mankind with benevolence; but your benevolence will be unavailing to the objects of it, if you overlook the distinctions of nature and those institutions which support the union of social life.

But if the spirit of Christianity be not inimical to the institutions and relations of society, neither can it be unfavourable to friendship. If that benevolence which the gospel enjoins admit of any modifications, why not of that particular modification which constitutes private friendship? It is not, indeed, directly enjoined; but neither is it forbidden. It is perfectly consistent with the general tendency and spirit of the gospel system: being favourable to the interests of society, it cannot but be agreeable to our holy religion.

But it is recommended by no direct precept, say those who would represent Christianity as inimical to it; while it has been the favourite theme of the philosophers and moralists of the heathen world.

But why should friendship be recommended by means different from those which the gospel employs for the purpose? Make yourself well acquainted with that admirable system which you so earnestly oppose; you will find that even the duties of private friendship are better explained and more powerfully enforced in the gospel, than by all the heathen philosophers and poets from Hesiod to Plutarch. The gospel makes a distinction between the virtuous and the vicious; it represents one character as more amiable and respectable than another. As it distinguishes between virtue and vice,

Friendship. vice, between piety and impiety; so its great object is to deter us from vice, and to encourage us to the practice of virtue. It cannot be supposed, then, that the gospel will direct us to associate indifferently with virtuous and profligate characters. It does not. It directs us to seek improvement, by associating with those whom we have reason to esteem. It directs those who are incorrigibly wicked to be expelled from society. What is this but to command us to enter into habits of intimacy wherever there is ground for mutual esteem? But this is the only basis of genuine friendship. When all the means which lead to a certain end are laid before you, and when you are particularly directed by some high authority to employ those means; though the end which you thus attain be not pointed out, yet the commanding you to employ such a series of means, is evidently the same as if you were directed to accomplish the purpose to which they tend. Thus, though the precepts of Christianity do not directly enjoin private friendship; yet they have a direct tendency to form those exalted characters who alone are capable of true friendship; they inculcate those virtues which naturally give rise to this generous attachment, and are absolutely necessary to support it where it is formed; they inculcate benevolence by the most effectual motives, and admit of modifications of that benevolence, correspondent to the relations and institutions of society: And therefore they may be considered in as strong and direct terms as if it had been expressly said, "Cultivate private friendship." Besides, friendship is rather an *accident* of society, a natural consequence of our character as moral and social beings, than a relation to be regulated and defined by institutions.

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Friendship  
countenan-  
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Saviour's  
example.

This union, so natural between virtuous persons, has been countenanced by the example of the Author of our religion; to whose life, no less than to his doctrines and precepts, we will do well to look for a standard by which we may regulate our conduct. We allude to two remarkable instances which occur in the evangelical history; and with the recital of which, as stated in all their striking circumstances by a very elegant writer\*, we shall conclude the present article.

\* W. Melmoth, Esq. in the concluding note to his Translation of Cicero's *Laelius*.

"The evangelist, in relating the miracle which Christ performed at Bethany by restoring a person to life who had lain some days in the grave, introduces his narrative by emphatically observing, that 'Jesus loved Lazarus'; intimating, it should seem, that the sentiments which Christ entertained of Lazarus were a distinct and peculiar species of that general benevolence with which he was actuated towards all mankind. Agreeably to this explication of the sacred historian's meaning, when the sisters of Lazarus sent to acquaint Jesus with the state in which their brother lay, they did not even mention his name; but, pointing him out by a more honourable and equally notorious designation, the terms of their message were, 'Behold! he whom thou lovest is sick!' Accordingly, when he informs his disciples of the notice he had thus received, his expression is, 'Our friend Lazarus sleepeth.' Now that Christ did not upon this occasion use the word *friend* in its loose undistinguished acceptation, but in a restrained and strictly appropriated sense, is not only manifest from this plain account of the fact itself, but appears farther evident from the sequel. For as he

was advancing to the grave, accompanied with the relations of the deceased, he discovered the same emotions of grief as swelled the bosoms of those with whom Lazarus had been most intimately connected; and sympathizing with their common sorrow, he melted into tears. This circumstance was too remarkable to escape particular observation: and it drew from the spectators, what one should think it must necessarily draw from every reader, this natural and obvious reflection, 'Behold! how he loved him!'

Friendship,  
Friesland.

"But in the concluding catastrophe of our Saviour's life, he gave a still more decisive proof that sentiments of the strongest personal attachment and friendship were not unworthy of being admitted into his sacred bosom: they were too deeply, indeed, impressed, to be extinguished even by the most excruciating torments. In those dreadful moments, observing among the afflicted witnesses of his painful and ignominious sufferings, that faithful follower who is described by the historian as 'the disciple whom he loved'; he distinguished him by the most convincing instance of superior confidence, esteem, and affection, that ever was exhibited to the admiration of mankind. For, under circumstances of the most agonizing torments, when it might be thought impossible for human nature to retain any other sensibility but that of its own inexpressible sufferings, he recommended to the care and protection of this his tried and approved friend, in terms of peculiar regard and endearment, the most tender and sacred object of his private affections. But no language can represent this pathetic and affecting scene with a force and energy equal to the sublime simplicity of the Evangelist's own narrative: 'Now there stood by the cross of Jesus, his mother and his mother's sister, and Mary Magdalene. When Jesus saw his mother and the disciple (standing) by, whom he loved; he saith to his mother, Behold thy son! then he saith to the disciple, Behold thy mother! And from that hour that disciple took her to his own home.'

"It may safely be asserted, that among all those memorable examples of friendship, which have been celebrated with the highest encomiums by the ancients, there cannot be produced a single instance in which the most distinguished features of exalted amity are so strongly displayed as in the foregoing relation. The only one, perhaps, that bears even a faint similitude to it, is that famous transaction recorded by a Greek author, which passed between Eudamidas and Aretheus. But when the very different circumstances attending the respective examples are duly considered, it must be acknowledged, that the former rises as much above the latter in the proof it exhibits of sublime friendship, as it does in the dignity of the characters concerned.

"Upon the whole, then, it appears, that the divine Founder of the Christian religion, as well by his own example as by the spirit of his moral doctrine, has not only encouraged but consecrated friendship."

FRIESLAND, one of the united provinces of the Low Countries. It is bounded on the east by the river Lauvers, which parts it from the lordship of Groningen, on the south by Overyssel, on the west by the Zuider-Zee, and on the north by the German ocean. It is 30 miles from north to south, and 28 from east to west. The land is very fertile in corn and pasture;

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sture; the horses are large, and the cows and sheep prolific. It is divided into three parts; Westergo to the west, Ostergo to the east, and Sevenwalden to the south. The islands of Sheling, Ameland, and other small ones, are dependent on this province. The principal towns are Leuwarden the capital, Franeker, Dokkum, Harlingen, and Staveren.

FRIESLAND, East, a province of Germany, in the circle of Westphalia, lying near the German ocean. It is bounded on the south by the bishopric of Munster, on the east by the county of Oldenburgh, on the west by the province of Groningen, and on the north by the sea, being about 50 miles in length, and 30 in breadth. It belongs to Prussia, and was formerly called the *county of Embden*. It is a very fertile country, and feeds a great number of cattle; but it was greatly damaged by an inundation in 1717, and the repair of the dykes cost an immense sum. The principal towns are Norden, Leer, Effen, Whitmunde, and Aurick. Embden was an imperial city, and the principal place in the country; but now belongs also to the king of Prussia, who bought it of the Dutch.

FRIGATE, in naval affairs, a ship of war, usually of two decks, light built, designed for swift sailing. When it hath but one deck, and consequently is of a smaller size, they call her a light frigate.

Frigates mount from 20 to 44 guns, and are esteemed excellent cruisers. The name was formerly known only in the Mediterranean, and applied to a long kind of vessel navigated in that sea with sails and oars. The English were the first who appeared on the ocean with these ships, and equipped them for war as well as for commerce.

*FRIGATE-Built*, denotes the disposition of the decks of such merchant ships as have a descent of four or five steps from the quarter-deck and fore-castle into the waist, in contradistinction to those whose decks are on a continued line for the whole length of the ship, which are called *galley-built*.

FRIGATOON, a Venetian vessel, commonly used in the Adriatic, built with a square stern, and without any foremast, having only a mainmast, mizenmast, and bowsprit.

FRIGHT, or TERROR, a sudden and violent degree of fear. See FEAR.

Sudden fear is frequently productive of very remarkable effects upon the human system. Of this many instances occur in medical writings.—In general, the effects of terror are a contraction of the small vessels and a repulsion of the blood in the large and internal ones; hence proceed a suppression of perspiration, a general oppression, trembling, and anguish of the heart, and lungs overcharged with blood.

Frights often occasion incurable diseases, as epilepsy, stupor, madness, &c. In acute diseases, they have evidently killed many, by the agitation into which they have thrown the spirits, already too much disordered. We have also accounts of persons absolutely killed by terrors when in perfect health at the time of receiving the shock from them: people ordered to be executed, but with private orders for a reprieve, have expired at the block without a wound.—Out of many instances of the fatal effects of fear recorded in writers, the following is selected as one of the most singular. “George Grochantzy, a Polander, who had insisted as

a soldier in the service of the king of Prussia, deserted during the war. A small party was sent in pursuit of him; and when he least expected it, they surprized him singing and dancing among a company of peasants, who were got together in an inn and were making merry. This event, so sudden and unforeseen, and at the same time so dreadful in its consequences, struck him in such a manner, that, giving a great cry, he became at once altogether stupid and insensible, and was seized without the least resistance. They carried him away to Glocou, where he was brought before the council of war, and received sentence as a deserter. He suffered himself to be led and disposed of at the will of those about him, without uttering a word, or giving the least sign that he knew what had happened or would happen to him. He remained immoveable as a statue wherever he was placed, and was wholly passive with respect to all that was done to him or about him. During all the time that he was in custody, he neither ate, nor drank, nor slept, nor had any evacuation. Some of his comrades were sent to see him; after that he was visited by some officers of his corps, and by some priests; but he still continued in the same state, without discovering the least signs of sensibility. Promises, intreaties, and threatenings were equally ineffectual. The physicians who were consulted upon his case, were of opinion, that he was in a state of hopeless idiocy. It was at first suspected, that those appearances were feigned; but these suspicions necessarily gave way, when it was known that he took no sustenance, and that the involuntary functions of nature were in great measure suspended. After some time they knocked off his fetters, and left him at liberty to go whither he would. He received his liberty with the same insensibility that he had showed upon other occasions: he remained fixed and immoveable; his eyes turned wildly here and there without taking cognizance of any object, and the muscles of his face were fallen and fixed like those of a dead body. Being left to himself, he passed 20 days in this condition, without eating, drinking, or any evacuation, and died on the 20th day. He had been sometimes heard to fetch deep sighs; and once he rushed with great violence on a soldier, who had a mug of liquor in his hand, forced the mug from him, and having drunk the liquor with great eagerness, let the mug drop to the ground.”

When a person is affected with terror, the principal endeavour should be to restore the circulation to its due order, to promote perspiration, and to allay the agitation of the patient. For these purposes he may drink a little warm liquor, as camomile tea, &c. the feet and legs may be put into warm water, the legs rubbed, and the camomile tea repeated every six or eight minutes; and when the skin is warm, and there is a tendency to perspiration, sleep may be promoted by a gentle opiate.

But frights have been known not only to cause, but \* *Works*, also to cure, diseases. Mr Boyle \* mentions agues, gout, *Abr.* p. 82, and sciatica, cured by this means. &c.

To turn from the serious to the ludicrous effects of fear, the following instance of the latter sort, quoted from a French author by Mr Andrews in his volume of *Anecdotes*, shows upon what slight occasions this passion may be sometimes excited in a very high degree, even in persons the most unlikely to entertain

tain

Fright  
||  
Friaazin.Frill  
||  
Frit.

tain such a guest. "Charles Gustavus (the successor of Christina of Sweden) was besieging Prague, when a boor of most extraordinary visage desired admittance to his tent; and being allowed entrance, offered, by way of amusing the king, to devour a whole hog of one hundred weight in his presence. The old general Konigsmarc, who stood by the king's side, and who, soldier as he was, had not got rid of the prejudices of his childhood, hinted to his royal master that the peasant ought to be burnt as a forcerer. 'Sir,' said the fellow, irritated at the remark, 'if your majesty will make but that old gentleman take off his sword and his spurs, I will eat him immediately before I begin the hog.' General Konigsmarc (who had, at the head of a body of Swedes, performed wonders against the Austrians, and who was looked upon as one of the bravest men of the age) could not stand this proposal, especially as it was accompanied by a most hideous and preternatural expansion of the frightful peasant's jaws. Without uttering a word, the veteran suddenly turned round, ran out of the court, and thought not himself safe until he had arrived at his quarters; where he remained above twenty-four hours locked up securely, before he had got rid of the panic which had so severely affected him."

† Elements  
of Moral  
Science.

Fear (Dr Beattie † observes) should not rise higher than to make us attentive and cautious; when it gains an ascendancy in the mind, it becomes an insupportable tyranny, and renders life a burden. The object of fear is evil; and to be exempt from fear, or at least not enslaved to it, gives dignity to our nature, and invigorates all our faculties. Yet there are evils which we ought to fear. Those that arise from ourselves, or which it is in our power to prevent, it would be madness to despise, and audacity not to guard against. External evils, which we cannot prevent, or could not avoid without a breach of duty, it is manly and honourable to bear with fortitude. Insensibility to danger is not fortitude, no more than the incapacity of feeling pain can be called patience; and to expose ourselves unnecessarily to evil is worse than folly, and very blameable presumption. It is commonly called *fool-hardiness*; that is, such a degree of hardness or boldness as none but fools are capable of. See the article **FORTITUDE**.

**FRIGID** (*frigidus*), in a general sense, denotes the quality of being cold. It is frequently applied to a jejune style, that is unanimated by any ornaments, and consequently without any force or vigour.

**FRIGID-ZONE**. See **ZONE**, **GEOGRAPHY** *Index*.

**FRIGIDITY**, in *Medicine*, the same with **IMPOTENCE**.

**FRIGORIFIC**, in *Physiology*, small particles of matter, which, according to Gassendus and others, being actually and essentially cold, and penetrating other bodies, produce in them that quality which is called *cold*, or, according to others, merely the absence or diminution of the particles of heat. See **COLD**, **CHEMISTRY** *Index*.

**FRILAZIN**, the name of a class or rank of people among the Anglo-Saxons, consisting of those who had been slaves, but had either purchased, or by some other means obtained, their liberty. Though these were in reality free men, they were not considered as of the

same rank and dignity with those who had been born free, but were still in a more ignoble and dependent condition, either on their former masters or on some new patrons. This custom the Anglo-Saxons seem to have derived from their ancestors in Germany, among whom those who had been made free did not differ much in point of dignity or importance in the state from those who continued in servitude. This distinction between those who have been made free and those who enjoy freedom by descent from a long race of free men, still prevails in many parts of Germany; and particularly in the original seats of the Anglo-Saxons. Many of the inhabitants of towns and cities in England, in this period, seem to have been of this class of men, who were in a kind of middle state between slaves and freemen.

**FRILL**, in *Falconry*. When a hawk trembles or shivers, they say she frills.

**FRINGILLA**, a genus of birds belonging to the order of passerines. See **ORNITHOLOGY** *Index*.

**FRIO**, a small island on the coast of the Brasils, situated in 32° 2' S. Lat. and 41° 31' 45" W. Long. The land of Frio is high, with a hollow in the middle, which gives it, at a distance, the appearance of two separate islands. The passage between the island and the continent is about a mile broad, and seemed to Sir Erasmus Gower to be clear from shoals.

**FRIPPERY**, a French term sometimes used in our language to signify the trade or traffic of old second-hand clothes and goods. The word is also used for the place where such sort of commerce is carried on, and even for the commodities themselves. The company of frippers, or fripperers, at Paris, are a regular corporation, of an ancient standing, and make a considerable figure in that city.

**FRISII**, **FRISEI**, **FRISIONES**, and **FRISONES**, in *Ancient Geography*, a people of Germany, so called either from their ardent love of freedom, or from the fresh and unbroken lands they occupied, contradistinguished from the old lands. Tacitus divides them, from their extent of power and territory, into the *Majores*, situated on the coasts between the Rhine and the Ems; and into the *Minores*, occupying the parts about the lakes lying between the channels of the Rhine.

**FRIT**, or **FRITT**, in the glass manufacture, is the matter or ingredients whereof glass is to be made, when they have been calcined or baked in a furnace.

A salt drawn from the ashes of the plant kali or from fern, or other plants mixed with sand or flint, and baked together, makes an opaque mass called by glassmen *frit*; probably from the Italian *fritare*, to fry; or because the frit, when melted, runs into lumps, like fritters, called by the Italians *fritelli*.

Frit, by the ancients, was called *ammonitrum*, of *αμμος*, sand, and *νιτρον*, nitre; under which name it is described by Pliny thus: Fine sand from the Volturnian sea, mixed with three times the quantity of nitre, and melted, makes a mass called *ammonitrum*; which being rebaked makes pure glass.

Frit, Neri observes, is only the calx of the materials which make glass; which, though they might be melted, and glass be made, without thus calcining them, yet it would take up much more time. This calcining, or making of frit, serves to mix and incorporate the ma-

Fritillaria  
||  
Frizing.

terials together, and to evaporate all the superfluous humidity. The frit, once made, is readily fused, and turned into glass.

There are three kinds of frits. The first, crystal frit, or that for crystal metal, is made with salt of pulverine and sand. The second, and ordinary frit, is made of the bare ashes of pulverine or barilla, without extracting the salt from them. This makes the ordinary white or crystal metal. The third is frit for green glasses, made of common ashes, without any preparation. This last frit will require ten or twelve hours baking.

The materials in each are to be finely powdered, washed, and searced; then equally mixed, and frequently stirred together in the melting pot. See GLASS.

**FRITILLARIA, FRITILLARY:** a genus of plants belonging to the hexandria class; and in the natural method ranking under the 10th order, *Coronariæ*. See *BOTANY Index*.

The different species of fritillary were, according to Beckman, introduced into gardens about the middle of the 16th century. The crown imperial (*fritillaria imperialis*) is supposed by some to be the lily which is much celebrated in sacred scripture; because a figure resembling this splendid plant, they imagine, is found represented on the coins of Herod. Invent. vol. iii.

**FRIULI**, a province of Italy, subject to Venice, and bounded by Carinthia in Germany on the north, by Carniola on the east, by the gulf of Venice on the south, and by the Bellunese and Feltrin on the west.

**FRIZE**, or **FRIEZE**, in *Architecture*, a part of the entablature of columns, more usually written and pronounced *freeze*. See **FREEZE**.

**FRIZE**, or **FREEZE**, in *Commerce*, a kind of woollen cloth or stuff for winter wear, being frized or knapt on one side; whence, in all probability, it derives its name.

Of frizes, some are crossed, others not crossed; the former are chiefly of English manufacture, the latter of Irish.

**FRIZING** of **CLOTH**, a term in the woollen manufactory, applied to the forming of the nap of cloth or stuff into a number of little hard burrs or prominences, covering almost the whole ground thereof.

Some cloths are only frized on the back side, as black cloths; others on the right side, as coloured and mixed cloths, rateens, bays, freezes, &c.

Frizing may be performed two ways. One with the hand, that is, by means of two workmen, who conduct a kind of plank that serves for a frizing instrument. The other is by a mill, worked either by water or a horse, or sometimes by men. This latter is esteemed the better way of frizing, by reason the motion being uniform and regular, the little knobs of the frizing are formed more equably and regularly. The structure of this useful machine is as follows:

The three principal parts are the frizer or crisper, the frizing table, and the drawer or beam. The two first are two equal planks or boards, each about 10 feet long and 15 inches broad; differing only in this, that the frizing-table is lined or covered with a kind of coarse woollen stuff, of a rough sturdy nap; and the frizer is incrustated with a kind of cement composed of glue, gum arabic, and a yellow sand, with a little aqua-vitæ, or urine. The beam or drawer, thus called,

because it draws the stuff from between the frizer and the frizing table, is a wooden roller, beset all over with little, fine, short points or ends of wire, like those of cards used in carding of wool.

Frizing  
||  
Frobisher.

The disposition and use of the machine is thus: The table stands immoveable, and bears or sustains the cloth to be frized, which is laid with that side uppermost on which the nap is to be raised; over the table is placed the frizer, at such a distance from it as to give room for the stuff to be passed between them: so that the frizer, having a very slow semicircular motion, meeting the long hairs or naps of the cloth, twists and rolls them into little knobs or burrs; while at the same time, the drawer, which is continually turning, draws away the stuff from under the frizer, and winds it over its own points.

All that the workman has to do while the machine is a-going, is to stretch the stuff on the table as fast as the drawer takes it off, and from time to time to take off the stuff from the points of the drawer.

The design of having the frizing table lined with stuff of a short, stiff, stubby nap, is that it may detain the cloth between the table and the frizer long enough for the grain to be formed, that the drawer may not take it away too readily, which must otherwise be the case, as it is not held by any thing at the other end. It were unnecessary to say any thing particular of the manner of frizing stuffs with the hand, it being the aim of the workmen to imitate, as near as they can with their wooden instrument, the slow, equable, and circular motion of the machine: it needs only be added, that their frizer is but about two feet long and one broad; and that to form the nap more easily, they moisten the surface of the stuff lightly, with water mingled with whites of eggs or honey.

**FROBENIUS, JOHN**, a famous and learned printer in the 16th century, was born at Hamelburgh in Franconia, and settled at Basil. He had before studied in that university, where he acquired the reputation of being uncommonly learned; and now setting up a printing house in that city, was the first of the German printers who brought that admirable art to any degree of perfection. Being a man of great probity and piety, as well as skill, he was particularly choice in the authors he printed; and would never, for the sake of profit, suffer libels, or any thing that might hurt the reputation of another, to go through his press. The great character of this printer was the principal motive which induced Erasmus to reside at Basil, in order to have his own works printed by him. A great number of valuable authors were printed by Frobenius, with great care and accuracy; among which were the works of St Jerome, Augustine, and Erasmus. He designed to have printed the Greek Fathers; but died in 1527, before he could execute his design. Erasmus wrote his epitaph in Greek and Latin.

John Frobenius left a son named *Jerome Frobenius*, and a daughter married to Nicholas Episcopius; who, joining in partnership, continued Frobenius's printing house with reputation, and printed correct editions of the Greek Fathers.

**FROBISHER, or FORBISHER, SIR MARTIN**, an excellent navigator and sea officer in the 16th century, was born near Doncaster in Yorkshire, and was from his

Frobisher  
||  
Frog Fish.

his youth brought up to navigation. He was the first Englishman who attempted to find a north-west passage to China, and in 1576 he sailed with two barks and a pinnace in order to attempt that passage. In this voyage he discovered a cape, to which he gave the name of *Queen Elizabeth's Foreland*, and the next day discovered a strait to which he gave his own name. This voyage proving unsuccessful, he attempted the same passage in 1577; but discovering some ore in an island, and his commission directing him in this voyage only to search for ore, and to leave the farther discovery of the north-west to another time, he returned to England. He sailed again, with 15 ships and a great number of adventurers, to form a settlement: but being obstructed by the ice, and driven out to sea by a violent storm, they, after encountering many difficulties, returned home, without making any settlement, but brought a large quantity of ore.—He afterwards commanded the *Aid* in Sir Francis Drake's expedition to the West Indies, in which St Domingo in Hispaniola, Carthagena, and Santa Justina, in Florida, were taken and sacked. In 1588, he bravely exerted himself in defence of his country against the Spanish armada, when he commanded the *Triumph*, one of the largest ships in that service; and, as a reward for his distinguished bravery, received the honour of knighthood from the lord high admiral at sea. He afterwards commanded a squadron which was ordered to cruise on the Spanish coast; and, in 1592 took two valuable ships and a rich carrack. In 1594 he was sent to the assistance of Henry IV. king of France against a body of the Leaguers and Spaniards, who had strongly entrenched themselves at Croyzon near Brest; but in an assault upon that fort, on the 7th of November, Sir Martin was unfortunately wounded with a ball, of which he died soon after he had brought back the fleet to Plymouth, and was buried in that town.

*FROBISHER'S Straits*, lie a little to the northward of Cape Farewell in West Greenland, and were discovered by Sir Martin Frobisher. W. Long. 48. 16. N. Lat. 63. 12.

**FRODSHAM**, a town of Cheshire in England, 162 miles from London, is noted for its ancient castle. It has a stone bridge over the river Weaver near its conflux with the Mersey, and a harbour for ships of good burden. By means of inland navigation, it has communication with the rivers Dee, Ribble, Ouse, Trent, Darwent, Severn, Humber, Thames, Avon, &c. which navigation, including its windings, extends above 500 miles, in the counties of Lincoln, Nottingham, York, Lancaster, Westmorland, Stafford, Warwick, Leicester, Oxford, Worcester, &c.

**FROG**. See RANA, } *ERPETOLOGY Index.*  
Bull Frog. See RANA, }

*Frog Fish* of Surinam, a very singular animal, of which a figure is given by Mr Edwards, *Hist. of Birds*, vol. i. There is no specimen in the British museum, nor in any private collection, except that of Dr Fothergill. It was brought from Surinam in South America.—Frogs, both in Asia and Africa, according to Merian, change gradually from fishes, to frogs, as those in Europe; but after many years revert again into fishes, though the manner of their change has never been investigated. In Surinam these fishes are called *jakjés*. They are cartilaginous, of a substance like our

mustela, and exquisite food: they are formed with regular vertebræ, and small bones all over the body divided into equal parts; are first darkish, and then gray: their scales make a beautiful appearance. Whether this animal is, in its perfect state, a species of frog with a tail, or a kind of water lizard, Mr Edwards does not pretend to determine; but observes, that when its size is considered, if it should be deemed a tadpole at first produced from spawn, and in its progress towards a frog, such an animal, when full grown, if it bears the same proportion to its tadpole as those in Europe do, must be of enormous size; for our full grown frogs exceed the tadpoles at least 50 times. See *ERPETOLOGY Index.*

**FROME**, a river that rises from several springs in the western parts of Dorsetshire in England, the principal of which is near Everhot; and directing its course almost due west, passes under Frampton bridge, washes the town of Dorchester, and falls into a bay of the English channel called *Poolhaven*, near Wareham.

*FROME-Selwood*, a town of Somersetshire in England, 150 miles from London. It is the chief town of this part of the country, which was anciently one great forest called *Selwoodshire*; and in the latter end of the last century, in those called *Frome Woodlands*, there was a considerable gang of money coiners or clippers, of whom many were taken and executed, and their covert laid open. Though the town is bigger than some cities, yet it has only one church; but it has six or seven meeting houses of Protestant dissenters. The inhabitants are reckoned about 13,000, whose chief manufactory is broad cloth. About 50 years ago, more wire cards for carding the wool for the spinners were made at this place than in all England besides, which was for the most part supplied with them from hence; for here were no less than 20 master card-makers, one of whom employed 400 men, women, and children, in that manufactory, at one time; so that even children of 7 or 8 years of age could earn half-a-crown a-week. The river here which abounds with trout, eels, &c. rises in the woodlands; and runs under its stone bridge towards Bath, on the east side of which it falls into the Avon. This town has been a long time noted for its fine beer, which they keep to a great age, and is generally preferred by the gentry to the wines of France and Portugal. It was governed formerly by a bailiff, and now by two constables of the hundreds of Frome, chosen at the court leet of the lord of the manor.

**FRONDESCENTIA**, from *frons*, "a leaf;" the precise time of the year and month in which each species of plants unfolds its first leaves.

All plants produce new leaves every year; but all do not renew them at the same time. Among woody plants, the elder, and most of the honeyuckles; among perennial herbs, the crocus and tulip, are the first that push or expand their leaves. The time of sowing the seeds decides with respect to annuals. The oak and ash are constantly the latest in pushing their leaves: the greatest number unfold them in spring; the mosses and firs in winter. These striking differences with respect to so capital a circumstance in plants as that of unfolding their leaves, seem to indicate that each species of plants has a temperature proper or peculiar to itself, and requires a certain degree of heat

Frome  
||  
FronDESCENTIA.

Front  
||  
Frontinus.

to extricate the leaves from their buds, and produce the appearance in question.

This temperature, however, is not so fixed or constant as it may appear to a superficial observer. Among plants of the same species, there are some more early than others; whether that circumstance depends, as it most commonly does, on the nature of the plants, or is owing to differences in heat, exposure, and soil. In general, it may be affirmed, that small and young trees are always earlier than larger or old ones.

The pushing of the leaves is likewise accelerated or retarded according to the temperature of the season; that is, according as the sun is sooner or later in dispensing that certain degree of heat which is suitable to each species.

FRONT, the forehead, or that part of the face above the eyebrows. The word is formed of the Latin *frons*; and that from the Greek *φρονειν*, "to think, perceive;" of *φρονεω*, "the mind, thought." Martinius, to make out this etymology, observes, that from the forehead of a person we perceive what he is, what he is capable of, and what he thinks of.

FRONT is also used where several persons or things are ranged side by side, and show their front or fore parts.

FRONT, in *Architecture*, denotes the principal face or side of a building, or that presented to their chief aspect or view.

FRONTAL, in *Architecture*, a little fronton or pediment, sometimes placed over a small door or window.

FRONTAL, *Frontlet*, or *Brow-band*, is also used in speaking of the Jewish ceremonies. This frontal consists of four several pieces of vellum, on each whereof is written some text of scripture. They are all laid on a piece of a black calf's leather with thongs to tie it by. The Jews apply the leather with the vellum on their foreheads in the synagogue, and tie it round the head with the thongs.

FRONTIER, the border, confine, or extreme, of a kingdom or province, which the enemies find in front when they would enter the same. Thus we say, a frontier town, frontier province, &c. Frontiers were anciently called *marches*.

The word is derived from the French *frontiere*, and that from the Latin *frontaria*; as being a kind of front opposed to the enemy. Skinner derives *frontier* from *front*; inasmuch as the frontier is the exterior and most advanced part of a state, as the front is that of the face of a man.

FRONTIGNIAC WINE, is so called from a town of Languedoc in France, situated 16 miles south-west of Montpellier, remarkable for producing it.

FRONTINAC, a fortress in Canada, situated at the head of a fine harbour, on the north-west side of the outlet of Lake Ontario, where vessels of every description may ride in perfect safety. It is 300 miles from Quebec, and in comparison of that place has a very short winter.

FRONTINUS, SEXTUS JULIUS, an ancient Roman writer, was of consular dignity, and flourished under the emperors Vespasian, Titus, Domitian, Nerva, and Trajan. He commanded the Roman armies in Britain; was made city prætor when Vespasian and Titus were consuls; and Nerva made him curator of the

aqueducts, which occasioned his writing *De Aquæductibus urbis Romæ*. He wrote four books upon the Greek and Roman art of war; a piece *De Re Agraria*, and another *De Limitibus*. These have been often separately reprinted; but were all collected together in a neat edition at Amsterdam in 1661, with notes by Robertus Keuchenius. He died under Trajan.

FRONTISPIECE, in *Architecture*, the principal face of a fine building. The word is formed of the Latin *frontispicium*, q. d. *frontis hominis inspectio*. Hence also, by a figure, we say, the frontispiece of a book; meaning an ornament with an engraven title on the first page.

FRONTLET. See **FRONTAL**.

FRONTO, MARCUS CORNELIUS, was chosen for his eloquence to instruct the emperors Marcus Aurelius and Lucius Verus in rhetoric; in recompense of which he was promoted to the consulate, and a statue was erected to his honour. He taught Marcus Aurelius not only eloquence, but the duty of kings, and excellent morals. Some say he wrote against the Christians. A sect was formed of those who looked upon him as a model of perfect eloquence, and those were called *Frontoniani*. The Civilians, whose names were *Fronto*, mentioned in the Pandects, were probably descended from him.

FROST, in *Physiology*, such a state of the atmosphere as occasions the congelation or freezing of water and other fluids. See **COLD**, **CHEMISTRY Index**, and **METEOROLOGY Index**.

Water and other fluids are capable of containing the element of fire or heat in two very different states. In the one, they seem to imbibe the fire in such a manner, that it eludes all the methods by which we are accustomed to observe it, either by our sensation of feeling, or the thermometer; in the other, it manifests itself obviously to our senses, either by the touch, the thermometer, or the emission of light.

In the first of these states, we call the body *cold*; and are apt to say that this coldness is occasioned by the *absence* of heat. But this manner of expressing ourselves, excepting in a relative degree, is certainly improper; for even those fluids which are coldest to the touch contain a vast deal of heat. Thus vapour, which is colder to the touch than the water from which it was raised, contains an immense quantity of fire, even more than sufficient to heat it red hot. The like may be said of common salt, and snow, or ice. If a quantity of each of these substances is separately reduced to the degree of 28 or 30 of Fahrenheit's thermometer, upon mixing them together, the heat which would have raised the thermometer to the degree above-mentioned, now enters into the substance of them in such a manner that the mercury falls down to 0.—Here an excessive degree of cold is produced, and yet we are sure that the substances contain the very same quantity of heat that they formerly did: nay, they will even seem exceedingly cold, when they must certainly contain a great deal more heat than they originally did; for they absorb it from all bodies around them; and if a small vessel full of water is put into the middle of such a mixture, it will in a short time be full of ice.

It appears, therefore, that our senses, even when assisted by thermometers, can only judge of the state in which the element of fire is with relation to the bodies

Frontif-  
piece  
||  
Frost.

*Frost.* dies around us, without regard to the quantity contained in them. Thus, if heat flows from any part of our body into any substance actually in contact with it, the sensation of cold is excited, and we call that substance *cold*; but if it flows from any substance into our body, the sensation of heat is excited, and we call that substance *hot*, without regard to the absolute quantity contained in either case.

Of all known substances, the atmosphere either absorbs or throws out heat with the most remarkable facility: and in one or other of these states it always is with respect to the surface of the earth, and such bodies as are placed on or near it; for these, properly speaking, have no temperature of their own, but are entirely regulated by that of the atmosphere.—When the air has been for some time absorbing the heat from terrestrial bodies, a frost must be the undoubted consequence, for the same reason that water freezes in a vessel put into a freezing mixture; and were this absorption to continue for a length of time, the whole earth would be converted into a frozen mass. There are, however, certain powers in nature, by which this effect is always prevented; and the most violent frost we can imagine, must always as it were defeat its own purposes, and end in a thaw. To understand this subject, we must observe,

1. In that state of the atmosphere which we denominate frost, there is a most intimate union between the air and the water it contains, and therefore frosty weather, except in very high latitudes, is generally clear.

2. When such a union takes place, either in winter or summer, we observe the atmosphere also inclined to absorb heat, and consequently to frost. Thus in clear settled weather, even in summer, though the day may be excessively hot by reason of the continued sunshine, yet the mornings and evenings are remarkably cold, and sometimes even disagreeably so.

3. The air being therefore always ready in the time of frost or in clear weather, to absorb heat from every substance which comes into contact with it, it follows that it must also absorb part of that which belongs to the vapours contained in it.

4. Though vapour is capable of becoming much colder than water without being frozen, yet by a continued absorption it must at last part with its latent heat, i. e. that which essentially constitutes its vapour, and without which it is no longer vapour, but water or ice. No sooner, therefore, does the frost arrive at a certain pitch, than the vapours, everywhere dispersed through the air, give out their latent heat: the atmosphere then becomes clouded: the frost either totally goes off, or becomes milder by reason of the great quantity of heat discharged into the air; and the vapours descend in rain, hail, or snow, according to the particular disposition of the atmosphere at the time.

5. Even in the polar regions, where it may be thought that the frost must increase beyond measure, there are also natural means for preventing its running to extremes. The principal cause here is, the mixture of a great quantity of vapours from the more temperate regions of the globe with the air in those dreary climates. It is well known, that aqueous vapour always flies from a warm to a colder place. For this

reason, the vapours raised by the sun in the more temperate regions of the earth, must continually travel northward and southward in great quantities. Thus they furnish materials for those immense quantities of snow and ice which are to be found in the neighbourhood of the poles, and which we cannot imagine the weak influence of the sun in these parts capable of raising. It is impossible that a quantity of vapour can be mixed with frosty air, without communicating a great deal of heat to it; and thus there are often thaws of considerable duration even in those climates where, from the little influence of the sun, we should suppose the frost would be perpetual.

6. We may now account with some probability for the uncertain duration of frosts. In this country they are seldom of a long continuance; because the vapours raised from the sea with which our island is surrounded, perpetually mix with the air over the island, and prevent a long duration of the frost. For the same reason, frosts are never of such long duration in maritime places on the continent as in the inland ones. There is nothing, however, more uncertain than the motion of the vapours with which the air is constantly filled; and therefore it is impossible to prognosticate the duration of a frost with any degree of certainty. In general, we may always be certain, that if a quantity of vapour is accumulated in any place, no intense frost can subsist in that place for any length of time; and by whatever causes the vapours are driven from place to place, by the same causes the frosts are regulated throughout the whole world.

The effects of frost in different countries are enumerated under the article CONGELATION. In the northern parts of the world even solid bodies are liable to be affected by frost. Timber is often apparently frozen, and rendered exceedingly difficult to saw. Marl, chalk, and other less solid terrestrial concretions will be shattered by strong and durable frosts. Metals are contracted by frost: thus, an iron tube, 12 feet long, upon being exposed to the air in a frosty night, lost two lines of its length. On the contrary, frost swells or dilates water near one tenth of its bulk. Mr Boyle made several experiments with metalline vessels, exceedingly thick and strong; which being filled with water, close stopped, and exposed to the cold, burst by the expansion of the frozen fluid within them. Trees are frequently destroyed by frost, as if burnt up by the most excessive heat; and in very strong frosts, walnut trees, ashes, and even oaks, are sometimes split and cleft, so as to be seen through, and this with a terrible noise, like the explosion of fire-arms.

Frost naturally proceeds from the upper parts of bodies downwards: but how deep it will reach in earth or water, is not easily known; because this depth may vary with the degree of coldness in the air, by a longer or shorter duration of the frost, the texture of the earth, the nature of the juices wherewith it is impregnated, the constitution of its more internal parts as to heat and cold, the nature of its effluvia, &c. Mr Boyle, in order to ascertain this depth, after four nights of hard frost, dug in an orchard, where the ground was level and bare, and found the frost had scarce reached three inches and a half, and in a garden nearer the house only two inches below the surface.

Frost.

Nine or ten successive frosty nights froze the bare ground in the garden six inches and a half deep; and in the orchard, where a wall sheltered it from the south sun, to the depth of eight inches and a half. He also dug in an orchard, near a wall, about a week afterwards, and found the frost to have penetrated to the depth of 14 inches. In a garden at Moscow, the frost in a hard season only penetrates to two feet: and the utmost effect that Captain James mentions the cold to have had upon the ground of Charlton island, was to freeze it to 10 feet deep: whence may appear the different degrees of cold of that island and Russia. And as to the freezing of water at the above mentioned island, the Captain tells us, it does not naturally congeal above the depth of six feet, the rest being by accident. Water also, exposed to the cold air in large vessels, always freezes first at the upper surface, the ice gradually increasing and thickening downwards: for which reason, frogs retire in frosty weather to the bottom of ditches; and it is said, that shoals of fish retire in winter to those depths of the sea and rivers, where they are not to be found in summer. Water, like the earth, seems not disposed to receive any very intense degree of cold at a considerable depth or distance from the air. The vast masses of ice found in the northern seas being only many flakes and fragments, which, sliding under each other, are, by the congelation of the intercepted water, cemented together.

In cold countries, the frost often proves fatal to mankind; not only producing gangrenes, but even death itself. Those who die of it have their hands and feet first seized, till they grow past feeling it; after which the rest of their bodies is so invaded, that they are taken with a drowsiness, which, if indulged, they awake no more, but die insensibly. But there is another way whereby it proves mortal, viz. by freezing the abdomen and viscera, which on dissection are found to be mortified and black.

The great power of frost on vegetables is a thing sufficiently known; but the differences between the frosts of a severe winter, and those which happen in the spring mornings, in their effects on plants and trees, were never perfectly explained, till by Mess. Du Hamel and Buffon in the Memoirs of the Paris Academy.

The frosts of severe winters are much more terrible than those of the spring, as they bring on a privation of all the products of the tenderer part of the vegetable world; but then they are not frequent, such winters happening perhaps but once in an age; and the frosts of the spring are in reality greater injuries to us than these, as they are every year repeated.

In regard to trees, the great difference is this, that the frosts of severe winters affect even their wood, their trunks and large branches; whereas those of the spring have only power to hurt the buds.

The winter frosts happening at a time when most of the trees in our woods and gardens have neither leaves, flowers, nor fruits upon them, and have their buds so hard as to be proof against slight injuries of weather, especially if the preceding summer has not been too wet; in this state, if there are no unlucky circumstances attending, the generality of trees bear moderate winters very well; but hard frosts, which happen late

in the winter, cause very great injuries even to those trees which they do not utterly destroy. These are,

1. Long cracks following the direction of the fibres.  
2. Parcels of dead wood enclosed round with wood yet in a living state. And, 3. That distemperature which the foresters call the *double blea*, which is a perfect circle of blea, or soft white wood, which, when the tree is afterwards felled, is found covered by a circle of hard and solid wood.

The opinions of authors about the exposition of trees to the different quarters, have been very different, and most of them grounded on no rational foundation. Many are of opinion that the effects of frost are most violently felt on those trees which are exposed to the north; and others think the south or the west the most strongly affected by them. There is no doubt but the north exposure is subject to the greatest cold. It does not, however, follow from this, that the injury must be always greatest on the trees exposed to the north in frosts: on the contrary, there are abundant proofs that it is on the south side that trees are generally more injured by frost: and it is plain from repeated experiments, that there are particular accidents, under which a more moderate frost may do more injury to vegetables, than the most severe one which happens to them under more favourable circumstances.

It is plain from the accounts of the injuries trees received by the frosts in 1709, that the greatest of all were owing to repeated false thaws, succeeded by repeated new frosts. But the frosts of the spring season furnish abundantly more numerous examples of this truth; and some experiments made by the Count de Buffon at large in his own woods, prove incontestably, that it is not the severest cold or most fixed frost that does the greatest injury to vegetables.

This is an observation directly opposite to the common opinion; yet is not the less true, nor is it any way discordant to reason. We find by a number of experiments, that humidity is the thing that makes frost fatal to vegetables; and therefore every thing that can occasion humidity in them, exposes them to these injuries, and every thing that can prevent or take off an over proportion of humidity in them, every thing that can dry them though with ever so increased a cold, must prevent or preserve them from those injuries. Numerous experiments and observations tend to prove this. It is well known that vegetables always feel the frost very severely in low places where there are fogs. The plants which stand by a river side are frequently found destroyed by the spring and autumnal frosts, while those of the same species, which stand in a drier place, suffer little or perhaps none at all by them; and the low and wet parts of forests are well known to produce worse wood than the high and drier. The coppice wood in wet and low parts of common woods, though it push out more vigorously at first than that of other places, yet never comes to so good a growth; for the frost of the spring killing these early top shoots, obliges the lower part of the trees to throw out lateral branches: and the same thing happens in a greater or lesser degree to the coppice wood that grows under cover of larger trees in great forests; for here the vapours not being carried off either by the sun or wind, stagnate and freeze, and in the same manner destroy the young shoots, as the fogs of marshy places.

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It is a general observation also, that the frost is never hurtful to the late shoots of the vine, or to the flower-buds of trees, except when it follows heavy dews, or a long rainy season, and then it never fails to do great mischief, though it be ever so slight.

The frost is always observed to be more mischievous in its consequences on newly cultivated ground than in other places; and this is because the vapours which continually arise from the earth, find an easier passage from those places than from others. Trees also which have been newly cut, suffer more than others by the spring frosts, which is owing to their shooting out more vigorously.

Frosts also do more damage on light and sandy grounds, than on the tougher and firmer soils, supposing both equally dry; and this seems partly owing to their being more early in their productions, and partly to their lax texture suffering a greater quantity of vapours to transpire.

It also has been frequently observed, that the side-shoots of trees are more subject to perish by the spring frosts than those from the top; and M. Buffon, who examined into this with great accuracy, always found the effects of the spring frosts much greater near the ground than elsewhere. The shoots within a foot of the ground quickly perished by them; those which stood at two or three feet high, bore them much better; and those at four feet and upwards frequently remained wholly unhurt, while the lower ones were entirely destroyed.

There is a series of observations, which have proved beyond all doubt, that it is not the hard frosts which so much hurt plants, as those frosts, though less severe, which happen when they are full of moisture; and this clearly explains the account of all the great damages done by the severe frosts being on the south side of the trees which are affected by them, though that side has been plainly all the while less cold than the north. Great damage is also done to the western sides of trees and plantations, when after a rain with a west wind the wind shifts to the north at sunset, as is frequently the case in spring, or when an east wind blows upon a thick fog before sunrise.

Frost, it is well known, is particularly destructive to the blossom of fruit trees. The following method of securing such trees from being damaged by early frosts may be acceptable to many of our readers. A rope is to be interwoven among the branches of the tree, and one end of it brought down so as to be immersed in a bucket of water. The rope, it is said, will act as a conductor, and convey the effects of the frost from the tree to the water. This idea is not new, for the following passage may be found in Colerus. "If you dig a trench around the root of a tree, and fill it with water, or keep the roots moist till it has bloomed, it will not be injured by the frost. Or, in spring, suspend a vessel filled with water from the tree. If you wish to preserve the blossom from being hurt by the frost, place a vessel of water below it, and the frost will fall into it."

*Hoar Frost*, a cold moist vapour, that is drawn up a little way into the air, and in the night falls again on the earth, where it is congealed into icy crystals of various figures. Hoar frost, therefore, is nothing but dew turned into ice by the coldness of the air.

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*Melioration of Aromatic Spirits by Frost.* Mr Beaume observes, that aromatic spirituous waters have less scent when newly distilled than after they have been kept about six months: and he found that the good effect of age was produced in a short time by means of cold; and that, by plunging quart bottles of the liquor into a mixture of pounded ice and sea salt, the spirit, after having suffered for six or eight hours the cold hence resulting, proves as grateful as that which hath been kept many years. Simple waters also, after having been frozen, prove far more agreeable than they were before. Geoffroy takes notice of this melioration by frost. *Hist. Acad.* 1713.

*Melioration of Land by Frost.* See AGRICULTURE Index.

**FROTH**, a white light substance, formed on the surface of fluids by vehement agitation, consisting of air included in thin films of water.

*Froth Spit*, or *Cuckoo Spit*, a name given to a white froth, or spume, very common in the spring and first months of summer, on the leaves of certain plants, particularly on those of the common white field lychnis or catchfly, thence called by some *spatling poppy*.

All writers on vegetables have taken notice of this froth, though few have understood the cause or origin of it till of late. It is formed by a little leaping animal, called by some the *flea grasshopper*, by applying its anus close to the leaf, and discharging thereon a small drop of a white viscous fluid, which, containing some air in it, is soon elevated into a small bubble: before this is well formed, it deposits such another drop; and so on, till it is every way overwhelmed with a quantity of these bubbles, which form the white froth which we see. Within this spume it is seen to acquire four tubercles on its back, wherein the wings are enclosed: these bursting, from a reptile it becomes a winged animal: and thus, rendered perfect, it flies to meet its mate, and propagate its kind. It has an oblong, obtuse body, and a large head with small eyes. The external wings (for it has four) are of a dusky brown colour, marked with two white spots: the head is black. It is a species of *CICADA*.

**FROWDE**, PHILIP, an English poet, was the son of a gentleman who had been postmaster in the reign of Queen Anne. He was sent to the university of Oxford, where he had the honour of being distinguished by Addison, who took him under his protection. While he remained there, he became the author of several pieces of poetry, some of which in Latin were pure and elegant enough to entitle them to a place in the *Muse Anglicanæ*. He likewise wrote two tragedies: *The Fall of Saguntum*, dedicated to Sir Robert Walpole; and *Philotas*, addressed to the earl of Chesterfield. He died at his lodgings at Cecil Street in the Strand, in 1738; and in the London Daily Post had the following character given him: "Though the elegance of Mr Frowde's writings has recommended him to the general public esteem, the politeness of his genius is the least amiable part of his character; for he esteemed the talents of wit and learning only as they were conducive to the excitement and practice of honour and humanity. Therefore, with a soul cheerful, benevolent, and virtuous, he was in conversation genteelly delightful, in friendship punctually sincere, in death Christianly resigned. No man could live more beloved, no private

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man could die more lamented." A fine elege! and we have no reason to doubt the truth of it.

**FRUCTESCENCIA**, (from *fructus*, "fruit,") comprehends the precise time in which, after the fall of the flowers, the fruits arrive at maturity, and disperse their seeds.

In general, plants which flower in spring, ripen their fruits in summer, as rye; those which flower in summer have their fruits ripe in autumn, as the vine; the fruit of autumnal flowers ripens in winter, or the following spring, if kept in a stove or otherwise defended from excessive frosts. These frosts, says M. Adanson, are frequently so pernicious and violent as to destroy the greatest part of the perennial plants of Virginia and Mississippi, that are cultivated in France, even before they have exhibited their fruit. The plants which flower during our winter, such as those of the Cape of Good Hope, ripen their fruit in spring in our stoves.

**FRUCTIFEROUS**, signifies properly any thing that produces fruit.

**FRUCTIFICATION OF PLANTS**, is defined by Linnaeus to be the temporary part of a vegetable appropriated to generation, terminating the old vegetable, and beginning the new. It consists of the following seven parts; viz. the calyx, corolla, stamen, pistillum, pericarpium, semen or seed, and receptaculum. See **BOTANY**.

**FRUIT**, in its general sense, includes whatever the earth produces for the nourishment and support of animals; as herbs, grain, pulse, hay, corn, and flax, every thing expressed by the Latins under the name *fruges*.

**FRUIT**, in *Natural History*, denotes the last production of a tree or plant, for the propagation or multiplication of its kind; in which sense fruit includes all kinds of seeds, with their furniture, &c.

**FRUIT**, in *Botany*, is properly that part of a plant wherein the seed is contained; called by the Latins *fructus*; and by the Greeks *καρπος*. The fruit in the Linnaean system is one of the parts of fructification, and is distinguished into three parts, viz. the pericarpium, seed, and receptacle, or *receptaculum seminum*. See **BOTANY**.

*Colours extracted from FRUITS*. See the article *COLOUR-Making*.

*Bread-Fruit*. See **ARTOCARPUS**, **BOTANY Index**.

**FRUITS**, with regard to commerce, are distinguished into *recent*, *fresh*, and *dry*.

*Recent FRUITS* are those sold just as they are gathered from the tree, without any farther preparation; as are most of the productions of our gardens and orchards, sold by the fruiterers.

*Dry FRUITS* are those dried in the sun, or by the fire, with other ingredients sometimes added to them to make them keep; imported chiefly from beyond sea, and sold by the grocers. Such are raisins, currants, figs, capers, olives, cloves, nutmegs, pepper, and other spices; which see under their respective articles.

Under the denomination of *dry fruits* are also frequently included apples, pears, almonds, filberds, &c.

*Fruit-Flies*, a name given by gardeners and others to a sort of small black flies found in vast numbers among fruit trees, in the spring season, and supposed to do great injury to them. Mr Leeuwenhoek preserved

some of these flies for his microscopical observations. He found that they did not live longer than a day or two, but that the females during this time laid a great number of longish eggs. The gardeners who suppose that these flies wound the leaves of the trees, are mistaken: it is true that they feed on their juices; but they have no instruments wherewith they can extract these for themselves: they feed on such as are naturally extravasated; and when there is not a sufficient quantity of these for their purpose, they haunt the places to which the pucerons resort, and feed on the juices which these little creatures extravasate by means of the holes they bore in the leaves with their trunks.

*FRUIT Stones*. The mischiefs arising from the custom which many people have of swallowing the stones of plums and other fruit are very great. The Philosophical Transactions give an account of a woman who suffered violent pains in her bowels for 30 years, returning once in a month or less. At length, a strong purge being given her, the occasion of all these complaints was driven down from the bowels to the anus; where it gave a sensation of distension and stoppage, producing a continual desire of going to stool, but without voiding any thing. On the assistance of a careful hand in this case, there was taken out with a forceps a ball of an oval figure, of about ten drachms in weight, and measuring five inches in circumference. This had caused all the violent fits of pain which she had suffered for so many years; and, after voiding it, she became perfectly well. The ball extracted looked like a stone, and felt very hard, but it swam in water. On cutting it through with a knife, there was found in the centre of it a plum stone; round which several coats of this hard and tough matter had gathered. Another instance given in the same papers is of a man, who, dying of an incurable colic which had tormented him many years, and baffled the effects of medicines, was opened after death; and in his bowels was found a ball similar to that above mentioned; but somewhat larger, being six inches in circumference, and weighing an ounce and a half. In the centre of this, as of the other, there was found the stone of a common plum, and the coats were of the same nature with those of the former.

These and several other instances mentioned in the same place, sufficiently show the folly of that common opinion that the stones of fruits are wholesome. For though by nature the guts are so defended by their proper mucus, that people very seldom suffer by things of this kind; yet if we consider the various circumvolutions of the guts, their valves and cells, and at the same time consider the hair of the skins of animals we feed on, the wool or down on herbs and fruit, and the fibres, vessels, and nerves of plants, which are not altered by the stomach; it will appear a wonder that instances of this sort of mischief are not much more common. Cherry stones, swallowed in great quantities, have occasioned the death of many people; and there have been instances even of the seeds of strawberries collecting into a lump in the guts, and causing violent disorders, which could not be cured without great difficulty.

*FRUIT Trees*. With regard to these it may be observed, 1. That the cutting and pruning them when young hurt their bearing, though it contributes to

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Frustum.

the richness and flavour of the fruit, as well as to the beauty of the tree. 2. That kernel fruit trees come later to bear than stone fruit trees: the time required by the first, before they come to any fit age for bearing, being one with another five years; but when they do begin, they bear in greater plenty than stone fruit. 3. That stone fruit, figs, and grapes, commonly bear considerably in three or four years, and bear full crops the fifth and sixth year; and hold it for many years, if well ordered. 4. That fruit trees in the same neighbourhood will ripen a fortnight sooner in some grounds than in others of a different temperature. 5. That in the same country, hot or cold summers set considerably forwards, or put backwards, the same fruit. 6. That the fruit on wall trees generally ripen before those on standards, and those on standards before those on dwarfs. 7. That the fruit of all wall trees planted in the south and east quarters commonly ripen about the same time, only those in the south rather earlier than those in the east; those in the west are later by eight or ten days; and those in the north, by 15 or 20. For the planting, pruning, grafting, &c. of fruit trees, see GARDENING.

FRUITERY, a place for the keeping of fruit, a fruit house, or fruit loft.

A fruitery should be inaccessible to any thing of moisture; and should be as much as possible so, even to frost.

FRUMENTACEOUS, a term applied by botanists to all such plants as have a conformity with wheat, in respect of their fruits, leaves, ears, or the like.

FRUMENTARI, a kind of soldiers or archers under the western empire.

The first time we read of these officers is in the reign of the emperor Adrian, who made use of them to inform himself of whatever passed. They did not make any particular corps distinct from the rest of the forces, but there was a certain number of them in each legion. It is supposed, that they were at first a number of young persons, disposed by Augustus throughout the provinces, particularly on all the grand roads, to acquaint the emperor, with all expedition, of every thing that happened.

Afterwards they were incorporated into the troops themselves, where they still retained their ancient name. As their principal office was the giving intelligence, they were often joined with the curiosi, with whom they agreed in that part of their office.

Their name of *frumentarii* is derived from their being also a sort of purveyors to the armies, cities, &c. collecting all the corn from the several provinces to furnish the commonwealth.

FRUMENTATION, in Roman antiquity, a largess of corn bestowed on the people. This practice of giving corn to the people was very ancient among the Romans, and frequently used to soothe the turbulent humour of the populace. At first the number of those to whom this largess was given was indeterminate, till Augustus fixed it at 200,000.

FRUSH, or RUNNING THRUSH. See FARRIERY Index.

FRUSTUM, in *Mathematics*, a part of some solid body separated from the rest.

The frustum of a cone is the part that remains,

when the top is cut off by a plane parallel to the base; and is otherwise called a *truncated cone*. See *CONIC Sections*.

The frustum of a pyramid is also what remains after the top is cut off by a plane parallel to its base.

The frustum of a globe or sphere is any part thereof cut off by a plane, the solid contents of which may be found by this rule: To three times the square of the semidiameter of the base add the square of its height; then multiply that sum by the height, and this product multiplied by .5236 gives the solidity of the frustum.

FRUTEX, a SHRUB. Shrubs, according to Linnæus, make a branch of the seventh family in the vegetable kingdom; and are distinguished from trees, in that they come up without buds. But this distinction is not universal, though it be generally just with regard to those of Europe. Nature hath made no absolute distinction between trees and shrubs. *Frutex*, in its general acceptation, is a plant whose trunk is perennial, gemmiparous, woody, dividing and subdividing into a great number of branches. In short, it is the epitome of a tree, exemplified in the rose bush.

FRY, in *Zoology*, signifies the spawn, or rather young, of fish.

FRYING-PAN, a dangerous shoal, which has received this appellation from its figure. It is situated at the entrance of Cape Fear river, in North Carolina, the southern part of which is in 33° 22' N. Lat. 24 miles south-east by south of the light-house on Bald Head.

FRYTH, JOHN, a martyr to the Protestant religion in the reign of Henry VIII. He was the son of an innkeeper at Seven Oaks in Kent; and educated in King's college, Cambridge, where he took the degree of bachelor of arts. Thence he removed to Oxford, and was made a junior canon of Wolfey's college. He had not been long in this university before he became acquainted with William Tyndale, a zealous Lutheran, with whom he conversed frequently on the abuses in religion. Fryth became a convert to Lutheranism, and publicly avowed his opinions. He was apprehended, examined by the commissary, and confined to his college. At length having obtained his liberty, in 1528 he went over to Germany, where he continued about two years; and then returned to England, more than ever determined in his religious sentiments. Finding at that time but few associates, he wandered about from place to place, till at last he was taken up at Reading as a vagrant, and set in the stocks, where he remained till he was near expiring for want of sustenance. He was at length relieved by the humanity of Leonard Cox, a schoolmaster; who finding him a man of letters, procured his enlargement, and administered to his necessities. Fryth now set out for London, where, with more zeal than prudence, he began to make proselytes; but was soon apprehended by order of the chancellor Sir Thomas More, and sent prisoner to the tower. Refusing to recant his opinions, he was condemned to the flames, and accordingly burnt in Smithfield, on the 4th of July 1533. He left several works behind him, which were printed in folio in 1573.

FUAGE, in old English writers, a tax of 12d. for every fire, levied in the time of Edward III.

FUCINUS LACUS, in *Ancient Geography*, a lake of Italy

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Fucinus.

Italy in the country of the Marfi. Now *Lago di Celano*, from a cognominal citadel, lying on the south of the Abruzzo Ultra, in the kingdom of Naples, near the Apennines. This lake was under the protection of a god of the same denomination, whose temple stood on its banks. According to the testimony of ancient authors, it was subject to extraordinary risings and decreasings. The actual circumference is 47 miles: the breadth in the widest part is 10, in the narrowest 4; its depth 12 feet upon an average. But all these have varied prodigiously. Two miles up the plain, behind Avezzano, the fragments of boats, shells, and other marks of its ancient extent, have been casually discovered: and, on the contrary, there are people who remember when it did not flow nearer than within two miles of Avezzano. An immense tract of excellent lands is lost at every increase of its level. All round this noble piece of water rises a circle of grand mountains, some of them the highest in Italy, if we except the Alps, and many of them covered with snow; and at the foot of them are numerous villages, with rich and well cultivated farms. The environs of the lake, Mr Swinburne describes as all well enclosed, and the sides of the hills as covered with fine woods; its waters abound with fish of various kinds, and thither repair at stated seasons innumerable flights of wild fowl. As the swelling of the lake was attended with incredible damage, the Marfi had often petitioned the senate to drain it: Julius Cæsar would have attempted it, had he lived longer. His successors were averse to the project; till Claudius, who delighted in expensive difficult enterprises, undertook it. During the space of 11 years he employed 30,000 men in digging a passage through the mountain; and when every thing was ready for letting off the water, exhibited a superb naval spectacle on the lake. A great number of condemned criminals were obliged to act the parts of Rhodians and Sicilians in separate fleets, to engage in earnest, and to destroy one another for the entertainment of the court and the multitude of spectators that covered the hills: A line of well armed vessels and rafts loaded with soldiers surrounded the scene of action, in order to prevent any of the wretches from escaping; but it was with great difficulty and many threats that they could be brought to an engagement. When this savage diversion was ended, the operations for opening the passage commenced, and the emperor was very near being swept away and drowned by the sudden rushing of the waters towards it. However, either through the ignorance or negligence of the engineers, the work did not answer as was expected, and Claudius did not live long enough to have the faults amended: Nero abandoned the scheme through envy. Hadrian is said to have let off the waters of the Fucinus; but none now escape except through hidden channels formed by nature, which are probably subject to be obstructed, and thus occasion a superabundance of water in the lake, till some unknown cause removes the obstructions and again gives free passage.

Sir William Hamilton, who visited the Fucinus in 1785, says, "it is the most beautiful lake he ever saw, and would be complete if the neighbouring mountains were better wooded." It furnishes abundance of fish, though not of the best quality. There are a few large trout, but mostly tench, barbel and dace. In the

shallow water on the borders of the lake, he saw thousands of water snakes pursuing and preying upon a little kind of fish like our thornbacks, but much better armed; though their defensive weapons seemed to avail them but little against such ravenous foes. The opening made by Claudius he describes as still entire, though, in many parts, filled with earth and rubbish. He went into it with torches as far as he could. It is a covered underground canal three miles long, and part of it cut through a hard rock; and other parts supported by mason work, with wells to give light. Hadrian is said to have let off the waters of the lake: and our author is of opinion, that if the canal were cleared and repaired, it would still answer that purpose, and thereby restore a great deal of rich land fit for cultivation.

FUCUS, a name given by the ancients to certain dyes and paints. By this name they called a purple sea plant used by them to dye woollen and linen things of that colour. The dye was very beautiful, but not lasting; for it soon began to change, and in time went wholly off. This is the account Theophrastus gives of it.

The women of those times also used something called *fucus*, to stain their cheeks red; and many have supposed, from the same word expressing both, that the same substance was used on both occasions. But this, on a strict inquiry, proves not to be the case. The Greeks called every thing *fucus* that would stain or paint the flesh. But this peculiar substance used by the women to paint their cheeks was distinguished from the others by the name of *rixion* among the more correct writers, and was indeed a root brought from Syria into Greece. The Latins, in imitation of the Greek name, called this root *radicula*; and Pliny very erroneously confounds the plant with the *radix lunaria*, or *struthion* of the Greeks.

The word *fucus* was in those times become such an universal name for paint, that the Greeks and Romans had a *fucus metallicus*, which was the ceruse used for painting the neck and arms white; after which they used the *purpurissum*, or red fucus of the *rixium*, to give the colour to the cheeks. In after-times they also use a peculiar *fucus* or paint for the purpose, prepared of the *creta argentaria*, or silver-chalk, and some of the rich purple dyes that were in use at that time: and this seems to have been very little different from our rose-pink; a colour commonly sold at the colour-shops, and used on like occasions.

FUCUS, in the Linnæan system of botany, is a genus of the order of algæ, belonging to the cryptogamia class of plants.

FUEGO, or FOGO, one of the Cape de Verd islands, in the Atlantic ocean. It is much higher than any of the rest; and seems, at sea, to be one single mountain, though on the sides there are deep valleys. There is a volcano at the top which burns continually, and may be seen a great way off at sea. It vomits a great deal of fire and smoke, and throws out huge pieces of rock to a vast height; and sometimes torrents of melted matter run down the sides. The Portuguese, who first inhabited it, brought negro slaves with them, and a stock of cows, horses, and hogs; but the chief inhabitants now are blacks, of the Romish religion. W. Long. 24. 47. N. Lat. 15. 20.

FUEL,

Fucus,  
Fuego.

Fuel FUEL, whatever is proper to burn or make a fire ;  
as wood, turf, peat, bituminous earths, coal, &c.

|| FUGUE. FUEN-HOA, a city of China, in the province of  
Pe-tcheli, celebrated for its extent and the number  
of its inhabitants, as well as for the beauty of its  
streets and triumphal arches. It is situated near the  
great wall, amidst mountains ; and has under its jurisdic-  
tion, besides two cities of the second, and eight of  
the third class, a great number of fortresses, which bar  
the entrance of China against the Tartars.

FUGALIA, in Roman antiquity, a feast supposed  
by some to be the same with the *refugium*, held on the  
24th of February, in memory of the expulsion of the  
kings and the abolishing of monarchical government.  
Others again distinguish the fugalìa from the *refuge*.  
And others think, that the fugalìa was the same with  
the *poplifugia*, or the feast of Fugia, the goddess of  
joy, occasioned by the rout of an enemy, which was  
the reason the people abandoned themselves to riot and  
debauchery.

FUGITIVE, a person obliged to fly his country,  
or remove from a place where he had some abode or  
establishment, on account of his crimes, debts, or other  
occasions.

FUGITIVE Pieces, among the learned, denote those  
little compositions which are printed on loose sheets  
or half sheets ; thus called, because easily lost and soon  
forgotten.

FUGUE, in Music (from the Latin *fuga*, " a  
chase"), a piece of music sometimes longer and some-  
times shorter, in which, agreeable to the rules of har-  
mony and modulation, the composer treats a subject ;  
or, in other words, what expresses the capital thought  
or sentiment of the piece, in causing it to pass successively  
and alternately from one part to another.

These are the principal rules of the fugue ; of which  
some are peculiar to itself, and others common to it  
with what the French call *imitation*.

1. The subject proceeds from the tonic to the do-  
minant, or from the dominant to the tonic, in rising or  
descending.

2. Every fugue finds its response in the part im-  
mediately following that which commenced.

3. That response ought to resume the subject in the  
interval of a fourth or fifth above or below the key,  
and to pursue it as exactly as the laws of harmony will  
admit ; proceeding from the dominant to the tonic  
when the subject is introduced from the tonic to the  
dominant, and moving in a contrary direction when the  
subject is introduced from the dominant to the tonic.  
One part may likewise resume the same subject in the  
octave or unison of the preceding ; but in that case, it is  
a repetition rather than a real response.

4. As the octave is divided into two unequal parts,  
of which the one contains four gradations descending  
from the tonic to the dominant, and the other only  
three in continuing the ascent from the dominant to the  
tonic ; this renders it necessary to have some regard to  
this change in the expression of the subject, and to make  
some alterations in the response, that we may not quit  
the cords that are essential to the mode. It is a different  
case when the composer intends to alter the modulation ;  
for there the exactness of the response itself, when taken  
in a different tone, produces the alteration proper for  
this change.

5. It is necessary that the fugue should be planned in  
such a manner, that the response may commence before  
the close of the first air, so that both the one and the  
other may be in part heard at the same time : that, by  
this anticipation, the subject may be as it were con-  
nected with itself, and that the art of the composer may  
discover itself in this concurrence. It is absolute mockery,  
instead of a fugue, to impose upon the hearers the same  
air, merely transposed from one key to another, with-  
out any other restraint than an accompaniment after-  
wards formed at pleasure. This deserves at best no  
better name than what the French call *imitation*. See  
IMITATION.

Besides these rules, which are fundamental, there are  
others which, though prescribed by taste alone, are not  
less essential. Fugues, in general, render music more noisy  
than agreeable ; it is for this reason that they are more  
agreeable in the chorus than anywhere else. Now, as  
their chief merit consists in fixing the ear on the prin-  
cipal air or subject, which for this reason is made to  
pass incessantly from part to part, and from mode to  
mode, the composer ought to exert his care in pre-  
serving that air always distinct ; or to prevent it from  
being absorbed in, or confounded with, the other parts.  
To produce this effect, there are two different ways ;  
one in the movement, which must be incessantly con-  
trasted with itself ; so that, if the procedure of the  
fugue be accelerated, the other parts more gravely and  
with protracted notes ; or, on the contrary, if the mo-  
tion of the fugue be slow and solemn, the accompani-  
ments must have more and quicker business. The other  
method is to extend the harmony, by removing the  
parts at a greater distance one from the other ; lest the  
others, too nearly approximated to that which contains  
the subject, should be confounded with it, and prevent  
it from being distinguished with sufficient clearness ;  
so that what would be an imperfection anywhere else,  
becomes here a beauty.

The unity of melody should be preserved : this is  
the great and general rule, which must frequently be  
practised by different means. The chords must be  
chosen, and the intervals, so that one particular sound  
may produce the chief effect ; this can only result from  
the unity of the melody. It will sometimes be necessary  
to employ voices and instruments of different kinds,  
that the parts which ought to prevail may be most  
easily distinguished ; this again shows the necessity of  
preserving the unity of the melody. Another object of  
attention, no less necessary, is, in the different connec-  
tions of modulation which are introduced by the pro-  
cedure and progress of the fugue, to cause all these  
modulations to correspond at the same time in all the  
parts, to connect the whole in its progress by an exact  
conformity of modes ; lest, if one part be in one mode,  
and another in another, the general harmony should be  
in none at all, and for that reason should no longer be  
able to produce simple effects upon the ear, nor simple  
ideas in the mind ; which is another reason for pre-  
serving unity of melody. In a word, in every fugue the  
confusion of melodies and modulations is at once what  
a composer has most to fear, and will find the greatest  
difficulty in avoiding ; and as this kind of music never  
produces a pleasure above mediocrity, one may say that  
a fine fugue is, though the masterpiece of an excellent  
harmonist, ungrateful to his toil.

There

Fulcrum

Fuller.

\* See  
Canon.

There are still several other kinds of fugues; such as the perpetual fugue\*, the double fugue, the inverted fugue.

The inverted fugue is a manner of composition, in which the flying part proceeds in a contrary direction to the other fugue, which had been formerly fixed in the same piece of music. Thus, when the first fugitive part is heard in ascending from the tonic to the dominant, or from the dominant to the tonic, the counter fugue ought to be heard in descending from the dominant to the tonic, or from the tonic to the dominant, and *vice versa*. Its other rules are exactly like those of the common fugue.

FULCRUM, in *Mechanics*, the prop or support by which a lever is sustained.

FULDA, a considerable town of Germany, in the circle of the Upper Rhine, and in the Buchow, with a celebrated abbey; whose abbot is primate of the abbeys of the empire, perpetual chancellor of the emperor, and sovereign of a small territory lying between Hesse, Franconia, and Thuringia. It is seated on the river Fulda, 55 miles south of Cassel, and 58 north-east of Francfort. E. Long. 9. 53. N. Lat. 50. 40.

FULGORA, a genus of insects belonging to the order of hemiptera. See ENTOMOLOGY *Index*.

FULHAM, a village of Middlesex, four miles from London. The Danes in 869 wintered at this place till they retired to the continent. It was in the Conqueror's time held of the king by the canons of St Paul's; and there is an ancient house here, which is moated about, and belongs to the see of London, whose bishop has a palace here, and the demesne has belonged to that diocese from 1067. From this place to Putney there is a wooden bridge over the Thames, where not only horses, coaches, and all carriages, but even foot passengers, pay toll. The church here is both a rectory and a vicarage.

FULICA, the GALLINULE and COOT, a genus of birds belonging to the order of grallæ. See ORNITHOLOGY *Index*.

FULIGINOUS, whatever proceeds from a thick sooty smoke, such as lamp black.

FULIGNO, a city of Italy, in the pope's territories, 10 miles north of Spoleto.

FULIGO, in *Natural History*, a species of pumice-stone. See PUMICE.

FULLER, DR THOMAS, a learned English divine, was born at Alvinckle, near Oundle, in Northamptonshire, about the year 1608, and studied at Cambridge. He was chosen minister of St Bennet's there; and at about 23 years of age, his merit procured him a fellowship in Sidney-college, and a prebend in Salisbury cathedral. He was soon after presented to the rectory of Broad Windsor in Dorsetshire; and afterwards was made lecturer of the Savoy in London: but upon the pressing of the covenant, he retired to Oxford; and soon after accompanied Sir Ralph Hopton as his chaplain in the army, which he attended in their marches from place to place. After the death of King Charles I. he obtained the living of Waltham-abbey, and was appointed lecturer of St Clement's; and shortly after removed to the lecture of St Bridge's, Fleet-street. Upon the restoration, he recovered his prebend in the cathedral of Salisbury, was appointed chaplain extraordinary to his majesty, and created

doctor of divinity. It is said, his memory was so tenacious and comprehensive, that he could make use of a sermon *verbatim* if he once heard it. He once undertook, in passing to and from Temple-bar to the Poultry, to tell at his return every sign as it stood in order on both sides of the way, repeating them either backwards or forwards; and this task he actually performed. He wrote, 1. A History of the Holy War. 2. The Church-History of Britain, in folio. 3. Andronicus, or the Unfortunate Politician, in 8vo. 4. A Pisgah-sight of Palestine. 5. A History of English Worthies; and other works. He died in August 1661; and was interred in the chancel of Cranford church, in Middlesex, whither his body was attended by at least 200 of his brethren of the ministry.

FULLER, a workman employed in the woollen manufactories to mill or scour cloths, serges, and other stuffs, in order to render them more thick, compact, and durable. See FULLING.

FULLER'S Earth, in *Natural History*, a species of clay, of a grayish ash-coloured brown, in all degrees from very pale to almost black, and it has generally something of a greenish cast. It is very hard and firm, of a compact texture, of a tough and somewhat dusty surface that adheres slightly to the tongue. It is very soft to the touch, not staining the hands, nor breaking easily between the fingers. It has a little harshness between the teeth, and melts freely in the mouth. Thrown into water, it makes no ebullition or hissing; but swells gradually in bulk, and falls into a fine soft powder. It makes no effervescence with aquafortis.

The greatest quantity and the finest earth of this kind in the world, is dug in the pits at Wavedon, near Woburn in Bedfordshire. The strata in these pits lie thus: From the surface to the depth of six feet, there are several layers or beds of sand, all reddish, but some lighter coloured than others. Under these there is a thin stratum of a sand-stone, which they break through, and then there is the fuller's earth. The upper stratum of this is about a foot thick: the workmen call it *clodge*, and throw it aside as useless; being commonly fouled with the sand which originally covered it, and which insinuates itself a good way into it. After this, they come to the fine fuller's earth for sale, which lies to the depth of eight feet more. The matter of this is divided into several layers, there being commonly about a foot and an half between one horizontal fissure and another. Of these several layers, the upper half, where the earth breaks itself, is tinged red; which seems to be owing to the running of the water upon it from among the sands above; some of which are probably of a ferruginous nature, or have ferruginous matter among them. This reddish fuller's earth the workmen call *crop*; and between the clodge and this there is a thin stratum of matter, of less than an inch, which in taste, colour, and external appearance, resembles the terra Japonica of the shops. The lower half of the strata of fuller's earth they call *wall-earth*. This is untinged with the red colour of the other, and seems the most proper for fulling. Under the fuller's earth there is a stratum of white and coarse stone about two feet thick. They seldom dig through this; but if they do, they find more strata of sand.

This earth is of great use in scouring cloths, stuffs, &c. imbibing all the grease and oil used in preparing, dressing,

Fuller.

Fuller  
||  
Fulling.

dressings, &c. of the wool; for which reason it is made a contraband commodity, and is not to be exported under the penalty of 1s. for every pound weight. See FULLING.

*FULLER'S Weed, or Teazle.* See DIPSACUS, BOTANY Index.

FULLERY, a place where cloths, &c. are fulled. See the next article.

FULLING, the art or act of cleansing, scouring, and pressing cloths, stuffs, and stockings, to render them stronger, closer, and firmer: called also *milling*. Pliny (lib vii. cap. 56.) assures, that one Nicias, the son of Hermias, was the first inventor of the art of fulling: and it appears by an inscription, quoted by Sir G. Wheeler, in his Travels through Greece, that this same Nicias was a governor in Greece in the time of the Romans.

Fulling of woollen cloths, depends, like felting, so entirely upon the structure of wool and hair, that those who have read our account of that process, will not find it difficult to comprehend the following observations.

The asperities with which the surface of wool is everywhere surrounded, and the disposition which it has to assume a progressive motion towards the root, render the spinning of wool, and making it into cloth, difficult operations. In order to spin wool, and afterwards convert it into cloth, its fibres must be covered with a coating of oil, which, filling the cavities, renders the asperities less sensible; in the same way as oil renders the surface of a very fine file less rough, when rubbed over it. When the piece of cloth is finished, it must be cleansed from this oil; which would cause it to soil whatever it came in contact with, besides giving it a disagreeable smell, and prevent its taking the colour which is intended to be given to it by the dyer. To deprive it of the oil, it is carried to the fulling-mill, where it is beat with hammers in a trough full of water, in which some clay has been mixed; the clay combines with the oil, which it separates from the cloth, and both together are washed away by the fresh water which is brought to it by the machine; thus, after a certain time, the oil is entirely washed out of the cloth.

But the scouring of the cloth is not the only object in fulling it; the alternate pressure given by the mallets to the piece of cloth, occasions, especially when the scouring is pretty far advanced, an effect analogous to that which is produced upon hats by the hands of the hatter; the fibres of wool which compose one of the threads, whether of the warp or the woof, assume a progressive movement, introduce themselves among those of the threads nearest to them, then into those which follow; and thus, by degrees, all the threads, both of the warp and the woof, become felted together. The cloth, after having, by the above means, become shortened in all its dimensions, partakes both of the nature of cloth and of that of felt; it may be cut without being subject to ravel, and, on that account, we are not obliged to hem the edges of the pieces of which clothes are made. Lastly, as the threads of the warp and those of the woof are no longer so distinct and separated from each other, the cloth, which has acquired a greater degree of thickness, forms a warmer clothing. Knit worsted also is, by fulling, rendered less apt to run, in case a stitch should happen to drop in it.

The fulling of cloths and other stuffs is performed by a kind of water-mill, thence called a *fulling* or *scouring mill*. Fulling.

These mills, excepting in what relates to the mill-stones and hopper, are much the same with corn-mills: and there are even some which serve indifferently for either use: corn being ground, and cloths fulled, by the motion of the same wheel. Whence, in some places, particularly in France, the fullers are called *millers*; as grinding corn and milling stuffs at the same time.

The principal parts of the fulling-mill are, The wheel, with its trundle; which gives motion to the tree or spindle, whose teeth communicate it to the pestles or stampers, which are hereby raised and made to fall alternately according as its teeth catch on or quit a kind of latch in the middle of each pestle. The pestles and troughs are of wood; each trough having at least two, sometimes three pestles, at the discretion of the master, or according to the force of the stream of water. In these troughs are laid the cloths, stuffs, &c. intended to be fulled: then, letting the current of water fall on the wheel, the pestles are successively let fall thereon, and by their weight and velocity stamp and press the stuffs very strongly, which by this means become thickened and condensed. In the course of the operation, they sometimes make use of urine sometimes of fuller's earth, and sometimes of soap. To prepare the stuffs to receive the first impressions of the pestle, they are usually laid in urine; then in fuller's earth and water; and, lastly, in soap dissolved in hot water. Soap alone would do very well; but this is expensive: though fuller's earth, in the way of our dressing, is scarce inferior thereto; but then it must be well cleared of all stones and grittinesses, which are apt to make holes in the stuff. As to urine, it is certainly prejudicial, and ought to be entirely discarded; not so much on account of its ill smell, as of its sharpness and saltness, which qualities are apt to render the stuffs dry and harsh.

The true method of fulling with soap is delivered by Mons. Colinet, in an authentic memoir on that subject, supported by experiments made by order of the marquis de Louvois, then superintendent of the arts and manufactories of France; the substance of which we shall here subjoin.

*Method of FULLING Cloths and Woollen Stuffs with Soap.*—A coloured cloth, of about 45 ells, is to be laid in the usual manner in the trough of a fulling-mill; without first soaking it in water, as is commonly practiced in many places. To full this trough of cloth, 15 pounds of soap are required; one-half of which is to be melted in two pails of river or spring water, made as hot as the hand can well bear it. This solution is to be poured by little and little upon the cloth, in proportion as it is laid in the trough: and thus it is to be fulled for at least two hours; after which it is to be taken out and stretched. This done, the cloth is immediately returned into the same trough, without any new soap, and there fulled two hours more. Then taking it out, they wring it well, to express all the grease and filth. After the second fulling, the remainder of the soap is dissolved as in the former, and cast four different times on the cloth; remembering to take out the cloth every two hours, to stretch it, and undo the plaits and wrinkles it has acquired in the trough.

When

Falling  
||  
Funambu-  
lus.

When they perceive it sufficiently full, and brought to the quality and thickness required, they scour it for good in hot weather, keeping it in the trough till it be quite clean. As to white cloths; in regard these full more easy and in less time than coloured ones, a third part of the soap may be spared.

*FULLING of Stockings, Caps, &c.* should be performed somewhat differently; viz. either with the feet or the hands; or a kind of rack, or wooden machine, either armed with teeth of the same matter, or else horses or bullocks teeth. The ingredients made use of herein are, urine, green soap, white soap, and fuller's earth. But the urine also is reckoned prejudicial here. Woven stockings, &c. should be full with soap alone: for those that are knit, earth may be used with the soap. Indeed it is frequent to full these kinds of works with the mill, after the usual manner of cloth, &c. But that is too coarse and violent a manner, and apt to damage the work unless it be very strong.

**FULMAR**, in *Ornithology*. See **PROCELLARIA**, **ORNITHOLOGY** *Index*.

**FULMAR**, or *Foumart*. See **MUSTELA**, **MAMMALIA** *Index*.

**FULMINATING**, something that thunders or resembles thunder.

*FULMINATING Gold, Silver, Copper, Quicksilver, &c.* See **CHEMISTRY** *Index*.

**FULMINATION**, in *Chemistry*, the same with detonation.

**FULMINATION**, in the Romish canon law, a sentence of a bishop, official, or other ecclesiastic appointed by the pope, by which it is decreed that some bull sent from the pope shall be executed.

**FUMARIA**, **FUMITORY**, a genus of plants belonging to the diadelphia class, and in the natural method ranking under the 24th order, *Corydalis*. See **BOTANY** *Index*.

**FUMIGATION**, in *Chemistry*, a kind of calcination, when metals or other hard bodies are corroded or softened by receiving certain fumes for that purpose.

**FUMIGATION**, in *Medicine*. By the subtle fumes that are inspired as well as inhaled into our bodies, much benefit or prejudice is produced, according to the nature of the matter, and the constitution into which it is received; as is evident from the palsies produced among workers in lead-mines, &c. and the benefits received in many cases when the air is impregnated with salutary materials. Catarrhs and catarrhus coughs are relieved by fumes received with the breath; and, by the same method, expectoration is assisted in humoral asthma; and even ulcers in the lungs are said to have been healed by this method. The advantage of mercurial fumigations in the cure of venereal ulcers is known to every practitioner.

**FUMITORY**. See **FUMARIA**, **BOTANY** *Index*.

**FUNAMBULUS**, among the Romans, was what we call a *rope-dancer*, and the Greeks *schanobates*. See **ROPE-DANCER**.

There was a funambulus, it seems, who performed at the time when the Hecyra of Terence was acted; and the poet complains, that the spectacle prevented the people from attending to his comedy. *Ita populus studio stupidus in funambulo, animum occupat.*

At Rome, the funambuli first appeared under the consulate of Sulpicius Pæticus and Licinius Stolo, who were the first introducers of the scenic representations. It is added, that they were first exhibited in the island of the Tyber, and that the censors Messala and Cassius afterwards promoted them to the theatre.

In the *Floralia*, or *ludi Florales*, held under Galba, there were funambulatory elephants, as we are informed by Suetonius. Nero also showed the like, in honour of his mother Agrippina. Vopiscus relates the same of the time of Carinus and Numerianus.

**FUNCHAL**, the capital of Madeira, situated round a bay, on a gentle ascent, and containing about 15,000 inhabitants. It is watered by several streams from the mountains; and is defended by a castle on a steep rock, which is surrounded by the sea at high water. The houses are built of brick or free-stone; but the streets are narrow, dark and dirty. W. Long. 17. 6. N. Lat. 32. 38.

**FUNCTION**, the act of fulfilling the duties of any employment.

**FUNCTION**, being also applied to the actions of the body, is by physicians divided into vital, animal, and natural. The *vital* functions are those necessary to life, and without which the individual cannot subsist; as the motion of the heart, lungs, &c. The *natural* functions are such as it cannot subsist any considerable time without; as the digestion of the aliment, and its conversion into blood. Under *animal* functions are included the senses of touching, tasting, &c. memory, judgment, and voluntary motion; without any or all of which an animal may live, but not very comfortably.

The animal functions perform the motion of the body by the action of the muscles; and this action consists chiefly in the shortening the fleshy fibres, which is called *contraction*, the principal agents of which are the arteries and nerves distributed in the fleshy fibres.

All parts of the body have their own functions, or actions, peculiar to themselves. Life consists in the *exercise* of these functions, and health in the *free* and *ready* exercise of them.

**FUNCTION**, a term used in analytics for an algebraical expression any how compounded of a certain letter or quantity with other quantities or numbers; and the expression is said to be a function of that letter or quantity. Thus  $a-4x$ , or  $ax+3x^2$ , or  $2x-a\sqrt{a^2-x^2}$ , or  $xc$ , or  $c^x$ , is each of them a function of the quantity  $x$ .

**FUND**, in general, signifies any sum of money appropriated for a particular purpose. Thus, that part of the national revenue which is set apart for the payment of the national debt, is called the *sinking fund*. But, when we speak of *the funds*, we generally mean the large sums which have been lent to government, and constitute the national debt; and for which the lenders, or their assignees, receive interest from revenues allotted for that purpose. The term *stock* is used in the same sense, and is also applied to the sums which form the capital of the bank of England, the East India and South Sea companies; the proprietors of which are entitled to a share of the profits of the respective companies.

The

Funchal  
||  
Fund.

Fund.

Fund.

The practice of funding was introduced by the Venetians and Genoa in the 16th century, and has been adopted since by most of the nations in Europe. Princes had often borrowed money, in former times, to supply their exigencies, and sometimes mortgaged their territories in security: but these loans were generally extorted, and their payment was always precarious; for it depended on the good faith and success of the borrower, and never became a regular burden on posterity. The origin of funds is derived from the peculiar manners and circumstances of modern Europe. Since the invention of gunpowder, and the progress of commerce, the military occupation has become a distinct employment in the hands of mercenaries; the apparatus of war is attended with more expence; and the decision of national quarrels has often been determined by command of money rather than by national bravery. Ambitious princes have therefore borrowed money, in order to carry on their projects with more vigour. Weaker states have been compelled, in self-defence, to apply to the same resource; the wealth introduced by commerce has afforded the means; the regularity of administration, established in consequence of the progress of civility, has increased the confidence of individuals in the public security; the complicated system of modern policy has extended the scenes of war, and prolonged their duration; and the colonies established by mercantile nations have rendered them vulnerable in more points, and increased the expence of defending them.

When a greater sum has been required for the annual expence than could easily be supplied by annual taxes, the government have proposed terms to their own subjects, or foreigners, for obtaining an advance of money by mortgaging the revenue of future years for their indemnification. This mortgage may either be for a limited period, or perpetual. If the sum allotted annually for the benefit of those who advance the money, be considerably greater than the interests of the sums advanced, they may agree to accept of such allowance, for a limited time, as a full equivalent. Thus, they may either agree for the casual produce of the revenue assigned; or a fixed annuity for a greater or less number of years; or a life annuity to themselves or nominees; or an annuity for two or more lives; or an annuity, with the benefit of survivorship, called a *rentine*, in which scheme, the whole sum to which the original annuitants were entitled continues to be distributed among the survivors.

The establishment of the funds was introduced in Britain at the Revolution; and has since been gradually enlarged, and carried to an amazing extent. The various methods above-mentioned have been used in their turns, but perpetual annuities have been granted for the greatest part; and, even when the money was originally advanced on other conditions, the lenders have been sometimes induced, by subsequent offers, to accept of perpetual annuities, instead of the former terms. The debt for which perpetual annuities are granted, is called the *redeemable debt*, and the other is called the *irredeemable debt*. Although the debts thus contracted by government are seldom paid for a long term of years; yet any creditor of the public may obtain money for what is due him when he pleases, by transferring his property in the funds to another; and

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regular methods are appointed for transacting these transfers in an easy manner. By means of this, the stocks become a kind of circulating capital; and have the same effect, in some respects, as the circulating money in the nation. When a stockholder transfers his share, he may sometimes be able to obtain a greater price than the original value, and at other times be obliged to accept of a less one. The value of the funds depends on the proportion between the interest they bear, and the benefit which may be obtained by applying the money to other purposes. It is influenced by the plenty or scarcity of money, and by the quantity of the public debt; and it is impaired by any event which threatens the safety, or weakens the credit, of the government.

The business of stock-jobbing is founded on the variation of the prices of stock. Persons possessed of real property may buy or sell stock, according to their notion that the value is likely to rise or fall, in expectation of making profit by the difference of price. And a practice has taken place among persons who often possess no property in the funds, to contract for the sale of stock against a future day, at a price now agreed on. For instance: A agrees to sell B 1000l. of bank stock, to be transferred, in 20 days, for 1200l. A has, in fact, no such stock; but, if the price of bank stock, on the day appointed for the transfer, should be only 118 per cent. A may purchase as much as will enable him to fulfil his bargain for 1180l. and thus gains 20l. by the transaction; on the contrary, if the price of bank stock be 125 per cent. he will lose 50l. The business is generally settled without any actual purchase or transfer of stock, by A paying to B, or receiving from him, the difference between the current price of the stock on the day appointed and the price bargained for.

This practice, which is really nothing else than a wager concerning the price of stock, is contrary to law; yet it is carried on to a great extent. In the language of Exchange Alley, where matters of this kind are transacted, the buyer is called a *bull*, and the seller a *bear*. As neither party can be compelled by law to implement these bargains, their sense of honour, and the disgrace and loss of future credit, which attend a breach of contract, are the principles by which the business is supported. When a person declines to pay his loss, he is called a *lame duck*, and dare never afterwards appear in the Alley. This opprobrious appellation, however, is not bestowed on those whose failure is owing to want of ability, providing they make the same surrender of their property voluntarily, which the law would have exacted if the debt had been entitled to its sanction.

The interest or dividend on the stock is paid half-yearly; and the purchaser has the benefit of the interest due on the stock he buys, from the last term to the time of purchase. Therefore the prices of the stocks rise gradually, *ceteris paribus*, from term to term, and fall at the term when the interest is paid. In comparing the prices of the different stocks, it is necessary to advert to the term when the last interest was paid: and, allowance being made for this circumstance, the prices of all the government stocks, which bear interest at the same rate, must be nearly the same, as they all depend on the same security.

K k

When

Fund.

When a loan is proposed, such terms must be offered to the lenders, as may render the transaction beneficial: and this is now regulated by the prices of the old stocks. If the stocks, which bear interest at 4 per cent. fell at par, or rather above, the government may expect to borrow money at that rate; but, if these stocks are under par, the government must either grant a higher interest, or some other advantage to the lenders, in compensation for the difference. For this purpose, besides the perpetual annuity, another annuity has sometimes been granted for life, or for a term of years. Lotteries have frequently been employed to facilitate the loan, by entitling the subscribers to a certain number of tickets, for which no higher price is charged than the exact value distributed in prizes, though their market price is generally 2l. or 3l. higher. Sometimes an abatement of a certain proportion of the capital has been granted, and a lender entitled to hold 100l. stock, though in reality he advanced no more perhaps than 95l.

It belongs to the chancellor of the exchequer to propose the terms of the loan in parliament: and he generally makes a previous agreement with some wealthy merchants, who are willing to advance the money on the terms proposed. The subscribers to the loan deposit a certain part of the sum subscribed; and are bound to pay the rest by instalments, or stated proportions, on appointed days, under pain of forfeiting what they have deposited. For this they are entitled, perhaps, not only to hold their share in the capital, but to an annuity for 10 years, and to the right of receiving a certain number of lottery tickets on advantageous terms. They may sell their capital to one person, their annuity to a second, and their right to the tickets to a third. The value of all these interests together is called *omnium*; and, in order to obtain a ready subscription, it ought to amount to 102l. or upwards, on 100l. of capital. This difference is called the *bonus* to the subscribers.

The capital advanced to the public, in the form of transferable stocks, and bearing interest from taxes appropriated for that purpose, is called the *funded debt*. Besides, there is generally a considerable sum due by government, which is not disposed of in that manner, and therefore is distinguished by the appellation of the *unfunded debt*. This may arise from any sort of national expence, for which no provision has been made, or for which the provision has proved insufficient. The chief branches are,

1st, *Exchequer Bills*. These are issued from the exchequer, generally by appointment of parliament, and sometimes without such appointment, when exigencies require. They bear interest from the time when issued, and are taken in by the Bank of England, which promotes their circulation.

2d, *Navy Bills*. The sums annually granted for the navy have always fallen short of what that service required. To supply that deficiency, the admiralty issues bills in payment of victuals, stores, and the like, which bear interest six months after the time issued. The debt of the navy thus contracted is discharged, from time to time, by parliament.

In time of war, the public expences, since the Revolution, have always been much greater than the annual revenue; and large sums have consequently been bor-

rowed. In time of peace, the revenue exceeds the expence, and part of the public debt has frequently been paid off. But, though there have been more years of peace than of war since the funds were established, the debts contracted during each war have much exceeded the payments during the subsequent peace. This will appear by the following abstract of the progress of the national debt.

Debt at peace of Ryfwick, 1697	£. 21,515,472
Debt at the beginning of war 1701	16,394,701
Discharged during peace 1697 to 1701	5,121,071
Debt at peace of Utrecht 1714, including value of annuities afterwards subscribed to South Sea stock	55,282,978
Contracted in war 1701 to 1714	38,888,277
Debt at beginning of war 1740, including 1,000,000l. charged on civil list	47,954,623
Discharged during peace 1714 to 1739	7,328,355
Debt at peace of Aix-la-Chapelle, 1748	79,193,313
Contracted during war 1740 to 1748	31,238,690
Debt at beginning of war 1756	73,289,673
Paid off during peace 1748 to 1756	5,903,640
Debt funded at the peace 1763, including 9,839,597l. then owing, which was funded in the subsequent years	133,957,270
Besides this, there was about 6,000,000l. of debt paid off, without ever being funded.	
Funded debt, 1775	125,000,000
Paid off during peace 1763 to 1775, besides unfunded debt above mentioned	8,959,270
Funded at the peace 1783	211,363,254

The following is a state of the national debt at a later period.

Amount of funded debt on 5th January 1805	£. 603,925,792
Stock created by loan of 1805	38,700,000
	L. 642,625,792
Transferred for the redemption of the land-tax	22,000,000
	L. 620,625,792
Redeemed by the commissioners for managing the sinking fund	113,500,000
Leaving as the amount of the national debt on the 31st January 1806.	L. 507,125,792

It is to be observed that nearly 100 millions of the above amount of 507 millions, consist of 4 and 5 per cent. stock; and if this be converted into 3 per cent. stock, it will make the total amount 557 millions; and taking the 3 per cent. stock at 60 per cent. the present average price, the total capital of the debt in money is 334 millions of pounds sterling.

The original provision of the sinking fund, of a million per annum, with the additions that have since been made to it; and the dividends on stock, bought up by the commissioners for managing that fund, amount at this time (1806) to about eight millions per annum. It has been calculated that the future rate of accumulation of the sinking fund, continuing the same as hitherto, namely,

Fundamentally, namely, at 5 per cent. the whole amount of the national debt will be extinguished in 24 years; for the annual income of the commissioners for the management of the sinking fund being eight millions, this will produce by the year

1810 the sum of	L. 34,480,000
1820	156,700,000
1830	356,000,000

which last sum exceeds the present national debt.

FUNDAMENT, in *Anatomy*, the lowest part of the intestinum rectum, called by anatomists the *anus*. See ANATOMY.

FUNDAMENTAL, in general, something that serves as a base or foundation for another.

FUNDAMENTAL, in *Music*. A *fundamental sound* is that which forms the lowest note of the CHORD, and from whence are deduced the harmonical relations of the rest; or, which serves for a key to the tone †. The *fundamental bass* is that which serves for a foundation to the harmony. A *fundamental chord* is that whose bass is fundamental, and in which the sounds are ranged in the same order as when they are generated, according to the experiment so often repeated by M. d'Alembert, in his Preliminary Discourse and Elements of Music ‡. But as this order removes the parts to an extreme distance one from the other, they must be approximated by combinations or inversions; but if the bass remains the same, the chord does not for this reason cease to bear the name of *fundamental*. Such an example is this chord, *ut mi sol*, included in the interval of a fifth: whereas, in the order of its generation, *ut sol mi*, it includes a tenth, and even a seventeenth; since the fundamental *ut* is not the fifth of *sol*, but the octave of that fifth.

FUNDAMENTAL Bass. This part in music is, according to Rousseau, and indeed according to all authors who have proceeded upon M. Rameau's experiment, in its primary idea, that bass which is formed by the fundamental notes of every perfect chord that constitutes the harmony of the piece; so that under each chord it causes to be heard, or understood, the fundamental sound of that particular chord; that is to say, the sound from whence it is derived by the rules of harmony. From whence we may see, that the fundamental bass can have no other contexture than that of a regular and fundamental succession, without which the procedure of the upper parts would be illegitimate.

To understand this well, it is necessary to be known, that, according to the system of Rameau, which Rousseau has followed in his Dictionary, every chord, though composed of several sounds, can only have one which is its fundamental, viz. that which produces this chord, and which is its bass according to the direct and natural order. Now, the bass which prevails under all the other parts, does not always express the fundamental sounds of the chords; for amongst all the sounds which form a chord, the composer is at liberty to transfer to the bass that which he thinks preferable; regard being had to the procedure of that bass, to the beauty of the melody, and above all to the expression, as may afterwards be explained. In this case the real fundamental sound, instead of retaining its natural station, which is in the bass, will either be transferred to some of the

other parts, or perhaps even entirely suppressed, and such a chord is called an *inverted chord*.

In reality, says Rameau, a chord inverted does not differ from the chord in its direct and natural order from which it was produced: but as these sounds form different combinations, these combinations have long been taken for fundamental chords; different names have been given them, (which may be seen at the word ACCORD, in Rousseau's Dictionary). These names, by the persons who bestowed them, were thought to create and sanctify their distinctions; as if a difference in names could really produce a difference in the species.

M. Rameau in his Treatise of Harmony has shown, and M. d'Alembert in his Elements of Music has still more clearly evinced, that many of these pretendedly different chords were no more than inversions of one single chord. Thus the chord of the sixth is no more than the perfect chord of the third transferred to the bass; by adding a fifth, we shall have the chord of the sixth and fourth. Here there are three combinations of a chord, which only consists of three sounds; those which contain four sounds are susceptible of four combinations, since each of these sounds may be transferred to the bass. But in adding beneath this another bass which, under all the combinations of one and the same chord, always presents the fundamental sound; it is evident, that consonant chords are reduced to the number three, and the number of dissonant chords to four. Add to this all the chords by supposition, which may likewise be reduced to the same fundamentals, and you will find harmony brought to a degree of simplicity in which no person could ever hope to see it whilst its rules remained in that state of confusion where M. Rameau found them. It is certainly, as that author observes, an astonishing occurrence, that the practice of this art could be carried so far as it really was, without knowing its foundation; and that all the rules were so exactly found, without having discovered the principle on which they depended.

After having shown what is the fundamental bass beneath the chords, let us now speak of its procedure, and of the manner in which it connects these chords among themselves. Upon this point the precepts of the art may be reduced to the six following rules.

1. The fundamental bass ought never to sound any other notes than those of the series or tone in which the composer finds himself, or at least those of the series or tone to which he chooses to make a transition. This of all the rules for the fundamental bass is the first and most indispensable.

2. By the second, its procedure ought to be so implicitly subjected to the laws of modulation, as never to suffer the idea of a former mode to be lost till that of a subsequent one can be legitimately assumed; that is to say, that the fundamental bass ought never to be devicous, or suffer us to be one moment at a loss in what mode we are.

3. By the third, it is subjected to the connexion of chords and the preparation of dissonances: a manœuvre which, as we shall afterwards see, is nothing else but a method of producing this connexion, and which of consequence is only necessary when the connexion cannot subsist without it. See CONNEXION, PREPARATION.

4. By the fourth, it is necessitated, after every dissonance,

Fundamen-  
tal. } sonance, to pursue that career which the resolution of  
the dissonance indispenfably prefcribes. See RESOLU-  
TION.

5. By the fifth, which is nothing elfe but a confe-  
quence of the former, the fundamental bafs ought  
only to move by confonant intervals; except alone  
in the operation of a broken cadence, or after a chord  
of the feventh diminished, where it rifes diatonically.  
Every other motion of the fundamental bafs is illegi-  
timate.

6. By the sixth, in fhort, the fundamental bafs or  
harmony ought not to be fyncopated; but to diftin-  
guish the bars and the times which they contain, by  
changes of chords properly marked with cadences; in  
fuch a manner, for inftance, that the difsonances which  
ought to be prepared may find their preparation in the  
imperfect time, but chiefly that all the repofes may hap-  
pen in the perfect time. This sixth rule admits of an  
infinite number of exceptions; but the compofer ought  
however to be attentive to it, if he would form a mufic  
in which the movements are properly marked, and in  
which the bars may end gracefully.

Wherever thefe rules are obferved, the harmony fhall  
be regular and without fault: this, however, will not  
hinder the mufic from being deteftable. See COMPOSI-  
TION.

A word of illuftration on the fifth rule may not be  
ufelefs. Whatever turn may be given to a funda-  
mental bafs, if it is properly formed, one of thefe  
alternatives muft always be found; either perfect  
chords moving by confonant intervals, without which  
thefe chords would have no connexion; or difsonant  
chords in operations of cadence: in every other cafe,  
the difsonance can neither be properly placed nor pro-  
perly refolved.

From thence it follows, that the fundamental bafs  
cannot move regularly but in one of thefe three man-  
ners: 1ft, To rife or defcend by a third or by a fifth.  
2dly, By a fourth or a fifth. 3dly, To rife diatonically  
by means of the difsonance which forms the connexion,  
or by a licence upon a perfect chord. With refpect  
to a diatonic defcent, it is a motion abfolutely prohibi-  
ted to the fundamental bafs; or, at moft, merely tolerat-  
ed in cafes where two perfect chords are in fucceffion,  
divided by a clofe expreffed or underftood. This rule  
has no other exception: and it is from not difcerning  
the foundation of certain transitions, that M. Rameau  
has caufed the fundamental bafs to defcend diatonically  
under chords of the feventh; an operation which is  
impracticable in legitimate harmony. See CADENCE,  
DISSONANCE.

The fundamental bafs, which they add for no other  
reafon than to ferve as a proof of the harmony, muft  
be retrenched in execution, and often in praftice it  
would have a very bad effect; for it is, as M. Rameau  
very properly obferves, intended for the judgment, and  
not for the ear. It would at leaft produce a monotony  
extremely naufeous by frequent returns of the fame  
chord, which they difguife and vary more agreeably  
by combining it in different manners upon the continued  
bafs, without reckoning upon the different inverfions of  
harmony, which furnifh a thoufand means of adding  
new beauties to the mufic and new energy to the expref-  
fion. See CHORD, INVERSION.

But it will be objected, If the fundamental bafs is

not ufeful in compofing good mufic, if it muft even be  
retrenched in praftice, what good purpofe, then, can  
it ferve? We anfwer, that in the firft place, It ferves  
for a rule to fcholars, upon which they may learn to  
form a regular harmony, and to give to all the parts  
fuch a diatonic and elementary procedure as is pre-  
fcribed them by that fundamental bafs. It does more,  
as we have already faid: it proves whether a harmony  
already formed be juft and regular; for all harmony  
which cannot be fubjected to the teft of a fundamental  
bafs, muft according to all rules be bad. Finally, It  
ferves for the investigation of a continued bafs under a  
given air: though, in reality, he who cannot directly  
form a continued bafs will fcarcely be able to form a  
fundamental bafs, which is better; and much lefs ftill  
will he be able to transform that fundamental bafs in-  
to a legitimate continued bafs. Thefe which follow  
are, however, the principal rules which M. Rameau  
prefcribes for finding the fundamental bafs of a given  
air.

1. To afcertain with precision the mode in which the  
compofer begins, and thofe through which he paffes.  
There are alfo rules for investigating the modes; but  
fo long, fo vague, fo incomplete, that with refpect to  
this, the ear may be formed long before the rules are  
acquired; and the dunce who fhould try to ufe them  
would gain no improvement but the habit of proceed-  
ing always note by note, without even knowing where  
he is.

2. To try in fucceffion under each note the princi-  
pal chords of the mode, beginning by thofe which are  
moft analogous, and paffing even to the moft remote,  
when the compofer fees himfelf under a neceffity of  
doing fo.

3. To confider whether the chord chofen can fuit the  
upper part in what precedes and in what follows, by a  
juft fundamental fucceffion; and when this is impracti-  
cable, to return the way he came.

4. Not to change the note of the fundamental bafs  
till after having exhausted all the notes which are allow-  
ed in fucceffion in the upper part, and which can enter  
into its chord; or till fome fyncopated note in the air  
may be fufceptible of two or a greater number of notes  
in the bafs, to prepare the difsonance which may be af-  
terwards refolved according to rule.

5. To ftudy the intertexture of the phrafes; the  
poffible fucceffion of cadences, whether full or avoided;  
and above all, the pauses which for ordinary return at  
the end of every four, or of every two bars, fo that  
they may always fall upon perfect and regular ca-  
dences.

6. In fhort, to obferve all the rules formerly given  
for the compofition of the fundamental bafs.—Thefe  
are the principal obfervations to be made for finding  
one under any given air; for there are fometimes fev-  
eral different ones which may be investigated. But,  
whatever may be faid to the contrary, if the air has ac-  
cent and character, there is only one juft fundamen-  
tal bafs which can be adapted to it.

After having given a fummary explication of the  
manner in which a fundamental bafs fhould be com-  
pofed, it fhould remain to fuggelt the means of tranf-  
forming it into a continued bafs; and this would be  
eafy, if it were only neceffary to regard the diatonic  
procedure and the agreeable air of this bafs. But let

Fundi  
||  
Funeral.

us not imagine that the basfs, which is the guide and support of the harmony, the foul, and as it were the interpreter, of the air, should be limited to rules fo fimple : there are others which depend upon principles more certain and more radical ; fruitful, but latent principles, which have been felt by every artist of genius, without having been detected by any one. Rouffeau hopes, that in his letter upon French mufic he infnuated this principle. For thofe who understand him, he imagines he has faid enough concerning it, and can never fay enough of it for thofe who do not. See *Rouffeau's Miscellanies*, vol. ii. p. 1.

He does not here mention the ingenious fyftem by M. Serre of Geneva, nor his double fundamental basfs ; becaufe the principles which, with a sagacity meritorious of praife, he had half detected, have afterwards been unfolded by M. Tartini, in a work of which Rouffeau has given an account in his article SYSTEM.

FUNDI, in *Ancient Geography*, a town of Latium, on the Via Appia, near Cajeta ; enjoying all the privileges of Roman citizens, except the right of fuffrage and of magiftracy. Now *Fondi* ; a city of Naples, on the confines of the pope's dominions. E. Long. 14. 20. N. Lat. 41. 35.

FUNDY, a bay of confiderable extent in North America, opening between the iflands of Penobfcot bay, in the county of Lincoln, and Cape Sable, the fouth-weft point of Nova Scotia. It reaches about 200 miles in a north-eaft direktion, and forms a very narrow irthmus with Verte bay, which reaches into the land in a fouth-weft direktion from the ftraits of Northumberland. It is 12 leagues from St John's in New Brunfwick, to the Gut of Annapolis in Nova Scotia, where the tides are remarkably rapid, and rife to the height of 30 feet. The tides in this bay are fo rapid, that it is faid, they will overtake animals feeding on the fhore.

FUNEN, or FIONIA, a confiderable ifland in Denmark, feated on the Baltic fea, and feparated from Jutland by a ftrait called the *Leffer Belt*, and from the ifland of Zealand by another called the *Great Belt*. It is fertile in wheat and barley ; and abounds in cattle, hofes, game of all forts, and fifh. Odenfee is the capital town.

FUNERAL RITES, ceremonies accompanying the interment or burial of any perfon. The word is formed of the Latin *funus* ; and that of *funalia*, on account of the torches (which were *funes cera circumdati*) ufed in the funerals of the Romans ; though others derive *funus* from the Greek *φονος*, *death* or *flaughter*.

Thefe rites differed among the ancients according to the different genius and religion of each country.

The firft people who feem to have paid any particular refpect to their dead, were the Egyptians, the pofterity of Ham, the firft cultivators of idolatrous worfhip and fuperftition after the flood ; they were alfo the firft who asserted the immortality of the foul, its migration into all kinds of animals in earth, air, and fea, and its return to the human body ; which they fuppofed to be within the term of 3000 years : Hence proceeded their very great care in embalming of their dead bodies, and their being at fuch vaft expences, as they were, in building proper repositories for them ; for they were more follicitous about their graves than their houfes : This gave birth to thofe wonders of the

world, the pyramids, which were built for the burial of their kings, with fuch vaft charges, and almoft incredible magnificence. See PYRAMID.

Whenever a perfon died among the *Egyptians*, his parents and friends put on mournful habits, and abftained from all banquets and entertainments. This mourning lafted from 40 to 70 days, during which time they embalmed the body. See EMBALMING.

When this ceremony was finifhed, the embalmed body was reftored to the friends, who placed it in a kind of open cheft, which was preferved either in their houfes, or in the fepulchres of their anceftors. But before the dead were allowed to be deposited in the tomb, they underwent a folemn judgment, which extended even to their kings. Of this remarkable custom we have a particular account in the firft book of Diodorus Siculus. " Thofe who prepare to bury a relation, give notice of the day intended for the ceremony to the judges, and to all the friends of the deceafed ; informing them, that the body will pafs over the lake of that diftrict to which the dead belonged : when, on the judges afsembling, to the number of more than 40, and ranging themfelves in a femicircle on the farther fide of the lake, the veffel is fet afloat, which thofe who fuperintend the funeral have prepared for this purpofe.

This veffel is managed by a pilot, called in the Egyptian language Charon ; and hence they fay, that Orpheus, travelling in old times into Egypt, and feeing this ceremony, formed his fable of the infernal regions, partly from what he faw, and partly from invention. The veffel being launched on the lake, before the coffin which contains the body is put on board, the law permits all, who are fo inclined to produce an accusation againft it. If any one steps forth, and proves that the deceafed has led an evil life, the judges pronounce fentence, and the body is precluded from burial ; but if the accufer is convicted of injuftice in his charge, he falls himfelf under a confiderable penalty. When no accufer appears, or when the accusation is proved to be an unfair one, the relations, who are afsembled, change their expreffions of forrow into encomiums on the dead ; yet do not, like the Greeks, fpeak in honour of his family, becaufe they confider all Egyptians as equally well born ; but they fet forth the education and manners of his youth, his piety and juftice in maturer life, his moderation, and every virtue by which he was diftinguifhed ; and they fupplicate the infernal deities to receive him as an affociate among the bleft. The multitude join their acclamations of applaufe in this celebration of the dead, whom they confider as going to pafs an eternity among the juft below." Such is the defcription which Diodorus gives of this funeral judicature, to which even the kings of Egypt were fubject. The fame author asserts, that many fovereigns had been thus judicially deprived of the honours of burial by the indignation of their people : and that the terrors of fuch a fate had the moft falutary influence on the virtue of their kings.

The funeral rites among the *Hebrews* were folemn and magnificent. When any perfon was dead, his relations and friends rent their clothes ; which custom is but faintly imitated by the modern Jews, who only cut off a bit of their garment, in token of affliction. It was ufual to bend the dead perfon's thumb into the hand, and faften it in that pofiture with a ftring ; be-  
caufe

Funeral.

Funeral.

cause the thumb then having the figure of the name of God, they thought the devil would not dare to approach it. When they came to the burying place, they made a speech to the dead in the following terms: "Blessed be God, who has formed thee, fed thee, maintained thee, and taken away thy life. O dead! he knows your numbers, and shall one day restore your life," &c. Then they spoke the elogium, or funeral oration, of the deceased; after which they said a prayer, called the *righteousness of judgment*; then turning the face of the deceased towards heaven, they called out, "Go in peace."

Among the ancient *Greeks* it was usual sometimes before the interment, to put a piece of money into the mouth of the deceased, which was thought to be Charon's fare for wafting the departed soul over the infernal river. This ceremony was not used in those countries which were supposed to be situated in the neighbourhood of the infernal regions, and to lead thither by a ready and direct road. The corpse was likewise furnished with a cake, composed of flour, honey, &c. which was designed to appease the fury of Cerberus the door-keeper of hell, and to procure the ghost a safe and quiet entrance. During the time the corpse continued in the house, there stood before the door a vessel of water: the design of which was, that those concerned about the body might purify themselves by washing; it being the opinion of the *Greeks*, as well as of the *Jews*, that pollution was contracted by touching a dead body.

The ceremonies by which they expressed their sorrow for the death of their friends were various; but it seems to have been a constant rule to recede as much as possible in habit and behaviour from their ordinary customs. For this reason they abstained from banquets and entertainments; they divested themselves of all ornaments; they tore, cut off, or shaved their hair, which they cast into the funeral pile, to be consumed with the body of their deceased friend. Sometimes they threw themselves on the ground and rolled in the dust, or covered their head with ashes; they beat their breasts, and even tore their flesh with their nails, upon the loss of a person they much lamented. When persons of rank, such as public magistrates or great generals died, the whole city put on a face of mourning; all public meetings were intermitted; the schools, baths, shops, temples, and all places of concourse, were shut up.

After interment followed the *epulee* or feasts, at which the company used to appear crowned; when they spoke in praise of the dead, so far as they could go with truth, it being esteemed a notorious wickedness to lie upon such an occasion. And not only at those feasts, but even before the company departed from the sepulchre, they were sometimes entertained with a panegyric upon the dead person.

The *Grecian* soldiers, who died in war, had not only their tombs adorned with inscriptions showing their names, parentage, and exploits, but were also honoured with an oration in their praise. Particularly the custom among the *Athenians* in the interment of their soldiers was as follows, namely, "They used to place the bodies of their dead in tents three days before the funeral, that all persons might have opportunity to find out their relations, and pay their last respects

to them. Upon the fourth day, a coffin of cypress was sent from every tribe, to convey the bones of their own relations; after which went a covered hearse, in memory of those whose bodies could not be found. All these, accompanied with the whole body of the people, were carried to the public burying place, called *Ceramicus*, and there interred. One oration was spoken in commendation of them all, and their monuments were adorned with pillars, inscriptions, and all other ornaments usual about the tombs of the most honourable persons. The oration was pronounced by the fathers of the deceased persons who had behaved themselves most valiantly. Thus after the famous battle at Marathon, the fathers of Callimachus and Cynægyrus were appointed to make the funeral oration. And upon the return of the day, upon which the solemnity was first held, the same oration was constantly repeated every year."

Interring or laying the dead in the ground seems to have been the most ancient practice among the *Greeks*; though burning came afterwards to be generally used among them. It was customary to throw into the funeral pile those garments the deceased usually wore. The pile was lighted by one of the deceased's nearest relations or friends, who made prayers and vows to the winds to assist the flames, that the body might quickly be reduced to ashes; and during the time the pile was burning, the dead person's friends stood by it, pouring libations of wine, and calling upon the deceased.

The funeral rites among the *ancient Romans* were very numerous. The deceased was kept seven days; and every day washed with hot water, and sometimes with oil, that, in case he were only in a slumber, he might be thus waked; and every now and then his friends meeting, made a horrible outcry or shout, with the same view; which last action they called *conclamatio*. The third conclamation was on the seventh day; when, if no signs of life appeared, the defunct was dressed and embalmed by the *pollinctores*; placed in a bed near the door, with his face and heels towards the street; and the outside of the gate, if the deceased were of condition, was garnished with cypress boughs. In the course of these seven days, an altar was raised near his bed side, called *acerra*; on which his friends every day offered incense: and the *libitinarii* provided things for the funeral.

On the seventh day a crier was sent about the city, to invite the people to the solemnization of the funeral in these words: *Exequias L. Tit. filii, quibus est commodum ire, jam tempus est. Ollus (i. e. ille) ex ædibus effertur*. The people being assembled, the last conclamation ended, and the bed was covered with purple: a trumpeter marched forth, followed by old women called *præficae*, singing songs in praise of the deceased; lastly, the bed followed, borne by the next relations; and if the person were of quality and office, the waxen images of all his predecessors were carried before him on poles. The bed was followed by his children, kindred, &c. *atrati*, or in mourning: from which act of following the corpse, these funeral rites were called *exequiæ*. The body thus brought to the rostra, the next of kin *laudabat defunctum pro rostris*, made a funeral oration in his praise and that of his ancestors. This done, the body was carried to the *pyra*, or funeral pile, and there burnt: his friends first cutting off a finger, to be buried

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ried with a second solemnity. The body consumed, the ashes were gathered; and the priest sprinkling the company thrice with clean water, the eldest of the *præfice* crying aloud, *Ilicet*, dismissed the people, who took their leave of the deceased in this form, *Vale, vale, vale: nos te ordine quo natura permisit sequemur*.—The ashes, enclosed in an urn, were laid in the sepulchre or tomb.

The ancient Christians testified their abhorrence of the Pagan custom of burning their dead; and always deposited the body entire in the ground: and it was usual to bestow the honour of embalming upon the martyrs at least, if not upon others. They prepared the body for burial, by washing it with water, and dressing it in a funeral attire. The exportation or carrying forth of the body was performed by near relations, or persons of such dignity as the circumstances of the deceased required. Psalmody, or singing of psalms, was the great ceremony used in all funeral processions among the ancient Christians.

In the *Romish church*, when a person is dead, they wash the body, and put a crucifix in its hand. At its feet stands a vessel full of holy water, and a sprinkler, that they who come in may sprinkle both themselves and the deceased. In the mean time some priest stands by the corpse, and prays for the deceased till it is laid in the earth. In the funeral procession, the exorcist walks first, carrying the holy water; next the cross-bearer, afterwards the rest of the clergy, and last of all the officiating priest. They all sing the *miserere*, and some other psalms; and at the end of each psalm a *requiem*. We learn from Alet's ritual, that the faces of deceased laymen must be turned towards the altar, when they are placed in the church; and those of the clergy towards the people. The corpse is placed in the church surrounded with lighted tapers; after the office for the dead, mass is said; then the officiating priest sprinkles the corpse thrice with holy water, and as often throws incense on it. The body being laid in the grave, the friends and relations of the deceased sprinkle the grave with holy water.

The funeral ceremonies of the *Greek church* are much the same with those of the Latin. It needs only be observed, that, after the funeral service, they kiss the crucifix, and salute the mouth and forehead of the deceased; after which each of the company eats a bit of bread and drinks a glass of wine in the church, wishing the soul a good repose, and the afflicted family all consolation.

*FUNERAL GAMES*, a part of the ceremony of the ancient funerals.

It was customary for persons of quality, among the ancient Greeks and Romans, to institute games with all sorts of exercises, to render the death of their friends more remarkable. This practice was generally received, and is frequently mentioned by ancient writers. Patroclus's funeral games take up the greatest part of one of Homer's *Iliads*; and Agamemnon's ghost is introduced by the same poet, telling the ghost of Achilles, that he had been a spectator at a great number of such solemnities.

The celebration of these games among the Greeks mostly consisted of horse races; the prizes were of different sorts and value, according to the quality and magnificence of the person that celebrated them. The

garlands given to victors on this occasion were usually of parsley, which was thought to have some relation to the dead.

Those games, among the Romans consisted chiefly of processions; and sometimes of mortal combats of gladiators around the funeral pile. They, as well as the Greeks, had also a custom, though very ancient, of cutting the throats of a number of captives before the pile, as victims to appease the manes of the deceased. Cæsar relates, that the Gauls had this custom.

The funeral games were abolished by the emperor Claudius.

*FUNERAL ORATION*, a discourse pronounced in praise of a person deceased, at the ceremony of his funeral.

This custom is very ancient. In the latter part of the account above given of the Egyptian ceremonies of interment, may be perceived the first rudiments of funeral orations, and what was the subject of them, which were afterwards moulded into a more polite and regular form by other nations, who adopted this custom. Nor can we omit remarking, that those funeral solemnities were attended not only with orations in praise of the deceased, but with prayers for him; which prayers, it seems, were made by one who personated the deceased: an entire form of one of them is preserved by Porphyry, and perhaps it may in some measure gratify the reader's curiosity to recite it from him. "When (says he) they (the Egyptians) embalm their deceased nobles, they privately take out the entrails, and lay them up in an ark or chest: moreover, among other things which they do in favour of the deceased, lifting up the ark or chest to the sun, they invoke him; one of the *libitinarii* making a prayer for the deceased, which Euphantus has translated out of the Egyptian language, and is as follows:—O lord, the sun, and all the gods who give life to men, receive me and admit me into the society of the immortal ones; for, as long as I lived in this world, I religiously worshipped the gods whom my parents showed me, and have always honoured those who begat my body; nor have I killed any man, nor have I defrauded any of what has been committed to my trust, nor have I done anything which is inexpiable. Indeed, whilst I was alive, if I have sinned either by eating or drinking anything which was not lawful; not through myself have I sinned, but through these, showing the ark and chest where the entrails were. And having thus spoke, he casts it into the river, but the rest of the body he embalms as pure."

The Grecians received the seeds of superstition and idolatrous worship from the Egyptians, through the coming of Cecrops, Cadmus, Danaus, and Erechtheus, into Greece; and among other customs transplanted from Egypt, were the solemnities used at the burial of the dead. Of these, an encomium on the deceased always formed a part, as particularly noticed under the preceding article.

From the Egyptians and Grecians, especially from the latter, the Romans received many of their laws and customs, as well as much of their polytheism and idolatrous worship. It is well known, that the custom of making funeral orations in praise of the dead obtained among them; and the manner in which their funeral services were performed has been already described. The corpse being brought into their great oratory,

**Funeral.** oratory, called the *rostra*, the next of the kin *laudabat defunctum pro rostris*, that is, made a funeral oration, in the commendation principally of the party deceased, but touching the worthy acts also of those his predecessors whose images were there present. The account given by Dr Kennet is in these words: "In all the funerals of note, especially in the public or indistinctive, the corpse was first brought with a vast train of followers into the forum; here one of the nearest relations ascended the rostra, and obliged the audience with an oration in praise of the deceased. If none of the kindred undertook the office, it was discharged by some of the most eminent persons in the city for learning and eloquence, as Appian reports of the funeral of Sylla. And Pliny the younger reckons it as the last addition to the happiness of a very great man, that he had the honour to be praised at his funeral by the most eloquent Tacitus, then consul; which is agreeable to Quintilian's account of this matter, *Nam et funebres*, &c. For the funeral orations (says he) depend very often on some public office, and by order of senate are many times given in charge to the magistrates to be performed by themselves in person. The invention of this custom is generally attributed to Valerius Poplicola, soon after the expulsion of the regal family. Plutarch tells us, that honouring his colleague's obsequies with a funeral oration, it so pleased the Romans, that it became customary for the best men to celebrate the funerals of great persons with speeches in their commendations." Thus Julius Cæsar, according to custom, made an oration in the rostra, in praise of his wife Cornelia, and his aunt Julia, when dead; wherein he showed, that his aunt's descent, by her mother's side, was from kings, and by her father's, from the gods. Plutarch says, that "he approved of the law of the Romans, which ordered suitable praises to be given to women as well as to men after death."—Though by what he says in another place, it seems that the old Roman law was, that funeral orations should be made only for the elder women; and therefore he says, that Cæsar was the first that made one upon his own wife, it not being then usual to take notice of younger women in that way: but by that action he gained much favour from the populace, who afterwards looked upon him, and loved him as a very mild and good man. The reason why such a law was made in favour of the women, Livy tells us was this, That when there was such a scarcity of money in the public treasury, that the sum agreed upon to give the Gauls to break up the siege of the city and capitol could not be raised, the women collected among themselves and made it up; who hereupon had not only thanks given them, but this additional honour, that after death, they should be solemnly praised as well as the men: which looks as if, before this time, only the men had those funeral orations made for them.

This custom of the Romans very early obtained among the Christians. Some of their funeral sermons or orations are now extant, as that of Eusebius on Constantine; and those of Nazianzen on Basil and Cæsarius; and of Ambrose on Valentinian, Theodosius, and others. Gregory, the brother of Basil, made *επιταφειον λογον*, a funeral oration, for Melitus bishop of Antioch: in which orations, they not only praised the

dead, but addressed themselves to them, which seems to have introduced the custom of praying to departed saints. Now these orations were usually made before the bodies of the deceased were committed to the ground; which custom has been more or less continued ever since, to this day.

Thus it appears, that those rites and ceremonies among the heathens, which have been delivered from one people to another, are what have given birth to

*FUNERAL Sermons and Orations*, among Christians. Though this practice is considerably improved, and cleared of many things which would smell too rank of paganism, and is thrown into a method which, perhaps, may be of some service to christianity; yet, notwithstanding this new dress, its original may very easily be discerned. The method in which the characters of deceased persons are given in our funeral sermons, is very much the same with that observed in those pagan orations; where first an account is given of the parentage of the deceased, then of his education; after that, we hear of his conduct in riper years: then his many virtues are reckoned up, with his generous, noble, and excellent performances.—Nor let the practice be condemned because of its rise and original; for why may not the customs of heathens, if just and laudable in themselves, and nowise pernicious to Christianity in their consequences, be followed by Christians? Only, since we are come into this practice, there is one thing we should take care to follow them in; and that is, not to make those sermons or orations for every one; but for those only whose characters are distinguished, who have been eminently useful in the world, and in the church of Christ. The old heathens honoured those alone with this part of the funeral solemnity, who were men of probity and justice, renowned for their wisdom and knowledge, or famous for warlike exploits: This, as Cicero \* informs us, being part of the law for burials, \* *De Leg.* 1. 2. which directs, that the praises only of honourable persons shall be mentioned in the oration. It would be much more agreeable, therefore, if our funeral discourses were not so common, and if the characters given of the deceased were more just; devoid of that fulsome flattery with which they too often abound.

FUNGI (from *σφογγος*, *fungus*), the name of the 4th order of the 24th class of vegetables, in the Linnæan system; comprehending all those which are of the mushroom kind, and which in Tournefort constitute the 2d, 3d, 4th, 5th, 6th, 7th, and 8th genera of the first section in the class xvii. This order in the Linnæan arrangement, contains 10 genera; and it constitutes one of the natural order of plants in the *Fragmenta Methodi Naturalis* of Linnæus. See BOTANY *Index*.

But as the classification of this order only has been given under the article BOTANY, we shall here detail some of the speculations of naturalists concerning their nature and mode of production.

The ancients called fungi *children of the earth*, meaning, no doubt, to indicate the obscurity of their origin. The moderns have likewise been at a loss in what rank to place them; some referring them to the animal, some to the vegetable, and others to the mineral, kingdom.

Messrs Wilck and Münchaufen have not scrupled to rank these bodies in the number of animal productions; because,

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because, when fragments of them or their seeds were macerated in water, these gentlemen perceived a quantity of animalcules discharged, which they supposed capable of being changed into the same substance. It was the ancient opinion, that beef could produce bees; but it was reserved for Messrs Wilck and Münchausen to suppose, that bees could produce beef. Wilck asserts, that fungi consist of innumerable cavities, each inhabited by a polype; and he does not hesitate to ascribe the formation of them to their inhabitants, in the same way as it has been said that the coral, the lichen, and the mucor, were formed. Hedwig has lately shown how ill founded this opinion is with respect to the lichen; and M. Durande has demonstrated its falsity with regard to the corallines. "Indeed (says M. Bonnet, talking of the animality of fungi) nothing but the rage for paradox could induce any one to publish such a fable; and I regret that posterity will be able to reproach our times with it. Observation and experiment should enable us to overcome the prejudices of modern philosophy; now, that those of the ancient have disappeared and are forgotten."

It cannot be denied that the mushroom is one of the most perishable of all plants, and it is therefore the most favourable for the generation of insects. Considering the quickness of its growth, it must be furnished with the power of copious absorption; the extremity of its vessels must be more dilated than in other plants. Its root seems, in many cases, to be merely intended for its support: for some species grow upon stones or moveable sand, from which it is impossible that they can draw much nourishment. We must therefore suppose, that it is chiefly by the stalk that they absorb. These stalks grow in a moist and tainted air, in which float multitudes of eggs, so small, that the very insects they produce are with difficulty seen by the microscope. These eggs may be compared to the particles of the byssus, 100,000 of which, as M. Gleditsch says, are not equal to the fourth of a grain. May we not suppose, that a quantity of such eggs are absorbed by the vessels of the fungus, that they remain there, without any change, till the plant begins to decay? Besides, the eggs may be only deposited on the surface of the plant, or they may exist in the water into which they are thrown for examination. Do not we see that such eggs, dispersed through the air, are hatched in vinegar, in paste, &c. and wherever they find a convenient nidus for their development? Can it be surprising then, that the corruption of the mushroom should make the water capable of disclosing certain beings that are really foreign to both?

It is not more easy to acquiesce in the opinions of those naturalists who place the fungi in the mineral kingdom, because they are found growing on porous stones, thence called *lapides fungarii*; which, however, must be covered with a little earth, and be watered with tepid water, in order to favour the growth. Such mushrooms are no more the produce of the stone, than the lichen is of the rock to which it adheres, or the moss of the tree on which it is found. We have only to observe the growth of mushrooms, to be convinced, that this happens by development, and not by addition or combination of parts as in minerals. The opinion of Boccone, who attributed them to an unctuous matter performing the function of seed, and acqui-

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ring extension by apposition of similar parts; and that of Morison, who conceived that they grew spontaneously out of the earth by a certain mixture of salt and sulphur, joined with oils from the dung of quadrupeds; have now no longer any adherents. Fungi are produced, they live, they grow, by development; they are exposed to those vicissitudes natural to the different periods of life which characterize living substances; they perish and die. They extract, by the extremity of their vessels, the juices with which they are nourished; they elaborate and assimilate them to their own substance. They are, therefore, organized and living beings, and consequently belong to the vegetable kingdom. But whether they are real plants, or only the production of plants, is still a matter in dispute with the ablest naturalists.

Some ancient authors have pretended to discover the seed of mushrooms; but the opinion was never generally received. Petronius, when he is laughing at the ridiculous magnificence of his hero Trimalcio, relates, that he had written to the Indies for the seed of the morelle.

These productions were generally attributed to the superfluous humidity of rotten wood, or other putrid substances. The opinion took its rise from observing that they grew most copiously in rainy weather. Such was the opinion of Tragus, of Bauhin, and even of Columna, who, talking of the peziza, says, that its substance was more solid and harder, because it did not originate from rotten wood, but from the *pituita* of the earth. It is not surprising, that, in times when the want of experiment and observation made people believe that insects could be generated by putrefaction, we should find the opinion general, that fungi owed their origin to the putrescence of bodies, or to a viscid humour analogous to putridity.

Malpighi could not satisfy himself as to the existence of seeds which other botanists had pretended to discover. He only says, that these plants must have them, or that they perpetuate themselves and shoot by fragments. Micheli, among the moderns, appears to have employed himself most successfully on this subject. He imagined, that he not only saw the seeds, but even the stamina, as well as the little transparent bodies destined to favour the dissemination and the fecundation of these seeds. Before this author, Lister thought he perceived seeds in the *Fungus perosus crassus magnus* of John Bauhin: the little round bodies that are found in the pezizæ and helvellæ, at that time, passed for seeds; which did not appear at all probable to Marfigli, considering that the eye, when assisted with the very best microscopes, could perceive nothing similar in much larger fungi. Indeed these bodies may be the capsules or covers of the seeds, if they are not the seeds themselves. However this may be, Marfigli, observing that fungi were often without roots or branches, and that they wanted flowers and seeds, the means which nature employs for the production of perfect plants, thought himself warranted in doubting whether these beings could be ranked in the number of vegetables.

The doubts of Marfigli prompted him to observe the formation of fungi. Their matrix he called *Situs*: he imagined they grew in places where they met with an unctuous matter, composed of an oil mixed with nitrous salt, which, by fermentation, produced heat and mois-

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ture, and insinuated itself between the fibres of wood; that is, he imagined them to be the production of a viscid and putrescent humour. Lancisi, in like manner, considered fungi as owing their existence to the putrefaction of vegetables, and supposed them a disease in the plant; but he imagined, "that the fibres of the tree were necessary to their production," as is the case in the formation of galls; he compared them to the warts and other excrescences of the human body. He added, that such fungous vegetable tumours must necessarily assume various forms and figures, from the fluids which distend the tubes and vessels relaxed by putrescence, from the ductility of the fibres and their direction, and from the action of the air.

This opinion has been refuted by the celebrated naturalist M. de Jussieu, in the Memoirs of the Academy of Sciences for the year 1728. He maintains, that the fungi have a great analogy with the lichen, which is allowed to be a vegetable; that, like the lichen, they are divested of stalk, branches, and leaves; that, like it, they grow and are nourished upon the trunks of trees, on pieces of rotten wood, and on all sorts of putrid vegetables; that they resemble the lichen too in the rapidity of their growth, and the facility with which many of them may be dried and restored to their former figure, upon being immersed in water; and, lastly, that there is a great similarity in the manner in which their seeds are produced. He affirms, that only the warts and excrescences which grow on animal bodies, and the knots and other tumors that are to be found on trees, can be compared with one another; for they are composed equally of the solid and liquid substance of the plant or animal on which they grow; whereas, the matter of the fungi is not only quite distinct from that of the plants on which they are found, but often entirely similar to the substance of those that spring immediately from the earth.

The organization, says M. de Jussieu, which distinguishes plants and other productions of nature, is visible in the fungi; and the particular organization of each species is constant at all times and in all places; a circumstance which could not happen if there were not an animal reproduction of species, and consequently a multiplication and propagation by seed. This is not, he says, an imaginary supposition; for the seeds may be felt like meal upon mushrooms with gills, especially when they begin to decay; they may be seen with a magnifying glass, in those that have gills with black margins: and, lastly, says he, botanists can have no doubt that fungi are a distinct class of plants, because, by comparing the observations made in different countries with the figures and descriptions of such as have been engraven, the same genera and the same species are everywhere found.

Notwithstanding this refutation by M. de Jussieu, another naturalist, M. de Necker, has lately maintained, in his work entitled *Mycitologia*, That the fungi ought to be excluded from the three kingdoms of nature, and be considered as intermediate beings. He has observed, like Marfigli, the matrix of the fungi: and has substituted the word *carchite* (initium faciens) instead of *fitus*; imagining that the rudiment of the fungus cannot exist beyond that point in which the development of the filaments or fibrous roots is perceived. He allows, that fungi are nourished and grow like vege-

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tables; but he thinks that they differ very much from them in respect of their origin, structure, nutrition, and rapidity of growth. He says, that the various vessels which compose the organization of vegetables are not to be found in the fungi, and that they seem entirely composed of cellular substance and bark; so that this simple organization is nothing more than an aggregation of vessels endowed with a common nature, that suck up the moisture in the manner of a sponge; with this difference, that the moisture is assimilated into a part of the fungus. Lastly, That the fructification, the only essential part of a vegetable, and which distinguishes it from all other organized bodies, being wanting, fungi cannot be considered as plants. This he thinks confirmed by the constant observation of those people who gather the morelle and the mushroom, and who never find them in the same spots where they had formerly grown. As the generation of fungi (says M. Necker) is always performed when the parenchymatous or cellular substance has changed its nature, form, and function, we must conclude that it is the degeneration of that part which produces these bodies.

But if fungi were owing merely to the degeneration of plants, they would be still better entitled to constitute a new kingdom. They would then be a decomposition, not a new formation or new bodies. Besides, we cannot deny, that in those bodies which form the limit between the animal and vegetable kingdoms, the organization becomes simple, as the organs destined for nutrition are multiplied: but, as the last in the class of insects belongs to the animal kingdom, fungi ought, notwithstanding the simplicity of their organization, still to belong to the vegetable kingdom. The parenchymatous or cellular substance, which, as Mr Bonnet says, is universally extended, embraces the whole fibrous system, and becomes the principal instrument of growth, must naturally be more abundant in these productions; and this accounts for the rapidity of their enlargement. Besides, growth, whether slow or rapid, never was employed to determine the presence or absence of the vegetable or animal character. The *draba verna*, which in a few weeks shoots, puts forth its leaves, its flowers, and fruit, is not less a plant than the palm. The insect that exists but for a day, is as much an animal as the elephant that lives for centuries. As to the seeds of the fungi, it is probable that nature meant to withdraw from our eyes the dissemination of these plants, by making the seeds almost imperceptible; and it is likewise probable that naturalists have seen nothing but their capsules. Since, however, from the imperfection of our senses, we are unable to perceive these seeds, ought we to infer that they do not exist? Are we authorized to conclude this, because we do not find mushrooms where we have found them a year before? Undoubtedly not; for the greater part of plants require a particular soil, and the same mould that this year will foster a rare plant, will next year allow it to perish. Neither are we at liberty to deny the existence of these seeds, because those bodies which have been called their seeds, and the fragments or cuttings of the plants themselves, have not produced others of the same species. Nature seems to have reserved for herself the care of disseminating certain plants; It is in vain, for instance, that the botanist

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nist sows the dust found in the capsules of the orchis, which every one allows to be the seed. But, after all, what are those parts in the fungi casually observed by naturalists, and which they have taken for the parts of fructification? These are quite distinct from the other parts; and whatever may be their use, they cannot have been formed by a prolongation of the cellular substance, or of the fibres of the tree on which the fungus grows: they are, therefore, owing, like flower and fruit, to the proper organization of the plant. These plants, therefore, have a particular existence, independent of their putrefying nidus. The gills of certain fungi, which differ essentially from the rest of the plant in their conformation, would be sufficient to authorize this latter opinion. But can putrefaction create an organic substance?

Nature undoubtedly disseminates through the air, and over the surface of the earth, innumerable seeds of fungi, as well as eggs of insects. The plant and the animal are excluded, when the nidus or the temperature is favourable for their development. No fortuitous concurrence, either of atoms or fluids, could produce bodies so exquisitely and so regularly organized. It is sufficient to throw one's eyes on the beautiful plates which Schæffer has published of them, and compare them, by the glass, with the warts and other excrescences of animals, to be convinced that they have not the same origin. The function of the cellular substance in vegetables must be greatly superior to that in animals, if it could produce any thing but deformities.

The greater part of fungi exhibit a configuration much too regular, constant, and uniform, to be the effect of chance or putrefaction. As this form is preserved the same in all places where fungi have been found, it follows, that they contain in themselves the principles of their reproduction. They resemble the mistletoe, and other parasitic plants, which are perfectly distinct from the trees on which they grow. The fungi, therefore, are organized and living substances, or true plants. If the manner of their production is unknown, that of some insects is so too.

FUNGIBLES, in *Scots Law*, are such things as are estimated by number, weight, or measure; as coin, butter, ale, &c.

FUNGITÆ, in *Natural History*, a kind of fossil coral, of a conic figure, though sometimes flatted and striated longitudinally.

FUNGUS, in *Surgery*, denotes any spongy excrecence. See *SURGERY Index*.

FUNNEL of a CHIMNEY, the shaft or smallest part of the waste, where it is gathered into its least dimensions.

Palladio directs, that the funnels of chimneys be carried through the roof four or five feet at least, that they may carry the smoke clear from the house into the air. See *CHIMNEY*.

He also advises, that chamber chimneys be not made narrower than 10 or 11 inches, nor broader than 15; for if too narrow, the smoke will not be able to make its way; and, if too wide, the wind will drive it back into the room.

FUR, or FURR, in commerce. See *FURR*.

FURBISHER, a person who furbishes, or cleans arms, as guns, swords, &c. which is

chiefly performed with emery. See the article *EMERY*.

FURCA, in antiquity, a piece of timber resembling a fork, used by the Romans as an instrument of punishment.

The punishment of the furca was of three kinds: the first only ignominious, when a master, for small offences, forced a servant to carry a furca on his shoulders about the city. The second was penal, when the party was led about the circus, or other place, with the furca about his neck, and whipped all the way. The third was capital, when the malefactor having his head fastened on the furca, was whipped to death.

FURCHE', in *Heraldry*, a cross forked at the ends.

FURETIERE, ANTONY, an ingenious and learned Frenchman, was born at Paris in 1620; and after a liberal education became eminent in the civil and canon law. He was first an advocate in the parliament; and afterwards taking orders, was presented with the abbey of Chalivoy, and the priory of Chuines. Many works of literature recommended him to the public; but what he is chiefly known by and valued for, is his *Universal Dictionary of the French Tongue*, in which he explains the terms of art in all sciences. He had not, however, the pleasure of seeing this useful work published before his death; which happened in 1688. He was a member of the French academy; and the disputes and quarrels which he had with certain members of it made a great noise in the world.

FURIA, in *Zoology*, a genus of insects belonging to the order of vermes zoophyta. There is but one species, viz. the infernalis, which has a linear smooth body ciliated on each side, with reflexed feelers pressed to its body. In Finland, Bothnia, and the northern provinces of Sweden, it was not unfrequently that people were seized with a pungent pain, confined to a point, in the hand or other exposed part of the body, which presently increased to a most excruciating degree, and hath sometimes been suddenly fatal. This disorder was more particularly observed in Finland, especially about boggy and marshy places, and always in autumn. At length it was discovered that this pain instantly succeeded somewhat that dropped out of the air, and in a moment penetrated and buried itself in the flesh. The Finlanders had tried variety of applications to no purpose, until at length a poultice of curds or cheese was found the most effectual in easing the pain: and the event confirmed that the insect was allured by this application to leave the flesh; as, on its removal, this worm, no longer than the sixth of an inch, was found in it, and thus the cause of this painful disease explained. But by what means this creature is raised into the air, is as yet unknown.

FURIES, in Pagan antiquity, certain goddesses whose office it was to punish the guilty after death. They were three in number: Alesto, Megæra, and Tisiphone; who were described with snakes instead of hair, and eyes like lightning, carrying iron chains and whips in one hand, and in the other flaming torches; the latter to discover, and the former to punish, the guilty: and they were supposed to be constantly hovering over such persons as had been guilty of any enormous crime.

Mythologists suppose, that Tisiphone punished the crimes which sprang from hatred or anger; Megæra, those

Furca  
||  
Furies.

Furling  
||  
Furnace.

those from envy; and Alecto, those from an insatiable pursuit after riches and pleasure. They were worshipped at Cafina in Arcadia, and at Carmia in Peloponnesus. They had a temple at Athens near the Areopagus, and and their priests were chosen from amongst the judges of that court. At Telphusia, a city in Arcadia, a black ewe was sacrificed to them.

FURLING, in naval affairs, signifies the operation of wrapping up and binding any sail close to the yard; which is done by hauling upon the clew-lines, bunt-lines, &c. which wraps the sail close together, and being bound fast to the yard, the sail is furled.

FURLONG, an English long measure containing the one-eighth of a mile, and therefore equal to 660 feet, or 220 yards.

FURLOUGH, in the military language, is a license granted by an officer to a soldier to be absent from his duty for a limited time.

FURNACE, is a vessel or building, for the purpose of containing combustible materials, whether of coal or wood, and so constructed that great heat may be produced and concentrated. There is great variety of furnaces, and they are variously constructed, according to the views of the operator, and the purposes to which they are applied. But in all furnaces there are four things which require to be particularly attended to. 1. To be able to concentrate the heat, and direct it as much as possible to the substances which are to be acted upon. 2. To prevent the dissipation of the heat after it is produced. 3. To obtain the greatest quantity of heat from the smallest quantity of fuel; and 4. To be able to regulate at pleasure the necessary degree of heat, or to have it under proper management.

Requisites  
of a good  
furnace.

To concen-  
trate the  
heat.

1. To accomplish the first object, namely to concentrate the heat, it is usual to confine the fire in a chamber or cavity, properly constructed, furnished with a door or opening, by which the fuel is introduced; a grate for supporting it, and allowing a free passage to the air, as well as for the ashes to fall through into the cavity below, called the *ash-pit*. In this way the heat produced by the combustion of the fuel is confined by the sides of the furnace, and so concentrated that its force is chiefly spent on the substances inclosed.

To prevent  
its dissipa-  
tion.

2. The dissipation of the heat is prevented by keeping the door of the furnace shut, by constructing the chimney no wider than to allow a passage for the smoke, and placing the substance to be acted upon in such a manner that the fire may have its full effect as it goes up the chimney.

To produce  
the greatest  
proportion  
of heat.

3. The third object, which is not the least important, is to produce the greatest quantity of heat from the smallest quantity of fuel. In an economical point of view, this object is worthy of the greatest attention, though it is often difficult to attain it. In this view much depends upon the proportion between the spaces between the bars of the furnace, and the wideness and height of the chimney. This is obvious from considering the circumstances which regulate the process of combustion; for this depends on the current of air passing through the combustible matter. When the fuel in the furnace is kindled, a certain degree of heat is produced; but without a current of fresh air passing through the burning matter, the fire is instantly extinguished; and without this stream of fresh air the inflammation cannot go on. But when this takes place, the air within the fur-

nace is rarefied, and being no longer a balance for the external air, it is driven up the chimney by a current of denser air, rushing in at the openings. This having passed through the fuel, is also rarefied, and passes off, giving place in its turn to a new current, so that in this way there is a constant flux of air up the chimney. From this it must appear, that the greater the rarefaction of the air in the fire-place is, the greater will be the intensity of the heat produced. By constructing a furnace in a particular way, the heat may be so managed that the under part of the chimney may be nearly as strongly heated as the fire-place itself; so that, although a strong current of air passes through the fuel, yet as the heat is uselessly spent on the chimney, there is a great and unnecessary waste of fuel. To prevent this, there is a contrivance by which the throat of the chimney is occasionally contracted, by means of a sliding plate, which, when it is pushed in, closes up the whole vent; but may be drawn out in such a way as to form a larger or smaller opening as may be thought necessary. Till the fuel is thoroughly kindled, and the furnace fully heated, the plate should be quite drawn out, so that the largest column of air which the furnace will admit, may pass through the fuel. The plate is then put in to a certain length, and so regulated that the smoke may be prevented from issuing at the door of the furnace. The current of air increases in proportion to the rarefaction of the air in the fire-place, and this increases the inflammation of the fuel; and the heat now being reflected from every point of the furnace, excepting the narrow passage by which the smoke passes off, becomes extremely intense. If a large quantity of fuel be introduced at once, it will consume slowly, and require little attention, in comparison with those furnaces where this precaution is not observed. When the intensity of the heat is not very great, the sliding plate may be of cast iron; but to resist great degrees of heat, it will be found more convenient to have it made of fire-clay. But it must be observed, that the advantage derived from the sliding-plate is lost to those furnaces which are of a large construction, and where great quantities of metal are to be melted; and there it is commonly found, that the waste of fuel is very great.

Furnace.

4. To attain the fourth object, namely, to be able to regulate conveniently the degree of heat, a certain proportion of air only is to be allowed to pass through the fuel. With this view it is necessary to have the command of the furnace below, because the parts above are often filled with small quantities of foot. To manage this in the most effectual manner, the door of the ash-pit is to be perfectly closed, and furnished with a series of round holes which have a certain proportion to each other. In the furnaces constructed according to Dr. Black's direction, the areas of these holes are as 1, 2, 4, 8, 16, &c. in geometrical progression. Seven or eight of these in the door of the ash-pit give a sufficient command over the fire. When the utmost intensity of heat is required, all the passages are thrown open, and the height of the chimney is increased, so that the height of the column of rarefied air being augmented, the motion of the current of air through the fuel is proportionably more rapid, and consequently the heat of the furnace becomes more intense. In the construction of a furnace recommended by Macquer, another

Method of  
regulating  
the heat.

min

**Furnace.** most distant from the furnace widest, and gradually tapering as it approaches it. By this contrivance, it was proposed to increase the velocity of the current of air as it passes from a wider into a narrower tube. But it is found that the air will not ultimately move with greater velocity than if the tube were not applied. It may indeed be useful where the furnace is placed in a small apartment, and the tube itself forms a communication with the external air.

After these preliminary observations on the general principles of furnaces, we propose, in the following treatise to give a short account of the construction and application of some of the more important furnaces which are employed in the arts and manufactures.

But before we enter into the detail and description of particular furnaces, we shall lay before our readers the description of one which was invented by Messrs Robertsons of Glasgow, for the purpose of consuming its own smoke, and saving fuel.

**Furnace for consuming its own smoke.** "To construct furnaces (says the editor of the Philosophical Magazine, from which this account is taken), on such a principle as should enable them to consume their own smoke, has long been a desideratum; and we believe the public in general, but especially those who have been annoyed by the smoke of steam engines, foundries, and similar erections in their neighbourhood, will be glad to learn that a furnace has been contrived which effectually gains this end.

"The construction is extremely simple, and will be easily understood by the following description, and the plate to which it refers.

**Plate CCXXV.** Fig. 1. represents a vertical section, and fig. 2. a front view of a steam-engine boiler, furnished with one of Messrs Robertsons furnaces; and the same letters refer in both to the same parts of the construction.

"The opening A, through which the fuel is introduced into the furnace, is shaped somewhat like a hopper, and is made of cast iron built into the brick-work H, H. From the mouth it inclines downward to the place where the fire rests on the bottom grate B. The coals in this mouth-piece or hopper answer the purpose of a door (A), and those that are lowest are by this means brought into a state of ignition before they are forced into the furnace. Below the lower plate of the hopper K, the furnace is provided with front bars G (B), which not only serve to admit air among the fuel, but offer a ready way to force the fuel back, from time to time, from c to d (c), to make room for fresh quantities to fall into the furnace from the hopper or mouth-piece. By this arrangement the fuel is brought into a state of ignition before it reaches the farther side of the bottom grate, where it is stopped by the rising

**Furnace.** breast, b, of the brick-work, so that any smoke liberated from the raw coals in the mouth-piece must pass over these burning coals before it can reach the flue FFF. But this, though it would cause a large quantity of the smoke to be burnt, would not completely prevent the escape and ascent of smoke up the chimney; for it is not merely necessary that the smoke should be exposed to a heat sufficient to ignite it before it escapes: unless, at the same time, a quantity of fresh air, able to furnish a sufficiency of oxygen for the combustion of the smoke, can be brought into contact with it, it will still escape in an undecomposed state. The judicious admission of fresh air, in such a manner that it can reach the smoke, without previously passing through the fire, and parting with its oxygen in its passage, and in such quantity as not to cool the bottom of the boiler, but merely to cause the smoke to burn, constitutes the chief merit of this invention; and to us it appears that it will fully answer the proposed end. Below the upper side of the mouth-piece or hopper, and at about the distance of three-fourths of an inch from it, (this space being a little more or less, according to the size of the furnace), is introduced a cast iron plate *an*. This plate is above the fuel, and the space between it and the top of the hopper is open for the admission of a thin stream of air, which, rushing down the opening, comes first in contact with that part of the fire which is giving off the greatest part of the smoke, viz. the fuel that has been last introduced, mixes with it before it passes over the fuel in the interior, which is in a high state of combustion, and enables it to inflame so completely, that not a particle of smoke ever escapes undecomposed.

"The quantity of air thus admitted to pass over the upper surface of the fire, is regulated by a very simple contrivance. The plate *an* rests at each end on a stud, or pin, projecting from the cheeks of the mouth-piece A, or is furnished at each end with a pivot which works in the cheeks; the said pins or pivots being placed about midway between the outside and inside of the mouth-piece or hopper, so that, by elevating or depressing the edge *a* of the plate, the opening at *n* is enlarged or diminished. When that degree of opening which produces the best effects is obtained, which is easily known, the plate *an* is kept in its place by means of a piece of iron introduced above it, and answering the purpose of a wedge.

"Under the grates is the ash-hole I, the upper part of which is furnished with doors SS, which, when shut, prevent the heat from the front bars G from coming out into the apartment, and incommoding the workmen.

"Invited by an advertisement, we went to Messrs Bunnell

(A) "In the management of this furnace, what is chiefly to be attended to is, that the hopper be kept full of coal, and either wholly or in part small coal, to prevent, as much as possible, air getting in by that passage; it is also necessary at some times to use a shutter of thin plate-iron, to be applied to the mouth of the hopper to exclude the entrance of air by that passage.

(B) "These bars are, in fact, a grated door, kept in their position by a catch L, and which may be opened at pleasure for cleaning the fire out. In small furnaces an opening here is all that is necessary; the bars may be dispensed with.

(C) "Between the back end, *d*, of the bottom bars, and the breast brickwork *b*, is represented in the plate a section of a shutter, which is sometimes opened for the purpose of getting out the refuse of the fuel.

Furnace.

Bunnell and Silver, Bedford-street, Covent Garden, to see one of these furnaces at work, and we were not a little gratified in observing that the smallest appearance of smoke could not be perceived issuing from the top of the chimney. The advantages of such an improvement can hardly be better illustrated than by mentioning what had actually happened with this steam engine. The smoke, before the improved furnace was employed, incommoded the neighbourhood so much, that it was stopped as an intolerable nuisance. Now it is so far from disturbing any one, that, without being admitted to see the engine, it would be actually impossible to know when it is at work.

“These furnaces, we understand, have also been adopted by many intelligent manufacturers at Leeds and at Manchester. At the latter place, if we may credit newspaper reports, several manufacturers have had their works indicted as nuisances for not having adopted the improvement; the magistrates arguing, that, though the welfare of the place required that such inconveniences should be submitted to while no possible cure for them was known, the health and comfort of the inhabitants equally demand, now that the evil can be done away, that smoking furnaces should not be permitted in the place.

“We earnestly recommend to owners of steam engines, and also to those who are annoyed by them, to endeavour to bring this improvement into general use. Indeed, we entertain no doubt of its being universally adopted sooner or later; for it yields advantages not only in point of cleanliness, comfort, and health, but also in point of interest; all the smoke usually discharged at the top of the chimney, being in fact, so much good fuel, that only wanted the contact of fresh air to inflame it under the boiler. It is a fact well known, that the flame which is often seen issuing from the chimneys of founders, &c. has no existence except at the top of the chimney: while ascending the flue it is only dense smoke, consisting of the azote of the atmospheric air decomposed in passing through the fire, of hydrogen, coal tar, and carbonaceous matter, of such a high temperature, that it only wants oxygen to make it inflame spontaneously: this it obtains from the atmospheric air into which it ascends, and then presents such appearances as would make a hasty observer adopt the opinion that the flame had ascended, as flame, from the fuel in the furnace; which is by no means the case. A consideration of this simple fact will convince any person that it is not an inconsiderable proportion of the fuel that is thus wasted. Nor is this the only loss sustained; the quantity of heat required not merely to render such a portion of the fuel volatile, but to give to it a temperature able to produce the effect of which we have taken notice, is itself furnished at the expence of an extra and unnecessary quantity of fuel. The whole waste in many cases is, we are persuaded, not less than an eighth of the whole fuel employed.”

Furnace for smelting iron.

One of the most important furnaces, particularly for this country, where, although great and essential improvements have been made by industry and ingenuity, the manufacture is yet in its infancy, is that for the smelting of iron.

We shall therefore enter more fully into the detail of the history, construction, and general principles of the operation of blast furnaces; and in tracing their pro-

gressive history, it may be observed, that in this country it has experienced a revolution, of which no analogous instance has occurred in other countries.

In the early and barbarous periods of society, before the introduction of agriculture, the surface of a country is usually covered with extensive forests. From this circumstance wood, as being most accessible, abundant, and of easiest application, is usually employed by mankind for the purposes of fuel. In the progress of population and improvement, other advantages were derived from the general use of wood as fuel; and among these the improvement of the climate, and clearing land for the purposes of agriculture, were none of the least. The application of wood as fuel to different manufactories, had no doubt also an early origin; and in the manufacture of iron, if conducted on a scale of any extent, the demand for fuel of this kind must have been very great. If, then, during the gradual improvement and prosperity of this country, this manufacture, in place of remaining stationary, or declining, from diminished consumption, has increased in capital and extent, without some substitute for wood, the art would have been long before this time entirely lost, because it depended on a stock which must have rapidly declined, and even its very existence was often far from being compatible with the views and interest of landholders. Such were the circumstances in which Great Britain was placed, from the reign of Charles II. to the middle of the 18th century. During this period, being in a prosperous state, the manufactures and commerce of the country increased the demand for iron, while the supply of wood, one of the most necessary materials in its manufacture, was greatly diminished. It is true, indeed, that, previous to this period, pit-coal had been employed as a substitute; but the prejudice of some, and the selfish views of others, and especially the want of sufficient mechanical powers, obstructed the progress of this mode of manufacture. When, however, these difficulties were surmounted, and it was found that the change of fuel in the blast furnace was likely to prove beneficial, this manufacture acquired new vigour, and improvements succeeded each other in rapid succession. In a period of about 50 years, a complete revolution was effected, not only in relinquishing the mode of making iron with charcoal and in employing pit-coal in the blast furnace, but also in the immense increase of the manufacture.

At what period the manufacture of iron commenced and progressed in Britain, cannot be precisely ascertained. It has, however, been supposed, that the Phœnicians, who wrought the tin mines of Cornwall, may have introduced into the country men who were skilled in metallic ores, and were capable of estimating their value, by converting these mineral riches to such purposes as their own necessities, or the wants of the inhabitants, might require. It is probable also, that the invasion of England by the Danes, and their establishment in this country, added something to their former knowledge in the art of mining and manufacturing the ores of iron. In support of this conjecture, the large heaps of scoria found in many parts of England, and having a considerable thickness of soil upon them, have been denominated from time immemorial, “Danes cinders;” and indeed so early as the year 1620, large oaks were found in a state of decay, upon the tops of some of those hills

Furnace.

of scoria. But although these may have been very ancient manufactures, it is the less probable that the production of these cinders is to be ascribed to the blast furnace; for at that remote period the manufacture was chiefly directed to the fabrication of small portions of malleable iron, in what were called foot-blasts and bloomeries. The art of casting or moulding in iron was either altogether unknown, or in so rude a state, that it could not be prosecuted with much prospect of advantage. Pig or cast iron, if it was at all produced, was then of the most refractory nature for being converted into malleable iron. It was not till a future period, when improvements had been made in machinery, and the advantages of a division of labour were known, that different furnaces were constructed; one for manufacturing pig iron, and another for converting it into malleable iron. To this the blast furnace seems to have owed its existence, and it is to be considered as an improvement of the advantages which are derived from a division of labour. The blast furnaces being exclusively appropriated to the making of pig iron, the attentive manufacturer would soon perceive that the products of the furnace were often different from each other. Repeated observation and experience would enable him to ascertain what was the cause of this difference. Observing that an additional quantity of fuel rendered the forged pig iron more fusible, this circumstance would suggest the practicability of casting it into shape. Hence probably arose the art of moulding, which afterwards, as well as the bar-iron forge, became an appendage to the blast furnace. After this new manufacture became familiar, the advantage of dividing the product of the blast furnace into gray melting iron, or into forged pigs, according to the demand, would be obvious.

Number of furnaces in England.

In the year 1613, according to Dudley, who has stated the fact in his *Metallum Martis*, there were no less than 300 blast furnaces in England for smelting iron ore with charcoal, and each furnace was supplied with fuel upon an average of 40 weeks in the year. Taking the average produce of pig iron at each furnace of 15 tons per week, or 600 tons per annum, the total annual quantity will amount to 180,000 tons, which is a greater quantity than has ever been produced in Britain since that period. It is supposed that this quantity may be greatly exaggerated, but at the same time it is allowed that the iron manufacture was, at this early period, highly prosperous and productive. But in the progress of agriculture and the increase of population, it was necessary to clear the land for the purpose of cultivation. From this circumstance, as well as from the great consumption of wood for the navy, the supply of fuel was greatly diminished; so that the iron manufacture became consequently less productive.

Pit-coal first used.

It is curious to remark that, although pit-coal was known long before this period, and was wrought at Newcastle previous to the year 1272, and great quantities of it were annually exported to Holland and the Low Countries, and was used in the smith's forge, and other manufactures which require a strong continued heat, yet in England the prejudice against its use in the manufacture of cast iron was so inveterate, that when it was first proposed and attempted, every obstacle which could be devised was thrown in its way. During the reign of James I. several patents were granted for the exclusive privilege of manufacturing iron with pit-coal.

Furnace.

None of the adventurers, however, succeeded in their attempts till the year 1619, when Dudley made pig-iron in a blast furnace, but produced only three tons in the week. At this time the price of iron had risen, in consequence of many of the iron works having stopped for want of wood as fuel. To those manufacturers, therefore, who could still be furnished with a supply of wood, the manufacture was highly profitable, so that they opposed any new attempt by which the price of iron was likely to be diminished.

After this period, the progress of the iron manufacture was greatly interrupted from other causes. Amidst the distraction occasioned by the civil wars which raged in England, little improvement was to be expected. It appears, however, that patents were granted during the Commonwealth, for the exclusive privilege of manufacturing iron in the new way; and in one of these, it was believed at the time, that the Protector himself had a share. All these experienced the fate of the former, and no manufacture of any extent was successfully established. In the year 1663, Dudley in his application for his last patent, stated that he could produce at one time seven tons of pig iron in the week with a furnace of an improved construction, 27 feet square, and with bellows which one man, without much fatigue, could work for an hour.

Thus, as the demand for wood for the purposes of fuel in this manufacture increased, and the growth of timber was greatly diminished, the manufacturer was forced by necessity to have recourse to the use of pit-coal; and when various valuable improvements had been made on machinery, and particularly when the beneficial effects of the steam engine had been ascertained, the iron manufacturer saw himself in possession of a command of power in the management of his materials, of which he had formerly no conception. The small furnace supplied with air from bellows constructed of leather, which was moved by means of oxen, horses, or men, went into disuse, when larger furnaces were introduced, with an increase of the column of air, for the purpose of exciting combustion. But at this period, when the manufacture derived new vigour from the introduction of the steam engine, and the general improvement in machinery, it seemed, from the operation of other causes, and particularly from the deficiency of fuel, to decline rapidly. The demand for iron in the manufactured state, and particularly for bar iron, had increased, while the quantity produced gradually diminished. Recourse was now had to foreign markets for a supply, and the importation of Russian and Swedish iron then commenced. Of the 300 blast furnaces spoken of by Dudley, 59 only existed; and estimating their annual produce at about 295 tons to each furnace, the total amount did not much exceed 17,000 tons.

Such was the state of the manufacture of iron in England and Wales, before the introduction of pit-coal; and thus it appears, that in a period of from 100 to 130 years, it had suffered a diminution of more than 50,000 tons annually. It proved of singular benefit to this manufacture, that the steam engine, which had then become a powerful machine, was introduced, for the purpose of raising and compressing the air, and could be employed in those places where materials were abundant, but where there was a deficiency of water for moving the machinery. Besides, experience now taught the

Furnace. the manufacturer, that the produce of his furnace could be increased by enlarging the diameter of the steam cylinder, for rendering the vacuum under the piston more perfect; and it was soon found that, by increasing these effects, such a quantity of pig iron could be produced from the coak of pit-coal, as would be attended with a suitable profit. It is scarcely to be wondered at, that this circumstance should have long remained a secret; for a small quantity of air only being necessary to ignite the charcoal furnace, whether it arose from the peculiar inflammability of the fuel, or the small capacity of the furnace, it was always under the eye of the manufacturer, and he would more frequently experience the inconveniences of overblowing than underblowing the furnace. It seems too extremely probable, that pit-coal, being considered in every respect inferior to charcoal, the manufacturer would proceed with great caution in enlarging the column of air, or increasing its density; and thus the advantages to be derived from its use would be in a great measure lost. When, however, experience had taught them a different lesson, the limits to the quantity of air that might be directed to a coak blast furnace, before any injurious effects arose, were not very observable. It was found, indeed, that the density of air diminished the quantity of the produce, and the same law seemed to hold with regard to pit-coal as well as to wood,—that the softer qualities might be overblown, while the strata of a denser and more compact consistence remained undiminished before a heavier blast.

Comes into general use. Between the years 1750 and 1760 the coak of pit-coal was pretty generally substituted for charcoal, in the blast furnace. The iron manufacture assumed new vigour, and in a period of 30 years it experienced in England and Wales a very remarkable progress. From the general and increasing use of pit-coal, it is probable that many of the charcoal works were sooner relinquished than they would otherwise have been. The history of the celebrated foundery of Carron in Scotland, affords us a curious instance of the progress of the use of pit-coal in this manufacture. These extensive operations commenced about the year 1760. The blowing, as was the practice at the time, was performed by means of large bellows, moved by a water wheel. But as there was a scanty supply of air, and as this was deficient in density, the weekly produce of the furnace rarely exceeded 10 or 12 tons, and often in summer this quantity was considerably diminished. With a view to improve the operation, immense quantities of wood charcoal were prepared, and it was found that the process of smelting succeeded much better with this kind of fuel than with the mineral coal which was dug out in the neighbourhood. But in the improvement of machinery, more effectual means were discovered to procure a blast of sufficient force and density for the ignition of pit-coal, wheels of greater power were constructed; the use of the bellows was relinquished, and in their place large iron cylinders, so contrived as to blow both up and down, were introduced. Thus, a larger column of air, of three or four times the former density, was obtained, and the beneficial effects arising from the improvements were soon perceived; for the same furnace which formerly produced 10 or 12 tons in the week, sometimes yielded 40 tons in the same time;

and on an annual average, not less than 15,000 tons Furnace. of metal.

About the end of the reign of Queen Elizabeth, we are informed by Dudley, that blast furnaces had been constructed on so large a scale, and with such a power of machinery, as to yield a daily produce of more than two tons of charcoal iron; but it is probable that so large a produce could only be obtained in situations where there was a copious supply of water, and where the water wheels and bellows, employed were of large size. In the more ordinary modes of conducting this process, furnaces of a much smaller size were employed, and these received the supply of air from hand bellows which were moved by men, and sometimes by cattle. From the superiority of the manufacture of iron guns, mortars, &c. England possessed at this time a considerable export trade; but as pit-coal had not yet been applied to any departments in the manufacture of iron, it seems probable that these articles were cast from the large blast furnaces, because the flame of wood, comparing it with that of pit-coal, possessing but feeble effects, would render the application of the reverberating furnace (if it was then known), of no use in the casting of guns and mortars. The want of pit-coal in every department of the foundery, greatly retarded the perfection to which the art of moulding might have arrived, and even obstructed its improvement. The backward state in which the art of casting and moulding long remained in this country, shewed that the want of this material of the smelting fuel in the blast furnace was long severely felt; and owing to this, other nations, who in many other respects enjoyed fewer advantages, made more rapid progress in the improvement of this manufacture. Before this period, it is not improbable that the use of pit-coal might have been suggested to the manufacturer, and that this material, employed as a fuel, might have been considered as an auxiliary, or as a substitute in various departments of the process. The inflammability of this substance, and its tendency to be converted into a cinder, as well as the general decay of wood, would afford sufficient ground for what might be considered by many as a useless speculation. The benefits of this manufacture as it then stood, had been carefully investigated, and fully appreciated by those who were interested in it. The supply of wood only seemed to limit its extent, but for want of a sufficient supply of materials, the establishment of new works became impracticable, those already engaged in the business were anxious to preserve the supply they enjoyed, however limited, than encourage any innovation or change in the process, which, by the substitution of pit-coal for charcoal from wood, would probably give to new adventurers and speculators a superiority of the market. Besides, many of the furnaces which were then going, were at a great distance from pit-coal, so that the general use of this substance, and the advantages to be derived from it, would be highly injurious to their interests.

Such was the state of this manufacture when the use of pit-coal in this process was discovered, or when it was proposed to employ it for this purpose. With this view, James I. in the year 1612, granted a patent to Simon Sturtevant, for the exclusive manufacture of iron with pit-coal, for the period of 31 years. In obtaining this privilege,

**Furnace.** privilege, the patentee obliged himself to publish a full account of his discoveries, and this appeared in a work in quarto, under the title of "Metallica." It appears, however, that Sturtevant had not succeeded in his schemes; for in the following year he gave up his privilege, but it is not known to what causes the failure is to be ascribed.

**Another adventurer.** After Sturtevant, a John Ravenston embarked in the same hazardous undertaking; and although he procured a patent without much trouble, he had soon to encounter difficulties in the way of ultimate success, analogous to those which had prevailed over the perseverance of Sturtevant, and induced him to relinquish the farther prosecution of his schemes. He obtained his patent on conditions similar to those on which his predecessor procured it, in consequence of which he published his "Metallica" in 1613. All his successors were like him, obliged to resign their patents from the want of adequate success.

**Dudley obtains a patent.** Dudley procured his patent in the year 1619, and notwithstanding he affirmed that he manufactured not more than three tons per week, he found it a lucrative undertaking. This discovery he brought to perfection at the works of his father in Worcestershire; but by the influence of those who wished to share in the emoluments arising from the manufacture of iron with pit-coal, his patent was limited to 14 instead of 31 years. He informs us himself, that, during the greater part of this period, he was enabled to sell pig and bar iron much cheaper than any of his competitors; but as his remarkable success drew their envy upon him, his devoted works were at length destroyed by a lawless mob, urged on, it is supposed, to perpetrate so atrocious a deed by his rivals in business. In this unmerited treatment of the sanguine but unfortunate Dudley, the coke pig process unquestionably experienced an irreparable loss. He had so many rivals to contend with, by virtue of the original ground he occupied as a manufacturer, and his attachment to the cause of royalty was so sincere, that his improvements were effectually prevented from arriving at lasting or general utility. Could he have procured a new patent after the restoration, there is little doubt but he would have again entered with avidity on the laborious paths of discovery. In petitioning for the recovery of his ancient privileges, we find him declaring that instead of three, he was enabled to manufacture seven tons per week of coke pig iron, in consequence of a large furnace, and an improved bellows.

**Attempts to evade it.** To stand clear as much as possible of the method of operation which Dudley had discovered, one Captain Buck, Major Wildman, and some others, constructed large air-furnaces in the forest of Dean, into which they put clay pots, for containing the requisite preparations of ore and charcoal. Pit-coal was employed for the purpose of heating the furnaces; and it is highly probable that these new adventurers were sanguine enough to believe that, by tapping the pots below, the separated metal would flow out. This strange method of assaying was soon found impracticable; for the heat was not of sufficient intensity to produce an entire separation; the pots gave way, and the prosecution of this ridiculous scheme was speedily relinquished.

The manufacture of iron received no farther improvements for about a century after this period. It  
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was found to be practicable; but how to procure such a quantity as to produce a lucrative return, was not to be derived from the mere knowledge of the particular proportions of the raw materials. Had machinery reached that degree of perfection in the time of the ill-fated Dudley which it has since done, we have good reason to believe that the rapid progress of the pig iron manufacture would have dated its origin from the æra of that enterprising genius.

We shall conclude this historical account of the iron manufacture, with a view of the progressive quantity of produce of manufacture, with a view of the progressive quantity of furnaces in produced at the different furnaces in Great Britain at different periods.

	Tons.
In 1620, the 300 blast furnaces mentioned by Dudley, which existed in England and Wales, produced each at an average	250
At a later period, but previous to the use of pit-coal, 59 furnaces produced each on an average	294
In 1788, 24 charcoal furnaces, which were then going in England, produced each on an average	545
In 1788, 53 blast furnaces, in which coak from pit-coal was used, yielded each on an average, nearly	907
In 1788, eight furnaces in Scotland produced on an average, each	875
In 1796, there were in England and Wales, 104 furnaces, from each of which was obtained on an average	1048
In 1796, 17 furnaces in Scotland produced each on an average	946

But from the above statement we are not enabled to draw an accurate conclusion of the degree of improvement which has been introduced in blowing machinery; for among the furnaces mentioned in 1796, were included a number of charcoal blasts, which yielded only a small produce. But the average produce of iron manufactured at pit-coal blast furnaces, at no less an amount than

	Tons.
At melting furnaces	1200
At forge pig works	2000

To what we have now said, we shall only give a view of the prices of the produce of this manufacture, and different the channels of consumption for this immense quantity of materials.

	Per Ton.
Charcoal pig iron sold in 1620 for	L. 6 0 0
Ditto for melting in 1788	8 0 0
Ditto in 1798	9 10 0
Coak pig iron in the time of Dudley	4 0 0
Ditto in 1788,	5 10 0
Ditto in 1798,	7 10 0
Melting iron in 1802,	8 10 0

The produce of pig iron in England and Wales, and in Scotland, from 168 furnaces, has been calculated at the immense quantity of 172,000 tons. It will be impossible to say with absolute precision what are the channels into which this immense quantity of raw materials passes for consumption; but the following views will enable the reader to account for part of it.

	Consumption of pig-Tons, iron.
Annual consumption in the erection of new furnaces, forges, &c.	5000
M m	Annual

Furnace.

Annual consumption at forges in Britain, for the manufacture of bar iron	70,000
Purchased by government in the state of cannons, mortars, &c. on an average of three years, including the waste in melting, &c. with what is employed in the navy as ballast	14,899
Ditto by the India Company	5,700
Ditto for merchantmen	11,000
Ballast for India and merchantmen	5000

Principles of the blast furnace.

Let us now consider the construction and general principles of the blast furnace. The term *blast* is employed at iron founderies, to signify the column of air which is forced into the furnace for the purpose of promoting combustion. The velocity of this blast is produced by the blowing machine impelling the contents of the air-pump through one or two small apertures, and in this way a column of air of various density is produced.

Herc we propose to avail ourselves of what has been done by Mr Musket, formerly of the Calder iron works near Glasgow, a manufacturer himself, who with much philosophical discrimination joins a great deal of excellent practical observation. The many valuable hints which he has suggested, will, we trust, not only be acceptable, but prove highly beneficial in directing and assisting the views and operations of those concerned in this important manufacture.

To have a clear view of his reasonings and observations on the nature and principles of the blast furnace, we shall first give his description of the building and apparatus, and then detail what he has said concerning its management and mode of operation.

Plate CCXXV. Description of a furnace.

Fig. 3. represents a blast furnace with part of the blowing machine. A the regulating cylinder, eight feet diameter and eight feet high. B, the floating piston, loaded with weights proportionate to the power of the machine. C, the valve, by which the air is passed from the pumping cylinder into the regulator: its length 26 inches, and breadth 11 inches. D, the aperture by which the blast is forced into the furnace. Diameter of this range of pipes 18 inches. The wider these pipes can with conveniency be used, the less is the friction, and the more powerful are the effects of the blast. E, the blowing or pumping cylinder, six feet diameter, nine feet high: travel of the piston in this cylinder from five to seven feet per stroke. F, the blowing piston, and a view of one of the valves, of which there are sometimes two, and sometimes four, distributed over the surface of the piston. The area of each is proportioned to the number of valves: commonly they are 12+46 inches. G, a pile of solid stone building, on which the regulating cylinder rests, and to which the flanch and tilts of the blowing cylinder are attached. H, the safety-valve, or cock; by the simple turning of which the blast may be admitted to, or shut off from the furnace, and passed off to a collateral tube on the opposite side. I, the tuyere, by which the blast enters the furnace. The end of the tapered pipe, which approaches the tuyere, receives small pipes of various diameters, from two to three inches, called *nose-pipes*. These are applied at pleasure, and as the strength and velocity of the blast may require. K, the bottom of the hearth, two feet square. L, the top of the

hearth, two feet six inches square. KL, the height of the hearth six feet six inches. L is also the bottom of the boshes, which here terminate of the same size as the top of the hearth; only the former are round, and the latter square. M, the top of the boshes, 12 feet diameter and eight feet of perpendicular height. N, the top of the furnace, at which the materials are charged; commonly three feet diameter. MN, the internal cavity of the furnace from the top of the boshes upwards, 30 feet high. NK, total height of the internal parts of the furnace, 44½ feet. OO, the lining. This is done in the nicest manner with fire-bricks made on purpose, 13 inches long and three inches thick. PP, a vacancy which is left all round the outside of the first lining, three inches broad, and which is beat full of coke-dust. This space is allowed for any expansion which might take place in consequence of the swelling of the materials by heat when descending to the bottom of the furnace. QQ, the second lining, similar to the first. R, a cast-iron lintel, on which the bottom of the arch is supported. RS, the rise of the arch. ST, height of the arch; on the outside 14 feet, and 18 feet wide. VV, the extremes of the hearth, ten feet square. This and the bosh-stones are always made from a coarse gritted freestone, whose fracture presents large rounded grains of quartz, connected by means of a cement less pure.

Fig. 4. represents the foundation of the furnace, and a full view of the manner in which the false bottom is constructed.

AA, the bottom stones of the hearth. B, stratum of bedding sand. CC, passages by which the vapours, which may be generated from the damps, are passed off. DD, pillars of brick. The letters in the horizontal view, of the same figure, correspond to similar letters in the dotted elevation.

Fig. 5. AA, horizontal section of the diameter of the boshes, the lining and vacancy for stuffing at M. C, view of the top of the hearth at L.

Fig. 6. vertical side-section of the hearth and boshes; shewing the tymp and dam-stones, and the tymp and dam-plates. a, the tymp-stone. b, the tymp-plate, which is wedged firmly to the stone, to keep it firm in case of splitting by the great heat. c, dam-stone, which occupies the whole breadth of the bottom of the hearth, excepting about six inches, which, when the furnace is at work, is filled every cast with strong sand. This stone is surmounted by an iron plate of considerable thickness, and of a peculiar shape d, and from this called the dam-plate. The top of the dam-stone and plate is two, three, or four inches under the level of the tuyere hole. The space betwixt the bottom of the tymp and the dotted line is also rammed full of strong sand, and sometimes fire-clay. This is called the tymp-stopping, and prevents any part of the blast from being unnecessarily expended.

The square of the base of this blast-furnace is 38 feet; the extreme height from the false bottom to the top of the crater is 55 feet.

Having given the above description of the construction of the furnace, Mr Musket next proceeds to take a view of its mode of operation and management. "The operations (he observes) I am about to describe have never as yet received any explanation consonant to true philosophy or chemical facts; yet there are few which present

**Furnace.** present a more beautiful chain of affinities, decomposition, and recombination, than the manufacture of iron in all its various stages. An extensive foundry is a laboratory fraught with phenomena of the most interesting nature in chemistry and natural philosophy: are we not then justly surprised to find that prejudice still reigns there; and that the curious manipulations of these regions are still shrouded with error and misconception; as if their dingy structure forbade the entrance of genius, or consigned her laborious unlettered sons to an endless stretch of mental obscurity?"

Having described the furnace, he continues, "I shall proceed to detail the train of preparation necessary before the furnace is brought to produce good melting iron.

**Heating and preparation.**

"The furnace being finished, the bottom and sides of it, for two feet up the square funnel, receive a lining of common bricks upon edge, to prevent the stone from shivering or mouldering when the fire comes in contact with it. On the front of the furnace is erected a temporary fire-place, about four feet long, into the bottom of which are laid corresponding bars. The side-walls are made so high as to reach the under-surface of the tympan-stone; excepting a small space, which afterwards receives an iron plate of an inch and a half thick, by way of a cover: This also preserves the tympan-stone from any injury it might sustain by being in contact with the flame. A fire is now kindled upon the bars, and is fed occasionally with small coals. As the whole cavity of the furnace serves as a chimney for this fire, the draught in consequence is violent, and the body of heat carried up is very considerable. In the course of three weeks the furnace will thus become entirely free from damp, and fit for the reception of the materials: when this is judged proper the fire-place is removed, but the interior bricks are allowed to remain till the operation of blowing commences. Some loose fuel is then thrown upon the bottom of the furnace, and a few baskets of coals are introduced; these are allowed to become thoroughly ignited before more are added. In this manner the furnace is gradually filled; sometimes entirely full, and at other times 5-8ths or 3-4ths full. The number of baskets full depend entirely upon the size of the furnace: that in the plate will contain 900 baskets. If the coal is splint, the weight of each basket-full will be nearly 110lb.  $\times 900 = 99,000$ lb. coals. As this quality of coals is made with a loss of nearly 50 per cent. the original weight in raw coals will be equal to 198,000lb. When we reflect that this vast body of ignited matter is replaced every third day, when the furnace is properly at work, a notion may be formed of the immense quantity of materials requisite, as also the consequent industry exerted to supply one or more furnaces for the space of one year.

"When the furnace is sufficiently heated through-

out, specific quantities of coals, iron-stone, and blast-furnace cinders are added: these are called charges. **Furnace.** **Charging it.** The coals are commonly filled in baskets, which, at all the various iron-works are nearly of a size. The weight of a basket, however, depends entirely upon the nature and quality of the coal, being from 70 to 112lb. each (D). The iron-stone is filled into boxes, which, when moderately heaped, contain 56lb. of torrefied iron-stone; they often exceed this when the stone has been severely roasted. The first charges which a furnace receives, contain but a small proportion of iron-stone to the weight of coals: this is afterwards increased to a full burden, which is commonly four baskets coals, 320lb.; two boxes iron-stone, 112lb.; one box of blast-furnace cinders, 60 or 70lb. (E). At new works, where these cinders cannot be obtained, a similar quantity of limestone is used.

"The descent of the charge, or burden, is facilitated by opening the furnace below two or three times a-day, throwing out the cold cinders, and admitting, for an hour at a time, a body of fresh air. This operation is repeated till the approach of the iron-stone and cinder, which is always announced by a partial fusion, and the dropping of lava through the iron bars, introduced to support the incumbent materials while those on the bottom are carried away. The filling above is regularly continued, and when the furnace at the top has acquired a considerable degree of heat, it is then judged time to introduce the blast; the preparations necessary for which are the following:— **Time to apply the blast.**

"The dam-stone is laid in its place firmly imbedded in fire-clay; the dam-plate is again imbedded on this with the same cement, and is subject to the same inclination. On the top of this plate is a slight depression, of a curved form, towards that side farthest distant from the blast, for the purpose of concentrating the scoria, and allowing it to flow off in a connected stream, as it tends to surmount the level of the dam. From this notch to the level of the floor a declivity of brick-work is erected, down which the scoria of the furnace flows in large quantities. The opening betwixt the dam and side-walls of the furnace, called the *fauld*, is then built up with sand, the loose bricks are removed, and the furnace bottom is covered with powdered-lime or charcoal-dust. The ignited coals are now allowed to fall down, and are brought forward with iron bars nearly to a level with the dam. The space between the surface of the coals and the bottom of the tympan-plate is next rammed hard with strong binding sand; and these coals, which are exposed on the outside, are covered with coke-dust. These precautions being taken, the tuyere-hole is then opened and lined with a soft mixture of fire-clay and loam: the blast is commonly introduced into the furnace at first with a small discharging-pipe, which is afterwards increased as occasion may require. In two

M m 2

hours

(D). "This same variety in the coal renders it almost impossible, under one description, to give a just idea of the proportions used at various blast furnaces: to avoid being too diffuse, I shall confine my description connected with a coal of a medium quality, or a mixture of splint and free-coal, a basket of which will weigh from 78lb. to 84lb.

(E). "A preference at first is always given to blast-furnace cinders in place of lime; being already vitrified, they are of much easier fusion, and tend to preserve the surface of the hearth by glazing it over with a black vitrid crust.

Furnace.

hours after blowing, a considerable quantity of lava will be accumulated; iron bars are then introduced, and perforations made in the compressed matter at the bottom of the furnace; the lava is admitted to all parts of the hearth, and soon thoroughly heats and glazes the surfaces of the fire-stone. Shortly after this it rises to a level with the notch in the dam-plate, and by its own accumulation, together with the forcible action of the blast, it flows over. Its colour is at first black; its fracture dense, and very ponderous; the form it assumes in running off is flat and branched, sometimes in long streams, and at other times less extensive. If the preparation has been well conducted, the colour of the cinder will soon change to white; and the metal, which in the state of an oxide formerly coloured it, will be left in a disengaged state in the furnace. When the metal has risen nearly to a level with the dam, it is then let out by cutting away the hardened loam of the fauld, and conveyed by a channel, made in sand, to its proper destination; the principal channel, or runner, is called the *sov*, the lateral moulds are called the *pigs*.

Fused metal let out.

"In six days after the commencement of blowing, the furnace ought to have *wrought herself clear*, and have acquired capacity sufficient to contain from 5000 to 7000 weight of iron. The quality ought also to be richly carbonated, so as to be of value and estimation in the pig-market. At this period, with a quality of coal as formerly mentioned, the charge will have increased to the following proportions:—Five baskets cokes, 400lb.; six boxes iron-stone, 336lb.; one box limestone, 100lb.

"An analysis of the smelting operation, and the tendency which the individual agents have to produce change in the quality and quantity of the iron, come next under consideration. Let us, however, first notice the characteristic features exhibited by the different kinds of iron while in fusion, whereby the quality of the metal may be justly defined.

Characters of the produce,

"When fine (N<sup>o</sup> 1.) or supercarbonated crude iron is run from the furnace, the stream of metal, as it issues from the fauld, throws off an infinite number of brilliant sparkles of carbone. The surface is covered with a fluid pellicle of carburet of iron, which, as it flows, rears itself up in the most delicate folds: at first the fluid metal appears like a dense, ponderous stream, but, as the collateral moulds become filled, it exhibits a general rapid motion from the surface of the pigs to the centre of many points; millions of the finest undulations move upon each mould, displaying the greatest nicety and rapidity of movement, conjoined with an uncommonly beautiful variegation of colour, which language is inadequate justly to describe. Such metal, in quantity, will remain fluid for 20 minutes after it is run from the furnace, and when cold will have its surface covered with the beautiful carburet of iron, already mentioned, of an uncommonly rich and brilliant appearance. When the surface of the metal is not carbureted, it is smooth like forged iron, and always convex. In this state iron is too rich for melting without the addition of coarse metal, and is unfit to be used in a cupola furnace for making fine castings, where thinness and a good skin are requisite.

"N<sup>o</sup> 4. or oxygenated crude iron, when issuing from the blast-furnace, throws off from all parts of the fluid

surface a vast number of metallic sparks: they arise from a different cause than that exerted in the former instance. The extreme privation of carbone renders the metal subject to the combination of oxygen so soon as it comes into contact with atmospheric air. This truth is evidently manifested by the ejection of small spherules of iron from all parts of the surface: the deflagration does not, however, take place till the globule has been thrown two or three feet up in the air; it then inflames and separates, with a slight hissing explosion, into a great many minute particles of brilliant fire. When these are collected they prove to be a true oxide of iron, but so much saturated with oxygen, as to possess no magnetic obedience. The surface of oxygenated iron, when running, is covered with waving flakes of an obscure smoky flame, accompanied with a hissing noise; forming a wonderful contrast with the fine rich covering of plumbago in the other state of the metal, occasionally parting and exhibiting the iron in a state of the greatest apparent purity, agitated in numberless minute fibres, from the abundance of the carbone united with the metal.

Furnace.

"When iron thus highly oxygenated comes to rest, small specks of oxide begin to appear floating upon the surface: these increase in size; and when the metal has become solid, the upper surface is found entirely covered with a scale of blue oxide of various thicknesses, dependent upon the stage of oxygenation or extreme privation of carbone. This oxide, in common, contains about 15 per cent. of oxygen, and is very obedient to the magnet. In place of a dark blue smooth surface, convex and richly carbonated, the metal will exhibit a deep, rough, concave face, which, when the oxide is removed, presents a great number of deep pits. This iron in fusion stands less convex than carbonated iron, merely because it is less susceptible of a state of extreme division; and indeed it seems a principle in all metallic fluids, that they are convex in proportion to the quantity of carbone with which they are saturated. This iron flows dead and ponderous, and rarely parts in shades but at the distance of some inches from each other.

"This is a slight sketch of the appearance of the two extreme qualities of crude or pig iron, when in a state of fusion. According to the division formerly made, there still remain two intermediate stages of quality to be described: these are, carbonated and carbo-oxygenated iron; that is, N<sup>o</sup> 2 and 3 of the manufacturers. Carbonated iron exhibits, like N<sup>o</sup> 1, a beautiful appearance in the runner and pig. The breakings of the fluid, in general, are less fine; the agitation less delicate; though the division of the fluid is equal, if not beyond that of the other. When the internal ebullition of the metal is greatest, the undulating shades are smallest and most numerous: sometimes they assume the shape of small segments; sometimes fibrated groups; and at other times minute circles, of a mellow colour that the ground of the fluid. The surface of the metal, exposed to the external air, when cooling is generally slightly convex, and full of punctures: these, in iron of a weak and fusible nature, are commonly small in the diameter, and of no great depth. In strong metal, the punctures are much wider and deeper. This criterion, however, is not infallible, when pig-iron of different works, is taken collectively. At each individual work, however, that iron will be strongest whose honeycombs are largest and deepest.

"Carbo.

Furnace.

“Carbo-oxygenated, or N<sup>o</sup> 3. pig-iron, runs smoothly, without any great degree of ebullition or disengagement of metallic sparks. The partings upon its surface are longer, and at greater distances from each other than in the former varieties; the shape they assume is either elliptical, circular, or curved. In cooling, this metal acquires a considerable portion of oxide; the surface is neither markedly convex nor concave; the punctures are less, and frequently vanish altogether. Their absence, however, is no token of a smooth face succeeding: in qualities of crude iron oxygenated beyond this, I have already mentioned that a concave surface is the consequence of the extreme absence of carbon; and that, in proportion as this principle is absent, the surface of the iron acquires roughness and asperity.

“It may perhaps be proper here to mention, once for all, that although, for convenience, the manufacturer has, from a just estimation of the value of the metal in a subsequent manufacture, affixed certain numbers for determinate qualities of iron, yet it is difficult to say at what degree of saturation of carbone each respective term commences: suffice it then to say, that the two alternative principles, oxygen and carbone, form two distinct classes, that in which oxygen predominates, and that in which carbone predominates; the latter comprehends N<sup>o</sup> 1 and 2 of the manufacturers, the former includes oxygenated, white and mottled; and the equalization of these mixtures form, as has already been noticed, the variety of carbo-oxygenated crude iron.

“I shall now observe some things relative to the various faces which crude iron assumes. N<sup>o</sup> 1 and 2, with their intermediate qualities, possess surfaces more or less convex, and frequently with thin blisters: this we attribute to the presence of carbone, which being plentifully interspersed betwixt and throughout the particles of the metal, the tendency which the iron has to shrink in cooling is entirely done away; it tends to distend the aggregate of the mass, and to give a round face, by gradually elevating the central parts of the surface, which are always last to lose their fluidity.

“Again, that quality of iron known by the name of N<sup>o</sup> 3, or carbo-oxygenated, is most commonly found with a flat surface. If we still farther trace the appearance of the surface of pig-iron, when run from the furnace, we shall find N<sup>o</sup> 4, either with a white or mottled fracture, possessed of concave faces rough and deeply pitted. Beyond this it may be imagined that every degree of further oxygenation would be productive of a surface deeper in the curve, and rougher, with additional asperities. The contrary is the case: when crude iron is so far debased as to be run from the furnace in clotted lumps highly oxygenated, the surface of the pigs is found to be more convex than that of N<sup>o</sup> 1 iron; but then the fracture of such metal presents an impure mass covered on both faces with a mixture of oxydated iron, of a blueish colour, nearly metallic. In short, this quality of iron is incapable of receiving such a degree of fluidity as to enable us to judge whether the convexity of its surface is peculiar to its state, or is owing to its want of division as a fluid, whereby the gradual consolidation of the metal is prevented.

“These features sufficiently distinguish betwixt the various qualities of crude iron after they are obtained from the blast furnace: there are, however, criterions not less infallible, whereby we can prejudice the quali-

ty of the metal many hours before it is run from the furnace. These are the colour and form of the scoria, the colour of the vitrid crust upon the working bars, and the quantity of carburet which is attached to it. The variety of colour and form in the cinder almost universally indicate the quality of the metal on the hearth. Hence, from a long course of experience, have arisen the following denominations: “Cinder of sulphury iron;” “Cinder of N<sup>o</sup> 1, N<sup>o</sup> 2, and N<sup>o</sup> 3;” and “Cinder of ballast iron.” Although at different works, from local circumstances, the same kind of scoria may not indicate precisely the same quality of iron, yet the difference is so small that the following description of the various cinders may convey a very just idea of their general appearance.

“When the scoria is of a whitish colour and short form, branching from the notch of the dam, and emitting from its stream beautiful sparks of ignited carbone, resembling those ejected from a crucible of cast steel in fusion, exposed to external air, or to the combustion of fine steel filings in a white flame; if, when issuing from the orifice of the furnace, it is of the purest white colour, possessing no tenacity, but in a state of the greatest fluid division, and, when cold, resembles a mass of heavy torrefied spar, void of the smallest vitrid appearance, hard and durable, it is then certain that the furnace contains *sulphury iron*, i. e. super-carbonated iron. At blast furnaces, where a great quantity of air is thrown in per minute, super-carbonated crude iron will be obtained with a cinder of a longer form, with a rough flinty fracture towards the outside of the column.

“That cinder which indicates the presence of carbonated iron in the hearth of the furnace, forms itself into circular compact streams, which become consolidated and inserted into each other; these are in length from three to nine feet. Their colour when the iron approaches the first quality, is a beautiful variegation of white and blue enamel, forming a wild profusion of the elements of every known figure; the blues are lighter or darker according to the quantity of the metal and the action of the external air while cooling. When the quality of the pig-iron is sparingly carbonated, the blue colour is less vivid, less delicate; and the external surface rougher, and more sullied with a mixture of colour. The same scoria, when fused in vessels which are allowed to cool gradually, parts with all its variety and shade, and becomes of a yellowish colour, sometimes nearly white when the quantity of incorporated metals has been small.

“The cinder which is emitted from the blast furnace when carbo-oxygenated (or N<sup>o</sup> 3,) iron is produced, assumes a long zig-zag form. The stream is slightly convex in the middle; broad, flat, and obliquely furrowed towards the edges. The end of the stream frequently rears itself into narrow tapered cones, to the height of six or eight inches: these are generally hollow in the centre, and are easily demolished, owing to their excessive brittleness. The colour of this lava is very various; for the most it is pale yellow, mixed with green. Its tenacity is so great, that if, while fluid, a small iron hook is inserted into it at a certain degree of heat, and then drawn from it with a quick but steady motion, 20 to 30 yards of fine glass thread may be formed with ease. If the colours are vivid and variegated, the thread will possess, upon a minute scale, all the

Furnace.

Determined from the colour and form of the scoria.

**Furnace.** the various tints of colouring which is found in the columnar mass. When by accident a quantity of this lava runs back upon the discharging-pipe, it is upon the return of the blast impelled with such velocity as to be blown into minute delicate fibres, smaller than the most ductile wire; at first they float upon the air like wool, and when at rest very much resemble that substance.

"The presence of oxygenated crude iron (N<sup>o</sup> 4,) on the furnace-hearth, is indicated by the lava resolving itself into long streams, sometimes branched, sometimes columnar, extending from the notch to the lowest part of the declivity; here it commonly forms large, flat, hollow cakes, or inclines to form conical figures: these are, however, seldom perfect; for the quantity of fluid lava, conveyed through the centre of the column, accumulates faster than the internal sides of the cone are consolidated; and thus, when the structure is only half finished, the small crater vomits forth its superabundant lava, and is demolished. The current of such lava falls heavily from the dam as if surcharged with metal, and emits dark red sparks resembling the agitation of straw embers. Its colour is still more varied than the former descriptions of scoriæ, and is found changing its hues through a great variety of greens shaded with browns. Another variety of scoria, which indicates the same quality of iron, assumes a similar form; but has a black ground colour mixed with browns, or is entirely black. When the latter colour prevails, the texture of the cinder becomes porous; the quantity of iron left is now very considerable, and such as will be easily extracted in the assay-furnace with proper fluxes. In cases of total derangement in the furnace, the scoria will still retain this black colour, although the quantity of metal may amount to 25 per cent.; the fracture, however, becomes dense, and its specific gravity increases in proportion to the quantity of metal it holds incorporated.

"The next source of information, as to the quality of the iron in the furnace, is to be got from the colour of the scoria upon the working bars, which are from time to time inserted to keep the furnace free from lumps, and to bring forward the scoria. When super-carbonated crude iron is in the hearth, the vitrid crust upon the bars will be of a black colour and smooth surface, fully covered with large and brilliant plates of plumbago.

"As the quality of the metal approaches to N<sup>o</sup> 2. (carbonated), the carburet upon the scoria decreases both in point of quantity and size.

"When carbo-oxygenated iron (N<sup>o</sup> 3) is in the furnace, the working bars are always coated with a lighter coloured scoria than when the former varieties exist; a speck of plumbago is now only found here and there, and that of the smallest size. When the quality of the metal is oxygenated (N<sup>o</sup> 4.), not only have the plates of carburet disappeared, but also the coally colour on the external surface of the scoria; what now attaches to the bars, is nearly of the same nature and colour as the lava emitted at the notch of the dam.

"These criterions are infallible; for, as the fusibility or carbonation of the metal is promoted in a direct ratio to the comparative quantity of the coally principle in the furnace, so in the same proportion will the vitrid crust encircling the working bars exhibit the presence of that principle in the furnace.

"In the smelting operation a just proportion and association of materials and mechanical construction ought to be blended, in order to produce the best possible effects. Under the former are comprehended the cokes, iron-stone, limestone, and blast; by the latter is understood the furnace, the power of the blowing-machine, or the compression and velocity under which the air is discharged into the furnace, and the genius or mechanical skill of the workmen. According to this division I shall endeavour to point out the very various effects which disproportion in any case produces, and *vice versa*.

"In the preceding observations the coal and iron stone have been traced through their various stages of preparation, and that stage pointed out in which they were most suitable for the profitable manufacture of the metal. It will be necessary to carry along with us this fact, that in the exact proportion which the quantity of carbone bears to the quantity of metal in the ore, and its mixtures, so will be the fusibility, and of course the value of the pig-iron obtained. The importance of this truth will still farther appear when we consider the very various qualities of pit-coal, the different proportions of carbone which they contain, and the various properties attached to every species of this useful combustible.

"Among the many strata of coal which I have distilled, some I have found to contain 70 parts in the 100 Nature of coal examined. This large proportion is peculiar to the clod-coal, used at some of the iron-works in England, and justly preferred, for the purpose of manufacture, to the purest and hardest variety of splint-coal. The latter I have found to average from 50 to 59 parts of carbone in the 100; and the soft, or mixed qualities of coal, from 45 to 53 parts. Such various proportions of carbone plainly point out, that the operations to be followed at each individual iron-work ought not to rest upon precedent, unless borrowed from those works where exactly the same quality of coal is used. This analysis also lays open part of the source from whence originates the widely different quantities of metal produced per week at various blast-furnaces, and the great disproportions of ore used to different coals.

"Experience has shewn that the three qualities of coal just mentioned, will smelt and give carbonation to the following proportions of the same species of torrefied iron stone:

112 lb. of clod-coal cokes will smelt	-	130 lb.
112 lb. of splint-coal cokes will smelt	-	105 lb.
112 lb. mixed soft and hard coal cokes will smelt		84 lb.

"Let the iron stone be supposed in the blast furnace to yield 40 per cent. then we find that the one-twentieth of a ton of the respective qualities of cokes will smelt and carbonate the following proportions of iron, viz. 112 lb. clod-coal cokes, 130 lb. iron stone, at 40 per cent. = 52 lb. iron; 112 lb. of splint-coal cokes, 105 lb. of the stone = 42 lb. of iron; and 112 lb. soft and hard coal cokes, 84 lb. of the iron stone = 33  $\frac{6}{7}$  lb. of iron. We then have for the quantity of metal produced by one ton of each quality of cokes:

Clod-coal	52	× 20 =	1040 lb.
Splint ditto	42	× 20 =	840 lb.
Mixed ditto	33 $\frac{6}{7}$	× 20 =	702 lb.

"This furnishes a datum whereby we easily obtain the

**Furnace.** the quantity of the various cokes necessary to produce one ton of carbonated crude iron by common proportion : for if 1040 lb. of metal are produced by one ton, or 2240 lb. of clod-coal cokes, the quantity of the same cokes requisite for the production of one ton, or 2240 lb. of metal will be—

	T. C. Q. lb.
	4824.6 lb. = 2 3 0 8
Splint coal cokes 840:2240::2240:5973.3 lb. = 2 13 1 9	
Mixed ditto 702:2240::2240:7147.5 lb. = 3 3 3 7	

“ If to the quantity of cokes necessary to manufacture one ton of crude iron, we add the quantity of volatile matter driven off in the process of charring, which may be thus estimated upon the average of each quality :

Clod-coal $\frac{3}{8}$ or $37\frac{1}{2}$ per c. produce in cokes $\frac{5}{8}$ a $62\frac{1}{2}$ per c.	
Splint coal $\frac{4}{8}$ — 50	$\frac{4}{8}$ or 50
Mixed coal $\frac{5}{8}$ — 62,5	$\frac{3}{8}$ — $37\frac{1}{2}$

“ Then, for the quantity of the respective coals used in the raw state, we have the following results in proportion :

	T. C. Q. lb.
Clod-coal 5 : 4824.6 :: 8 : 7719 $\frac{3}{4}$ = 3 8 2 19	
Splint-coal 4 : 5973.3 :: 8 : 11946 = 5 6 2 18	
Mixed coal 3 : 7147.1 :: 8 : 16158 $\frac{1}{2}$ = 8 11 0 16	

Difference of produce from different kinds of coal.

“ These great disproportions of quantity, used to fabricate one ton, or 2240 averdupoise pounds of the same quality of crude iron, will convey a striking and impressive idea of the multifarious qualities of coal which may be applied and made to produce the same effects. It should also convince the manufacturer that the study and analysis of his own materials is the first and radical approach to true knowledge, and certainty of operation. Divest him of this knowledge, and view him guided by the customs and rules prevalent at another manufactory, where the coals and ores may be as different as has been already mentioned, and we will no longer wonder at the uncertainty of his results, and the numberless errors of his direction.

“ Before I enter into the practical discussion of the application of coal, I beg leave to indulge myself in the following calculations :—We have already seen that the production of 2240 lb. of carbonated crude iron requires 4824 lb. of clod-coal cokes ; these may be averaged to contain 4.5 per cent. of ashes, which, deducted from 4824, gives 4607 lb. of carbone used for one ton of metal : this sum, divided by 2240, farther gives, for one lb. of cast iron thus manufactured, 2.056 lb. of carbone.

“ We next find that 2240 lb. of the same metal requires of splint-coal cokes 5973.3 lb. ; we farther find, from a table of the analysis of coal, furnished in a former paper, that 100 parts of the raw coal contained

4.2 parts of ashes. As it is there stated to lose 50 per cent. in charring, 100 parts of cokes will contain 8.4 of ashes ; and 8.4 per cent. deducted from 5973.3, gives 5472 lb. of carbone. This again, reduced by 2240 lb. gives for each pound of metal manufactured, 2.442 lb.

“ Again, 7147.1 lb. of cokes obtained from soft mixed coals are consumed for every ton of 2240 averdupoise pounds of crude iron produced ; every 100 parts of the same coals contain 3.3 parts of ashes ; and 100 parts of cokes contain nearly 6.5 per cent. of ashes, which, deducted from 7147.3, gives 6672.6 of carbone, which divided by 2240, gives, for the quantity used for one pound of cast iron, 2.978 lb.

“ From these calculations it appears, that 2240 lb. of carbonated iron, requires of carbone from clod-coal 4607 lb. ; of carbone from splint-coal, 5472 lb. ; and of carbone from mixed coal, 6672 lb. : that one pound of carbonated iron requires of carbone from clod-coal cokes 2,056 lb. ; from splint, 2,442 lb. ; from mixed, 2,983 lb. ; and that carbonated crude iron may be obtained when widely different quantities of carbone have been consumed.

“ In seeking for a solution of the latter fact, we must have recourse to the different degrees of inflammability of the carbone, according to the various laws of continuity imposed upon it in its fossil construction. It can easily be conceived, that, owing to this structure, and the nature of the interposed ashes, the particles of carbone of some cokes will be more easily oxygenated than those of others ; in the same way that we find splint-coal, when exposed to ignition in contact with open air, affords one-third of more cokes than are obtained from soft mixed coals, though the latter, when distilled, yield more pure carbone than the former.

“ By experiment it is proven that 100 grains of carbonic acid gas is composed of 72 parts of oxygen, united with 28 parts of carbone : if the quantity of the carbone of clod-coal, viz. 2.056 lb. used for the manufacturing of every pound of cast iron, is reduced to grains, we will find it to consist of 14392 grains ; this, divided by 28, gives the acidifiable principle of 514  $\times$  100 = 51400 grains of carbonic acid gas (F) : hence, as one cubic foot of this gas, at 29.84 of barometrical pressure, and 54.5 of temperature, weighs nearly 761 grains, we find that in the formation of every pound of cast iron  $\frac{51400}{761}$  = 67,54 cubical feet of carbonic acid

gas will be formed ; and in the production of one ton of metal, the astonishing quantity of 151289,60 cubic feet. This quantity, however incredible it may seem, is only what would be formed under the above pressure, and at the above temperature : when we take into the account the high temperature at which the decomposition and recombination are effected, with the consequent

(F) “ This is supposing, for the moment, that the whole of the carbone is oxygenated, either by the oxygen contained in the ore, or obtained from the discharging-pipe by the decomposition of the atmospheric air : this, however, is not strictly true, as the metal takes up a small portion, by weight, of the carbone ; and when, by accident, moisture has been introduced into the furnace, either through the medium of the blast, or of the materials, its decomposition furnishes a portion of both oxygen and hydrogen, which may dissolve, and also carry off, a part of the carbone. Atmospheric air being found to hold water in solution, a small quantity of hydrogen will, even in the driest weather, be present in the blast furnace.

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quent increase of elastic force and of volume, our ideas are almost unable to commensurate the sum of the gas hourly formed, and thrown off, ignited to the highest degree of heat.

“ If the same mode of calculation is adopted with the other qualities of coal, we will have the following results :

“ For the splint-coal  $2,442 \text{ lb. or } \frac{17094}{28} = 610,5 \times 100 = 61050$  grains of carbonic acid, which gives  $\frac{61050}{761} = 82,85$  cubic feet for 1 lb. and  $82,85 \times 2240 = 185,584$  cubic feet for one ton. For the mixed coal  $2,983$  or  $\frac{20881}{28} = 710 \times 100 = 71000$  grains carbo-

nic acid ; that is,  $\frac{71000}{761} = 93,3$  cubical feet for 1 lb. ;

and  $93,3 \times 2240 = 208,992$  cubical feet for one ton. By the same calculation we may attain a pretty accurate notion of the quantity of atmospheric air necessary to produce 1 lb. or one ton of cast iron ; an average of the three varieties of coal will be sufficiently accurate for this purpose ; thus  $\frac{14392 \times 17094 \times 20881}{3} =$

$17455\frac{2}{3}$  or  $2,4935$  lb. of carbone are consumed upon the average of each pound of pig-iron : this is found to produce of carbonic acid gas  $\frac{17455\frac{2}{3}}{28} = 62,341 \times 100$

$= 62,30041$  grains ; which again divided by 761, the grains in one cubic foot gives 81.86 cubic feet for the gas discharged in manufacturing one pound of cast iron. As carbonic acid contains, as has already been noticed, 72 parts of oxygen in 100, then we have for the quantity of oxygen gas  $100 : 72 :: 62400.41 : 44856.29$  grains oxygen gas ; and as, at the ordinary temperature and pressure of the atmosphere, a cubic foot of oxygen gas weighs 591 grains, we find  $44856.29$  divided by  $591 = 75.89$  cubic feet of oxygen gas necessary to form the acidifying principle of 81.86 cubic feet of carbonic acid gas ; and that the same quantity of oxygen gas is necessary to the production of one pound of carbonated crude iron. This leads us to the following statement for the quantity of atmospheric air used during the same operation ; first premising that the constituent parts of atmospheric air are nearly 73 of azote and 27 of oxygen gas ; of atmospheric air then necessary, we have  $27 : 100 :: 75.89 : 281$  cubic feet.

“ I shall now proceed from mere calculation to matter of fact, and attempt to prove the correctness of the former by the approximation of the latter to its results. Let a blast-furnace be supposed to produce  $20\frac{1}{2}$  tons of pig-iron per week,  $= 45360$  averdupoise pounds ; this, divided by days, hours, minutes, and seconds, gives per day 6480 pounds, per hour 270, per minute  $3\frac{3}{4}$  lb. and per second 525 grains.

“ From this it is evident that one pound of cast iron is produced in  $13\frac{3}{10}$  seconds ; experience has shewn that a blast-furnace, producing, in any of the above periods, the respective quantity of metal, requires a discharge of air per minute nearly equal to 1350 cubic feet ; this, divided by 4,5 lb. the quantity produced per minute gives, for one pound of iron, 300 cubic feet. The quantity, by calculation, we have seen to be 281 cubic feet, difference 19 ; a sum no way considerable

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when we reflect upon the inequality of the movements of a blowing machine, and when it is recollected that some allowance ought also to be made for what air may pass through the furnace undecomposed, or may be lost at the place of entrance.

“ From this coincidence of theory with practice, we cannot help admiring the rigorous principles on which the Lavoisierian system is founded ; nor are we less pleased to find, that, small as the operations of the chemist may be, yet they are a just epitome of what takes place in the philosophy of extensive manufactories. The following table exhibits the quantity of carbone which may be used upon an average, with the relative quantity of carbonic acid formed, and air used :

“ In the manufacture of 1. lb.—1 ton of iron,  
The pure carbone requisite is 2.49— 5585.44 lb.  
Carbonic acid formed 81.86—183366.40 cub. ft.  
Oxygen gas used 75.89—169993.60 cub. ft.  
Atmospheric air employed 281.00—629440.00 cub. ft.

“ From the foregoing particulars upon coal may be learned how much is dependent upon the native construction of coal and its constituent parts ; I shall next advert to the effects produced by its improper preparation.

“ When coals intended for the blast-furnace are sufficiently charred, they ought, in point of colour, to be of a silver-gray ; their fracture will appear lamellated and porous if splint-coals have been used ; softer coals form themselves into branches slightly curved, and, when properly prepared, are always very porous. I have frequently found that the better the cokes were charred, the more water they will absorb. Coals half burnt do not take up half so much water, because their fracture continues in part to be smooth and less porous than when thoroughly burnt.

“ When half-prepared cokes are introduced into the furnace, the metal formerly carbonated will lose its gray fracture, and approach to the quality of oxygenated iron. Their presence is easily detected by the unusual quantity of thick vapour arising along with the flame. Besides, the water and sulphur, which raw coals introduce into the furnace, and which always impair the quantity of carbon by the various solutions effected by the presence of oxygen, hydrogen, &c. the fitness of the coal for combustion, and the support of the ore, is much diminished by this second course of ignition and disengagement of bitumen. The pressure of the incumbent ores also fracture and reduce the cokes into small pieces, which produce a considerable portion of coke-dust ; this is partly carried to the top of the furnace before the blast ; sometimes below it appears in immense quantities, ignited to whiteness, and liquid as sand. Coal thus detached from the mass, exposed to the action of a compressed current of air, is unfit for conveying the carbonic principle to the metal ; and as it frequently belongs to the just proportion of charcoal necessary to smelt the ores, and to carbonate their iron, its loss must be felt, and the quality of iron impaired.

“ When cokes of any quality are exposed to a moist atmosphere, so as to absorb water, their effects in the blast furnace become much reduced, and the presence of the water is productive of the most hurtful consequences in the production of carbonated crude iron. I have found, by repeated experiment, that one pound of well-

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well-prepared cokes will, when laid in water, take up  $1\frac{1}{4}$  ounces in the space of half an hour; at this rate, a basket of cokes weighing 80lb. saturated with water, will contain 140 ounces of water, or  $8\frac{1}{2}$  lb. If the charge contains six baskets, then we see that upwards of 50 lb. of water is introduced regularly along with the charge, furnishing an additional quantity of oxygen equal to  $42\frac{1}{2}$  lb. and of hydrogen equal to  $7\frac{1}{2}$  lb.; but it frequently happens that the cokes contain a larger portion of water than is here stated. When cokes thus furcharged are introduced in quantity into the blast furnace, the quality of the metal is not always instantaneously changed, and frequently the colour and form of the cinder remain long without any great alteration. The contact of wetted cokes with the ore is first seen by the great discharge of pale blue gas, with the whiter flame at the top of the furnace; next, the accumulating oxyde upon the surface of the pig when consolidating indicates their presence. Iron thus oxygenated frequently exhibits, while fluid, that agitation and delicate partings peculiar to carbonated metal: the remelting of this iron is never attended with advantage, and is always unprofitable to the founder.

“ From the properties which have been assigned to pit-coal, the following facts may be deduced:—That charcoal is the basis of the manufacture of crude iron; that its proper application produces the most valuable qualities of pig-iron; that, by diminishing its relative proportion, or contaminating its quality by heterogeneous mixtures, the value and fusibility of the metal is lost; but that, by a proper increase, and always in proportion to this increase, will the fusibility and value of the iron be mended. From the whole, an important lesson may be learned of the pernicious effects of water in the furnace, and how absolutely necessary it is to prepare the cokes without using water, either to damp the fires, as in the usual mode, or to cool the cinders obtained from the tar kilns, to prevent their consuming in the open air: in all this hurtful operation considerable quantities of water become fixed in the cokes, which require a very great degree of heat to expel.

“ The preparation of iron stone has already been fully attended to, and the phenomena which it exhibits under every stage minutely described. In consequence of various experiments we are authorized to draw the following conclusions: That when pure calcareous iron-stone is used, it admits of having the local quantities of cokes diminished; that argillaceous requires a larger portion than the calcareous genus; and that siliceous iron-stone requires a greater proportion of fuel than any variety of the former genera. We have also seen that fusibility, either connected with strength or otherwise, is derived from the mixture of the ores; and that excessive brittleness, intimately connected with infusibility, is also derived from the same source. From a review of these facts, we are forcibly impressed with the importance of combining the prepared iron-stones with proportions of fuel suited to their various natures, in order to produce all the varieties of iron with the greatest possible economy. Contemplating farther the same subject, it is easy to be conceived that a want of knowledge of the component parts of iron-stones, and the effects which individually they produce, must lead to great

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uncertainty of operation in the smelting process, wherein the beautiful economy of nature, and even real property, will be often unprofitably sacrificed to precedent.

“ Besides the above causes of alteration, dependent upon mixtures of the earths, the existence of oxygen in various quantities in the ores ought never to be overlooked in proportioning the cokes to the iron-stone. This powerful agent, whose form and substance constantly eludes our vision; whose existence is only ascertained by the wonderful changes produced by its various combinations with the iron; and whose presence in the same iron-stone, in various quantities, may produce such variety of result as to characterize the ores, as containing *good* or *bad* iron, surely forms the most interesting mixture which ores or iron-stones possess. It will be a momentous epoch in the manufacture of iron when the existence of such a principle shall be fully admitted by the manufacturer, and its agency, from certain visible effects produced, adopted to explain its accompanying phenomena. Till that period he will not perceive the utility of ascertaining the quantity of oxygen, and devising economical methods of taking it from the ore. An attention to this powerful principle can alone root out those prejudices so inimical to the real interests of the manufacturer, and which seem to glance at nature, as having improvidently combined her most useful metal with mixtures which could resist the ingenuity of man, or set his comprehensive intellect at defiance. In the progress of this great inquiry, is it not possible that the present expensive exertions may in part be superseded? Is it not possible, that, by laying open the sources of information to individuals at large, a greater mass of intellect may engage in the practice of this art? While the present extensive and lofty buildings are necessary, the business is entirely confined in the hands of men of great capital: the extent of their manufactures require that a large tract of country be devoted to their supply; a natural consequence is, that innumerable tracts of land are overlooked, or held unworthy of notice, merely because they cannot, in a period necessary to clear a great capital and insure a fortune, afford the necessary supply of materials. Such situations, according to the present state of the iron business, must remain unexplored. Should, however, a desire for truth once gain footing in the manufactories of iron, and should this natural impulse of the unprejudiced mind keep pace with other branches of intellectual information, we may not despair of seeing many imperfections removed, which were the unavoidable consequence of the period of their creation.

“ In the application of iron-stone in the blast furnace, the following particulars ought rigorously to be attended to:—

“ 1. Their mixtures, whether clay, lime, or flux; their and its relative proportions to each other, judging according to the rules formerly laid down; which of them may admit of a diminution of fuel; which of them will afford the quality of iron at the time requisite; and which of them will be most likely, by a judicious arrangement, to give the greatest produce of metal, united with value and economy. Iron-stones, united with large portions of flux, have already been stated to require a greater proportion of fuel to carbonate their metal than the other genera. When ballast or forge-pigs are wanted, it

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Different kinds of iron-stone require different proportions of cokes.

The oxygen of the iron-stone

other qualities to be considered.

Furnace. is obvious that siliceous iron-stones ought to be used; not that they contain a greater quantity of iron, but because they form a substitute for the other kinds, which may be more advantageously smelted for the production of more valuable qualities.

" 2. The quantity of metal which each individual iron-stone may contain, is another object of consideration. Besides the proportion of mixtures, which chiefly contribute to the fusibility of iron-stones, a second degree of fusibility is dependent upon the richness of the ore in iron; this is so obvious in the use of the Cumberland and Lancashire ores, that the consequences of their introduction will be perceived, by the change of the scoria and metal, in half the time that change would be effected by ordinary iron-stones. It has been frequently noticed, that crude iron contained pure carbone in proportion to its fusibility; then the more fusible or supercarbonated qualities must take up, comparatively, a considerable portion of the carbonaceous principle from the fuel. From this results a striking consequence, that the quantity of fuel should, over and above its relation to the mixtures, bear a just proportion to the quantity of iron in the stone: for example, let the weight per charge of fuel at a blast furnace be 400lb. and let this be supposed sufficiently to fuse and carbonate the iron contained in 360lb. of iron-stone; let the quantity of metal be supposed 35 per cent. then the produce will be 126lb. Should a change take place, and iron stone richer in iron be applied, though the same by weight, and should this iron stone yield of torrefied stone 45 per cent. its produce will be 162lb. or 40lb. more than the former. As there exists no greater proportion of carbone in the furnace, it is evident that the existing quantity, being distributed over nearly one-third of more metal, must therefore be in more sparing quantity in the whole, and the value of the metal consequently reduced.

Quantity of fuel to be proportionate to the richness of the ore.

" 3. The weight of oxygen contained in iron stones is the next object of serious consideration. I have already shewn, from experiment, that our iron stones naturally contain from 9 to 14 per cent. of oxygen, which remains after torrefaction; it has also been shewn, that this quantity of hurtful mixture may be easily doubled by over-roasting or under-roasting the stone; and that the bad effects entailed are in the ratio of its combination with the iron. From a review of the facts which have been adduced on this subject, its agency and effects will easily be credited by men of science; its property of constituting the acidifying base of all the acids readily explains the unalienable consequence of its presence with acidifiable bases. The effects are still more pernicious when the oxygen is furnished by the decomposition of water in raw iron stone; the hydrogen in this case set free, also seizes a portion of the carbone; and these abstractions, united to that produced by the native portion of oxygen in the stone, form an aggregate which frequently reduces the value of iron 40 per cent. So long as the principles of science are overlooked in the manipulations of the foundery and forge, the existence of such agents will be treated as chimeras of the philosopher and chemist, and the effects hourly produced by them industriously attributed to causes which, in point of unity or consistency, will not

\* Phil.

Mag. vol. v. bear the slightest touch of investigation.\*"

The compression, velocity, and effects of the air are

of the utmost importance in blast furnaces. The production, management, and direction of these effects are therefore serious objects of consideration to the manufacturer of iron, since on their proper application the success of his operation chiefly depends. And here we shall renew our obligations to Mr Musket for his interesting observations on this subject. "When it is considered," he says, "that in the smelting operation the reduction of immense quantities of materials is effected by a compressed current of air impelled by the whole power of a blowing machine, the consequences of the change of air, either in quantity or quality, must be very obvious: when, farther, we contemplate the metal called into existence by means of combustion thus excited; when we consider iron as having the most powerful affinity for the base of that part of the air which maintains combustion; and when we view the debased state to which the metal is reduced by coming into improper contact with it, we must conclude, that the application of blast in the manufacturing of iron calls for the most minute and thorough investigation. In order to take a comprehensive view of this subject, the following division will be requisite:—

" 1st, The intimate connection which the quantity of blast bears to the area of the internal cavity of the furnace, and to the nature of the pit-coal.

" 2d, The various modes by which air is procured, and how these respectively affect the quality of the air.

" 3d, The various changes to which air is subjected by a change of temperature in the atmosphere, with the consequent effects.

" 4th, How far increased or diminished velocity and compression alter the results of the furnace.

" 5th, The form and diameter of the discharging-pipe.

" 1st, Then, in the construction of a blast-furnace and blowing-machine, the quantity of air to be used ought to depend upon the internal dimensions of the former; which, again, ought to be formed according to the quality of the pit-coal. Upon the softness or hardness of the coal, ought more immediately to depend the height of the blast-furnace. This necessary precaution has given rise to a vast variety of furnaces, of different capacities, from 30 to 50 feet in height, and from nine to 16 feet diameter at the boshes. Furnaces from 30 to 36 feet are used for the softer qualities of coal, such as a mixture of free-coal and splint. Furnaces from 36 to 45 are appropriated to the burning of splint-coal cokes; and in Wales, such is the superior strength and quality of the pit-coal, that the furnaces admit of being reared to the height of 50 feet.

" These various qualities of coal, it has been formerly shewn, have appropriate weights of iron-stone, and, to use the language of the manufactory, are capable of supporting a greater or less burden of mine." The former qualities admit not of having the air discharged in great quantity, unless it is impelled under an uncommon degree of compression and consequent velocity incompatible with the operations of a steam-engine. The reason is obvious: when air, loosely compressed, or comparatively so, is thrown into a body of ignited fuel, the mechanical structure and continuity of whose particles are soft, the air is much more easily decomposed; the ignition, of course, is more rapid: the descent of the materials is promoted beyond their proper ratio, and long

**Furnace.** long before the carbonaceous matter has penetrated the ore, or united to the metal, to constitute fusibility. I shall adduce an example, as being the most illustrative of this doctrine.

Illustrated  
by an ex-  
ample.

“ Suppose a blast furnace, 35 feet high, 11 wide at the bothes, properly burdened, and producing, N<sup>o</sup>. 1. pig-iron. Let the discharge of the air be supposed equal to a pressure of two pounds and a half upon the square inch, or equivalent to one-sixth of the atmosphere, or five inches of mercury: under these circumstances let it farther be supposed, that 1500 cubical feet of air are discharged in one minute; and that the diameter of the discharging pipe is 2.625, the area of which is equal to 6.890625 circular inches. Let the discharging pipe be increased to three inches diameter, and let the same quantity of air be passed into the furnace; it is evident that as the area of the discharging pipe is increased to nine circular inches, or nearly one-third more than formerly, the compression of air must be proportionally diminished. The alteration is soon perceived by its effects; the quantity of scoria increases from the furnace, whilst the consumption of the materials above is also considerably augmented. In a few hours the scoria will have undergone a complete change, from pure white, enamelled with various blue shades, to a green, brown, or black colour, considerably charged with the oxide of iron (G). The same effects will continue, in greater or lesser degree, till all the materials are reduced which were existing in the furnace at the period of diminished compression. The philosophy of this fact may be investigated in the following manner:—

“ While the just association of proportions remained, the air was discharged under such a degree of compression as to excite proper combustion: the decomposition of the air by means of the ignited fuel, was not effected in immediate contact with the separating metal, but had, by its uncommon degree of density, resisted decomposition in the ignited passage, and had been decomposed upon the cokes at a greater elevation in the furnace. As a proof of this, we frequently see a tube formed throughout the whole breadth of the furnace, quite black and apparently cold, formed of the fused materials: when this is removed, a considerable descent momentarily takes place of cokes heated visibly beyond the common pitch: these inflame rapidly, but are soon again cooled to blackness by the incessant discharge of air upon them. The descending mixture of iron and lava is in like manner cooled around the line of blast; the tube is again formed, and, if not removed, will remain for days together, while the furnace will be otherwise working in the best manner.

“ When by accident or design the compression and velocity of blast are diminished, the tube begins to burn, and throws off a great many fiery-coloured sparks, the sides and roof fail, and are carried before the blast in all directions. Sometimes considerable clots of imperfect iron are recoiled with such violence as to escape the vortex of blast, and issue from the tuyere-hole with such velocity as to inflame in the air, and fall down in the state of oxide. In the end the tuyere will appear to flame, and all the passage inwards shews an as-

tonishing degree of whiteness. The decomposition of the air is instantaneously effected upon its entering the ignited passage; the iron by this means is exposed to the oxygen that is disengaged; and the vast quantity of caloric set free, in consequence of its union with the iron and carbone, produces the astonishing heat now visible, but which formerly took place at a more proper height in the furnace.

“ From this it will appear, that although a greater apparent degree of heat is visibly produced by the sudden decomposition of the air, and a more rapid descent of materials for some time is the consequence, yet, as the quality of the iron is impaired, and as in the end the furnace will return to its old consumption of materials as to quantity, the effects of a loose soft blast are obviously pernicious.

“ It sometimes happens, that when a loose blast is furnished with a considerable portion of moisture, or comes in contact with cokes which had been wet when introduced into the furnace, the inflammation which takes place at the tuyere is prodigious: fine fire clay will be melted down and blown to slag in a few minutes; the sides of the furnace, composed of very infusible fire stone, is next attacked, and in a few hours will be so completely destroyed as to stop the working, and require immediate repair. Effects similar to those now described will be felt when blast is improperly proportioned to coal of a stronger continuity of fracture and superior quality. Besides the effects produced by the sudden decomposition of iron, others of like nature are produced where a soft coal is used, a small furnace, and a great discharge of blast.

“ It has been found that crude iron, to be properly matured, ought to remain in the blast furnace, according to circumstances, 48 to 60 hours; that is, from the period that the iron stone is introduced till such time as the metal begins to occupy its place in the hearth in a state of perfect separation. When the contrary is the case, the mixtures arrive at the hottest parts of the furnace before the metal has taken up a sufficient quantity of carbone from the fuel; the action of the blast, and the immediate heat by which the ore is surrounded, forces the iron from its connections to the bottom of the furnace. The quality is de-carbonated, and reduced in its value: to restore this again, the local portion of fuel is increased; this adds to the expence of manufacturing, and diminishes, in some measure, the smelting of the furnace.

“ When splint-coal cokes are used in the blast furnace, the blast admits of being thrown in under the highest possible pitch of compression; the uncommon density of the charcoal sustains a very powerful discharge of blast before it is dissipated to facilitate the general descent. Most frequently, large masses of these cinders pass through the whole ignited cavity, and are thrown out below, possessing all the acuteness of their original form and fracture.

“ This quality of coal is used in all the Curson blast furnaces, where, to ensure a respectable produce, the air is discharged under a pressure equal to  $3\frac{1}{2}$  pounds upon the square inch, or  $6\frac{1}{2}$  inches of mercury.

N n 2

“ The

(G) “ The metal will have lost nearly all its carbone, and have become inferior in value 25 to 30 per cent.

**Furnace.** "The same quality of coal was used at the Devon iron works, where at one time, having all the blast of a 48 inch cylinder engine thrown into one furnace, the column of mercury supported was upwards of seven inches; the quantity of air discharged under such an impelling power, I found to exceed 2600 cubical feet per minute.

"The coals used at the Cleugh, Cleland, and Clyde iron works, are nearly of the same quality at each—a mixture of splint and soft coal. The Muirkirk and Glenbuck iron works have a coal different from any of the former, and in some particular spots it considerably resembles the English clod coal.

**Methods of directing air into the furnace,** "2d, The various methods of procuring air for the blast furnace may be reduced to the following:—1st, That procured by cylinders, and discharged into the furnace by means of a floating piston heavily loaded, and working in a large receiver or regulating cylinder: 2d, That wherein pumping cylinders only are used, and the air thrown into chests inverted in water, called the *water vault*: 3d, That mode wherein the air is discharged from the pumping or forcing cylinder into an air-tight house, called the *air vault*.

**By cylinders and water blowing machines;** "The first method is the original mode of blowing, and is still much used at those iron works whose erection has been prior to the last fifteen years. By this mode the quality of the air is less subject to alteration by a change of atmosphere. The principal objection to this manner of blowing, is the want of capacity in the receiving cylinder; which cannot be increased so much as to take away the considerable intervals which occur at different parts of the engine stroke. This effect is sensibly seen by the speedy and irregular ascent and descent of the column of mercury. In water blowing machines, where the air is raised by three or four cylinders worked by means of a crank, and where the air is received into an air chest, and forced into the furnace by the continual action of the blast of each successive cylinder, the current of the air is steady, and supports the column of mercury with great uniformity.

**By means of the water vault.** "The use of the water vault has of late years become very general among new erected works. Its properties are, a steady and very cold blast: the largeness of the receiving cisterns gives them a sufficient capacity to retain every pound of air raised by the furnace, and distribute it to the greatest advantage. This is not the case with the floating pistons, where a certain quantity of spare wind is thrown out at every return of the engine, lest the great piston and weight should be blown out of the cylinder altogether; which, indeed, sometimes happens. The only objection which remains in force against the use of the water-vault, is the tendency which the air has to take up a considerable portion of water in solution, and introduce it into the furnace. A judicious arrangement of the conducting pipes would in some measure obviate this, as well as the more dangerous tendency which water has to rise in a pipe speedily emptied of its air by the stopping of the engine: a stream of water thus conveyed to the furnace, would be productive of the most awful consequences.

**The air vault.** "The air afforded by the air vault is much inferior to that obtained in the former methods. This immense magazine of compressed air generates a considerable portion of heat, which greedily seizes the damps, which

are unavoidable in underground excavations, and conveys them to the furnace. The blast is, however, steady and uniform; and when the inside of the building is completely secured against the passage of air, it is productive of considerable effects in the furnace. In the summer months, however, the air becomes so far debased as to affect the quality of the iron, and change it from gray to white. Every change in the temperature of the atmosphere during this period, is indicated by various changes in the furnace.

"The largest air-vault hitherto in use was excavated out of solid rock at the Devon iron works: the fissures of the rock admitted considerable quantities of water; and the same degree of damp would always prevent the possibility of making the side walls and roof air-tight by means of pitch and paper, &c.

"Besides the various natures of blast, as to the strength and equality of the current afforded by different modes of constructing the blowing machines, a variety in the quality of the air obtained is also an invariable consequence: this is sufficiently known by the effects which it produces in the blast furnace, and ought to be subject to scrupulous examination.

"In this, as in other countries, larger produces of cast iron are obtained in the winter months than during the summer and autumn seasons: the quality of the metal is also much more carbonated, and with a less proportion of fuel. In many parts of Sweden, where the summer heats are intense, the manufacturer is obliged to blow out or stop his furnace for two or three months: not only is he unable to make carbonated metal, but is frequently incapable of keeping the furnace in such trim as to make a produce of any quality whatever. In Britain, during the months of June, July, and August, more especially in dry seasons, the quality of the iron, with the local proportion of fuel, will be depreciated 30 per cent, and the quantity reduced to two-thirds or three-fourths.

"In seeking for a solution of this universally acknowledged fact, our attention is naturally directed to an examination of the various states of air. That the quality of the air in winter is more fit for combustion than in summer, is a truth which requires no farther demonstration. Greater coolness, whereby an almost complete refrigeration of moisture takes place, and the presence of perhaps a greater relative proportion of oxygen, may account for this phenomenon. On the contrary, the quality of air during the summer months becomes much contaminated for combustion, by holding in solution a much greater quantity of moisture: the abundance of nitrous particles may also diminish the usual proportion of oxygen.

"This will account for the inferior effects of combustion both in common fires and in the blast furnace; it will also in a great measure tend to solve the curious phenomenon of the pig-iron taking up less carbone in summer, although reduced with a superior quantity of fuel. The air discharged most probably contains less oxygen; yet the metal is much less carbonated than at other times, when contrary proportions of these exist. Most probably the deficient carbone is carried off by dissolving in hydrogen, forming a constant stream of hydro-carbonic gas, while the oxygen that is set free unites to the iron; and while it reduces its quality, at the

Furnace. the same time the quantity is reduced by a portion of the metal being lost in the scoria (H).

But is not sufficiently attended to.

"To correct these occasional imperfections in the quality of the air, and to devise methods to procure air always fit for proper combustion, ought to be an object of much consideration to the manufacturer of cast iron. Whether such a consideration has been given rise to the different modes of receiving and discharging the air now in use, I cannot say; I rather think not: a great quantity of air has hitherto been a greater object than a certain and uniform quality; and in a country where there is more temperate and cold weather than hot, it is by far the most important object: to unite both, however, would be an attainment of the greatest utility, and would rank the discoverer amongst the well-deserving of his country. How far the mechanism of our present machinery has been adapted to the exigencies of our atmosphere, will appear upon examining the nature and properties of the air, judged by its effects upon the blast furnace.

Effects of the air from the cylinder.

"The air produced by the blowing and receiving cylinder is less changed, and less subject to change, than that produced and lodged in contact with a vast body of air or water. If the blowing cylinder is fixed in a dry cool spot, the only difference which the air undergoes is an increase of temperature; this is so very considerable, that upon entering the blowing cylinder immediately after stopping the engine, I have found the thermometer rise 15 to 17½ degrees higher than the surrounding air. That this heat is generated in the cylinder is unquestionable; but whether it is occasioned by the friction of the piston leather upon the sides of the cylinder, or expressed from the air by its severe compression, I have not yet been able to decide. It very probably arises from both causes, although the latter is sufficient to produce a much greater degree of heat. What effect this increase of temperature has upon combustion we are unable to say, as the degree of heat accumulated will at all times bear a reference to the temperature of the surrounding air, and as there is no method likely to be devised where heat would not be generated by the action of the particles of air upon each other. When the bulb of a thermometer is held in the middle of the current of blast, as it issues from the discharging pipe, a temperature is indicated as much lower than the temperature of the surrounding air, as the temperature of the cylinder was higher; and it is most probable that a much lower degree would be obtained, were it not for the previous expression of some heat in the blowing cylinder. Upon the whole, I think, the quality of the air obtained in this way of blowing uniformly most fit for combustion, provided the numerous pauses and irregularities of the current of air were done away.

From the water vault.

"Air forced into the furnace under water pressure always contains a considerable portion of moisture; the blast of course is colder, as it issues from the discharging pipe. The temperature differs so much from that of the external air as to sink the thermometer from 54° down to 28° and 30°. Such effects are produced by

air coming into contact with water, that, although the temperature of the atmosphere is 60, 65, to 70, yet the blast at the orifice seldom rises above 38: the cold produced in this manner is much increased if the air is surcharged with so much water as to be visible in the state of a fine spray. The leading feature, therefore, of the water vault, as to its effects upon the quality of the air, seems to indicate an almost uniform degree of temperature in the blast: this can only be occasioned by the warm air in summer taking up a greater portion of the water in solution, the escape of which at a small orifice, and under a great degree of compression, produces the very great depression of the thermometer. I have already hinted at the bad effects produced by moist blasts, and shall, in a proper place, more minutely attend to them.

Furnace.

"The most inferior quality of air used in the blast furnace is that thrown into the air vault, and afterwards expressed from thence by its own elasticity and the successive strokes of the engine. The capacity of such a building is from 60 to 70,000 cubical feet; this, when filled, generates a much superior degree of heat to that sensible in the blowing cylinder. As this heat is produced many feet distant from any mechanical motion, it is most evident that it is extricated from the air, and will readily unite with the moisture which penetrates the building: the quality of the air introduced into the furnace will therefore be in proportion to the quantity of moisture taken up; this will be much more in summer than in winter, as the temperature of the former exceeds that of the latter. The sensation, on entering the air vault in the coldest months, immediately after stopping the engine, is exactly similar to that experienced upon entering a crowded room in the hottest summer day; the walls are covered with damp, and the superior regions of the vault readily obscure the flame of a candle. The feeling, upon remaining in the air vault when the engine is at work, is less marked than would be expected where so great a compression of air existed; the sense of hearing, owing to the moisture in the conducting medium, is considerably impaired, and respiration is performed with some difficulty; the light of a candle is faint, and not visible at the distance of a few feet.

"I have explained the necessity of just proportions existing betwixt the area of the interior of the blast furnace, the quantity of air thrown per minute, and the quality of coal. The various modes of blowing, and their respective effects, deduced from strict observation, were also attended to. We have now, 3d, to adduce examples where the various changes of the atmosphere, as to heat and pressure, occasion the most sensible difference in the quantity of materials consumed, and in the quality and quantity of metal produced.

"It has been already demonstrated, that the air in winter, by containing less moisture, is more proper for combustion, and more calculated to produce carbonated crude iron, than the air existing at any other season. From this superior quality the manufacturer obtains advantages, which induce him to wish for a continuance of

(H) "May not the superabundant azote of the summer atmosphere produce part of these effects, by dissolving a portion of the carbone, and forming carbonated azotic gas, as has been proved by M. Lavoisier?"

Furnace.

Effects of a change of weather.

of cool air throughout the whole year. These effects are not, however, uniform; they depend greatly upon a light or heavy atmosphere. The keener and more still the air, the more rapid the combustion. During a severe frost, the descent of the materials is facilitated from one-tenth to one-fiftieth more than in rainy or hazy weather, and at the same time the quality of the iron is rather improved than impaired. When a change from frost to snow or rain takes place, the effects frequently become almost immediately obvious; the colour of the flame at the furnace head is changed; the tuyere of the furnace inflames, and burns with great violence; the lava, as it flows from the notch of the dam stone, becomes lengthened and tenacious; the form of it is changed, and the colour undergoes the most visible alterations; the iron no longer retains its complete saturation of carbone, but flows out sensibly impaired of its fluidity; and, when cold, the privation of carbone is most evident by the examination of its fracture.

“When such consequences arise from the transition so frequent in winter from frost to thaw, it will be easily conceived that the change effected during the milder and warmer months must produce proportionally additional effects. The increase of temperature by taking up, and holding in solution, a much greater portion of aqueous vapour, will account for the ordinary effects which are annually observable in every work. Where these pernicious consequences approach to extremity, a solution of the phenomenon will likely be obtained by the examination of the blowing apparatus. If air is fitted for combustion in proportion as it is free from watery solutions, we are not to expect similar results from these blast furnaces in summer, which are blown by air from the regulating cylinder, and those blown by air from a water or air vault. I have for years seen this fact verified, and superior quantity and quality of iron during the hot weather, obtained from a furnace excited by means of blast, from the simple regulating cylinder, with a less proportion of fuel than from furnaces whose air was expressed by means of the water or air vault. Observations thus made, where every day the effects of the different means could be justly estimated and compared, have led me to the following conclusion: That the quality of the air, as furnished us by nature in our atmosphere, is uniformly more fit for the manufacture of crude iron to profitable account, when discharged simply by means of cylinders and pistons, than when brought into contact with moisture either in the water vault or air vault.

Air from cylinders preferred.

“So imperfect has the quality of the summer air been found in this country for combustion, where the water vault was used, that experiments have been made to repair the deficiency of effect by introducing steam into the furnace by means of an aperture above the tuyere. The inducing motive to this act, was a belief, that combustion was diminished in consequence of a diminution of oxygen gas during the summer; that, by introducing water upon a surface of materials ignited to whiteness, decomposition would ensue, a larger quantity of oxygen would then be presented to the fuel, and superior effects, as to combustion, obtained in this manner than hitherto witnessed. The idea was ingenious, and, in its application to the manufacture of cast iron, original; but the whole train of facts, which have been detailed, as to the effects of a superabundant

quantity of oxygen, was overlooked. The event proved in the most complete manner, and on a great scale, the pernicious effects of moisture. The furnace gradually became cooled where the steam entered; the heat, set free by the decomposition of the water and the disengagement of oxygen, increased to an alarming pitch a considerable way up the furnace; the quality of the iron became brittle, and as white in the fracture as silver; the introduction of the steam was still continued, the descending materials were instantly robbed of their heat to facilitate the decomposition of the water, and by and by the furnace closed entirely over, and the experiment ceased.

Furnace.

“This experiment, performed in a furnace 18 feet high, is a complete proof that heat is disengaged from bodies while they pass from the fluid to the aëriform state. The first instant of the discharge of steam, a very considerable portion of heat would be withdrawn from the fusing materials and united to the water. This, in its turn, would be ignited to whiteness, and decomposed upon the metals and cokes, in a superior region of the furnace. The process continuing for several hours, the materials at the tuyere were at last so completely deprived of the caloric by the continual torrent of steam, that they lost fluidity, cooled rapidly, and at last became black. Had another aperture for steam and for air been opened above these, now entirely shut up by the consolidated materials, the same effects would have been produced; the immense quantity of caloric, disengaged by the decomposition of the ignited water, would now approach nearer to the top of the furnace, another stratum of fusing materials would again become consolidated, till in the end the whole furnace would be set fast from top to bottom. From the introduction of steam into the blast furnace, either as such, or under a superior degree of expansive force, the following important truths may be learned: That the quantity of oxygen which enters into our atmospheric compound is generally more fit for the manufacture of the superior qualities of crude iron than any mixture which may be furnished by the addition of water: that, although the decomposition of water, by furnishing a superior quantity of oxygen, and by throwing off a relative proportion of caloric, increases the effects of combustion immediately in the vicinity of this chemical analysis; yet, as the water had previously abstracted the heat necessary to its decomposition from the inferior strata, a greater quantity by no means exists in the furnace. The water, in fact, only serves as a medium to convey the heat from one particular spot; but, by attempting to fly off with it, meets decomposition, and renders up not only the abstracted heat, but that which was contained in the oxygen of its decomposition.

“4th, The compression and velocity of the air discharged into the furnace, considerably affect the results of the smelting operations. In the consideration of this subject, the various qualities of coals will be found to have an intimate connexion with the area of the discharging pipe and the compression of the blast. It has already been more than once observed, that a soft or mixed quality of coal is more susceptible of combustion than either the splint or clod coal: the consequence of this is, that, unless the necessary compression of air is used, decomposition is too early accomplished, and the cokes become oxygenated by combustion in a greater ratio

Compression and velocity of the air considered.

**Furnace.** ratio than is proper for the carbonation of the metal. To avoid this, the column of air ought to be discharged, in the case of soft coals being unavoidably used, under such a degree of compression, as to resist entire decomposition in the ignited passage. In that case, the iron does not so immediately come into contact with oxygen, as the decomposition is chiefly effected in the superior strata of the separating materials. Under the former circumstance, of a loose unconnected stream of air being thrown upon coals easily combustible, the quality of the metal, with the same quantity of fuel, becomes oxygenated, the tuyere becomes fiery, and frequently emits sparks of metallic oxide. The separating iron may be viewed as it oozes from the ore in small globular masses, frequently on fire, changing its state to that of an oxide. The combination of oxygen, by altering its density, makes it subject to the re-action of the blast, which at times gives it a direction from the tuyere with considerable violence. Those parts of the iron (by far the greatest) thus oxidated, which escape not at the tuyere, mix along with the fused earths of the ores and limestone, alter their colour, and flow from the furnace more unrevived than at their first introduction. It is, however, very different, even with this inferior quality of coal, where the density of the blast is proportioned to the inflammability of the fuel. Qualities and quantities of crude iron may be produced from this, equal to those from coals reckoned of a superior nature. The metal becomes as highly saturated with carbonic principle as that made from clod or splint coal. The tuyere evinces that decomposition is effected in its proper place. The fluid masses of iron, as they become expressed from the ore, are shivered into spray, before the dense column of air, without exhibiting the least symptom of decomposition. They again unite under the level of the blast, increase in size, and sink through the fluid stratum of earths to the bottom of the furnace. This fact holds out one of the strongest proofs of the great affinity which carbone and iron mutually possess towards each other. In the case of the iron separating in an oxygenated state destitute of carbone, it immediately falls a prey to its affinity for oxygen. In the latter case, the iron, being completely carbonated, resists decomposition by the sacrifice of a very small portion of its carbone. It further proves, that the affinity of oxygen is greater to carbone than to iron; and that, before iron becomes oxidated, all the carbone is taken up.

“The continuity of the particles of splint coals renders the coals of difficult combustion, capable of withstanding a most powerful discharge of air, in quantity and in the degree of compression, without entailing effects similar to those produced with the use of softer coals: this renders the operations with splint coal less subject to casualty and to change. Carbonated iron with a proper blast is more uniformly obtained, and frequently a very superior quantity. Similar effects are produced with the clod coal, but in a more eminent degree. Discharging pipes are used four inches in the diameter, and the compression only equal to two pounds on the square inch; yet the same fatal effects are not known as in the use of soft coal, which, with such a column of air, would require the pressure to be equal to three pounds and a half upon the square inch at least.

“5th, Upon the form and construction of the dis-

charging pipe effects of more considerable importance **Furnace.** depend than is either generally allowed or even conceived. At some iron works, no peculiar shape is adopted: if the tube is sufficient to convey the air, and the mouth of it nearly of the size wanted, the interior construction is entirely overlooked. This indifference, however, is by no means general: variously constructed pipes are used at different works, and at some places it is preferred to throw in the air from two pipes whose areas are only equal to one of the usual size.

“To understand properly the objectionable parts of the construction of nose pipes, it must be recollected, that much has been said to depend upon the blast reaching the opposite extremity of the furnace, as little impaired of the compactness and velocity of its original discharge as possible. When it is otherwise, the results in the internal operations of the furnace must be consequently altered. If the compression is diminished one-half or two-thirds when it reaches the opposite wall, decomposition in that portion must be effected before the air has attained its elevated situation in the furnace. It is even possible to disperse the whole column of air in such a manner that the ignited materials of the opposite side may receive little of its effects to promote combustion.

“A discharging pipe is frequently used, in length 12 inches or more, the discharging aperture 3 inches, the other end 5 inches; but this is arbitrary, depending upon the size of the adjoining pipe. From a pipe thus constructed, the air disperses or diverges too suddenly; and at a small distance from the orifice, a considerable portion of it answers but imperfectly the purposes of combustion. Part of it is speedily decomposed, and the oxygen brought into immediate contact with the iron. The quantity of metal is reduced by the former, and the quality injured by the latter. Though long custom, by a continued use of such shaped pipes, has prevented their pernicious effects from being observed, yet they must prove in many cases detrimental to the economical distribution of air, and the manufacture of iron.

“A nose pipe, of another construction, even more exceptionable, is also used; and the air disperses still more suddenly, in a degree somewhat proportionate to the more sudden contraction of the pipe, a considerable quantity never enters the furnace, but, striking on the exterior wall, is thence repelled.

“A discharging pipe, of the following construction, **Best form** would obviate, in a great measure, the imperfections of **of construc-** the two former: the length of the tapered piece is 12 **tion.** inches, of the straight pipe, six inches; extreme diameter, as in the others, five inches; diameter of straight pipe, three inches. From such a pipe it is conceived that the blast will proceed to the greatest possible distance unimpaired in compression and velocity. So far, therefore, as the absolute force of the blast and breadth of the furnace will permit, decomposition will be prevented on the level of the pipe, and the manufacturer freed from the evils which I have above detailed, as attendant upon decomposition in that quarter.”

The following is a description, also taken from Mr **Description** Mullet, of an air and a water vault which is employed **of an air** to equalize the discharge of air into a blast furnace. **and water**

“Fig. 7. represents a vertical section of the elevation of an air-vault 60 feet long and 30 feet wide, consisting of

**Furnace.** of four arches of regularly progressive sizes. This building is generally constructed under the bridgehouse, where the materials are daily collected for filling the furnace. AB, represents the acclivity to the furnace top. The space betwixt the arch tops and the level of the floor is filled with materials as dense as can be procured. The walls of the under part are three feet thick, besides a lining of brick and plaster from 18 inches to two feet. Still further precautions are necessary, and alternate layers of pitch and stout paper are requisite to prevent the escape of the compressed air. C, a view of the arched funnel which conveys the air from the cylinder to the vault. Large iron pipes with a well fitted door, are preferable, and less apt to emit air. D, an end view of the pipe by which the blast is carried to the furnace.

"Fig. 8. is a horizontal section of fig. 7. at the dotted line *ab*, representing the width of the cross arches, which are thrown in each partition to preserve an easy communication betwixt the vaults. D, is a section of the first range of pipes, meant to conduct the air to the furnace. In like manner pipes may be taken off from any part of the vault for the different purposes of blowing furnaces, fineries, hollow fires, &c.

"Fig. 9. represents a vertical longitudinal section of what is generally called the water-vault. The walls of this building may be erected to the height of eight or nine feet, their thickness similar to those of the air vault. A brick lining, and even puddling with clay betwixt it and the stone building, is necessary to prevent the water from oozing by the accumulated pressure. A, is an end view of the horizontal range of pipes which conveys the blast from the blowing cylinder to the inverted chest. BBB, the range which conducts the air to the interior of the inverted chest, and conveys it to the furnaces, proceeding along the extremities of the columns broken off at BB. C, an inverted chest made of wood, iron, or even of well-hewn flags set on end and tightly cemented, is 54 feet within in length, 18 feet wide, and 12 feet high. The dimensions, however, vary at different works. When the chest is made of wood or iron, it is generally bolted by means of a flange to the logs on which it is supported, lest the great pressure of the air should overcome the gravitation of the chest, and displace it. DD, view of the centre log, and ends of the cross logs, on which the chest is laid. These should measure 18 inches in height, so as that the mouth of the chest may be that distance from the surface of the floor, and the water allowed to retreat from the interior of the chest with the least possible obstruction. EE, the outside walls of the building. FF, the brick-work, made perfectly water tight. The dotted line G, represents the surface of the water when at rest. Let the depth of the water, outside and inside of the chest, be estimated at four feet. When the engine is at work, should the pressure of the air have forced the water down to the dotted line H, three feet and a half distant from the line G, and only six inches from the mouth of the chest, it follows, that the water must have risen in the outer building, or chest, three feet and a half above G, and have its highest surface nearly at rest at I. In this case the strength of the blast is reckoned equal to seven feet of water, or nearly six inches of mercury. The space betwixt the chest and outside building is three feet. When

the engine is at rest, and the water has assumed its level, **Furnace.** the quantity of water within the chest should be equal to that without.

"Fig. 10. is a ground plan of fig. 9. The cross logs on which the cistern is supported are dotted within, but drawn full in the space betwixt the flange of the chest and outer building. The breadth of the flange-tops of the binding bolts, and thickness of the metal of the chest, are also drawn. The letters bear a reference to those in fig. 9."

An account of some curious phenomena observed by Mr Roebuck in the air vault of a blast furnace has been published in the 5th volume of the Transactions of the Royal Society of Edinburgh. This, as well as some remarks of practical utility on the management of blast furnaces, we doubt not, will be interesting to our readers. We shall therefore give it in his own words. It is addressed in the form of a letter to Sir James Hall.

"I have (says he) examined my memorandums, concerning the observations I made on the condensed air in the air vault of the Devon iron works, near Alloa, on the north side of the frith of Forth; and, according to your request, I now transmit you an account of them; and also of an experiment I made, when a partner and manager of these works, in order to increase the produce of blast furnaces.

The two blast furnaces at Devon are of large dimensions, each being 44 feet high, and about 13 feet wide in the boshes, or widest part, and are formed on a steep bank, by two pits sunk in a very solid stratum of coarse-grained freestone.

These pits were afterwards shaped and lined in the usual manner of blast furnaces, with common bricks and fire bricks, and the hearth was laid with large blocks of the stone that had been dug out, and which serve the purpose of fire stones. At the back of the two furnaces, next the bank, the air vault is excavated, and formed by a mine driven in the solid rock, distant from the furnaces about 16 feet. The bottom of the air vault is only about four feet higher than the level of the bottom of the furnaces. This vault has an aperture at one end to receive the air from the blowing machine, and has two at the opposite end, one of which receives the eduction pipe, and the other is a door to give admittance occasionally into the vault. As the rock is extremely close and solid, the vault is dry, except that a little water oozes very gently from the side next the bank in small drops, and does not appear to exceed an English pint in 24 hours.

These furnaces are provided with air, or blast, as it is termed, by the means of a fire-engine of the old, or Newcomen's construction. The diameter of the steam cylinder is  $48\frac{1}{2}$  inches; and the square area of its piston being about  $1866\frac{1}{2}$  square inches, the power of this sort of engine cannot be rated at more than 7lb. to the square inch, amounting in all to about 13062lb. This power was employed to work an air pump, or blowing cylinder, of 78 inches diameter, and about seven feet long. The number of square inches on the piston of the air pump is 4778, and therefore this area, being multiplied by  $2\frac{1}{2}$ , will produce 13139, being a resistance that nearly balances the above-rated power, and shows that the air, which was expelled from the air pump, could not be condensed more in the ordinary

Furnace.

way of working, than with a compressing power of about  $2\frac{1}{4}$  lb. on each square inch. As the engine was not regulated, at first, to make a longer stroke than about four feet eight inches, only one furnace being used, the quantity of air expelled at each stroke of the machine was about 155 cubic feet, which it discharged through a valve into the air vault, about 16 times in a minute. When two furnaces afterwards were blown, the engine was regulated to work much quicker, and with a longer stroke. The air vault is 72 feet long, 14 feet wide, and 13 feet high; and contains upwards of 13,000 cubic feet, or above 80 times the contents of the air pump. The top, sides, and bottom of this vault, where the least fissure could be discovered in the beds of the rock, were carefully caulked with oakum, and afterwards plastered, and then covered with pitch and paper. The intention of blowing into the vault is to equalize the blast, or render it uniform, which it effects more completely than any machinery ever yet contrived for the same purpose. The air is conducted from the vault by the eduction pipe, of 16 inches diameter, into an iron box or wind chest, and from this it goes off to each furnace, in two smaller pipes that terminate in nozles, or blow-pipes, of only  $2\frac{1}{2}$  to  $3\frac{1}{4}$  inch diameter, at the tuyere of the furnace.

Dimensions of the air vault.

Trial of the furnace fails.

“When the furnace was put in blast, after having been filled with coakes, and gently heated for more than six weeks, the keepers allowed it to have but little blast at first, giving it a small blow-pipe of about  $2\frac{1}{4}$  inch diameter, and likewise letting off a very considerable quantity of air, at the escape or safety valve on the top of the iron wind chest, as it is a received though erroneous opinion among them, that the blast must be let on very gradually for several months. From the construction of this valve, it was impossible to ascertain the exact proportion of the blast which was thus lost, but I believe it was very considerable. The consequence was, that the furnace, after it had been in blast for several days, never seemed to arrive at its proper degree of heat, but was always black and cold about the tuyere in the hearth, and appeared in danger of choking, or gobbing, as it is termed.

“After various experiments tried in vain, by the keepers and the company’s engineer, and others, (indeed they tried every thing, except giving the furnace a greater quantity of air, which, as I afterwards ascertained, was all that it wanted), they concluded, that the air vault was the cause of the whole mischief; and, to confirm their opinion, they said they had now discovered that water was, in considerable quantities, driven out of the air vault through the blow-pipe, which cooled the furnace; and they insisted, that the power of the engine was such as to force water out of the solid rock; so that this method of equalizing the blast never would succeed. The other managing partner was so much alarmed by these representations, that he began to consult with the engineer, and others, about finding a substitute for the air vault at any expense.

The causes investigated.

“As the plan of the blowing apparatus had been adopted at my recommendation, and was now so loudly condemned on account of the water, I had other motives, than mere interest, for trying to become better acquainted with the phenomena attending it. I accordingly determined to go into the air vault, and to re-

Furnace.

main inclosed in the condensed air while the engine was blowing the furnace. It is an experiment that perhaps never was made before, as there never existed such an opportunity. I could not persuade the engineer, or any other of the operative people about the work, to be my companions, as they imagined that there was much danger in the experiment. Mr Neil Ryrie, however, one of the clerks of the Devon company, had sufficient confidence in my representations to venture himself along with me.

“The machine had been stopped about two hours previous to our entering the vault, and we found a dampness and mistiness in it, which disappeared soon after the door was shut fast upon us, and the engine began to work in its usual manner. After four or five strokes of the engine, we both experienced a singular sensation in our ears, as if they were stopped by the fingers, which continued as long as we remained in the condensed air. Our breathing was not in the least affected. I had no thermometer with me, but the temperature of the air felt to us the same as that without the vault. Sound was much magnified, as we perceived, when we talked to each other, or struck anything; particularly, the noise of the air escaping at the blow-pipe, or waste-valve, was very loud, and seemed to return back to us. There was no appearance of wind to disturb the flame of our candles; on the contrary, I was surprised to find, that when we put one of them into the eduction pipe, which conveys the wind from the vault to the furnaces, it was not blown out. There was not the smallest appearance of any drops of water issuing out of this pipe. The oozing and dropping of water from the side of the rock, next the bank, seemed the same as before the condensation was made in the vault. In short, everything appeared, in other respects, the same as when we were in the common atmosphere. Having remained about an hour in the condensed air, and satisfied ourselves that no water, during that time, that we could in the least discover, was agitated and forced out of the rock and vault by the power of the blast, as was imagined and insisted on, we gave the signal to stop the engine. As soon as it ceased to work, and the condensation abated, and before the door of the vault was unscrewed, the whole vault, in a few seconds, became filled with a thick vapour, so that we could hardly see the candles at four or five yards distance. The door being now opened, the work people, anxious to know our situation, and what had occurred, came into the vault, and prevented any further observations.

Phenomena in the air vault, and peculiar sensations within it.

“I now endeavoured to account for this curious appearance of the water, which only showed itself occasionally, in very small quantities, at the tuyere, at a hole I ordered to be made in the bottom of the wind chest to collect it more accurately, for it never was observed, but either when the engine, after working slowly, was made to work quicker, or, after having been stopped for a few minutes, was set to work again.

“I considered the vapour which we had discovered in the vault to arise from the moisture of the side of the rock next the furnace, which being expelled by the great heat of the furnace, and converted into vapour, was able to force its way through the pores of the rock into the vault, but that being in a manner confined within the rock, by the pressure of the condensed air, it found itself at liberty to come into the

The vapour observed in the vault accounted for.

**Furnace.** vault, only when the condensation abated considerably, or was totally removed by the going flow, or stopping of the engine. It also occurred to me, that the air, in a state of condensation, might possibly be capable of holding a greater quantity of water in solution, which might precipitate suddenly into vapour or mist when the condensation abated. I imagined, therefore, that the very small quantities of water we at times discovered, proceeded from nothing else but this vapour, in its passage to the furnace along with the blast, being condensed into water, by the coolness of the eduction pipe and iron wind chest. The quantity of water did not appear to amount to a gallon in twenty-four hours.

" A few days after I had made this experiment, the water ceased entirely to make its appearance, either at the tuyere, or at the hole in the wind chest, but the furnace did not come into heat for a long while after, and indeed not till the keepers let much more air into it by a larger blow-pipe, and allowed less air to escape at the safety valve. It is probable that the rock was now become perfectly dry by the continued heat of the furnace.

" My experiment had the good effect to remove all the prejudices against the plan I had adopted of blowing the furnaces, and likewise prevented the other partner from laying out a large sum of money, by stopping the works, and altering the blowing machinery. Indeed, it has since been admitted, by all who have seen it at work, to be the most simple and effective method of equalizing the blast which has yet been put in practice.

**Wind gauge applied and its effects.**

" This experiment led me, some time afterwards, to apply a wind gauge that I contrived, to ascertain precisely the state of the condensation of the air thrown into the furnaces. I found that a column of quick-silver was raised five inches, and sometimes, though seldom, six inches, and, in the interval of the engine to receive air into the air pump, it fell only half of an inch. At this time only one furnace was worked. But when two furnaces were in blast, the engine only raised the mercurial gage about four inches, because the Devon company, for several reasons, did not, while I continued a partner, think proper to allow the blowing machinery to be completed, by putting to work their second boiler of 20 feet diameter for the fire engine, according to my original design, which, by adjusting the machinery, would have enabled us to blow two furnaces, with two boilers, with as much effect, in proportion, as one furnace with one boiler. This instrument had the advantage of enabling the work people to discover the real power of their blast, and know the exact condition of the air valves, and the gearing of the blowing piston; for if these were not tight, and in order, (although the engine might, to appearance, be doing well, by making the same number of discharges of the air pump as usual per minute), yet the wind gage would not rise so high, and would shew that there was an imperfection somewhere, by reason of a quantity of air escaping at the valves, or piston, that could not so easily otherwise be known. This contrivance was considered as of much use, and was afterwards always quoted in the company's journal books, to shew the actual state of the blowing machine, in comparing the daily produce of the furnaces.

" I hope you will not think me tedious, when I explain to you another experiment, which appears to me to be of considerable importance to all manufacturers of cast iron. **Furnace.**

" I had reason to conjecture, from my own observations on the effects of blowing machinery on blast furnaces, as well as from the knowledge I had acquired from my father Dr Roebuck, and from my communications with other experienced iron masters, that a great part of the power of such machinery was misapplied in general practice, by throwing air into furnaces with much greater velocity than necessary, and that, if this velocity was, to a certain degree diminished, the same power, by properly adjusting the blowing machinery, of whatever nature, would be capable of throwing into the furnace a proportionally greater quantity of air. For, *Since the quantities of any fluid, issuing through the same aperture, are as the square roots of the pressure;* it follows, that it would require four times the pressure, or power, to expel double the quantity of air, through the same aperture, in the same time; but if the area of the aperture was doubled, then the quantity of air expelled by the same power, and in the same time, would be increased in the ratio of the square root of 2 to 1, though its velocity would be diminished exactly in the same proportion. Again: I considered that the quantity and intensity of heat, produced in blast furnaces, and consequently its effects in increasing the produce, might be only in proportion to the quantity of air decomposed in the process of combustion, without regard to its greater velocity; that is to say, whether or not the same quantity of air was forced, in the same time, into the furnace through a small pipe, or through one of larger dimensions; for, in attending to the process of a common air furnace for remelting of iron, where there is a very large quantity of air admitted through the large areas between the bars, it is well known, that a much greater intensity of heat is produced than takes place in a blast furnace; and yet the air does not enter into the fire through the bars with increased density or great velocity. I therefore thought it probable, that increasing the quantity of air thrown into the blast furnace in a considerable degree, although the velocity or density might be much less, would have the effect of increasing its heat, and operations, and produce. And as, from the principles above stated, with regard to the machinery, I saw I could greatly increase the quantity of air thrown into the furnace, by enlarging the diameter of the blow-pipe, and regulating the engine accordingly, without being obliged to employ more power, I was anxious to make this experiment.

" A system of management, of which I did by no means approve, was adopted by the other partners of the Devon company, soon after the works were begun to be erected; and, in the prosecution of it, they ordered their second furnace to be put in blast, without permitting those measures to be taken that were necessary to provide and maintain a sufficient stock of materials; and also without allowing their blowing machine to be completed, according to the original design, by the addition of its second boiler. As might have been expected, a trial of several months to carry on two furnaces, with only half the power of steam that was necessary, and an inadequate stock of materials, proving unsuccessful,

**Furnace.** unsuccessful, the company, as a remedy, instead of making up the above deficiencies, ordered one of the furnaces to be blown out, and stopped altogether. This improper measure, however, afforded me the opportunity of immediately putting in practice the plan I have mentioned.

and esta-  
blished by  
experiment.

“ When one of the furnaces was stopped, the other continued to be blown by a blow-pipe of  $2\frac{3}{4}$  inches diameter, and the produce of the furnace, for several weeks thereafter, was not 20 tons of iron per week at an average. The engine at this time was making about 16 strokes a minute, with a stroke of the air pump, about 4 feet 8 inches long; but when I altered the diameter of the blow-pipe, first to 3, and immediately after to  $3\frac{1}{4}$  inches diameter, and regulated the working gears of the engine, so as to make a stroke of 5 feet 2 inches long, and about 19 strokes in a minute, on an average, the produce was immediately increased. It continued to be, on an average of nine months immediately after this improvement, at the rate of 33 tons of iron per week, of as good quality as formerly; for, during this period, from the 21st November 1795 to July 30, 1796, this one furnace yielded 1188 tons of iron. No more coals were consumed in working the blast engine, or other expences about the blowing machine incurred, and therefore no more power was employed to produce this great effect. It is also of much importance to remark, that the consumption of materials, from which this large produce was obtained, was by no means so great as formerly: The furnace required very considerably *less fuel, less iron stone, and less limestone*, than were employed to produce the same quantity of iron by the former method of blowing; and according to the statements made out by the company's orders, as great a change was effected in the economical part of the business.

“ From the success of this experiment, so well authenticated, and continued for several months, I am led to be of opinion, that all blast furnaces, by a proper adjustment of such machinery as they are provided with, might greatly and advantageously increase their produce, by assuming this as a principle, viz. ‘ *That with the given power it is rather by a great quantity of air thrown into the furnace, with a moderate velocity, than by a less quantity thrown in with a greater velocity, that the greatest benefit is derived, in the smelting of iron stones, in order to produce pig-iron.*’ However, it is by

experiment alone, perhaps, that we can be enabled **Furnace.** to find out the exact relations of power, velocity, and quantity of air requisite to produce a *maximum* of effect (1).”

In order to illustrate what is said above, a ground plan of the air vault and furnaces of the Devon Iron Works is given in Plate CCXXVI.; of which the explanation follows.

*Explanation of Fig. 11.*

A, The air vault, formed by a mine driven in the solid rock of coarse-grained freestone.

B, The blowing cylinder.

C, The pipe that conveys the air from the blowing cylinder to the air vault.

D, The eduction pipe that carries the air from the air vault to the iron wind-chest.

E, The iron wind chest (about  $2\frac{1}{2}$  feet cube), in which is inserted a wind-gauge, represented in fig. 12.

FF, The two blow-pipes for each furnace, which terminate in apertures of  $3\frac{1}{4}$  inches diameter at the tuyeres of the furnaces.

GG, The two blast furnaces, placed in two pits sunk in the solid rock.

HH, The tymps of the furnaces from whence the cast iron is run off into the casting room, LL.

O, The door to give occasional admittance into the air vault.

M, The excavation, in which is placed the blowing machine.

*Explanation of Fig. 12.*

A, The end of the wind-gauge (about 12 inches long), which is open to the atmosphere, being half filled with quicksilver.

B, The end that is inserted in the iron wind chest, and exposed to the pressure of the condensed air of the air vault.

To Mr Musket we are also indebted for the following Description account of air furnaces, which are employed in iron of an air founderies for the purpose of casting large pieces of ord-<sup>furnace.</sup>nance, and other heavy articles.

These furnaces, he observes, “ are employed for melting pig iron with the flame of pit coal. Furnaces of this kind are constructed of various sizes according to circumstances. The small sizes will run down from

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(1) “ If Q be the quantity of a fluid, issuing in a given time through an aperture of the diameter D, V its velocity, and P the power by which it is forced through the aperture: then the area of that aperture being as D<sup>2</sup>, the quantity of the fluid issuing in the given time will be as VD<sup>3</sup>, or VD<sup>3</sup>=Q.

“ Again, this quantity multiplied into its velocity, will be as the *momentum* of the fluid expelled, or as the power by which it is expelled, that is, V<sup>2</sup>D<sup>3</sup>=P, or VD=√P.

“ Here, therefore, if D is given, V is as √P, as Mr Roebuck affirms. Also, because  $V = \frac{Q}{D^2}$ , and also  $V = \frac{\sqrt{P}}{D}$ , Q=D√P, so that, while P remains the same, Q will increase as D increases, and V will diminish in the same ratio.

“ The problem, therefore, of throwing the greatest quantity of air into the furnace, with a given power, strictly speaking, has no *maximum*, but the largest aperture of which the engine can admit must be the best. It is probable, however, that there is a certain velocity with which the air ought to enter into the furnace; this will produce a limitation of the problem, which, as Mr Roebuck suggests, is not likely to be discovered but by experiment.” *Note by Mr Playfair.*

Furnace. seven to ten hundred weight, and are used in small founderies for what the trade call *jobbing*.

" Fig. 13. (Plate CCXXVI.) a ground plan of two large air furnaces, and chimney for melting pig or cast iron with the flame of pit coal.

" The letters ABCD point out the exterior dimensions of the stalk or chimney, which is first erected, leaving two openings or arches into which the fore-part of the furnaces are afterwards built. The breadth of the chimney at the particular place which the plan exhibits is 16 feet from A to B, and from A to D or from B to C six feet six inches. The plan is drawn at that elevation where the flame enters the chimney by the flue or throat, narrowed on purpose to throw back part of the flame, and keep the furnace equally hot throughout, as may be more particularly viewed in the vertical section, fig. 14.

" EE, the furnace bars on which the coals rest, and where the combustion is maintained.

" FF, openings called teasing holes, by which the coals are introduced to repair the fire.

" GG, fire brick buildings called bridges. These are meant to concentrate the flame, that it may act as violently on the metal as possible. Upon the height of the bridge much depends in fusing the metal speedily, and with little loss. The height of this may be seen in the vertical section, fig. 14. G.

" HH, the charging doors, by which the metal is introduced in the shape and state of pig iron, lumps, scraps, &c. &c. The iron generally occupies the furnace across to I, called the back wall, and is never meant to approach the bridge nearer than the dotted line, lest the metal in melting should run back into the grates, in place of descending into the general reservoir or cavity below. The corners or notches, *h, h, h, h*, receive a stout cast iron frame lined with fire bricks. This is hung by means of a chain and pulley, and can be raised and depressed at pleasure. This frame is, properly speaking, the charging door, and is always carefully made air tight by means of moistened sand.

" KK, the flues or openings by which the flame enters the chimney. These are 15 inches by 10. On maintaining these openings of a proportionate size to the other parts depend in a great measure the powers and economy of the furnace.

" LL, lading doors, by which ladles are introduced, in the case of small furnaces, to lift out the metal and distribute it to the various moulds.

" MMMM, binding bolts to limit within proper bounds the expansion which takes place in the building when the furnace is highly heated.

" Fig. 14. vertical section of one of the furnaces, and its appropriate stalk or chimney.

" E, the grates.

" F, the teasing hole.

" G, the bridge.

" H, the charging door.

" K, the flue or opening into the chimney.

" L, the lading door.

" MM, the binder or binding bolt.

" N, the interior of the stalk or chimney, 30 inches square.

" OO, the fire brick work, nine inches thick.

" PP, space of two inches for stuffing with sand.

" QQ, common brick building.

" RR, cast iron lintels, over which are thrown double nine inch arches, so that at any time the inferior building can be taken down to make repairs, without shaking or in the least injuring the chimney.

" S. The dotted lines here are meant to represent what is called the tapping hole. When a large piece of goods is to be cast, lifting the metal with ladles would be impracticable. A sharp pointed bar is driven up this opening. The iron then flows freely out into a large basin of sand made for its reception. It is then conducted, by collateral channels, into the mould.

" The space under the curved dotted line from G to L, by S, is filled with a mixture of sand and ashes. When the furnace is prepared to melt, the whole of the bottom receives a stratum of sharp clean sand about two inches thick. This is broken up at night, and fresh sand is substituted for it before the fire is kindled in the morning.

" Fig. 15. is a horizontal section of the chimney or stalk, taken where the flues assume a perpendicular direction. The letters in this figure correspond to those in the vertical section, fig. 14. The height of the chimney ought not to be less than 45 feet: if 50 feet, the effect will be sooner and of course better produced.

" The effect wished to be produced in air furnaces is the fusion of a certain portion of pig or cast iron, for the purpose of being poured or run into moulds to form articles of almost every description.

" The preparation previous to melting is as follows: Preparation of the furnace. After the bottom of the furnace is laid, and smoothed with fresh sand, and all the openings made air tight, the furnace man introduces a kindling at the teasing hole, accompanied with new pit coal. In a few minutes a considerable volume of dark flame mixed with smoke is produced. The fire quickly gathers strength; more coal is introduced; and the furnace now becomes filled with a yellow-coloured flame. By continuing this operation for an hour, or an hour and a quarter, the furnace and flame will have become completely white; the latter steady, and at times apparently without motion. The furnace man now judges the bottom to have been sufficiently hardened for receiving the pig iron without any risk of sinking. The charging door is now opened, and the pig metal thrown carefully and regularly upon that part of the bottom formerly described as being appropriated for its reception. The door is again closed and made air tight, and the operation of firing continued with unremitting care and attention.

" The time of melting depends entirely upon the quantity of metal introduced. The furnaces described above are capable of melting from 50 to 60 hundred weight of metal each, and when there is a moderate circulation of air they will perform this work in  $2\frac{1}{2}$  or 3 hours. In half an hour after the metal is introduced it assumes a blackish red colour. It then begins to brighten with every additional fire, and in about one hour appears white, and begins to lose shape, and resemble a wreath of snow.

" An eye accustomed to such heats will now discern the metal beginning to drop, and run down the inclined plane in very beautiful streamlets resembling quicksilver. Eight or ten of these are visible at a time, and after proceeding half way down begin to form junctions with

with

**Furnace.** with each other, and flow connected into the general cavity or reservoir. By-and-by this becomes filled, and literally forms a beautiful molten mirror, in which sometimes part of the interior furnace is reflected.

“The furnace man, by searching at the bridge with his fire-iron or teafe, judges when the metal is nearly all gone. Of this he is certain by looking up from the peep-hole of the lading door. If the streamlets of the running metal have ceased, then the whole is melted, and ready for running out.

**Circumstances to be attended to during its operation.**

“In the operation of melting, the three following circumstances ought to be particularly attended to: the thinness or hotness of the metal; the waste or loss sustained in melting; and the quantity of coals employed.

“The first is of the utmost importance, as many articles in the foundry business require the metal in a state of the greatest division; otherwise they will be found imperfect when taken from the sand, and unfit for sale. The furnace man, therefore, is always on the watch to replace the fire as it decays, and keep a large and sharp volume of flame constantly passing over the metal.

“The waste or loss of real metal is also an object of great importance. This always bears a relation to the quality of the iron, the strength and cleanness of the coals, and the judgment and attention of the melter. Strong iron is found always more difficult to fuse; this necessarily exposes it for a long period in contact with the flame. The reverse happens with metal that is more fragile, and easier broken in the pig. The length of the exposure in fusing depends on this; and other circumstances being alike, the loss or waste of metal will also be in the same ratio.

“There are, however, other facts not unworthy of notice. N<sup>o</sup> 1. pig iron, or richly carbonated metal, when run from an air furnace, will be found in point of quality little better than N<sup>o</sup> 2. or carbonated iron. This is owing to a quantity of its carbone being destroyed during the fusion. The loss in melting N<sup>o</sup> 1. iron, therefore, chiefly consists of carbone; and the deficiency of metal ought never, with a clean bottom, to exceed 1 cwt. in 20.

“Carbonated or N<sup>o</sup> 2. iron also becomes deprived of a considerable portion of its carbonaceous mixture in fusion; and when run from the air furnace is seldom better than N<sup>o</sup> 3. metal. The loss sustained in melting may be averaged at 7½ per cent.

“N<sup>o</sup> 3. pig iron is, after melting in an air furnace, found whitish or mottled. It is seldom susceptible of the same nice degree of division as the superior qualities, and loses in fusion a much larger proportion of metal, seldom under 10 per cent. and frequently 12½ or 15.

“The quantity of coals requisite to melt a given quantity of iron is various, as much depends upon the quality and fusibility of the metal. If the furnace goes one heat a day with N<sup>o</sup> 1. or 2. iron, the quantity of coals will be from 20 to 25 cwt. for a ton of iron. If two or three heats a day, or as many tons of iron are melted at one kindling, the proportion of coals will be nearly weight for weight of the iron melted when the coals are mixed with a fair proportion of small: with strong large splint coals, one ton of good pig iron may

be completely reduced with from 12 to 15 cwt. including the previous heating of the furnace\*.”

**Furnaces**  
\* *Phil. Mag.* xv. 245.

In the reduction and fusion of ores, the improvement of the blowing apparatus, or the machinery contrived for the purpose of forcing a current of air into furnaces, where a high degree of temperature was necessary, has always been an important object of consideration to the manufacturer; and indeed, it appears that the history and improvement of this kind of machinery have progressively advanced, in some cases have exceeded the improvement of other departments of the manufactures of this country.

**Importance of blowing machinery.**

In smelting some metallic ores, as for instance, those of lead and tin, the magnitude and powers of blowing machines have been less attended to, because the requisite temperature for that purpose is far inferior to what is necessary for the reduction of the ores of iron. Lead and tin being naturally fusible, and easily volatilized in a temperature beyond a bright red heat, have hitherto fixed the limits with regard to the size of the furnace, and the quantity of blast. The air furnace is generally employed in the manufacture of copper, excepting in small blast furnaces, in which the precipitated oxide of this metal is received, and they are similar to the furnaces called cupolas, and used at iron founderies.

The lead mill, as it is called, or machine for the reduction of the ores of lead, is of a very simple construction. In the middle of a square building a water wheel is erected, and to the shaft of this wheel, four small wheels of cast iron, about 18 inches in diameter, are attached. Two pairs of bellows placed at equal distances, and on each side of the shaft, are supported on a strong frame of wood. During the revolution of the shaft of the water wheel, the small wheels are also carried round, and alternately depress the end of the lever which is attached by means of an iron chain, to an equally balanced beam. When this lever descends, the opposite end of the beam is elevated, and to this end there is attached by another iron chain, the moveable surface of the bellows. The blast produced in this way is soft, and far inferior, either with regard to quantity or density, to the blast necessary for an iron furnace. The length of the bellows is usually about 10 feet, the breadth across the breech about five or six, and they move at the rate of about 30 strokes a minute.

But in the manufacture of iron, and particularly since the use of pit-coal was introduced, it is absolutely necessary to have a more powerful blowing machinery. This, therefore, has always been an essential requisite, and has been a constant object in this manufacture; in proportion to the quantity of air thrown into the furnace, the produce and quantity of metal is increased. In the earlier periods of this manufacture, when the fuel employed was charcoal from wood, the process was more easily managed. Furnaces which were built of small size, and which were then called *bloomeries*, were considered of sufficient capacity to yield profit, if they produced a bloom or two of iron in the day, each bloom amounting to about 90 or 120 lbs. For smaller operations, hand bellows, and what were called fuel blasts, were deemed of sufficient power; but when the refining furnace began to be employed, and the iron manufacture branched out into the making of pig iron, and the refining

which must be of great power in the manufacture of iron.

**Furnace.** refining of it into bar or malleable iron, the advantage and necessity of a powerful blast were immediately seen. The first moving power introduced was that of the water wheel; and this working two or more pairs of leathern bellows, was found to produce effects sufficiently powerful for the purpose.

**Progressive improvement of** Machinery constructed in this way, and set in motion by the power of water, continued to be employed for this purpose, till the principles of the steam engine were fully understood, and this powerful machine came into general use. The steam engine, besides many other advantages, could be employed in situations where the want of water prevented furnaces being erected, but otherwise commodious, in being near the necessary materials of ore and fuel. The first substitute for the leathern bellows were cylinders composed of wood, closely jointed, and strongly hooped. These in their turn gave place to cylinders of cast iron, smoothly and accurately bored; and this kind of apparatus being discovered and applied in the manufacture of iron, the blowing machine now assumed a more perfect and more manageable form.

But without attempting to describe any of the blowing machines in our own country, the power and effects of which are familiar to those to whom this knowledge is most interesting, we shall give a short description of an apparatus of this kind, which is set in motion by the pressure of a column of water, and is erected near Namur in the Netherlands. The account of this machine is given by Baillet, inspector of the mines, who observes, that its construction is simple, and not very expensive, and that it may be kept up without requiring much repair. This machine, besides, can be employed to blow several furnaces at once. It does not require any great moving power, and the consumption of water is much less than in the blowing apparatus of leather or wood. In consequence of these advantages, the number of furnaces has been greatly increased since this apparatus was first erected, and the extent of the manufacture has been doubled. This apparatus possesses another superiority over the ordinary blowing machines. The latter, to be put in motion, require a water wheel; but the apparatus which is here alluded to, is set in motion merely by the pressure of a column of water.

The following is the description of this blowing machine, as it was first erected at Marche upon the Meuse. It was invented and constructed by Janniens, proprietor of the forges, and it consists of two cylinders of three feet eight inches diameter, and of thirty inches high, placed vertically near each other. One of these cylinders is represented at fig. 16. A piston of wood covered with leather, (fig. 17.) moves in each cylinder, and forces the air through the tubes *o, o, o*, which are fitted to the upper part of the cylinders, and are conducted to the different furnaces where combustion is to be excited. The base of these tubes is furnished with valves, to prevent the return of the air. The piston is, besides, furnished with two lids or covers, *w, w*, (fig. 18. and 19.) which open when it descends, and shut when it rises. The piston is surrounded with a band of leather in the usual way, to make it tight.

The moving power in this apparatus, is a water wheel erected on the horizontal shaft, *s*. On this shaft are fixed the arms *t, t*, projecting from its circumference, which alternately elevate the stalk of the piston.

The descent of the piston is regulated by the weight *f*, which acts as a counterpoise; and the spring of wood, *g*, which is balanced when the stalks of the piston are at their lowest descent, serves to retard the velocity, and to prevent any sudden or violent stroke.

Two of these cylinders, erected at one of the forges at Marche, furnish air to two furnaces, which employ charcoal from wood, and one with coke from pit-coal. The stroke of the piston is about 18 inches, and 25 strokes in a minute, and with this length of stroke and velocity, the two pistons produce nearly about 400 cubical feet of air. The consumption of water, having a fall of about 10 feet, is about 80 cubical feet.

Two similar cylinders, erected at another furnace at the same place, move with the velocity of 19 strokes per minute. The length of each stroke is about 22 inches, so that it produces about 360 cubical feet of air. For this, with a fall of 10 feet, 75 cubical feet of water are necessary.

In the construction of this blowing machine, no peculiar difficulty occurs. It is not necessary that the cylinders should be accurately turned in the inside. All that is required is, to grind or polish their inner surface with sand stone. It was in this way that the cylinders and apparatus, just described, were prepared.

The piston, which is made of wood, has in the middle of it a mortise, *u*, fig. 17. and 19. to admit the stalk, *p*, which is kept in its place by four bands or straps of iron, *x*, fig. 17.

The band of leather, *z*, is about three lines in thickness, and about five inches broad. It is nailed to the piston, and ought to be raised above the groove or gutter, *v*.

The grooves *y, y*, are sunk in the piston, in proportion to the thickness of the leather, and their external diameter should be somewhat smaller than that of the cylinder. The large lids or covers of the piston are of wood, lined with sheep-skin; and their hinges, which are made of leather, are fixed with screws to the wood: a bridle of leather limits the extent of the opening.

The small valves, which are fixed at the upper opening of the cylinders, at the end of the tubes for conducting the air, are also of wood, and covered with sheep-skin.

The tubes or pipes which conduct the air are made of iron plates, or of tinned iron, and they terminate in pipes of a convenient diameter, and proportioned to the different furnaces. They should also be furnished with keys or cocks, for regulating at pleasure the quantity of the air.

The frame which supports these cylinders is of a very simple construction, as will appear by inspecting fig. 16. It is attached and secured to part of the wall of the building.

All that is necessary to keep this apparatus in order, is with a brush to cover the internal surface of the cylinders with oil once every 10 days.

The following are the dimensions of the principal parts in the old French measure.

The large valves of the piston, 8 inches by 6.  
 The interval between these valves, 14 inches.  
 Stalk of the piston, 6 inches square.  
 The rollers on the axis of the wheel. { Length, 12 inches.  
 { Diameter, 36 inches.

Diameter

Furnace.

Diameter of the cylinder, 38 inches.

Height of ditto, 26 do.

Baillet, who has given the above description, proposes a new application of the moving force to this kind of blowing machine; and he observes, that a very important advantage may be derived from these cylinders, since the simple pressure of a column of water may be substituted for the moving power. In fig. 20. the apparatus is so arranged as to shew in what way this effect may be produced.

The stalk, *f*, of the cylindrical apparatus *c*, is common to the piston of the small cylinder *d*, in which it can convey the column of water *b c*. When the cock *h*, is open, and that at *l* is shut, the pressure of the column must elevate the stalk *f*, and the piston of the blowing cylinder. Then the cock *h* being shut, and that at *l* being open, the water of the cylinder *d* will flow out, and the stalk *f* and the piston of the cylinder will descend. These alternate motions can be easily managed by means of levers, or regulators at *i*, fitted to the stem of the piston, and in the same way as in the steam engine. The openings at *h* and *l* may be regulated according to the velocity which is required in the motion of the piston, and the diameter of the cylinder *d* will be proportioned to the fall of water *b, c*, and the volume of air which is wanted.

## EXPLANATION OF THE FIGURES.

Fig. 16. exhibits a section and elevation of the blowing machine.

*a*, the wall of the building. *b*, the opening in the wall for the balance beam.

*c*, one of the two beams which receive the gudgeons on which the balance beam moves. *d, e*, the balance beam; *f*, the weight which acts as a counterpoise; *g*, the spring of wood.

*h*, a brace or strap of leather, which is attached to the curved head of the beam.

*i, k, l, m*, the frame which supports the cylinders.

*n*, the blowing cylinder of cast iron.

*o, o, o*, tubes for conveying air to the furnace.

*p*, stalk of the piston.

*q*, a knee or catch attached to the stalk.

*r*, the horizontal axis of the water wheel.

*s, s*, arms attached to the axis, with rollers which raise the knee or catch *q*, and the piston.

*t, t*, similar arms and rollers for moving the piston of the second cylinder.

Fig. 17. Section of the piston.

Fig. 18. The piston seen from above.

Fig. 19. View of the under surface of the piston.

Fig. 17. 18. and 19.

*p*, stalk of the piston.

*w, w*, lids or valves.

*v, v*, groove in the circumference of the piston.

*u*, mortise to receive the stalk *p*.

*x, x*, straps of iron to support the stalk *p*.

*y, y*, the band of leather surrounding the piston.

Fig. 20. *a*, a reservoir of water; *b, c*, a column of water.

*d*, a cylinder for water.

*e*, the blowing cylinder.

*f*, the stalk common to the pistons of the two cylinders, *d* and *e*.

*g*, the pipe for conducting the air.

*h, h*, cocks for receiving and letting out the water.

*i, i*, the regulators, for the purpose of opening and shutting the cocks.

*k*, a second blowing cylinder\*.

The following is a description by Torelli-Narci, of a three-blast furnace, which was constructed in the chemical laboratory of the French school of mines.

"This furnace (says the author) is destined for fusing different mineral substances, in order to ascertain the nature of them; and the experience of six years has shown that it answers the intended purpose. By its means a very intense heat is obtained, and it was employed by C. Clouet for repeating his experiments on the conversion of forged iron into cast steel, which were attended with full success.

"Chemists who have seen this furnace seemed desirous of being better acquainted with the construction of it: the council even transmitted drawings of it to several persons; and what has hitherto prevented a description of it from being given was a desire to ascertain its power by longer use.

"I long ago conceived the idea of a fusing furnace, in which the wind was distributed in three tuyeres placed in its circumference, and at equal distances from each other; but I had no opportunity of realizing this idea till I became attached to the council of mines.

"Nearly seven years ago a plan was in agitation for constructing in the laboratory of the school a fusing furnace capable of producing a very great degree of heat, in order to operate with facility and speed on larger quantities of mineral, and consequently to obtain more precision in the trials which might be made than had been obtained by the small furnaces before employed for docimastic experiments.

"I proposed my ideas: they were approved by the council of mines; and I was ordered to cause the furnace I am about to describe to be constructed. The principal difference between it and those before used for the same purpose is, that in the present one the wind is introduced through three tuyeres, placed at equal distances from each other in its circumference, whereas in common furnaces it enters only by one.

"This furnace is round, both outside and inside, and constructed of very refractory bricks, secured by iron hoops in such a manner that they cannot be displaced. It rests on a square base of strong mason work, raised to a sufficient height above the ground to render it easy to manage.

"The bellows are four feet in length, and the mean breadth of them is about 20 or 21 inches: they are of wood, and the joints are covered with white leather. The upper part consists of five folds and two half folds; the inferior, of two folds and two half folds. They are placed eight or nine feet ( $\kappa$ ) above a wooden box, the joints of which are covered with leather, and into which the wind

Furnace.

\* Four. de  
Mines.  
Three-  
blast fur-  
nace.

( $\kappa$ ) "This height is arbitrary; it depends in part on the manner in which the bellows are disposed, and on the height of the chamber in which the furnace is placed."

Furnace.

wind as it comes from the bellows is conveyed by a copper pipe, three inches in diameter, adjusted to the upper part of the box. The box itself is supported by two iron bars built into the wall. From the lower part of this box descend, in a vertical direction three pipes of copper, two inches in diameter, bent at right angles about 45 inches below it, to bring them into a horizontal position, and to convey the wind to the furnace, which is about six feet distant. The extremities of these pipes are fitted into three tuyeres of forged iron, fixed at equal distances around the circumference of the furnace: these three pipes are more or less curved or bent, to convey the wind into the furnace by the three apertures made for that purpose.

“About six inches below the box is adjusted, on each of the three tubes, which descend in a vertical direction, a brass cock about three inches of interior diameter: these cocks serve to intercept entirely the communication between the bellows and the furnace; and by opening them all more or less, or each of them separately, any required quantity of wind may be obtained (L).

“These cocks are well fixed to the tubes, and kept in their place by two clips of iron suited to the diameters of the tubes, and forming a kind of three collars, which by means of four screws embrace and confine them: these pieces of iron are themselves made fast to two crutches of iron, which support the box and are fixed to it by screws. The box is kept on the crutches by two straps, which embrace it at each extremity, and are fixed by female screws, which are fitted to screws on the ends of these straps after they have passed through the horizontal part of the two crutches.

“To give the proper strength to this furnace, a solid square was constructed of mason-work, about a foot larger on each side than the exterior diameter of the sides of the furnace, which were from 21 to 22 inches from outside to outside. Bricks were placed on the ground in the middle of this erection for the extent of 18 inches, in order to form a bottom, and on this base were placed the sides of the furnace constructed in the manner about to be described.

“I caused to be forged two iron hoops six lines in thickness, from 2 to 2½ inches in breadth, and about 22 inches of exterior diameter: these two circles were fastened together by three bars of iron, the distance of their exterior edge being kept at about nine inches, the height of the bricks: these bars are pierced with holes towards the end rivetted on the circles, and placed at equal distances on their circumference. One of the extremes of each of these three bars is left of a sufficient length to pass beyond the lower circle about an inch, in order to make them enter into three holes formed in the brick-work which forms the bottom of the furnace,

and by these means to prevent the furnace from becoming deranged. Furnace.

“This kind of iron frame was filled with bricks similar to those employed for the bottom of the furnace: they were rubbed one on the other to smooth them, and the corners were a little rounded; so that, being placed upright with their broad sides applied to the iron hoops, the narrow side stood inwards. By these means all these bricks were adjusted in such a manner as to touch each other by their broadest faces, and to form the sides of the furnace, the thickness of which was equal to the breadth of the bricks, and its depth to their length. Three apertures were reserved for the tuyeres which terminate the three tubes that convey the wind, by cutting from as many bricks a portion equal to the thickness of a brick.

“These bricks thus adjusted were taken from the iron frame, and then replaced, putting between them a cement to connect them firmly and to fill up the joints. The dust produced by cutting the bricks was reserved for this purpose; and I desired the workman to mix with it a small quantity of clay diluted in a great deal of water, in order to make a puddle for daubing over the bricks, and in particular to put between them no more than was necessary for filling the joints and the small space left between their faces in consequence of any inequality left in dressing them.

“The furnace thus constructed was then placed on its base, a stratum of the same mortar employed for filling up the joinings of the bricks being first interposed. The extremities of the three iron bars projecting beyond the lower circle were placed in the holes left in the base to receive them. The body of the furnace encircled with iron, both by its weight and the gentle blows given to the iron hoops above the bars which connected them, expelled the excess of the mortar, and caused a part of it to enter and unite with that which filled up the joints of the brick work of the circumference, which rendered it immovable.

“The bellows is secured as usual by crutches of iron and supporters fixed in the wall and to the floor: the handle is disposed in such a manner, that the rope which makes it act may be pulled by the same person who manages the fire of the furnace, which in certain cases is necessary.

“The tuyeres of forged iron which receive the ends of the copper tubes are secured in their proper apertures in the circumference of the furnace by pieces of brick and mortar similar to that employed for filling up the joints; and the ends of the copper pipes introduced into these tuyeres are luted with the same mortar, a little thickened with brick dust.

“The apertures of these tuyeres towards the interior of the furnace is only nine lines in diameter; on which account,

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(L) “Care must be taken, when the action of the bellows ceases, to shut the cocks, especially when coals are used in the furnace; for the hydrogen disengaged from that mineral substance ascends into the box, and when the bellows are again made to act, may inflame, and cause a violent explosion, or even burst the bellows. This accident once took place in the furnace here described: the box burst with a loud noise on the first stroke of the bellows, the gas which filled them having suddenly inflamed; but by good fortune no person was hurt. The same thing happened at the house of C. Gorlier, locksmith, of Paris; one of his bellows burst with a horrid explosion at the moment when they were put in motion.”

Furnace.

account, as the volume of air furnished by the bellows cannot pass so quick as it is produced, it becomes condensed in the box placed above the cocks. By these means a very uniform blast is obtained, which can also be regulated by opening more or fewer of the cocks.

" During more than six years, since this furnace was constructed, it has suffered no derangement: it is not even cracked. It is however worn in the inside by the violence of the heat it has experienced, which has increased its diameter about two inches. The parts round the three tuyeres have also got hollowed, so that it has need of being repaired. It is intended to make it deeper, and to have a kind of moveable muffs or linings made of fire clay, in order that its diameter may be reduced at pleasure: it is meant also to construct it in such a manner, as to deposit the rest or support for the crucible, not on the bottom of the furnace, but on bars of forged iron placed at the distance of some inches from that bottom, so as to leave below them a vacancy in which the blast of the bellows may be diffused, and from which it may rise, passing between the bars to traverse the mass of charcoal which surrounds the crucible. The blast will then produce a more uniform fire, and the flame can no longer be directed against the sides of the crucibles; so that the risk of their breaking by sudden inequalities in the heat will be much less.

" This alteration is going to be immediately carried into execution, and the method proposed for doing it is as follows:

" A round frame will be made of forged iron, in which bricks will be placed in the same manner as above described. In the lower part of the furnace an aperture will be reserved for raking out the ashes, which will be closed by means of a door of baked earth carefully luted with clay. Some inches above the bottom of the furnace will be placed a grate of forged iron, and between this grate and the bottom of the furnace the tuyeres will terminate, and the blast be introduced. Muffs or linings of very refractory earth will then be introduced, so as to descend to this grate. There will be two of them, one within the other, and both within the body of the furnace. At the lower part these muffs will be furnished with a rim, projecting outward so as to leave between the body of the furnace and the muffs a vacancy, which will be luted at the bottom with clay, and which will be filled with pounded glass, or any other substance a bad conductor for heat.

The interior muff, or both of them, may be removed at pleasure to obtain a furnace of greater or less capacity according to the operations to be performed. It is proposed to make the muffs wider at the top than at the bottom.

#### Explanation of the Figures.

Plate

CXXVII.

" Fig. 21. Plan of the bellows and of the furnace. AB, the bellows made of wood, the folds of which are also of wood covered with leather on the joints. CD, the handle which serves for moving the bellows. E, a copper tube which conveys the wind of the bellows into the box FG, in which it is condensed. FG, a box of wood serving as a reservoir for the wind condensed by the bellows. HI, KL, MN, three pipes adapted

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ed to the box FG, and which convey the wind into the inside of the furnace by three tuyeres, I, L, N. OP, masonry work to support the horizontal pipes. Q, the furnace properly so called, the form of which is circular, and which is placed on the square masonry work R, S, T, U.

" Fig. 22. Elevation of the furnace, the pipes which convey the blast, the cocks, the condensing box, and the bellows. AB, the bellows mounted in their place, and supported by the iron-work necessary for securing it, which is fixed in the wall and to the floor. CD, the handle which serves for moving the bellows. E, the copper pipe which conveys the blast of the bellows to the box FG in which it is condensed. At G is a hole shut by a large cork stopper, which can be opened at pleasure. This box is supported by two crutches of iron *f, g*, and *h, i*, built into the wall, and on which it is fixed by two iron stirrups *l, m*.

" Fig. 23. One of the crutches and its stirrup are seen represented sidewise at *f, g, l*; the extremities, *n, o*, are built into the wall, and the two ends, *p, q*, of the iron piece which keeps the box on the horizontal traverse of the crutch, are tapped, and receive screws which make them fast to the crutch *f, g*. HI, KL, MN, are three pipes which convey the wind into the interior of the furnace. Q, R, S, T, U, masonry work on which is placed the furnace Q, and which serves it as a bottom. OP, masonry which serves to support the three pipes that convey the wind to the furnace. XYZ, fig. 22. are the three cocks fixed to the three pipes which proceed from the box to convey the wind to the furnace.

" In fig. 24, the dimensions of which are double those of fig. 22, may be seen the details of one of these cocks.

" At *r, s, t*, the body of the cock is seen in front; the stopper being taken out shows at *r* and at *t* the two holes which receive the tubes that communicate either with the box or with the tuyeres. *u* exhibits the body of the cock seen on one side; *v* the key with its aperture *x*, and its head *y*. This key, turned round more or less in its socket, serves to give more or less wind. 1, 2, 3, iron clips which secure the cocks at the distance they ought to be from each other, and connect them at the same time to the iron crutches which support the air-box.

" Fig. 25. a plan of these two clips. They are bent at the places marked 1, 2, 3, to embrace the body of the three cocks, and secure them in such a manner that they cannot be deranged when they are opened or shut.

" Fig. 26. and 27. represent the plan and section of the changes and additions proposed to be made when the furnace is re-constructed. At I, L, and N, are seen the extremities of the three pipes that enter the forged iron tuyeres, and convey the wind to the interior of the furnace. *a, b*, and *c*, indicate the thickness at the upper part of each of the muffs and of the body of the furnace, between which there are two vacancies filled with pounded glass or some other bad conductor of heat. *d*, the grate on which are deposited the rests of baked earth destined to receive the crucibles. *e*, the crucible, luted and attached with clay to a rest of baked earth (M)." P p M<sub>r</sub>

(M) " The advantage arising in large founderies from the application of two or three tuyeres instead of one, is well known; but I do not believe that such an arrangement was ever adopted in small furnaces.

" At

Furnace.

Mr Collier, in a paper communicated to the Manchester Philoſophical Society, has delivered ſome important obſervations on iron and ſteel, with a more correct account of the proceſs for the manufacture of the latter than has hitherto been given. To this account he has added the deſcription of a furnace for the converſion of iron into ſteel. As his obſervations and reaſonings are extremely valuable, we ſhall lay the whole before our readers in his own words.

Accounts of  
the proceſs  
for making  
iron and  
ſteel, im-  
perfect.

“ After examining (ſays Mr Collier) the works of different authors who have written on the ſubject of making iron and ſteel, I am perſuaded that the accounts given by them of the neceſſary proceſſes and operations are extremely imperfect. Chemiſts have examined and deſcribed the various compound minerals containing iron with great accuracy, but have been leſs attentive to their reduction. This obſervation more particularly applies to ſteel, of the making of which I have not ſeen any correct account.

“ It is ſingular to obſerve, how very imperfectly the cementation of iron has been deſcribed by men of great eminence in the ſcience of chemiſtry. Citizen Fourcroy ſtates the length of time neceſſary for the cementation of iron to be about twelve hours; but it is difficult to diſcover whether he alludes to caſt or to bar ſteel: for he ſays, that ſhort bars of iron are to be put into an earthen box with a cement, and cloſed up. Now ſteel is made from bars of iron of the uſual length and thickneſs: but caſt ſteel is made according to the proceſs deſcribed by Citizen Fourcroy, with this eſſential difference; the operation is begun upon bar ſteel and not bar iron.

“ Mr Nicholſon is equally unfortunate in the account given in his Chemical Diſtionary. He ſays, that the uſual time required for the cementation of iron is from ſix to ten hours, and cautions us againſt continuing the cementation too long; whereas the operation, from the beginning to the end, requires ſixteen days at leaſt. In other parts of the operation he is equally defective, confounding the making of bar with that of caſt ſteel, and not fully deſcribing either. In ſpeaking of the uſes of ſteel, or rather of what conſtitutes its ſuperiority, Mr Nicholſon is alſo deficient. He obſerves, that ‘ its moſt uſeful and advantageous property is that of becoming extremely hard when plunged into water.’ He has here forgotten every thing reſpecting the temper and tempering of ſteel inſtruments, of which, however, he takes ſome notice in the ſame page. ‘ Plunging into water’ requires a little explanation: for if very hot ſteel be immerſed in cold water without great caution, it will crack, nay, ſometimes break to pieces. It is, however, neceſſary to be done, in order to prevent the ſteel from growing ſoft, and returning to the ſtate of malleable iron; for, were it permitted to cool in the open air, the carbone which it holds in combination would be diſſipated (N).

“ I ſhall, at preſent, confine my remarks to the operation performed on iron in Sheffield and its neighbourhood: from whence various communications have been tranſmitted to me by reſident friends, and where I have myſelf ſeen the operations repeatedly performed.

Furnace.

Proceſs in  
Sheffield,

“ The iron made in that part of Yorkſhire is procured from ores found in the neighbourhood, which are of the argillaceous kind, but intermixed with a large proportion of foreign matter. Theſe, however, are frequently combined with richer ores from Cumberland and other places. The ore is firſt roaſted with cinders for three days in the open air, in order to expel the ſulphureous or arſenical parts, and afterwards taken to the furnaces: ſome of which are conſtructed ſo that their internal cavity has the form of two four-ſided pyramids joined baſe to baſe; but thoſe moſt commonly uſed are of a conical form, from 40 to 50 feet high.

The furnace is charged at the top with equal parts of coal cinder and lime-ſtone. The lime-ſtone acts as a flux, at the ſame time that it ſupplies a ſufficient quantity of earthy matter to be converted into ſcoria, which are neceſſary to defend the reduced metal from calcination, when it comes near the lower part of the furnace. The fire is lighted at the bottom; and the heat is excited by means of two pair of large bellows blowing alternately. The quantity of air generally thrown into the furnace is from a thouſand to twelve hundred ſquare feet in a minute. The air paſſes through a pipe, the diameter of which is from two inches and a quarter, to two and three quarters, wide. The compreſſion of air which is neceſſary is equal to a column of water four feet and a half high. The ore melts as it paſſes through the fire and is collected at the bottom, where it is maintained in a liquid ſtate. The ſlag, which falls down with the fuſed metal, is let off, by means of an opening in the ſide of the furnace, at the diſcretion of the workmen.

“ When a ſufficient quantity of regulus, or imperfectly reduced metal, is accumulated at the bottom of the furnace (which uſually happens every eight hours), it is let off into moulds; to form it for the purpoſes intended, ſuch as cannon or pig iron.

“ Crude iron is diſtinguiſhed into white, black, and gray. The white is the leaſt reduced, and more brittle than the other two. The black is that with which a large quantity of fuel has been uſed; and the gray is that which has been reduced with a ſufficient quantity of fuel, of which it contains a part in ſolution.

“ The operation of refining crude iron conſiſts in burning the combuſtible matter which it holds in ſolution; at the ſame time that the remaining iron is more perfectly reduced, and acquires a fibrous texture. For this purpoſe, the pigs of caſt iron are taken to the forge; where they are firſt put into what is called the refinery: which is an open charcoal fire,

and for re-  
fining crude  
iron.

“ At Treibach, in Carinthia, C. Le Febre, and Haſſenfratz member of the council and inſpector of mines, ſaw, about twenty years ago, a large furnace with two tuyeres; drawings of which they brought to France, and which they repreſented in the third plate of *l'Art de fabriquer les Canons*, by Monge: two pairs of bellows ſupply wind through two oppoſite tuyeres, and ſince that arrangement the daily product of metal has been double.”

(N) “ It is the opinion of ſome metallurgists, that a partial abſtraction of oxygen takes place, by plunging hot metal into cold water.”



**Furnace.** the trough; and, upon that, a layer of bar iron, and so on alternately until the trough is full. It is then covered over with clay to keep out the air; which, if admitted, would effectually prevent the cementation. When the fire is put into the grate, the heat passes round by means of flues, made at intervals, by the sides of the trough. The fire is continued until the conversion is complete, which generally happens in about eight or ten days. There is a hole in the side by which the workmen draw out a bar occasionally, to see how far the transmutation has proceeded. This they determine by the blisters upon the surface of the bars. If they be not sufficiently changed, the hole is again closed carefully to exclude the air; but if, on the contrary, the change be complete, the fire is extinguished, and the steel is left to cool for about eight days more, when the process for making blistered steel is finished.

**Blistered steel.**

"For small wares, the bars are drawn under the tilt hammer, to about half an inch broad and three-sixteenths of an inch thick.

**Tilted steel.**

"The change wrought on blistered steel by the tilt hammer, is nearly similar to that effected on iron from the refinery by the forge hammer. It is made of a more firm texture, and drawn into convenient forms for use.

**German steel.**

"German steel is made by breaking the bars of blistered steel into small pieces, and then putting a number of them into a furnace; after which they are welded together and drawn to about 18 inches long; then doubled and welded again, and finally drawn to the size and shape required for use. This is also called shear steel, and is superior in quality to the common tilted steel.

**Cast steel.**

"Cast steel is also made from the common blistered steel. The bars are broken and put into large crucibles with a flux. The crucible is then closed up with a lid of the same ware, and placed in a wind furnace. By the introduction of a greater or smaller quantity of flux, the metal is made harder or softer. When the fusion is complete, the metal is cast into ingots, and then called ingot steel; and that which afterwards undergoes the operation of tilting, is called tilted cast steel.

"The cast steel is the most valuable, as its texture is the most compact and it admits of the finest polish.

"Sir T. Frankland has communicated a process, in the Transactions of the Royal Society\*, for welding cast steel and malleable iron together; which, he says, is done, by giving the iron a malleable, and the steel a white heat; but, from the experiments which have been made at my request, it appears, that it is only soft cast steel, little better than common steel, that will weld to iron: pure steel will not; for, at the heat described by Sir T. the best cast steel either melts or will not bear the hammer.

"It may here be observed, as was mentioned before, that steel is an intermediate state between crude and malleable iron, except in the circumstance of its reduction being complete; for, according to the experiments of Reaumur and Bergman, steel contains more hydrogen gas than cast iron, but less than malleable iron;—less plumbago than the first, but more than the latter;—an equal portion of manganese with each;—less siliceous earth than either—more iron than the first, but less than the second. Its fusibility is likewise interme-

diated, between the bar iron and the crude. When steel has been gradually cooled from a state of ignition, it is malleable and soft, like bar iron; but when ignited and plunged into cold water, it has the hardness and brittleness of crude iron.

"From the foregoing facts, we are justified in drawing the same conclusions with Reaumur and Bergman, but which have been more perfectly explained by Vandermonde, Berthollet, and Monge, that crude iron is a regulus, the reduction of which is not complete; and which consequently will differ according as it approaches more or less to the metallic state. Forged iron, when previously well refined, is the purest metal; for it is then the most malleable and the most ductile, its power of welding is the greatest, and it acquires the magnetic quality soonest. Steel consists of iron perfectly reduced and combined with charcoal; and the various differences in blistered steel, made of the same metal, consist of the greater or less proportion of charcoal imbibed.

"Iron gains, by being converted into steel, about the hundred and eightieth part of its weight.

"In order to harden steel, it must be put into a clean charcoal, coal, or cinder fire, blown to a sufficient degree of heat by bellows. The workmen say, that neither iron nor steel will harden properly without a blast. When the fire is sufficiently hot, the instrument intended to be hardened must be put in, and a gradual blast from the bellows continued until the metal has acquired a regular red heat; it is then to be carefully quenched in cold water. If the steel be too hot when immersed in water, the grain will be of a rough and coarse texture; but if of a proper degree of heat, it will be perfectly fine. Saws and some other articles are quenched in oil.

"Steel is tempered by again subjecting it to the action of the fire. The instrument to be tempered will suppose to be a razor made of cast steel. First rub it upon a grit stone until it is bright; then put the back upon the fire, and in a short time the edge will become of a light straw colour, whilst the back is blue. The straw colour denotes a proper temper either for a razor, graver, or penknife. Spring knives require a dark brown; scissars, a light brown, or straw, colour; forks or table knives, a blue. The blue colour marks the proper temper for swords, watch-springs, or any thing requiring elasticity. The springs for penknives are covered over with oil before they are exposed to the fire to temper.

#### Explanation of the Figures.

"Fig. 28. is a plan of the furnace, and fig. 29. is a section of it taken at the line AB. The plan is taken at the line CD. The same parts of the furnace are marked with the same letters in the plan and in the section. EE are the pots or troughs into which the bars of iron are laid to be converted. F is the fire-place; P, the fire bars; and R, the ashpit. GG, &c. are the flues. HH is an arch, the inside of the bottom of which corresponds with the line IIII, fig. 28. and the top of it is made in the form of a dome, having a hole in the centre at K, fig. 29. LL, &c. are six chimneys. MM is a dome, similar to that of a glass-house, covering the whole. At N there is an arched opening, at which the materials are taken in and out of the furnace,

Furnace.

Hardening steel.

Tempering

nace,

**Furnace.** nace, and which is closely built up when the furnace is charged. At OO there are holes in each pot, through which the ends of three or four of the bars are made to project quite out of the furnace. These are for the purpose of being drawn out occasionally to see if the iron be sufficiently converted.

“The pots are made of fire tiles, or fire stone. The bottoms of them are made of two courses, each course being about the thickness of the single course which forms the outsides of the pots. The insides of the pots are of one course, about double the thickness of the outside. The partitions of the flues are made of fire brick, which are of different thicknesses, as represented in the plan, and by dotted lines in the bottom of the pots. These are for supporting the sides and bottoms of the pots, and for directing the flame equally round them. The great object is to communicate to the whole an equal degree of heat in every part. The fuel is put in at each end of the fire-place, and the fire is made the whole length of the pots and kept up as equally as possible.”

Improved  
process of  
cupella-  
tions.

In a memoir published by Du Hamel, the inconvenience and expence which attend the process commonly in use, for refining lead or separating the silver from this metal, are pointed out, and a more economical process is proposed. This process, which is known by the name of *cupellation*, is performed in a vessel called the *cupel*, which is made of the ashes of the bones of animals, or of vegetables, after separating, by means of water, the saline parts which adhere to them. But the difficulty and expence of obtaining a sufficient quantity of these materials, led him to contrive something else as a substitute, which might be less costly and more easily obtained.

For the purpose of performing the process in the way here recommended, it is not necessary to make any alteration in the general construction of the furnace. All that is required is, to have a sufficient number of canals or openings towards its base, to allow the escape of the moisture. These canals are covered with a bed of scoria, on which is raised a pavement formed of the most porous bricks, and about a brick in thickness. On this floor or area, which should be a little concave, in the same way as the ordinary cupels are formed when they are made of ashes, is placed a quantity of casting or moulding sand, slightly moistened; and if the sand has not a sufficient quantity of earth, some clay is added, to give it consistence, and the whole is carefully mixed together. This sand is beaten together, and a concave vessel is made of it, of an equal thickness in all its parts. When the basin has been uniformly beaten, it will be proper to sift over its whole surface a small quantity of wood ashes, well washed with water, and these are also beaten down with a pebble.

The cupel being thus prepared, the head of the furnace is put on, and a moderate fire is kindled and kept up for some hours, to carry off part of the moisture of the sand. The remainder is dissipated without inconvenience, by means of the canals, during the process. After it has been sufficiently dried, the head of the furnace is again taken off, and allowed to cool a little. A quantity of straw or hay is put upon the basin or cupel, to prevent any injury from the weight of the bars of lead on the sand. To avoid this still more, it is re-

commended to have the lead to be purified cast into the form of hemispheres, in place of bars. **Furnace.**

A sufficient quantity of lead being introduced into the furnace, the head is luted on with baked clay, and the fire is applied in the usual way. As soon as the lead is completely fused, the basin appears covered with the burnt straw: this is removed by means of an iron instrument, and this operation is repeated several times. When the lead begins to grow red, the action of the bellows commences, at first softly, and the blast is so directed that it may strike the centre of the cupel. To effect this more completely, a small round plate of iron is attached to the extremity and upper part of the pipe by means of a hinge, so that at each blast it is half raised, and the current of air is directed to the surface of the fused metal.

After the whole of the scum that rises has been removed, and the lead is covered with a stratum of litharge, a small gutter is made by means of a hook for the purpose, in the sand of the cupel. This is gradually and cautiously hollowed, till it is on a level with the surface of the bath, and then the litharge driven by the blast towards the anterior part of the furnace, will flow this way, and spread itself on the floor in the usual way. When the operator perceives that the litharge has been removed, he stops up the gutter with moistened ashes, till another quantity of litharge appears on the surface. He then re-opens the gutter, which is now made deeper in proportion to the diminution of the fused metal, but at the same time taking care that no part of the lead escapes, especially towards the end of the process, because then a considerable portion of silver would be carried off.

In this way the process is conducted till the separation of the silver begins to take place, observing at the same time to increase the heat as the quantity of fused metal diminishes, because then the silver is collected together; and since it is much more difficult to keep it in fusion than the small portion of lead which remains combined with it, the separation would be very imperfect, without the application of a sufficient temperature. Instead of having only one-twentieth of lead, which is the usual proportion in the common process, the quantity would be much greater, and this would render the second operation, the refining of the silver, much more difficult.

Du Hamel observes, that a cupel of sand, well made, will answer for the repetition of the process several times, without renewing it at the end of each operation, as is the case with those of ashes. The only precaution to be observed is, to remove the kind of varnish of oxide of lead which remains on the sides of the gutter by which the litharge flowed out, that the new sand with which it is to be filled up may combine easily with the old.

The length of time which the reverberatory furnace may be employed in smelting the ores of lead, and even in reducing litharge, is a proof that the oxide of lead acts only on the surface of the cupel, and penetrates a very small thickness. After the process has been several times repeated, this crust is removed, and it is fused for the purpose of obtaining the lead. This process will be as easy as the reduction of the metal contained in the ashes of the ordinary cupels, and in much smaller quantities.

Furnace.

quantity. By the new method, therefore, a greater proportion of litharge is obtained; and it may be added, that the sand absorbing a smaller quantity of oxyde of lead, it will contain also a smaller proportion of silver; for it is well known that the lead which is reduced from the ashes, contains always much more than that which is produced from the reduction of litharge.

In place of sand, argillaceous earth may be employed in the construction of cupels; but it is necessary that this earth be well beaten together, and that this process should be several times repeated, for several days, without which the clay would be apt to crack, and the melted lead would flow into the crevices; an inconvenience which does not arise from the use of sand, even although it should be mixed with a little earth. And besides, it is to be observed, that the cupel constructed of this substance, becomes too hard to allow a gutter to be easily made for the passage of the litharge. In this case it would be necessary that the place by which the oxyde is to flow out, be made up of sand, or of ashes.

In the formation of the bason or cupel, which is here proposed, it seems to be advantageous to employ two kinds of sand, the one fine, like that which is used by the founders, the other coarser, and free from earth. It is of the latter, the coarse kind, that the first stratum is formed; and this, after being made of sufficient thickness, is well beaten with pestles for the purpose; on this the fine sand is to be placed, containing a proper proportion of earth, and it is to be beaten together in the same way. Both the coarse and the fine sand are to be moistened a little, that they may adhere together, and afterwards acquire a sufficient degree of solidity under the pestles. The sand of the inferior layer being coarser than the other, will absorb the moisture from it as it evaporates, and will allow it to pass off easily, by means of the canals or openings which are left for that purpose. This stratum, too, is to remain in its place, when the fine sand of the cupel is removed, and that the surface of the stratum of coarse sand may not be disturbed when the other is removed, a thin layer of ashes may be thrown upon it, and beaten down, before the other stratum is laid on\*.

The French school of mines appointed a commission, composed of Haslenfratz, Brochant, and Miché, to consider the best form for the construction of a furnace for burning lime-stone, or plaster of Paris. After considering different forms of furnaces, and reasoning on their effects, they propose in their report to adopt the following, which is represented in fig. 30. and 31.

Fig. 30. is a plan of the furnace proposed.

D, the fire-place. E, E, openings for taking out the substances which are converted into lime or plaster.

P, half of the plan taken at the height of the line AK of fig. 31.

Q, half of the plan taken at the height of the line, XY of fig. 31.

Fig. 31. exhibits a section of the same furnace.

B, C, are places which remain empty after the introduction of the substances to be exposed to heat.

B, D, the fires.

E, the opening for the extraction of the substances after they are converted into lime or plaster.

O, the throat or vent.

a, b, openings for regulating the heat.

We shall now conclude this article with a short account of the construction and management of furnaces for chemical purposes.

The following is a description of an essay or cupel-  
Chemical  
ling furnace. 1. A hollow, quadrangular prism, 11  
Furnace.  
inches broad and nine inches high, is constructed with iron plates, and it ends at top in a hollow quadrangular pyramid, seven inches high; the latter terminating in an opening seven inches square. The prism is closed at bottom with another iron plate, which serves as a bottom.

2. Near the bottom a door three inches high and five inches broad, is opened. This leads to the ash hole.

3. Above this door, and six inches from the basis, another door is opened, of the figure of a segment of a circle, four inches broad at the bottom, and three inches and a half high in the middle.

4. Three iron plates are then to be fastened to the fore-part of the furnace, the first of them should be 11 inches long, half an inch high, and so fastened with three or four rivets, that its lower edge may rest against the bottom of the furnace. Between this plate and the side of the furnace a space must be left, so wide that the sliders of the lower door, which are made of a thicker iron plate, may move easily in the groove. The second iron plate, which is 11 inches long, and three inches high, is fastened parallel to the first, in the space between the two doors. Both the upper and lower edges of this plate form grooves with the side of the furnace, for receiving the sliders which shut the doors. The third plate of the same dimensions with the first, is rivetted close above the upper door, and forms a groove for receiving the edge of the sliders which move that door.

5. For the purpose of closing the doors, two sliders of iron-plates must be adapted to each of them. These sliders are moved in the grooves. The two sliders belonging to the upper door have each a hole near the top; in the one there is a small hole  $\frac{1}{2}$  of an inch near,  $\frac{1}{2}$  inch long; and the other a semicircular opening one inch high and two broad. To each slider there is a handle attached, to lay hold of it when it is moved.

6. Five round holes, an inch diameter, are bored in the furnace, two in the back part, and two in the fore part, five inches from the bottom; but  $3\frac{1}{2}$  inches from each side of the furnace. The fifth hole is at the height of an inch above the upper edge of the upper door.

7. The inside of the furnace must be armed with iron hooks, about 3 inches from each other, and projecting  $\frac{1}{2}$  inch. The use of these hooks is to secure the lute with which the furnace is to be lined.

8. A moveable, hollow, quadrangular pyramid, also of iron, and 3 inches high, is to be fitted to the upper opening of the furnace, 7 inches broad, and ending above in a hollow tube, 3 inches in diameter, about 2 inches high, nearly cylindrical, but converging a little at the top. This tube serves to support a funnel for conveying the smoke into the chimney. This cover has 2 handles to lay hold of it. To secure the cover on the furnace, an iron plate is rivetted to the right and left of its upper edge, and turned down towards the inside, so that a furrow may be made, open before

Furnace.

\* Mem. de  
l'Inst.  
iii. 306.

**Furnace.** fore and behind, for receiving the lateral edges of the cover.

9. A square ledge, made of thick iron plate, is fixed at the top of the upper edge of the lower door, for supporting the grate and the lute, and that it may be easily introduced into the cavity of the furnace, it should be of two pieces.

10. Iron bars are then to be fixed in the inside of the furnace, for supporting the fuel. These must be equal in length with the diameter of the furnace, about  $\frac{1}{2}$  inch thick, and  $\frac{1}{4}$  inch distant from each other. They are supported at their extremities by a square iron ledge.

11. To prevent the dissipation of the heat, and the destruction of the iron, by being repeatedly made red hot, the inside of the furnace must be lined with lute, about a finger's breadth, or rather more, in thickness.

**Coating for furnaces.** For luting furnaces, Doctor Black recommended a simple mixture of sand and clay. The proportions for resisting the violence of fire are four parts of sand to one of clay; but when designed for the lining of furnaces, he uses six or seven of sand to one of clay, the more effectually to prevent the contraction of the latter; for it is known from experiments, that clay, when exposed to a strong heat, contracts the more in proportion to its purity. The sand settles into less bulk when wet, and does not contract by heat, which it also resists as well as the clay itself.

Besides this outside lining next the fire, Dr Black uses another to be laid on next the iron of the furnace; and this consists of clay mixed with a large proportion of charcoal dust. It is more fit for containing the heat, and is put next to the iron, to the thickness of an inch and an half. That it may be pretty dry when first put in, he takes three parts by weight of the charcoal dust, and one of the common clay, which must be mixed together when in dry powder, otherwise it is very difficult to mix them perfectly. As much water is added as will form the matter into balls; and these are beaten very firm and compact by means of a hammer upon the inside of the furnace. The other lute is then spread over it to the thickness of about half an inch, and this is also beaten solid by hammering; after which it is allowed to dry slowly, that all cracks and fissures may be avoided; and after the body of the furnace is thus lined, the vent is screwed on and lined in the same manner. It must then be allowed to dry for a long time; after which a fire may be kindled, and the furnace gradually heated for a day or two. The fire is then to be raised to the greatest intensity; and thus the luting acquires a hardness equal to that of free-stone, and is afterwards as lasting as any part of the furnace.

**Mode of operating with this furnace.**

To perform an operation in this furnace, two iron bars an inch thick, and of sufficient length, to project a little beyond the holes of the furnace, are passed through four lower holes, which are placed before and behind, directly opposite to each other. These bars support the muffle, which is introduced through the upper opening of the furnace, and placed upon the bars, in such a way that the open side of it may be near the inner border of the upper door. The fuel is introduced through the top of the furnace, and the best fuel is charcoal made of hard

wood. It should be reduced to small pieces, that they may readily fall between the muffle and the sides of the furnace. The muffle is to be covered with fuel, to the height of several inches. The pieces of charcoal should not be too small, because they may fall immediately through the interstices of the grate, or be too rapidly consumed, and thus increasing the quantity of ashes, obstruct the current of air.

As the management of the fire is of great importance, **Management** for the success of operations in the furnace, the following directions may be attended to. To increase the heat to the utmost, the door of the ash-hole may be left open; the sliders of the upper door drawn towards each other, so as to touch in the middle, and the cover and funnel adapted to its tube, placed on the top of the furnace. The heat is still farther increased by putting red burning coals into the open upper door. By shutting the upper door with the slider, which has a narrow oblong hole in it, the heat is diminished, and it is still farther diminished by shutting the door with the other slider, having the semicircular hole. The heat is also diminished by removing the funnel at the top of the cover; and the heat is less by partially or totally shutting the door of the ash-hole, because then the current of air necessary to excite combustion is obstructed.

The heat of the furnace is also increased in proportion to the diminished size of the muffle. The heat is stronger too, according as the muffle has more and larger segments cut out of it, as the sides of it are thinner, and as the number of vessels placed in the hinder part of it is increased; and the contrary. It may be here observed, that when many of the conditions necessary to produce strong heat are wanting, the operator, with all his sagacity, will scarcely be able to excite combustion in such a degree in common assay furnaces as to succeed well in his operations; and even when he employs bellows, and introduces coals by the upper door. The grate, therefore, ought to be placed nearly three inches below the muffle, that the air rushing through the ash-hole, may not cool its bottom, and that the smaller coals, almost already consumed, and the ashes, may more easily fall through the interstices of the grate; larger coals, fit for keeping up the requisite degree of heat, must be used. The funnel is added, that the blowing of the fire being increased by means of it as much as possible, may be brought to the degree that is wanted; for the fire may be at any time diminished, but without the assistance of proper apparatus, it cannot always be increased at pleasure.

*Explanation of Fig. 32, 33, and 34.*

Fig. 32. *a, a, b, b*, body of the assay furnace.

*b b, c c*, top of the same.

*d*, opening at the top of the furnace.

*e*, door leading to the ash-hole.

*f*, upper door.

*g g, h h, ii*, the iron plates rivetted on the furnace, which form the grooves in which the doors slide.

*k k, ll*, the sliding doors.

*m*, the hole in one of the doors; *n*, the semicircular hole.

*oo*, the holes for receiving the bars which support the muffle.

Furnace.

*p*, a hole above the upper edge of the upper door, for introducing a rod to stir the fire.  
*g*, the pyramidal cover.  
*r*, tube or funnel at the top.  
*s s*, its handles.

Fig. 33. represents a longitudinal section of a reverberatory furnace, 18 feet long, 12 broad, and  $9\frac{1}{2}$  high.

*a*, the building.  
*b*, the ash-hole.  
*c*, channel for the evaporation of the moisture.  
*d*, the grate.  
*e*, the fire-place.  
*f*, the inner part of the furnace.  
*g*, a bafon formed of sand.  
*h*, the cavity containing the melted metal.  
*i*, a hole through which the scoria is removed.  
*k*, the passage for the flame and smoke, or the lower part of the chimney, to be carried to the height of 30 feet.  
*l*, a hole in the roof, through which the ore is introduced into the furnace.

Fig. 34. is a longitudinal section of a refining furnace.

*a a*, the building.  
*b*, the channels to carry off the moisture.  
*c*, other small channels, which meet in the middle of the bafon.  
*d*, the bafon made of bricks.  
*e*, a layer of ashes.  
*f*, the hollow or bafon containing the melted metal.  
*g*, the hole for the smoke and flame.  
*h h*, two openings for admitting the pipes of the bellows.  
*i*, the vault or dome of the furnace.  
*k*, the fire-place.  
*l*, the grate.  
*m*, a hole below for the admission of air.  
*n*, a hole in the vault, which serves to cool the furnace.

Portable furnace.

A convenient portable blast furnace, contrived by Mr Aikin, and described by him in the 17th vol. of the Philosophical Magazine, will probably be useful to some of our chemical readers. "It is (he says) particularly adapted to those who, like myself, can only devote a small room and a moderate share of time to these pursuits.

"Dr Lewis, in his *Commerce of the Arts* (page 27), describes a very powerful blast furnace formed out of a black-lead pot, which has a number of holes bored at small distances in spiral lines all over it, from the bottom up to such a height as the fuel is designed to reach to. This is let half way into another pot, which last receives the nozzle of the bellows, so that all the air sent in is distributed through the spiral holes of the upper pot, and concentrates the heat of the fuel upon the crucible, which is placed in the midst.

"The furnace which I am going to describe resembles very closely this of Dr Lewis; with this difference, however, that the air-holes are only bored through the bottom of the pot, and this merely stands upon another piece, instead of being let into it. It is

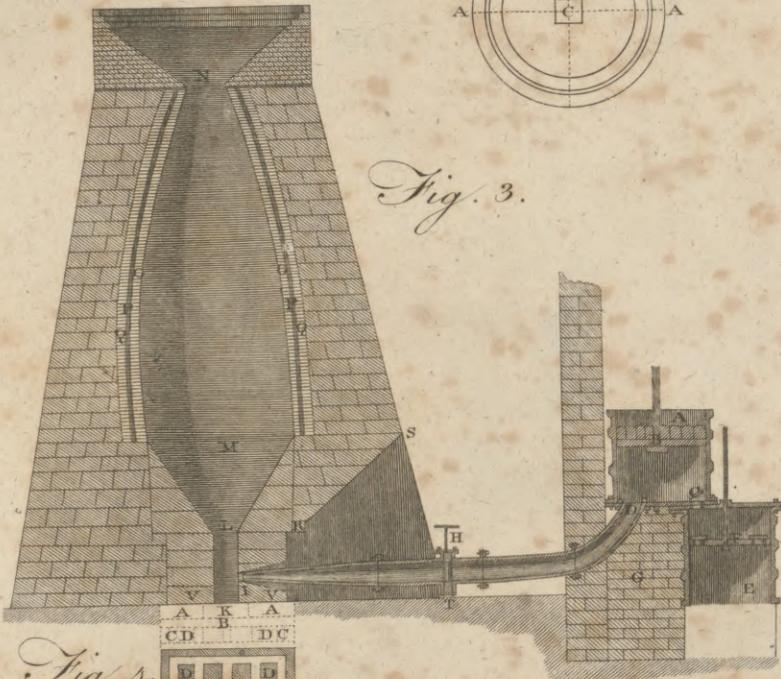
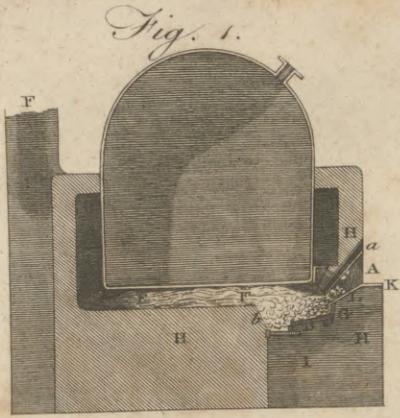
on this account somewhat more commodious, and I imagine not less powerful.

"Fig. 35. is a view, and fig. 36. a section, of the furnace. It is composed of three parts, all made out of the common thin black-lead melting pots sold in London for the use of the goldsmiths. The lower piece, A, is the bottom of one of these pots cut off so low as only to leave a cavity of about one inch, and ground smooth, above and below. The outside diameter over the top is  $5\frac{1}{2}$  inches. The middle piece or fireplace, B, is a larger portion of a similar pot with a cavity about six inches deep, and measuring  $7\frac{1}{2}$  inches over the top, outside diameter, and perforated with six blast holes at the bottom. These two pots are all that are essentially necessary to the furnace for most operations: but when it is wished to heap up fuel over the top of a crucible contained within, and especially to protect the eyes from the intolerable dazzle of the fire when in full heat, an upper pot, C, is added of the same dimensions as the middle one, and with a large side opening cut out to allow an exit to the smoke and flame. It has also an iron stem with a wooden handle (an old chisel will do very well), to lift it off and on.

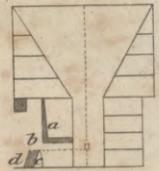
"The bellows (which are double) are firmly fixed, by a little contrivance which will take off and on, to a heavy stool, as is represented in the plate; and their handle should be lengthened, to make them work easier to the hand. To increase their force on particular occasions, a plate of lead may be tied on the wood of the upper flap. The nozzle is received into a hole in the pot A, which conducts the blast into its cavity. From hence the air passes into the fire-place, B, through six holes, of the size of a large gimlet, drilled at equal distances through the bottom of the pot, and all converging in an inward direction, so that, if prolonged, they would meet about the centre of the upper part of the fire. The larger hole through the middle of the bottom of the same pot is for another purpose. Fig. 37. is a plan of the same, showing the distribution of these holes.

"As a stand or support for the crucible, I have found no method so good as to fit an earthen stopper into the bottom of the pot B, through the large centre hole which is made for this purpose. This keeps the crucible in its proper place, in stirring down the coals and managing the fuel. These stoppers are made with great ease and expedition out of the softened fire-brick sold in London. A piece of this brick, made to revolve a few times within a portion of iron or earthenware tube, presently takes the form of its cavity, and comes out a very neat portion of a cylinder or cone, according to the shape of the tube, from which the stoppers may readily be fashioned. Fig. 38. represents one of these stoppers, which is also seen in its proper place in fig. 36. supporting a crucible.

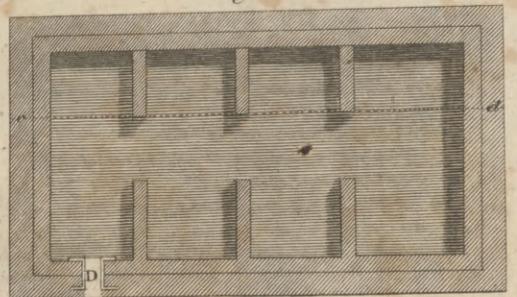
"As the construction of this furnace (exclusive of the bellows and its stool) is easy to any one at all used to these little manual operations, I trust that the working chemist will allow me to add a few words on the method which I have found the most convenient and economical. Almost any broken pot of the proper width will furnish the lower piece A; and often the middle and upper pieces may be contrived out of the same refuse matter. Dr Lewis advises a saw to cut these pots; but



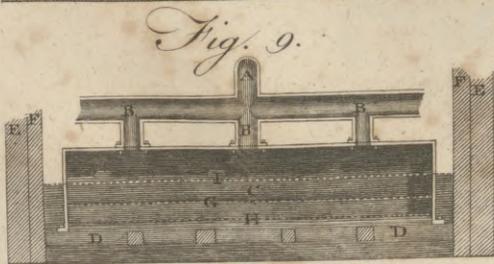
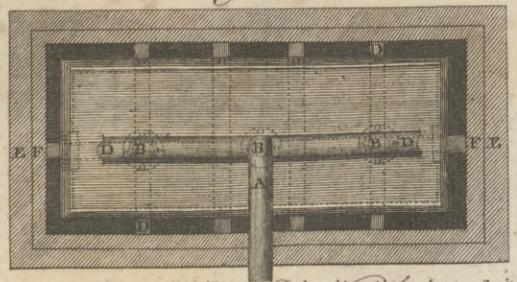
*Fig. 6.*



*Fig. 8.*



*Fig. 10.*



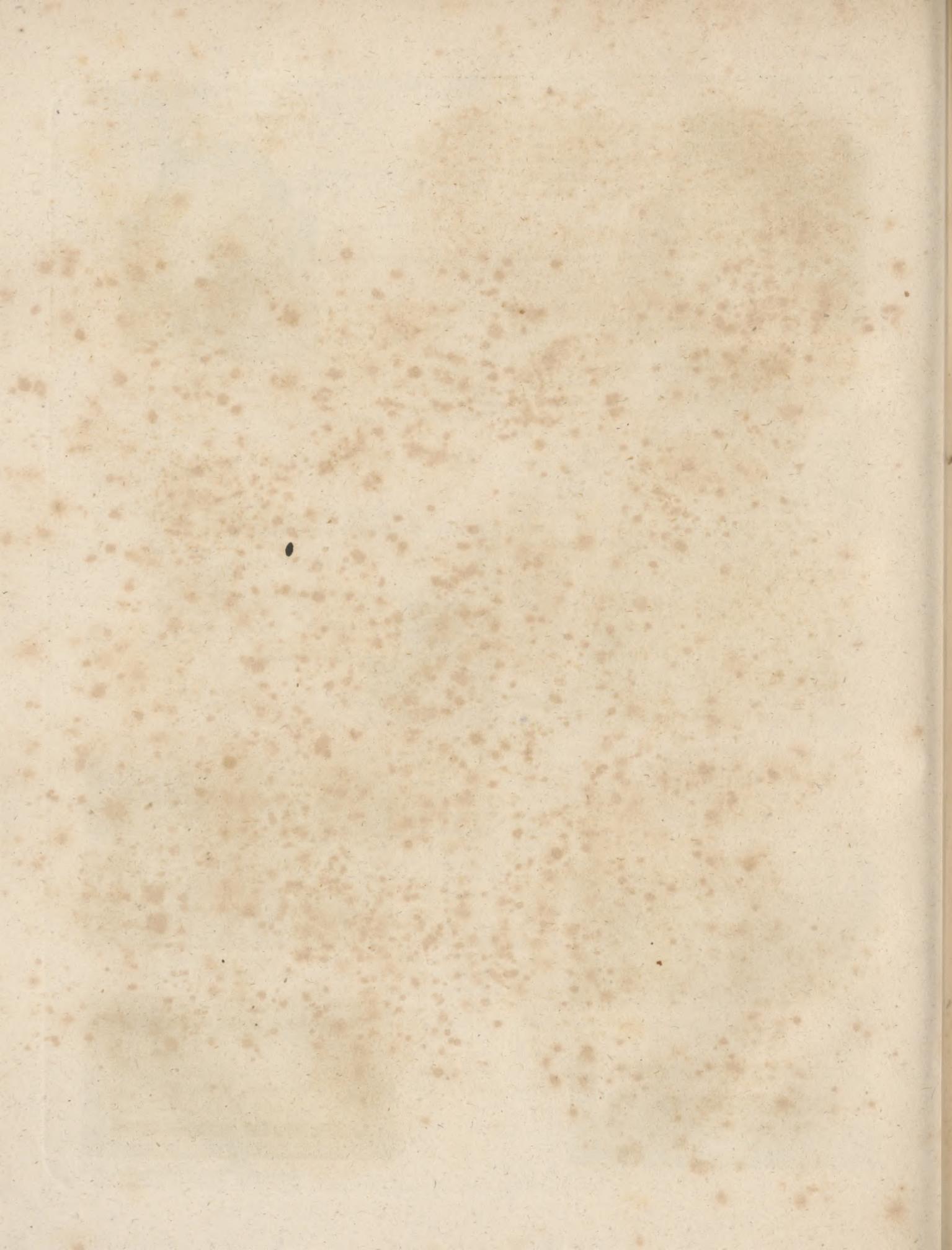


Fig. 11.

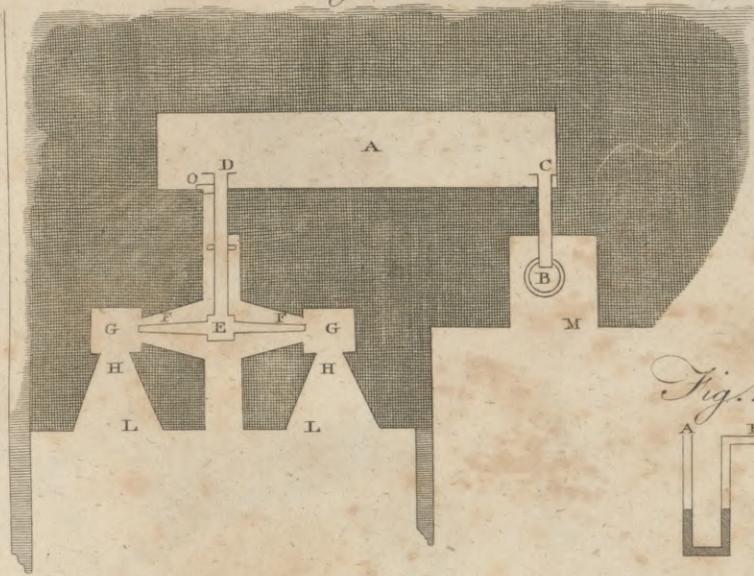


Fig. 13.

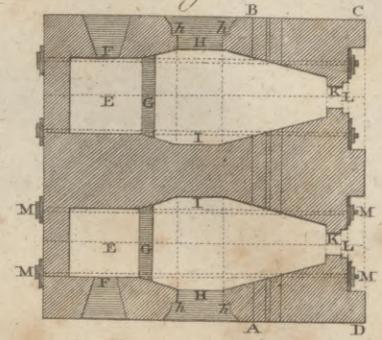


Fig. 12.



Fig. 14.

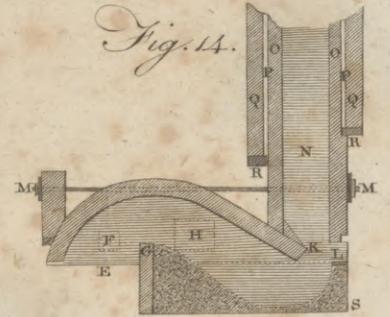


Fig. 15.

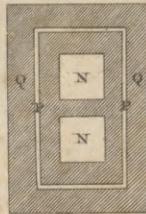


Fig. 20.

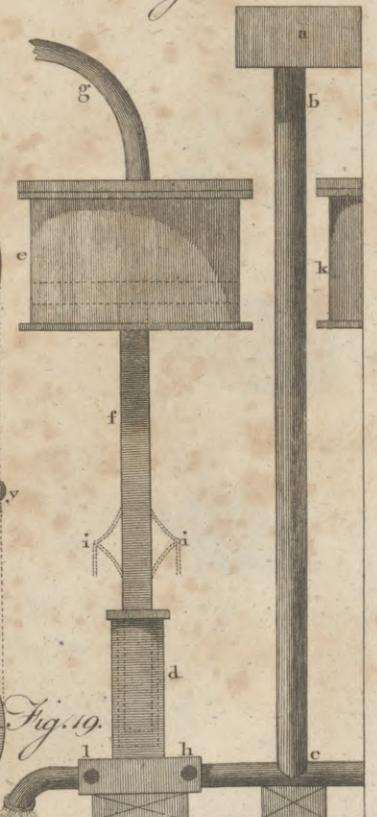


Fig. 10.

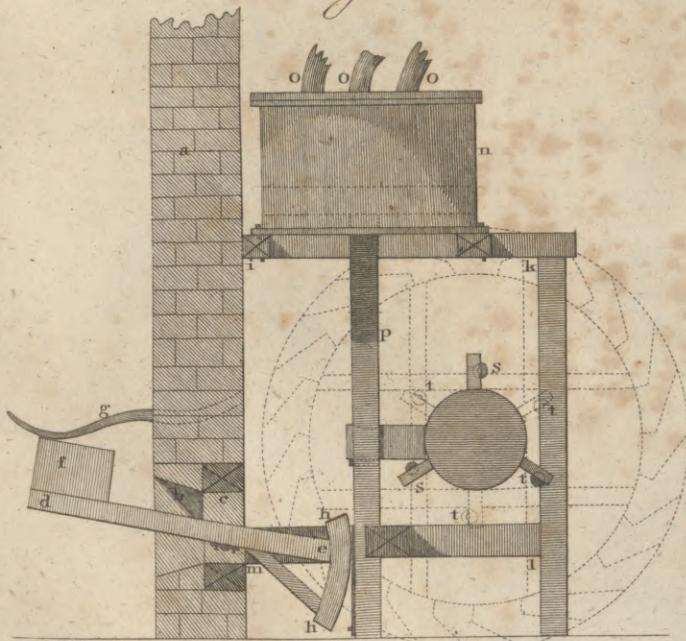


Fig. 18.

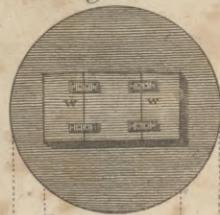


Fig. 17.

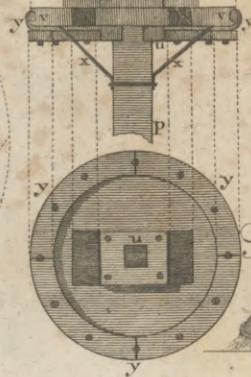


Fig. 19.



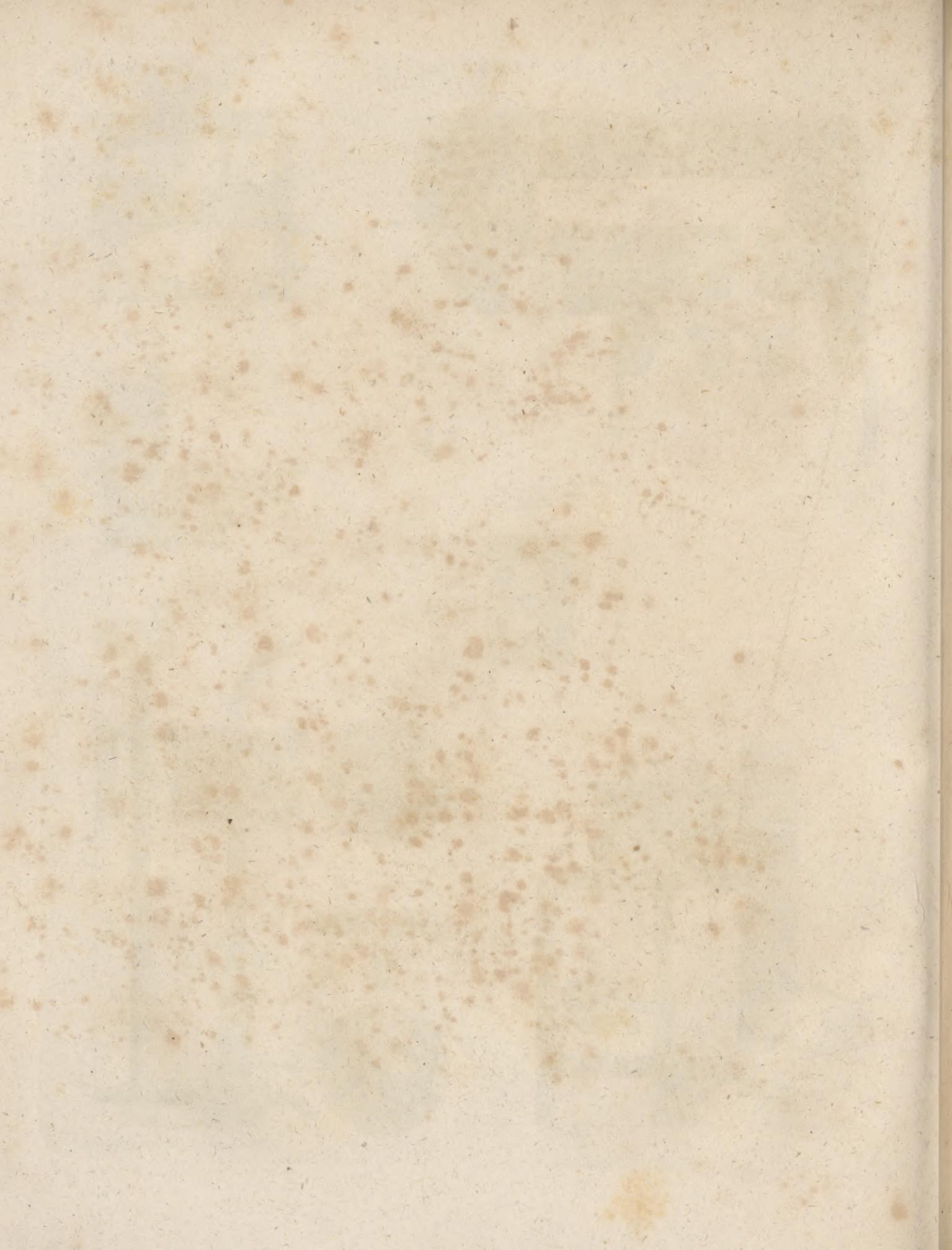


Fig. 21.

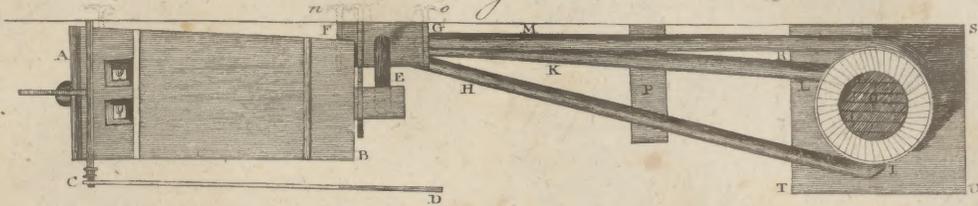


Fig. 24.



Fig. 27.

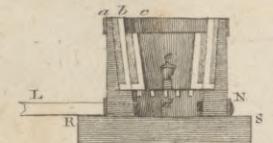


Fig. 23.

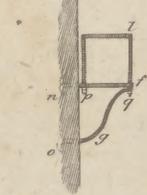


Fig. 25.



Fig. 26.

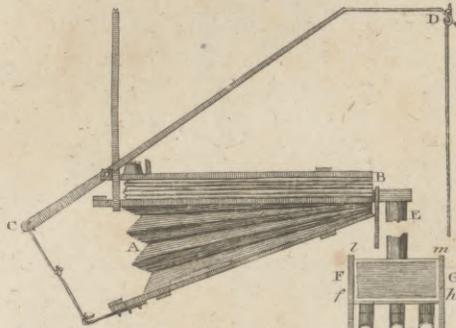
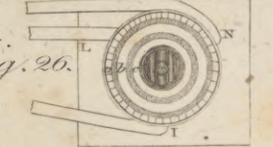


Fig. 22.

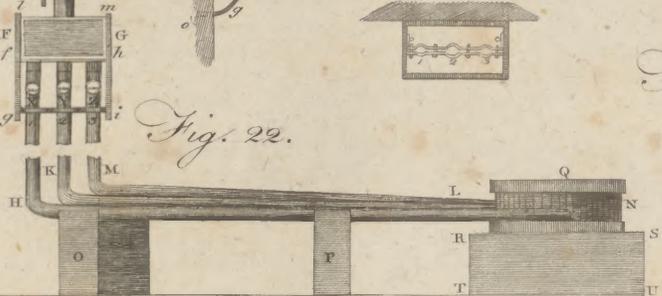


Fig. 28.

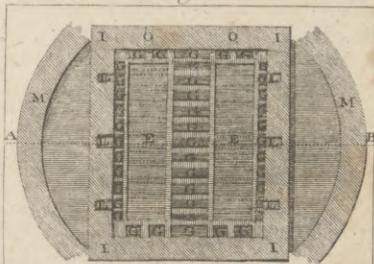


Fig. 30.

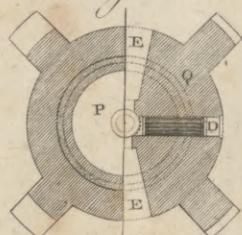


Fig. 32.

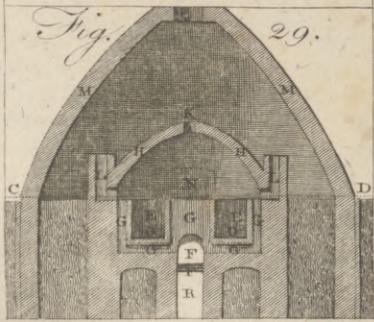


Fig. 29.

Fig. 31.

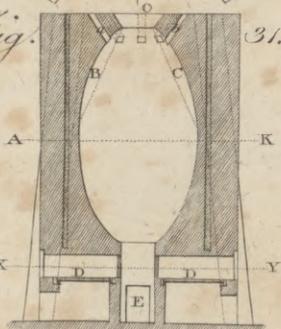


Fig. 33.

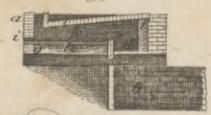


Fig. 34.



Fig. 35.

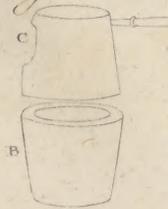


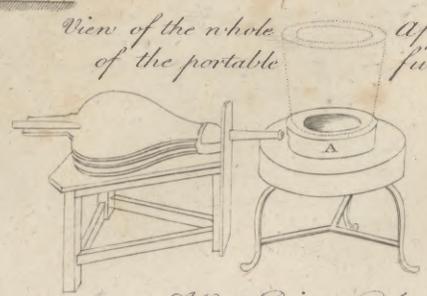
Fig. 36.



Fig. 37.



View of the whole of the portable apparatus furnace.





**Furnace.** but most saws are too thick, and when a little used, the teeth get rounded off, which makes them work intolerably slow. I have found by far the best tool to be an old table knife, or rather two of them, worn thin by use, and hacked and jagged as deeply as possible, by striking the edges strongly against each other. These work well and expeditiously, and when they become dull are again roughened by the same simple means. The holes may be drilled with a common gimlet of the largest size, and a little steadiness of hand will easily enable the operator to give them the oblique direction with sufficient accuracy; for much is not required. To make a smooth surface to the parts intended to adapt to each other, first wear them down a little with the soft fire-brick, and then grind them with water on a flat free-stone (a sink-stone for example), and lastly make them entirely fit by rubbing one surface on the other.

“ No luting of any kind is ever required; so that the whole may be set up and taken down immediately. Nor is it necessary to bind the pots with metal hoops; for they are thick enough to endure considerable blows without breaking; and yet they will bear, without cracking, to be heated as suddenly and intensely as possible. In short, the black-lead crucible seems to be the best material that could possibly be devised for these purposes.

“ The heat which this little furnace will afford is so intense, and so much more than would at first sight be expected from so trifling an apparatus, that it was only the accidental fusion of a thick piece of cast iron in it that led us to suspect its power. The utmost heat which we have procured in this furnace has been 167° of a Wedgwood pyrometer piece, which was withdrawn from a very small Hessian crucible when actually sinking down in a state of porcellanous fusion. A steady heat of 150° to 155° may be usually depended on, if the fire be properly managed and the bellows worked with vigour. This is sufficient for most operations in chemistry; and the economy in time and fuel is extreme, since a furnace of the given dimensions will very well raise to the above point of heat in from five to ten minutes a Hessian crucible of such a diameter, that the average thickness of burning fuel around its bottom is not more than one inch and a half. A smaller crucible will take a higher heat, but at the risk of its softening and falling in by the weight of the incumbent fuel.

“ Coak, or common cinders taken from the fire just when the coal ceases to blaze, and broken into very small pieces, with the dust sifted away, form the best fuel for the highest heat. A light spongy kind of coak, formed of a mixture of coal and charcoal, called *Davey's patent coal*, also answers extremely well. Charcoal alone has not weight enough, when broken so small as it must be to lie close in this little fire-place, to withstand the force of the blast when very violent. A bit of lighted paper, a handful of the very small charcoal, called in London *small coal*, and ten or a dozen strokes of the bellows, will kindle the fire in almost as many seconds.

“ Various little alterations and arrangements, which will readily occur to the practical chemist, will fit this little apparatus for distillation with an earthen retort, heating a gun-barrel passed through the fire, bending glass tubes, &c.

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“ I shall only add, that the dimensions of this furnace were determined merely by the circumstance of having at hand pieces of black-lead pots of this size, so that doubtless they may be varied without any diminution, and probably with some increase of the effect. The same may be said of the number of holes; for in another instance four appeared to answer as well as six, with this difference, however, that, by long working, the melted slag of the coak will now and then partially block up one or two of the holes; on which account perhaps the greater number is preferable.\*

**FURNITURE**, a term in dialling, which denotes certain additional points and lines drawn on a dial, by way of ornament, such as the signs of the zodiac, length of days, parallels of declination, azimuths, points of the compass, meridians of chief cities, Babylonian, Jewish, or Italian hours, &c. \* *Pbil. Mag. xvii. 106.*

**FUROR UTERINUS**, a disorder peculiar to women. See *MEDICINE Index*.

**FURR**, or **FUR**, in *Commerce*, signifies the skin of several wild beasts, dressed in alum with the hair on; and used as a part of dress, by princes, magistrates, and others. The kinds most in use are those of the ermine, sable, castor, hare, rabbit, &c. See *MUSEELA*.

It was not till the later ages that the furs of beasts became an article of luxury. The more refined nations of ancient times never made use of them; those alone whom the former stigmatized as barbarians were clothed in the skins of animals. Strabo describes the Indians covered with the skins of lions, panthers, and bears; and Seneca, the Scythians clothed with the skins of foxes and the lesser quadrupeds. Virgil exhibits a picture of the savage Hyperboreans, similar to that which our late circumnavigators can witness in the clothing of the wild Americans, unseen before by any polished people.

*Gens effræna virùm Riphæo unditur Euro;  
Et pecudum fulvis velantur corpora setis.*

Most part of Europe was at this time in similar circumstances. Cæsar might be as much amazed with the skin-dressed heroes of Britain, as our celebrated Cook was at those of his new-discovered regions. What time has done to us, time, under humane conquerors, may effect for them. Civilization may take place; and those spoils of animals, which are at present essential for clothing, become the mere objects of ornament and luxury.

It does not appear that the Greeks or old Romans ever made use of furs. It originated in those regions where they most abounded, and where the severity of the climate required that species of clothing. At first it consisted of the skins only, almost in the state in which they were torn from the body of the beast; but as soon as civilization took place, and manufactures were introduced, furs became the lining of the dress, and often the elegant facing of the robes. It is probable that the northern conquerors introduced the fashion into Europe. We find, that about the year 522, when Totila king of the Visigoths reigned in Italy, the Suethons (a people of modern Sweden), found means, by help of the commerce of numberless intervening people, to transmit, for the use of the Romans, *saphilinas pelles*, the precious skins of the sables. As luxury advanced, furs, even of the most valuable

species, were used by princes as linings for their tents: thus Marco Polo, in 1252, found those of the Cham of Tartary lined with ermines and fables. He calls the last *sibelines* and *sambolines*. He says that those and other precious furs were brought from countries far north; from the *land of Darkness*, and regions almost inaccessible by reason of morasses and ice. The Welsh set a high value on furs as early as the time of Howel Dda, who began his reign about 940. In the next age, furs became the fashionable magnificence of Europe. When Godfrey of Boulogne and his followers appeared before the emperor Alexis Comnenus, on their way to the Holy Land, he was struck with the richness of their dresses, *tam ex ostro quam aurifrigio et niveo opere harmelino et ex mardrino grifioque et vario*. How different was the advance of luxury in France from the time of their great monarch Charlemagne, who contented himself with the plain fur of the otter! Our Henry I. wore furs; yet in his distress was obliged to change them for warm Welsh flannel. But in the year 1337 the luxury had got to such a head, that Edward III. enacted, that all persons who could not spend a hundred a-year should absolutely be prohibited the use of this species of finery. These, from their great expence, must have been foreign furs, obtained from the Italian commercial states, whose traffic was at this period boundless. How strange is the revolution in the fur-trade! The north of Asia at that time supplied us with every valuable kind; at present we send, by means of the possession of Hudson's Bay, furs, to immense amount, even to Turkey and the distant China.

*History of the Fur Trade.*—During Captain Cook's last voyage to the Pacific ocean, besides the various scientific advantages which were derived from it, a new source of wealth was laid open to future navigators, by trading for furs of the most valuable kind on the north-west coast of America. The first vessel which engaged in the new branch of trade pointed out by that great navigator, was equipped by some gentlemen in China. She was a brig of 60 tons and 20 men, commanded by James Hanna. She sailed from the Typa the end of April 1785; proceeded to the northward, along the coast of China; passed through Diemen's straits, the south end of Japan; and arrived at Nootka in August following. Soon after her arrival, the natives, whom Captain Cook had left unacquainted with the effect of fire-arms, tempted probably by the diminutive size of the vessel (scarce longer than some of their own canoes) and the small number of her people, attempted to board her in open day; but were repulsed with considerable slaughter. This was the introduction to a firm and lasting friendship. Captain Hanna cured such of the Indians as were wounded; an unreserved confidence took place; they traded fairly and peaceably; a valuable cargo of furs was procured; and the bad weather setting in, he left the coast in the end of September, touched at the Sandwich islands, and arrived at Macao the end of December of the same year.

Captain Hanna sailed again from Macao in May 1786, in the snow Sea-Otter of 120 tons and 30 men, and returned to Macao in February 1787. In this second voyage he followed his former track, and arrived at Nootka in August; traced the coast from

thence as far as 53 degrees, and explored the extensive found discovered a short time before by Mr Strange, and called by him Queen Charlotte's found, the latitude of which is 51 degrees north, longitude 128 west.

The snow Lark, Captain Peters, of 220 tons and 40 men, sailed from Macao in July 1786. Her destination was Kamtschatka (for which she was provided with a suitable cargo of arrack, tea, &c.), Copper islands, and the N. W. coast. Captain Peters was directed to make his passage between Japan and Corea, and examine the islands to the north of Japan, said to be inhabited by hairy people; which, if Captain Cook had lived, would not have been left to the French to determine. No account having been received of this vessel since her departure, there is every reason to fear she has perished.

In the beginning of 1786, two coppered vessels were fitted out at Bombay, under the direction of James Strange, Esq; who was himself a principal owner. These vessels were, the snow Captain Cook of 300 tons, and snow Experiment of 100 tons. They proceeded in company from the Malabar coast to Batavia; passed through the straits of Macassar, where the Experiment was run upon a reef, and was obliged to haul ashore upon Borneo to repair; from thence they steered to the eastward of the Palaos islands; made Sulphur island; and arrived at Nootka the end of June following. From Nootka, where they left their surgeon's mate (Mackay) to learn the language and collect skins against their intended return (but who was brought away in the Imperial Eagle the following year), they proceeded along the coast to Queen Charlotte's found, of which they were the first discoverers; from thence in a direct course to Prince William's found. After some stay there, the Experiment proceeded to Macao (their vessels being provided with passes by the governor-general of Goa): the Captain Cook endeavoured to get to Copper island, but without success, being prevented by constant west winds.

Two coppered vessels were also fitted out by a society of gentlemen in Bengal, viz. the snow Nootka of 200 tons, and the snow Sea Otter of 100 tons, commanded by John Meares and William Tipping, lieutenants in the royal navy. The Nootka sailed in March 1786 from Bengal; came through the China seas; touched at the Bashees, where they were very civilly treated by the Spaniards, who have taken possession of these islands; arrived at Oonalashka the beginning of August; found there a Russian galliot and some furriers; discovered accidentally near Cape Greville a new strait near Cook's river, 15 leagues wide and 30 long; saw some Russian hunters in a small bay between Cape Elizabeth and Cape Bear; and arrived in Prince William's found the end of September. They determined wintering in Snug Corner Cove, lat. 60. 30. in preference to going to the Sandwich islands, which seem placed by Providence for the comfort and refreshment of the adventurers in this trade, and were frozen up in this gloomy and frightful spot from the end of November to the end of May. By the severity of the winter they lost their third and fourth mates, surgeon, boatswain, carpenter, and cooper, and twelve of the fore-mast-men; and the remainder were so enfeebled as to be under the necessity of apply-

Furr. ing to the commanders of the King George and Queen Charlotte, who just at this time arrived in the sound, for some hands to assist in carrying the vessel to the Sandwich islands, where, giving over all further thoughts of trade, they determined (after getting a sea-stock of fish off Cape Edgecumbe) immediately to proceed. The Nootka arrived at Macao the end of October 1787.

The Imperial Eagle, Captain Barkley, fitted out by a society of gentlemen at Ostend, sailed from Ostend the latter end of November 1786; went into the bay of All Saints; from thence, without touching any where, to the Sandwich islands, and arrived at Nootka the beginning of June; from thence to the south, as far as 47° 30', in which space he discovered some good and spacious harbours. In the lat. of 47° 46', lost his second mate, purser, and two seamen, who were upon a trading party with the long-boat, and imprudently trusting themselves ashore unarmed, were cut off by the natives. This place seems to be the same that Don Antonio Mourelle calls the *Ilha de los Dolores*, where the Spaniards going ashore to water, were also attacked and cut off.

The King George of 320, and the Queen Charlotte of 200 tons, commanded by Captains Portlock and Dixon, who served under Captain Cook in his last voyage, were fitted out by a society of gentlemen in England, who obtained a privilege to trade to the north-west coast of America, from the South Sea and East India companies.

These vessels sailed from England the beginning of September 1785; touched at the Falkland islands; Sandwich islands, and arrived at Cook's river in the month of August. From thence, after collecting a few furs, they steered in the end of September for Prince William's sound, intending, it is said, to winter there; but were prevented entering, by heavy storms and extreme bad weather, which obliged them to bear away, and seek some other part of the coast to winter at. The storms and bad weather accompanied them till they arrived off Nootka sound, when they were so near the shore, that a canoe came off to them: but though thus near accomplishing their purpose, a fresh storm came on, and obliged them finally to bear away for the Sandwich islands, where they remained the winter months; and returning again to the coast, arrived in Prince William's sound the middle of May. The King George remained in Prince William's sound; and during her stay, her long-boat discovered a new passage from the sound into Cook's river. The Queen Charlotte proceeded along the coast to the south; looked into Behring's bay, where the Russians have now a settlement; examined that part of the coast from 55° to 50°, which was not seen by Captain Cook, and which consists of a cluster of islands, called by Captain Dixon *Queen Charlotte's Islands*, at a considerable distance from the main, which is thus removed farther to the eastward than it was supposed to be: some part of the continent may, however, be seen from the east side of these islands; and it is probable the distance does not anywhere exceed 50 leagues. On this estimation, Hudson's House, lat. 53°, long. 106° 27' west, will not be more than 800 miles distant from that part of this coast in the same parallel. It is therefore not improbable, that the enterprising spirit of our Cana-

dian furriers may penetrate to this coast (the communication with which is probably much facilitated by lakes or rivers), and add to the comforts and luxuries of Europe this invaluable fur, which in warmth, beauty, and magnificence, far exceeds the richest furs of Siberia. Queen Charlotte's islands are inhabited by a race of people differing in language, features, and manners, from all the other tribes of this coast. Among other peculiarities, they are distinguished by a large incision in the under lip, in which is inserted a piece of polished wood, sometimes ornamented with mother of pearl shell, in shape and size like a weaver's shuttle, which undoubtedly is the most effectual mode of deforming the human face divine that the ingenious depravity of taste of any savage nation has yet discovered. These ships, after disposing of their furs in China, were loaded with teas on account of the English company, sailed from Wampoa, and arrived in England, after an absence of three years.

The year after the departure of the King George and Queen Charlotte, the same society to which they belonged fitted out two other vessels, viz. the Princess Royal of 60 tons, and the Prince of Wales of 200 tons, commanded by Captains Colnet and Duncan, the former of whom had served under Captain Cook. These vessels left England in August 1786; touched at New Year's harbour on Staten Land, where they left an officer and 12 men to kill seals against the arrival of a vessel which was to follow them from England; from thence they proceeded directly to Nootka, where they arrived the 6th of July, sickly and in bad condition, and found here the Imperial Eagle, which had left Europe some months after them. Leaving Nootka, they steered along the shore to the northward, and soon after fell in with the Queen Charlotte.

In the beginning of 1788, Captain Mears sailed again with two other vessels, the Felice, which he commanded himself, and the Iphigenia, Captain Douglas, to Nootka sound. Here he purchased of the chief of the district a spot, on which he built a house for his residence and more convenient intercourse with the natives, hoisting the British colours thereon, surrounding it with a breast-work, and mounting a three pounder on the front. Having so done, he sent Mr Douglas in the Iphigenia to trade along the northern coast, while he himself proceeded to the south; and by presents to the chiefs obtained the ports Cox and Effingham, and the promise of an exclusive trade with the natives of the district, and also some other places, which he took possession of in the name of the king. Captain Douglas likewise, by presents to the chiefs of the countries he visited, obtained similar privileges, no other European vessel having sailed there before him.

On their return to Nootka, they found a vessel finished which the commander had laid down before his departure. This, which he named the North West America, he left at Nootka with the Iphigenia, while he sailed with a cargo of furs in the Felice to China.

A few days after his arrival at China, two vessels, the Prince of Wales and Princess Royal, came to Canton from their trading voyage above mentioned. Captain Mears, fearing a competition of interests might be injurious to both parties, proposed a copartnership,

Furr.

which was mutually agreed to; and another ship was purchased by the firm, and called the *Argonaut*. In the month of April 1787, Captain Mears gave Mr Colnet the command of the *Princess Royal* and *Argonaut*, which were loaded with stores and articles estimated sufficient for three years trade, besides several artificers, and near 70 Chinese, who intended to become settlers on the north-west coast of America, under protection of the new company.

In the mean while, the *Iphigenia*, and North-West America (the vessel built at Nootka) having wintered in Sandwich islands, returned to Nootka in the latter end of April. Soon after which, two Spanish ships of war, under the command of Don Martinez, anchored in the sound. For a few days mutual civilities passed between the Spanish captain and Mr Douglas; but at the end of about a week, Don Martinez summoned the latter on board his own ship the *Princesa*, telling him he was his prisoner, and that the king of Spain had commanded him, Don Martinez, to seize all vessels he should find on that coast. He therefore instructed his officers to take possession of the *Iphigenia*, which they accordingly did in the name of his Catholic majesty; and the officers and crew were conveyed as prisoners on board the Spanish ships, where they were put in irons, and otherwise ill treated. Immediately after this, Don Martinez took possession of the little settlement, hoisting the standard of Spain, and modestly declaring all the lands from Cape Horn to 60 degrees north latitude belonged to his master. To aggravate the insult, he forcibly employed the crew of the *Iphigenia* in building batteries, &c. and offered no kind of violence to two American vessels that were at the same time in the harbour. At this time the North-West America was sent to explore the Archipelago of St Lazarus. On her return to Nootka, she met with a similar treatment, and the skins she had collected were seized, with the rest of her cargo.

A few days after the *Princess Royal* (which we have mentioned as leaving Canton in company with the *Argonaut*) arrived. The Spanish commander, for reasons that do not appear, suffered her to depart. The skins collected by the North West-America were shipped on board her for the benefit of her owner, and she proceeded to trade in the neighbouring isles. On the 3d of July, the *Argonaut* arrived at the sound; and Don Martinez, after making every profession of civility to Mr Colnet the commander, took possession of the said ship in the name of his master, and made prisoners of the crew. Soon after, the *Princess Royal* returning to receive instructions from Mr Colnet, director of the enterprise, was seized by the Spanish captain.

The crews of the British vessels were differently disposed of; some sent to China by the American vessels, and others to Spanish America: but the Chinese were all detained, and employed in the mines which were opened on the lands purchased by Captain Mears. What these mines consisted of, we are nowhere informed. Mr Colnet was so much affected at the failure of the enterprise, as to be deprived of reason.

This, as soon as known, occasioned a spirited representation from the British court to that of Spain; at the same time that vigorous preparations were made for war in case adequate satisfaction should be refused.

Matters, however, were prevented from coming to extremities, by a compliance on the part of Spain, after many delays and much artifice of negotiation, with the requisitions of Britain: in consequence of which, among other advantages unnecessary to be here recited, the whole trade from California to China is completely laid open; and the British allowed the full exercise of navigation and commerce in those parts of the world which were the subject of discussion.

In some accounts of the voyages above mentioned, the fur trade in those parts has been greatly magnified. In that published by Captain Portlock, however, this officer observes, that the gains hitherto have certainly not been enviably great; though the merchants have no doubt found the trade lucrative.

*History of the Fur Trade from Canada to the North-west.*—The following account of this trade is extracted from Mr Mackenzie's Narrative of his Voyages and Travels from Montreal, through the North-west Continent of America, and to the Pacific ocean.

“The fur trade, he says, from the earliest settlement of Canada, was considered of the first importance to that colony. The country was then so populous, that, in the vicinity of the establishments, the animals whose skins were precious, in a commercial view, soon became very scarce, if not altogether extinct. They were, it is true, hunted at former periods, but merely for food and clothing. The Indians, therefore, to procure the necessary supply, were encouraged to penetrate into the country, and were generally accompanied by some of the Canadians, who found means to induce the remotest tribes of natives to bring the skins which were most in demand, to their settlements, in the way of trade.

“It is not necessary for me to examine the cause, but experience proves that it requires much less time for a civilized people to deviate into the manners and customs of savage life, than for savages to rise into a state of civilization. Such was the event with those who thus accompanied the natives on their hunting and trading excursions; for they became so attached to the Indian mode of life, that they lost all relish for their former habits and native homes. Hence they derived the title of *Coyreurs des Bois*, became a kind of pedlars, and were extremely useful to the merchants engaged in the fur trade; who gave them the necessary credit to proceed on their commercial undertakings. Three or four of these people would join their stock, put their property into a birch-bark canoe, which they worked themselves, and either accompanied the natives in their excursions, or went at once to the country where they knew they were to hunt. At length, these voyages extended to 12 or 15 months, when they returned with rich cargoes of furs, and followed by great numbers of the natives. During the short time requisite to settle their accounts with the merchants, and procure fresh credit, they generally contrived to squander away all their gains, when they returned to their favourite mode of life: their views being answered, and their labour sufficiently rewarded, by indulging themselves in extravagance and dissipation during the short space of one month in 12 or 15.

“The indifference about amassing property, and the pleasure of living free from all restraint, soon brought on a licentiousness of manners which could not long escape the vigilant observation of the missionaries, who had

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Furr. had much reason to complain of their being a disgrace to the Christian religion; by not only swerving from its duties themselves, but by thus bringing it into disrepute with those of the natives who had become converts to it; and, consequently, obstructing the great object to which those pious men had devoted their lives. They, therefore, exerted their influence to procure the suppression of these people, and accordingly, no one was allowed to go up the country to traffic with the Indians, without a licence from the government.

“ At length, military posts were established at the confluence of the different large lakes of Canada, which, in a great measure, checked evil consequences that followed from the improper conduct of these foresters, and, at the same time, protected the trade. Besides, a number of able and respectable men retired from the army, prosecuted the trade in person, under their respective licences, with great order and regularity, and extended it to such a distance, as, in those days, was considered to be an astonishing effort of commercial enterprize. These persons and the missionaries having combined their views at the same time, secured the respect of the natives, and the obedience of the people necessarily employed in the laborious parts of this undertaking. These gentlemen denominated themselves commanders, and not traders, though they were intitled to both those characters: and, as for the missionaries, if sufferings and hardships in the prosecution of the great work which they had undertaken, deserved applause and admiration, they had an undoubted claim to be admired and applauded: they spared no labour and avoided no danger in the execution of their important office; and it is to be seriously lamented, that their pious endeavours did not meet with the success which they deserved: for there is hardly a trace to be found, beyond the cultivated parts, of their meritorious functions.

“ This cause of the failure must be attributed to a want of due consideration in the mode employed by the missionaries to propagate the religion of which they were the zealous ministers. They habituated themselves to the savage life, and naturalised themselves to the savage manners, and, by thus becoming dependant, as it were, on the natives, they acquired their contempt rather than their veneration. If they had been as well acquainted with human nature, as they were with the articles of their faith, they would have known, that the uncultivated mind of an Indian must be disposed by much preparatory method and instruction to receive the revealed truths of Christianity, to act under its sanctions, and be impelled to good by the hope of its rewards, or turned from evil by the fear of its punishments. They should have begun their work by teaching some of those useful arts which are the inlets of knowledge, and lead the mind by degrees to objects of higher comprehension. Agriculture so formed to fix and combine society, and so preparatory to objects of superior consideration, should have been the first thing introduced among a savage people: it attaches the wandering tribe to that spot where it adds so much to their comforts; while it gives them a sense of property, and of lasting possession, instead of the uncertain hopes of the chase, and the fugitive produce of uncultivated wilds. Such were the means by which the forests of Paraguay were converted

into a scene of abundant cultivation, and its savage inhabitants introduced to all the advantages of a civilized life.

“ The Canadian missionaries should have been contented to improve the morals of their own countrymen, so that by meliorating their character and conduct, they would have given a striking example of the effect of religion in promoting the comforts of life to the surrounding savages; and might by degrees have extended its benign influence to the remotest region of that country, which was the object, and intended to be the scene, of their evangelic labours. But by bearing the light of the gospel at once to the distance of 2500 miles from the civilized part of the colonies, it was soon obscured by the cloud of ignorance that darkened the human mind in those distant regions.

“ The whole of their long route I have often travelled, and the recollection of such a people as the missionaries having been there, was confined to a few superannuated Canadians, who had not left that country since the cession to the English, in 1763, and who particularly mentioned the death of some, and the distressing situation of them all. But if these religious men did not attain the objects of their persevering piety, they were, during their mission, of great service to the commanders who engaged in those distant expeditions, and spread the fur trade as far west as the bank of the Saskatchewan river, in 53° north latitude, and longitude 102° west.

“ At an early period of their intercourse with the savages, a custom was introduced of a very excellent tendency, but is now unfortunately discontinued, of not selling any spirituous liquor to the natives. This admirable regulation was for some time observed, with all the respect due to the religion by which it was sanctioned, and whose severest censures followed the violation of it. A painful penance could alone restore the offender to the suspended rites of the sacrament. The casuistry of trade, however, discovered a way to gratify the Indians with their favourite cordial, without incurring the ecclesiastical penalties, by giving, instead of selling it to them.

“ But notwithstanding all the restrictions with which commerce was oppressed under the French government, the fur trade was extended to the immense distance which has been already stated; and surmounted many most discouraging difficulties, which will be hereafter noticed; while, at the same time, no exertions were made from Hudson's Bay to obtain even a share of the trade of a country which, according to the charter of that company, belonged to it, and, from its proximity, is so much more accessible to the mercantile adventurer.

“ Of these trading commanders, I understood, that two attempted to penetrate to the Pacific ocean, but the utmost extent of their journey I could never learn; which may be attributed, indeed, to a failure of the undertaking.

“ For some time after the conquest of Canada, this trade was suspended, which must have been very advantageous to the Hudson's Bay company, as all the inhabitants to the westward of Lake Superior were obliged to go to them for such articles as their habitual use had rendered necessary. Some of the Canadians who had lived long with them, and were become attached

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tached to a savage life, accompanied them thither annually, till mercantile adventurers again appeared from their own country, after an interval of several years, owing, I suppose, to an ignorance of the country in the conquerors, and their want of commercial confidence in the conquered. There were, indeed, other discouragements, such as the immense length of the journey necessary to reach the limits beyond which this commerce must begin; the risk of property; and the expences attending such a long transport; and an ignorance of the language of those who, from their experience, must be necessarily employed as the intermediate agents between them and the natives. But, notwithstanding these difficulties, the trade, by degrees, began to spread over different parts to which it had been carried by the French, though at a great risk of the lives, as well as the property, of their new possessors, for the natives had been taught by their former allies to entertain hostile dispositions towards the English, from their having been in alliance with their natural enemies the Iroquois; and there were not wanting a sufficient number of discontented, disappointed people to keep alive such a notion; so that for a long time they were considered and treated as objects of hostility. To prove this disposition of the Indians, we have only to refer to the conduct of Pontiac, at Detroit, and the surpris and taking of Michilimakinac, about this period.

"Hence it arose, that it was so late as the year 1766, before which the trade I mean to consider commenced from Michilimakinac. The first who attempted it were satisfied to go the length of the river Camenistiquia, about 30 miles to the eastward of the Grande Portage, where the French had a principal establishment, and was the line of their communication with the interior country. It was once destroyed by fire. Here they went, and returned successful in the following spring to Michilimakinac. Their success induced them to renew their journey, and incited others to follow their example. Some of them remained at Camenistiquia, while others proceeded to and beyond the Grande Portage, which since that time has become the principal entrepôt of that trade, and is situated in a bay, in latitude 48. north, and longitude 90. west. After passing the usual season there, they went back to Michilimakinac as before, and encouraged by the trade, returned in increased numbers. One of these, Thomas Curry, with a spirit of enterprise superior to that of his contemporaries, determined to penetrate to the furthest limits of the French discoveries in that country; or at least till the frost should stop him. For this purpose he procured guides and interpreters, who were acquainted with the country, and with four canoes arrived at Fort Bourbon, which was one of their posts, at the west end of the Cedar lake, on the waters of the Saskatchewan. His risk and toil were well recompensed, for he came back the following spring with his canoes filled with fine furs, with which he proceeded to Canada, and was satisfied never again to return to the Indian country.

"From this period people began to spread over every part of the country, particularly where the French had established settlements."\*

After continuing the detail of the history of the trade for which we must refer to the work itself, Mr Mackenzie proceeds to inform us of the concern which he

himself had in it, when in the year 1785, he was assumed as a partner, on condition of going into the Indian country to take an active share in the business. After some struggles, from jealousy and rivalry, with another company who had been some time in the trade, a union between the two companies was formed. This happened in 1787, and the following is Mr Mackenzie's account of its success, and of the extent and mode of conducting this trade.

"This commercial establishment, "he proceeds," was now founded on a more solid basis than any hitherto known in the country; and it not only continued in full force, vigour, and prosperity, in spite of all interference from Canada, but maintained at least an equal share of advantage with the Hudson's Bay Company, notwithstanding the superiority of their local situation. The following account of this self-erected concern will manifest the cause of its success.

"It assumed the title of the North-West Company, and was no more than an association of commercial men, agreeing among themselves to carry on the fur trade, unconnected with any other business, though many of the parties engaged had extensive concerns altogether foreign to it. It may be said to have been supported entirely upon credit; for, whether the capital belonged to the proprietor, or was borrowed, it equally bore interest, for which the association was annually accountable. It consisted of twenty shares, unequally divided among the persons concerned. Of these, a certain proportion was held by the people who managed the business in Canada, and were styled agents for the Company. Their duty was to import the necessary goods from England, store them at their own expence at Montreal, get them made up into the articles suited to the trade, pack and forward them, and supply the cash that might be wanting for the outfits; for which they received, independent of the profit on their shares, a commission on the amount of the accounts, which they were obliged to make out annually, and keep the adventure of each year distinct. Two of them went annually to the Grande Portage, to manage and transact the business there, and on the communication at Detroit, Michilimakinac, St Mary's, and Montreal, where they received stores, packed up, and shipped the company's furs for England, on which they had also a small commission. The remaining shares were held by the proprietors, who were obliged to winter and manage the business of the concern with the Indians, and their respective clerks, &c. They were not supposed to be under any obligation to furnish capital, or even credit. If they obtained any capital by the trade, it was to remain in the hands of the agents; for which they were allowed interest. Some of them, from their long services and influence, held double shares, and were allowed to retire from the business at any period of the existing concern, with one of those shares, naming any young man in the company's service to succeed him in the other. Seniority and merit were, however, considered as affording a claim to the succession, which, nevertheless, could not be disposed of without the concurrence of the majority of the concern; who, at the same time relieved the succeeding person from any responsibility respecting the share that he transferred, and accounted for it according to the annual value or rate of the property; so that the seller could have no advantage but that of getting the

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\* Gen. Hist. of the Fur Trade, p 1.

*Furr.* the share of stock which he retained realised, and receiving for the transferred share what was fairly determined to be the worth of it. The former was also discharged from all duty, and became a dormant partner. Thus, all the young men who were not provided for at the beginning of the contract, succeeded in succession to the character and advantages of partners. They entered into the company's service for five or seven years, under such expectations, and their reasonable prospects were seldom disappointed: there were, indeed, instances when they succeeded to shares, before their apprenticeship was expired, and it frequently happened that they were provided for while they were in a state of article clerkship. Shares were transferable only to the concern at large, as no person could be admitted as a partner who had not served his time to the trade. The dormant partner indeed might dispose of his interest to any one he chose, but if the transaction were not acknowledged by his associates, the purchaser could only be considered as his agent or attorney. Every share had a vote, and two-thirds formed a majority. This regular and equitable mode of providing for the clerks of the company, excited a spirit of emulation in the discharge of their various duties, and in fact, made every agent a principal, who perceived his own prosperity to be immediately connected with that of his employers. Indeed, without such a spirit, such a trade could not have become so extended and advantageous, as it has been and now is.

" In 1788, the gross amount of the adventure for the year did not exceed 40,000l.: but by the exertion, enterprise, and industry of the proprietors, it was brought in eleven years to triple that amount and upwards; yielding proportionate profits, and surpassing, in short, any thing known in America.

" Such, therefore, being the prosperous state of the company, it, very naturally, tempted others to interfere with the concern in a manner by no means beneficial to the company, and commonly ruinous to the undertakers.

" In 1798 the concern underwent a new form, the shares were increased to forty-six, new partners being admitted, and others retiring. This period was the termination of the company, which was not renewed by all the parties concerned in it, the majority continuing to act upon the old stock, and under the old firm; the others beginning a new one; and it now remains to be decided, whether two parties, under the same regulations and by the same exertions, though unequal in number, can continue to carry on the business to a suc-

cessful issue. The contrary opinion has been held, which, if verified, will make it the interest of the parties again to coalesce; for neither is deficient in capital to support their obstinacy in a losing trade, as it is not to be supposed that either will yield on any other terms than perpetual participation.

" It will not be superfluous in this place, to explain the general mode of carrying on the fur trade.

" The agents are obliged to order the necessary goods from England in the month of October, eighteen months before they can leave Montreal; that is, they are not shipped from London until the spring following, when they arrive in Canada in the summer. In the course of the following winter they are made up into such articles as are required for the savages; they are then packed into parcels of ninety pounds weight each, but cannot be sent from Montreal until the May following; so that they do not get to market until the ensuing winter, when they are exchanged for furs, which come to Montreal the next fall, and from thence are shipped, chiefly to London, where they are not sold or paid for before the succeeding spring, or even as late as June; which is forty-two months after the goods were ordered in Canada; thirty-six after they had been shipped from England; and twenty-four after they had been forwarded from Montreal; so that the merchant, allowing that he has twelve months credit, does not receive a return to pay for those goods, and the necessary expences attending them, which is about equal to the value of the goods themselves, till two years after they are considered as cash, which makes this a very heavy business. There is even a small proportion of it that requires twelve months longer to bring round the payment, owing to the immense distance it is carried, and from the shortness of the seasons, which prevent the furs, even after they are collected, from coming out of the country for that period (A).

" The articles necessary for this trade, are coarse woollen cloths of different kinds; milled blankets of different sizes; arms and ammunition; twist and carrot tobacco; Manchester goods; linens, and coarse sheetings; thread, lines, and twine; common hardware; cutlery and ironmongery of several descriptions; kettles of brass and copper, and sheet-iron; silk and cotton handkerchiefs; hats, shoes, and hose; calicoes and printed cottons, &c. &c. &c. Spirituous liquors and provisions are purchased in Canada. These, and the expence of transport to and from the Indian country, including wages to clerks, interpreters, guides, and canoe-men, with the expence of making up the goods for the

(A) " This will be better illustrated by the following statement :

We will suppose the goods for 1798;	
The orders for the goods are sent to this country	25th Oct. 1796.
They are shipped from London	March 1797.
They arrive in Montreal	June 1797.
They are made up in the course of that summer and winter.	
They are sent from Montreal	May 1798.
They arrive in the Indian country, and are exchanged for furs the following winter	1798.9.
Which furs come to Montreal	Sept. 1799.
And are shipped for London, where they are sold in March and April, and paid for in	
May or June	1800.

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the market, form about half the annual amount against the adventure.

" This expenditure in Canada ultimately tends to the encouragement of British manufactory, for those who are employed in the different branches of this business, are enabled by their gains to purchase such British articles as they must otherwise forego.

" The produce of the year of which I am now speaking, consisted of the following furs and peltries :

106,000 Beaver skins,	6000 Lynx skins,
2100 Bear skins,	600 Wolverine skins,
1500 Fox skins,	1650 Fisher skins,
4000 Kitt fox skins,	100 Raccoon skins,
4600 Otter skins,	3800 Wolf skins,
17,000 Musquash skins,	700 Elk skins,
32,000 Marten skins,	750 Deer skins,
1800 Mink skins,	1200 Deer skins dressed,
500 Buffalo robes, and a quantity of castoreum.	

" Of these were diverted from the British market, being sent through the United States to China, 13,364 skins, fine beaver, weighing 19,283 pounds; 1250 fine otters, and 1724 kitt foxes. They would have found their way to the China market at any rate, but this deviation from the British channel arose from the following circumstance :

" An adventure of this kind was undertaken by a respectable house in London, half concerned with the North-West Company in the year 1792. The furs were of the best kind, and suitable to the market; and the adventurers continued this connexion for five successive years, to the annual amount of 40,000l. At the winding up of the concern of 1792, 1793, 1794, 1795, in the year 1797, (the adventure of 1796 not being included, as the furs were not sent to China, but disposed of in London), the North-West Company experienced a loss of upwards of 40,000l. (their half,) which was principally owing to the difficulty of getting home the produce procured in return for the furs from China, in the East India Company's ships, together with the duty payable, and the various restrictions of that company. Whereas, from America there are no impediments; they get immediately to market, and the produce of them is brought back, and perhaps sold in the course of twelve months. From such advantages the furs of Canada will no doubt find their way to China by America, which would not be the case if British subjects had the same privileges that are allowed to foreigners, as London would then be found the best and safest market.

" But to return to our principal subject.—We shall now proceed to consider the number of men employed in the concern: viz. 50 clerks, 71 interpreters and clerks, 1120 canoe men, and 35 guides. Of these, five clerks, 18 guides, and 350 canoe men, were employed for the summer season in going from Montreal to the Grande Portage, in canoes, part of whom proceeded from thence to Rainy Lake, as will be hereafter explained, and are called *pork-eaters*, or *goers* and *comers*. These were hired in Canada or Montreal, and were absent from the 1st of May till the latter end of September. For this trip the guides had from 800 to 1000 livres, and a suitable equipment; the foreman and steersman from 400 to 600 livres; the middle men from

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250 to 350 livres, with an equipment of one blanket, one shirt, and one pair of trowsers; and were maintained during that period at the expence of their employers. Independent of their wages, they were allowed to traffic, and many of them earned to the amount of their wages. About one-third of these went to winter, and had more than double the above wages, and equipment. All the others were hired by the year, and some times for three years; and of the clerks many were apprentices, who were generally engaged for five or seven years, for which they had only 100l. provision and clothing. Such of them who could not be provided for as partners, at the expiration of this time, were allowed from 100l. to 300l. per annum, with all necessaries, till provision was made for them. Those who acted in the twofold capacity of clerk and interpreter, or were so denominated, had no other expectation than the payment of wages to the amount from 1000 to 4000 livres per annum, with clothing and provisions. The guides, who are a very useful set of men, acted also in the additional capacity of interpreters, and had a stated quantity of goods, considered as sufficient for their wants, their wages being from 1000 to 3000 livres. The canoe men are of two descriptions, foremen and steersmen, and middlemen. The two first were allowed annually 1200, and the latter 400, livres each. The first class had what is called an equipment, consisting of two blankets, two shirts, two pair of trowsers, two handkerchiefs, 14 pounds of tobacco, and some trifling articles. The latter had 10 pounds of tobacco, and all the other articles: those are called *north men*, or *winterers*; and to the last class of people were attached upwards of 700 Indian women and children, victualled at the expence of the company.

The first class of people are hired in Montreal five months before they set out, and receive their equipments, and one-third of their wages in advance; and an adequate idea of the labour they undergo may be formed from the following account of the country through which they pass, and their manner of proceeding.

" The necessary number of canoes being purchased, at about 300 livres each, the goods formed into packages, and the lakes and rivers free of ice, which they usually are in the beginning of May, they are then dispatched from La Chine, eight miles above Montreal, with eight or ten men in each canoe, and their baggage; and 65 packages of goods, 600 weight of biscuit, 200 weight of pork, three bushels of pease, for the men's provision; two oil cloths to cover the goods, a sail, &c. an axe, a towing-line, a kettle, and a sponge to bail out the water, with a quantity of gum, bark, and watape, to repair the vessel. An European on seeing one of these slender vessels thus laden, heaped up, and sunk with her gunwale within six inches of the water, would think his fate inevitable in such a boat, when he reflected on the nature of her voyage; but the Canadians are so expert that few accidents happen."\*

FURSTENBURGH, a town and castle of Germany, the capital of a county of the same name, 30 miles north-west of Constance. E. Long. 8. 30. N. P. 20. Lat. 47. 50.

FURTHCOMING, in Law, the name of an action competent

\* Gen. Hist.

of the Fur

Trade,

p. 20.

Furuncle  
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Furiliers.

competent to any person who has used arrestment in the hands of his debtor's creditor, for having the subject arrested declared his property.

**FURUNCLE**, or **BOIL**, in *Surgery*, a small resisting tumour, with inflammation, redness, and great pain, arising in the adipose membrane, under the skin. See *SURGERY Index*.

**FURZE**. See **ULEX**, *BOTANY Index*.

**FUSANUS**, in *Botany*, a genus of plants, belonging to the polygamia class. The hermaphrodite calyx is quinquefid; there is no corolla; there are four stamina; the germen beneath; there are four stigmata; the fruit a plum.

**FUSAROLE**, in *Architecture*, a moulding or ornament placed immediately under the echinus, in the Doric, Ionic, and Composite capitals.

**FUSE** or **FUZE**, in artillery. See **FUSEE**.

**FUSEE**, in clock-work, is that conical part drawn by the spring, and about which the chain or string is wound; for the use of which, see **CLOCK** and **WATCH**.

**FUSEE**, or *Firelock*. See **MUSQUET**.

**FUSEE**, *Fuze*, or *Fuze*, of a bomb or grenado, is that which makes the whole powder or composition in the shell take fire, to do the designed execution.

Fuzes are chiefly made of very dry beech wood, and sometimes of hornbeam, taken near the root. They are turned rough, and bored at first, and then kept for several years in a dry place; the diameter of the hole is about one-fourth of an inch; the hole does not come quite through, leaving about one-fourth of an inch at the bottom; and the head is made hollow, in the form of a bowl.

The composition for fuzes is saltpetre 3, sulphur 1, and mealed powder 3, 4, and sometimes 5. This composition is driven in with an iron driver (whose ends are capped with copper to prevent the composition from taking fire), and equally hard as possible; the last shove full being all mealed powder, and two stands of quickmatch laid across each other being driven in with it, the ends of which are folded up into the hollow top, and a cap of parchment tied over it till used.

When these fuzes are driven into the loaded shell, the lower end is cut off in a slope, so that the composition may inflame the powder in the shell: the fuze must have such a length as to continue burning all the time the shell is in its range, and to set fire to the powder as soon as it touches the ground, which instantly bursts into many pieces. When the distance of the battery from the object is known, the time of the shell's flight may be computed to a second or two; which being known, the fuze may be cut accordingly, by burning two or three, and making use of a watch or a string by way of a pendulum to vibrate seconds.

**FUSIBILITY**, in *Natural Philosophy*, that quality of bodies which renders them fusible. Gold is more fusible than iron or copper; but less so than silver, tin, and lead. Borax is frequently mixed with metals, to render them more fusible.

**FUSIL**, in *Heraldry*, a bearing of a rhomboidal figure, longer than the lozenge, and having its upper and lower angles more acute and sharp than the other two in the middle. It is called in Latin *fusus*, "a spindle," from its shape.

**FUSILIERS**, **FUSILEERS**, or *Fuzileers*, in the military art, are soldiers armed as the rest of the infantry,

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but formerly wore caps like the grenadiers, though somewhat shorter. There are three regiments in the British service: the royal regiment of Scotch fuzileers raised in 1678; the royal regiment of English fuzileers raised in 1685; and the royal regiment of Welsh fuzileers raised in 1688-9.

**FUSION**, the state of a body rendered fluid by fire. See **FLUIDITY**, and *CHEMISTRY Index*.

**FUST**, or **FAUST**, **JOHN**, was a goldsmith of Mentz, and one of the three artists to whom the valuable invention of printing has been usually ascribed. The names of the other two were Guttemberg and Schœffer. It seems impossible, however, to determine with certainty, whether Fust had any other merit in the business than that of supplying Guttemberg with money, who had been making some attempts with carved blocks at Straßburgh, before he visited Mentz. To Schœffer, the son-in-law of Fust, we are indebted for the invention of punches and matrices, by means of which this noble art was afterwards carried to perfection. That work which may be regarded as the origin of the true typographic art, was the "Durandi Rationale Divinorum Officiorum," published in 1459, by Fust and Schœffer, which was soon followed by a copy of the bible, both executed in a very masterly manner.

We are informed that Fust went to Paris in 1462, in order to dispose of a part of the second edition of his bible, which he was enabled to sell considerably lower than bibles in manuscript, yet some reckoned themselves overcharged by him, and some pretend that he was even accused of magic, but for the belief of this there appears to be no rational foundation. It seems certain that Fust was never in Paris after the year 1466; but that he was in that metropolis then, is proved by a note at the end of a copy of Cicero's Offices, intimating that the first possessor received it from John Fust at Paris, in 1466. It is extremely probable that he died that year of the plague, to which 40,000 of the inhabitants fell a sacrifice in the months of August and September. This opinion is farther corroborated by this circumstance, that the name of Schœffer alone was prefixed to the books which were published at Mentz after that period.

This man has been frequently confounded with John Faust, better known by the name of Dr Faustus, a pretender to the art of magic, who was first a theologian, then a student of medicine, and last of all sold himself to the devil for 24 years, at the expiration of which period it seems the devil came to carry off his purchase, and dashed out the doctor's brains against the wall about mid-night. This wretched romance has no doubt been invented by the monks, to blacken the reputation of the great Fust, whose art deprived them of the emoluments arising from the copying of manuscripts. See (*History of*) **PRINTING**.

**FUST**, in *Architecture*, the shaft of a column, or the part comprehended between the base and the capital, called also the naked.

**FUSTIAN**, in *Commerce*, a kind of cotton stuff, which seems as it were whaled on one side.

Right fustians should be altogether made of cotton-yarn, both woof and warp; but a great many are made, the warp of which is flax, or even hemp.

There are fustians made of several kinds, wide, narrow, fine, coarse; with shag or nap, and without it.

R r

FUSTIAN

Fustian  
||  
Fustian.

**FUSTIAN** is also used for a bombast style, or a high swelling kind of writing, made up of heterogeneous parts.

**FUSTICK**, or **FUSTOCK**, a yellow wood, that grows in all the Caribbee islands, and is used in dying yellow. It is a species of **MORUS**. See **BOWAN** *Index*. And for its properties, see **CHEMISTRY** and **DYEING** *Index*.

**FUSTIGATIO**, in the Roman customs, a punishment inflicted by beating with a cudgel. This punishment was peculiar to freemen; for the slaves were scourged or lashed with whips.

**FUTTOCKS**, in a ship, the timbers raised over the keel, or the encompassing timbers that make her breadth.

**FUTURE**, something to come hereafter. We say, a *future* state, a *future* contingency; there is none but God to whom *future* things are present.

**FUTURE**, or **FUTURE TENSE**, in *Grammar*, denotes an inflection of verbs, whereby they denote, that a thing will be in some time yet to come. See **GRAMMAR**.

**FUZES**, or **FUSEES**, in artillery. See **FUSEE**.

**FUZILEERS**. See **FUSILEERS**.

## G.

**G**, THE seventh letter and fifth consonant of our alphabet; though in the alphabets of all the oriental languages, the Hebrew, Phenician, Chaldee, Syriac, Samaritan, Arabic, and even Greek, *G* is the third letter. The Hebrews call it *ghimel* or *gimel*, q. d. "camel;" by reason it resembles the neck of that animal; and the same appellation it bears in the Samaritan, Phenician, and the Chaldee: in the Syriac it is called *gamel*, in Arabic *gim*, and in Greek *gamma*.

The gamma ( $\Gamma$ ) of the Greeks is manifestly the gimel ( $\gamma$ ) of the Hebrews or Samaritans. All the difference between the gamma and gimel consists in this, that the one is turned to the right, and the other to the left, according to the different manners of writing and reading which obtained among those different nations; so that all the pains Salmasius has taken on Solinus, to prove that the *G* was derived from the Greek kappa, is lost.

From the Greeks the Latins borrowed their form of this letter; the Latin *G* being certainly a corruption of the Greek gamma  $\Gamma$ , as might easily be shown had our printers all the characters and forms of this letter which we meet with in the Greek and Latin MSS. through which the letter passed from  $\Gamma$  to *G*.

Diomed, lib. ii. cap. *De Litera*, calls *G* a new letter. His reason is, that the Romans had not introduced it before the first Punic war; as appears from the rostral column erected by C. Duilius, on which we everywhere find a *C* in lieu of *G*. It was Sp. Carvilius who first distinguished between those two letters, and invented the figure of the *G*; as we are assured by Terentius Scaurus. The *C* served very well for *G*; it being the third letter of the Latin alphabet, as the  $\Gamma$  or  $\gamma$  was of the Greek.

The *G* is found instead of *C* on several medals: *Vaillant, Num. Imperat.* tom. i. p. 39.

M. Beger produces a medal of the *Familia Qgulnia*, where *GAR* is read instead of *CAR*, which is on those of M. Patin. But the *C* is more frequently seen on medals in lieu of *G*; as, *AUGUSTALIS CALLAECIA CARTACINENSIS*, &c. for *AUGUSTALIS*, &c. Not that the pronunciation of those words was altered, but only that the *G* was unartfully or negligently cut by

the workmen: as is the case in divers inscriptions of the eastern empire; where *AVC*, *AUCC*, *AUCCC*, are frequently found for *AUG*, &c.

The northern people frequently change the *G* into *V* or *W*; as in *Gallus*, *Wallus*; *Gallia*, *Wallia*, *Vallia*, &c. For in this instance it must not be said that the French have changed the *W* into *G*; because they wrote *Gallus* long before *Wallus* or *Wallia* was known, as appears from all the ancient Roman and Greek writers. And yet it is equally true, that the French change the *W* of the northern nations, and *V* consonant, into *G*; as, *Willielmus*, "William," into *Guillaume*; *Wulphilas* into *Gulphilas*; *Vascon* into *Gascon*, &c.

The letter *G* is of the mute kind, and cannot be any way sounded without the help of a vowel. It is formed by the reflection of the air against the palate, made by the tongue as the air passes out of the throat; which Martianus Capella expresses thus, *G spiritus cum palato*; so that *G* is a palatal letter.

The modern *G* takes its form from that of the Latins. In English it has two sounds, one from the Greek  $\Gamma$  and the Latin, which is called that of the hard *G*, because it is formed by a pressure somewhat hard on the fore part of the tongue against the upper gum; which sound it retains before *a*, *o*, *u*, *l*, *r*; as *gate*, *go*, *gull*. At the end of a word it is always hard, as *ring*, *sing*, &c. The other sound, called that of the soft *G*, resembles that of *j*; and is commonly, though not always, found before *e* and *i*, as in *gesture*, *giant*, &c. To this rule, however, there are many exceptions; *G* is often hard before *i*, as *give*, &c. and sometimes before *e*, as *get*, &c. It is also hard in derivatives from words ending in *g*, as *singing*, *stronger*, &c. and generally before *er*, at the ends of words, as *singer*. *G* is mute before *n*, as *gnash*, *sign*. *Gh* has the sound of the hard *G* in the beginning of a word, as *ghostly*; in the middle, and sometimes at the end, it is quite silent, as *right*, *though*. At the end of a word *Gh* has often the sound of *f*, as *laugh*, *rough*, *tough*.

As a numeral, *G* was anciently used to denote 400; and with a dash over it thus  $\bar{G}$ , 40,000.

As an abbreviature, *G*. stands for *Gaius*, *Gellius*, *gens*,

Gabale *gens, genus, &c.* G. G. for *gemia, gessit, gesserunt,* &c. G. C. for *genio civitatis* or *Cæsaris*. G. L. for *Gaius libertus,* or *genio loci*. G. V. S. for *genio urbis sacrum*. G. B. for *genio bono*. And G. T. for *genio tutelari*.

In music, G is the character or mark of the treble cleff; and from its being placed at the head, or marking the first sound in Guido's scale, the whole scale took the name *ganuit*.

GABALE, in *Mythology*, a deity worshipped at Heliopolis under the figure of a lion, with a radiant head; and it is thus represented on many medals of Caracalla.

GABARDINE, from the Italian *gavardina*, has been sometimes used to denote a coarse frock, or mean dress. In this sense it is used by Shakespeare in his *Tempest* and *Merchant of Venice*, and by Butler in his *Hudibras*, book i.

GABARA, or GABBARA, in antiquity, the dead bodies which the Egyptians embalmed, and kept in their houses, especially those of such of their friends as died with the reputation of great piety and holiness, or as martyrs. See *EMBALMING*, and *MUMMY*.

GABEL (*Gabella, Gablum, Gablagium*), in French *Gabelle*, i. e. *Veſtigal*, hath the same signification among the ancient English writers that *gabelle* hath in France. It is a tax; but hath been variously used, as for a rent, custom, service, &c. And where it was a payment of rent, those who paid it were termed *gablatores*. When the word *gabel* was formerly mentioned without any addition to it, it signified the tax on salt, though afterwards it was applied to all other taxes.

In the French customs, the gabel, or tax on salt, computed to make one-fourth of the whole revenue of the kingdom, is said to have had its rise in France in 1286, under Philip the Fair. Philip the Long took a double per livre on salt, by an edict in 1318, which he promised to remit when he was delivered from his enemies; which was renewed by Philip de Valois in 1345; and the duty was raised to four deniers per livre; King John resumed it in 1355, and it was granted to the dauphin in 1358, to ransom King John. It was continued by Charles V. in 1366; after his decease it was suppressed, but revived again by Charles VI. in 1381. Louis XI. raised it to 12 deniers per livre; and Francis I. in 1542 to 24 livres per muid: and it has been considerably augmented since that time; so that a minot of salt latterly paid a duty of 52 livres 8 sols and 6 deniers. Philip de Valois first established granaries and officers of the gabelles, and prohibited any other persons from selling salt: from which time the whole commerce of salt for the inland consumption continued wholly in the king's hands, every grain thereof being sold and distributed by his farmers and officers created for the purpose.—This oppressive tax has lately been abolished by the National Assembly.

GABII, in *Ancient Geography*, a town of Latium, midway almost between Rome and Preneste to the east, often mentioned in the history of Tarquin the Proud. *Cincus Gabinus* denoted a particular way of tucking the gown, by drawing it forwards on the breast, and tying it into a knot; as the people of Gabii did at a solemn sacrifice, on the sudden attack of an enemy, in order to be fitter for action. In this manner the consul used to declare war, to sacrifice, and burn the spoils of

the enemy; and then he was said to be *præcinctus*. The place now extinct.

GABINIAN LAWS, in Roman antiquities; laws instituted upon several occasions by persons of the name of *Gabinus*. The first was the *Gabinia lex de Comitibus*, by A. Gabinus the tribune, in the year of Rome 614. It required, that in the public assemblies for electing magistrates, the votes should be given by tablets, and not *viva voce*.—Another *de Comitibus*, which made it a capital punishment to convene any clandestine assembly, agreeable to the old law of the 12 tables.—Another *de Militia*, by A. Gabinus the tribune, year of Rome 685. It granted Pompey the power of carrying on the war against the pirates, during three years, and of obliging all kings, governors, and states, to supply him with all the necessaries he wanted, over all the Mediterranean sea, and in the maritime provinces as far as 400 *stadia* from the sea.—Another *de Usura* by Aul. Gabinus the tribune, year of Rome 685. It ordained that no action should be granted for the recovery of any money borrowed upon small interest to be lent upon larger. This was an usual practice at Rome, which obtained the name of *versuram facere*.—Another against fornication.

GABIONS, in *Fortification*, baskets made of ozier twigs, of a cylindrical form, six feet high and four wide; which, being filled with earth, serve as a shelter from the enemy's fire.

GABLE or GABEL End, of a house (from *gaval*, Welsh), is the upright triangular end from the cornice or eaves to the top of the house.

GABRES, or GAVRES, a religious sect in Persia and India; called also *Gebres, Guebres, Gevres, Gauris*, &c. See *MAGI*.

The Turks call the Christians *Gabres*, q. d. Infidels, or people of a false religion; or rather, as Leunclavius observes, Heathens or Gentiles: the word *Gabre*, among the Turks, having the same signification as *Pagan* or *Infidel* among the Christians, and denoting any thing not Mahometan.

In Persia the word has a more peculiar signification; wherein it is applied to a sect dispersed through the country, and said to be the remains of the ancient Persians or followers of Zoroaster, being worshippers of fire. They have a suburb at Ispahan, which is called *Gaurabad*, or "the town of the *Gauris*;" where they are employed in the meanest and vilest drudgery; some of them are dispersed through other parts of Persia; but they principally abound in Kerman, the most barren province in the whole country, where the Mahometans allow them liberty and the exercise of their religion. Several of them fled many ages ago into India, and settled about Surat, where their posterity remain to this day. There is also a colony of them at Bombay. They are a poor, ignorant, inoffensive people, extremely superstitious, and zealous for their rites, rigorous in their morals, and honest in their dealings. They profess to believe a resurrection and a future judgment, and to worship only one God. And though they perform their worship before fire, and direct their devotion towards the rising sun, for which they have an extraordinary veneration, yet they strenuously maintain that they worship neither; but that these are the most expressive symbols of the Deity, and that for this reason they turn towards them in their devotional services.

Gabriel  
||  
Gad.

vices.—However, some have supposed, that these are Persians converted to Christianity, who, being afterwards left to themselves, mingled their ancient superstitions with the truths and practices of Christianity, and so formed for themselves a religion apart: and they allege, that throughout the whole of their system of doctrine and practice, we may discern the marks and traces of Christianity, though grievously defaced; the annunciation, the magi, the massacre of the infants, our Saviour's miracles, his persecutions, ascension, &c.

GABRIEL, the name of one of the principal angels in heaven. It signifies *the strength of God*. There are a few events, in which this exalted being was concerned, recorded in Scripture. He was sent to the prophet Daniel, to explain to him the vision of the ram and goat, and the mystery of the seventy weeks, which had been revealed to him. He was sent to Zecharias, to declare to him the future birth of John the Baptist. Six months after, he was sent to Nazareth to the Virgin Mary, to warn her of the birth of Jesus Christ.

The Orientalists add several particulars to what the Scriptures inform us concerning the angel Gabriel. The Mahometans call him *the faithful spirit*; and the Persians, by way of metaphor, *the peacock of heaven*. We read, in the second chapter of the Koran, that *whosoever is an enemy to Gabriel shall be confounded*. It was Gabriel, they believe, who brought to Mahomet their false prophet the revelations which he published; and it was he who conducted him to heaven mounted upon the animal Borak.

GABRIEL, *St*, an island lying in the great river La Plata, South America, which was discovered by the celebrated navigator Sebastian Cabot, in the year 1526.

GABRIELITES, in ecclesiastical history, a sect of Anabaptists that appeared in Pomerania in 1530. They derive their name from Gabriel Scherling; who, after having been for some time tolerated in that country, was obliged to remove, and died in Poland.

GAD, a Jewish prophet, the seer, or domestic prophet of King David, who was his adviser in all matters of importance. When the displeasure of the Almighty was roused against David and the children of Israel for numbering the people, Gad received a commission to wait upon the king, and make him an offer of three evils as a punishment for his offence. These were famine, war, or pestilence, the last of which was chosen by David, the ravages of which were terrible beyond description, and produced genuine repentance in the hearts of survivors. To perpetuate the memory of this event, Gad ordered an altar to be erected in the threshing-floor of Ornan the Jebusite, around which place, it is said, the temple was afterwards built. We learn from the Old Testament that Gad was an author, who wrote a history of his own times, of which much use appears to have been made by the compilers of the books of Samuel and Chronicles. Gad was also the name of one of the twelve patriarchs, or sons of Jacob.

GAD, in *Ancient Geography*, a district of the Transjordan Palestine, situated between Gilead and the kingdom of Bashan to the north, and the kingdom of Amorites, to the south; having the Jordan to the west, and

bounded by various peoples on the east; so called from a tribe of that name.

GAD, among miners, a small punch of iron, with a long wooden handle, used to break up the ore.

One of the miners holds this in his hand, directing the point to a proper place, while the other drives it into the vein, by striking it with a sledge hammer.

*GAD-Bee*, or *Gad-Fly*. See OESTRUS, ENTOMOLOGY Index.

GADARA, in *Ancient Geography*, a town of the Peræa, or Transjordan, in the Decapolis, a very strong place. Restored by Pompey after its demolition by the Jews (Josephus). After Herod's death it was joined to the province of Syria by Augustus.

GADARENORUM AGER, in *Ancient Geography*, the country of the Gadarenes, called by Matthew the country of the Gergesenes, because it was a district that lay between Gadara and Gergesa, otherwise called *Gerasa*, both which lay within the Decapolis on the other side Jordan.

GADES, or GADIRA, in *Ancient Geography*, a small island in the Atlantic, on the Spanish coast, 25 miles from the Column of Hercules. It was sometimes called *Tartessus* and *Erythia* according to Pliny. Geryon, whom Hercules killed, fixed his residence there. Hercules, surnamed Gaditanus, had there a celebrated temple in which all his labours were engraved with excellent workmanship. The inhabitants are called Gaditani.

GADUS, a genus of fishes belonging to the order of jugulares. This genus includes the cod, the whiting, the torsk, &c. See ICHTHYOLOGY Index.

GAELIC LANGUAGE. See HIGHLANDS.

GÆTULIA, in *Ancient Geography*, a country of Africa, lying to the south of Mauritania, called *Gætulia Propria*, and *Vetus Gætuli*, the people, were distinguished by different epithets; as *Nigri*, *Autololes*, *Daræ* and *Baniuræ*, (Pliny). The *Gætuli* were among the first inhabitants of Africa; a rough, unpolished people, living on venison and the spontaneous productions of the earth; a roving, wandering people, who took up with the first place in which night surprised them, (Sallust).

GAFF, a sort of boom or pole, frequently used in small ships, to extend the upper edge of the mizen; and always employed for the same purpose on those sails whose foremost edges are joined to the mast by hoops or lacing, and which are usually extended by a boom below. Such are the main sails of all sloops, brigs, and schooners.

GAFFAREL, JAMES, a French divine, and very learned writer, born about 1601. He acquired great skill in the oriental and several other languages; and was particularly versant in the cabalistic and occult sciences, which he learned, exposed, and refuted. Cardinal Richelieu made choice of him for his library keeper, and sent him into Italy to collect the best manuscripts and books. He published a book entitled *Curiositez Innouies*, i. e. Unheard-of Curiosities. It is said the cardinal designed to employ him in his grand project for the reunion of religions. He died in 1681, aged 80. He had been labouring for many years, and had almost finished a history of the subterranean world; containing an account of the caves, grottoes, vaults, catacombs,

Gad  
||  
Gaffarel.

Gagates, catacombs, and mines, he had met with in 30 years travels.

**GAGATES**, or **JET**. See **JET**, **MINERALOGY Index**.

**GAGE**, in our ancient customs, signifies a pledge or pawn, given by way of security. The word is only properly used in speaking of moveables; for immoveables, *hypotheca* is used.

If the gage perish, the person who received it is not to answer for it, but only for extreme negligence, &c.

**GAGE** is also used for a challenge to combat: (See **CARTEL**). In which sense, it was a pledge, which the accuser or challenger cast on the ground, and the other took up as accepting the challenge; it was usually a glove, gauntlet, chaperoon, or the like. See **COMBAT**, and **DUEL**.

**GAGE**, is only now retained as a substantive. As a verb, the *G* is changed into *W*, and of *gage* is formed *wage*: as to wage law, to wage deliverance, q. d. to give security a thing shall be delivered. See **WAGE**.

If a person who has distrained be sued for not having delivered what he had taken by distress, he should wage, or gage, or gager, deliverance; that is, put in surety that he will deliver them.

**Mort-GAGE**, is that which is left in the hands of the proprietor, so that he reaps the fruits thereof.

In opposition to *vis-gage*, where the fruits or revenues are reaped by the creditor, and reckoned on the foot of the debt, which diminishes in proportion thereto. The second acquits or discharges itself; the first does not.

**GAGE**, in the sea language. When one ship is to windward of another, she is said to have the weather-gage of her. They likewise call the number of feet that a vessel sinks in the water, the ship's *gage*; this they find by driving a nail into a pike near the end, and putting it down beside the rudder till the nail catch hold under it; then as many feet as the pike is under water is the ship's *gage*.

**GAGE**, among letter founders, a piece of box, or other hard wood, variously notched; the use of which is to adjust the dimensions, slopes, &c. of the different sorts of letters. See **FOUNDRY**.

**GAGE**, in joinery, is an instrument made to strike a line truly parallel to the straight side of any board or piece of stuff. Its chief use is for gaging of tenons true, to fit into mortises; and for gaging stuff of an equal thickness. It is made of an oval piece of wood, fitted upon a square stick, to slide up and down stiffly thereon, and with a tooth at the end of a staff, to score, to strike a line upon the staff at any distance, according to the distance of the oval from it.

**Sliding GAGE**, a tool used by the mathematical instrument makers for measuring and setting off distances.

**Sea GAGE**, an instrument invented by Dr Hales and Dr Desaguliers for finding the depth of the sea; the description whereof is this. **AB** (fig. 1.) is the gage bottle, in which is cemented the gage tube *Ff* in the brass cape at **G**. The upper end of tube **F** is hermetically sealed, and the open lower end *f* is immersed in mercury, marked **C**, on which swims a small thickness or surface of treacle. On the top of the bottle is screw-

ed a tube of brass **HG**, pierced with several holes to admit the water into the bottle **AB**. The body **K** is a weight hanging by its shank **L**, in a socket **N**, with a notch on one side at *m*, in which is fixed the catch *l* of the spring **S**, and passing through the hole **L**, in the shank of the weight **K**, prevents its falling out when once hung on. On the top, in the upper part of the brass tube at **H**, is fixed a large empty ball, or full blown bladder **I**, which must not be so large, but that the weight **K** may be able to sink the whole under water.

The instrument thus constructed is used in the following manner. The weight **K** being hung on, the gage is let fall into deep water, and sinks to the bottom: the socket **N** is somewhat longer than the shank **L**; and therefore, after the weight **K** comes to the bottom, the gage will continue to descend till the lower part of the socket strikes against the weight; this gives liberty to the catch to fly out of the hole **L**, and let go the weight **K**: when this is done, the ball or bladder **I** instantly buoys up the gage to the top of the water. While the gage is under water, the water having free access to the treacle and mercury in the bottle, will by its pressure force it up into the tube **Ff**, and the height to which it has been forced by the greatest pressure, viz. that at the bottom, will be shown by the mark in the tube which the treacle leaves behind it, and which is the only use of the treacle. This shows into what space the whole air in the tube **Ff** is compressed; and consequently the height or depth of the water which by its weight produced that compression, which is the thing required.

If the gage tube **Ff** be of glass, a scale might be drawn on it with the point of a diamond, showing, by inspection, what height the water stands above the bottom. But the length of 10 inches is not sufficient for fathoming depths at sea, since that, when all the air in such a length of tube is compressed into half an inch, the depth of water is more than 634 feet, which is not half a quarter of a mile.

If, to remedy this, we make use of a tube 50 inches long, which for strength may be a musket barrel, and suppose the air compressed into an hundredth part of half an inch; then by saying, as 1 : 99 : : 400 : 39600 inches, or 3300 feet; even this is but little more than half a mile, or 2640 feet. But since it is reasonable to suppose the cavities of the sea bear some proportion to the mountainous parts of the land, some of which are more than three miles above the earth's surface; therefore, to explore such great depths, the Doctor contrived a new form for his sea gage, or rather for the gage tube in it, as follows. **BCDF** (fig. 2.) is a hollow metalline globe communicating on the top with a long tube **AB**, whose capacity is a ninth part of that globe. On the lower part at **D**, it has also a short tube **DE**, to stand in the mercury and treacle. The air contained in the compound gage tube is compressed by the water as before; but the degree of compression, or height to which the treacle has been forced, cannot there be seen through the tube: therefore, to answer that end, a slender rod of metal or wood, with a knob on the top of the tube **AB**, will receive the mark of the treacle, and show it when taken out.

If the tube **AB** be 50 inches long, and of such a bore

Gage.

bore that every inch in length should be a cubic inch of air, and the contents of the globe and tube together 500 cubic inches; then when the air is compressed within a hundredth part of the whole, it is evident the treacle will not approach nearer than five inches of the top of the tube, which will agree to the depth of 3300 feet of water as above. Twice this depth will compress the air into half that space nearly, viz.  $2\frac{1}{2}$  inches, which correspond to 6600, which is a mile and a quarter. Again, half that space, or  $1\frac{1}{4}$  inch, will show double the former depth, viz. 13200 feet, or  $2\frac{1}{2}$  miles; which is probably very nearly the greatest depth of the sea.

*Bucket Sea GAGE*, an instrument contrived by Dr Hales to find the different degrees of coolness and saltness of the sea, at different depths: it consists of a common household pail or bucket, with two heads: These heads have each a round hole in the middle, about four inches in diameter, covered with square valves opening upward; and that they may both open and shut together, there is a small iron rod fixed to the upper part of the lower valve, and the other end to the lower side of the upper valve. So that as the bucket descends with its sinking weight into the sea, both the valves may open by the force of the water, which by that means has a free passage through the bucket. But when the bucket is drawn up, then both the valves shut by the force of the water at the upper part of the bucket; so that the bucket is drawn up full of the lowest sea water to which it has descended. When the bucket is drawn up, the mercurial thermometer fixed in it is examined; but great care must be taken to observe the degree at which the mercury stands, before the lower part of the thermometer is taken out of the water in the bucket, lest it be affected by the different temperature of the air. In order to keep the bucket in a right position, there are four cords fixed to it, reaching about three feet below it; to which the sinking weight it fixed. The result of several trials with this gage was, that when it was let down to different depths, from 360 feet to 5346 feet, in lat. 25. 13. N. and long. 25. 12. W. it was discovered by the thermometer, that the cold increased gradually in proportion to the depths, till it descended to 3900 feet, viz. near  $\frac{1}{4}$ ths of a mile, whence the mercury in the thermometer came up at  $53^{\circ}$ ; and though it was afterwards sunk to 5346 feet, i. e. a mile and 66 feet, it came up no lower: the warmth of the water upon the surface, and that of the air, was all that time  $84^{\circ}$ . When the water in the bucket was become of the same temperature with that on the surface of the sea, equal quantities of both were weighed and tried by the hydrometer; that from below was found to be the heaviest, and consequently the saltest.

Dr Hales was probably led to the construction of this sea gage from an instrument invented by Dr Hook, and designed for the same purpose. This consists of a square wooden bucket C, whose bottoms are so contrived, that as the weight of A sinks the iron B, to which the bucket C is fastened by two handles D, D, on the end of which are the moveable bottoms or valves EE, and thereby draws down the bucket, the resistance of the water keeps up the bucket in the posture C, whereby the water, whilst the bucket was descending, hath a free passage through it; whereas, as soon as the

Gage.

bucket is pulled upwards by the line F, the resistance of the water to that motion beats the bucket downwards, and keeps it in the posture G, whereby the included water is kept from getting out, and the ambient water kept from getting in. Phil. Transf. N<sup>o</sup> ix. p. 149. and N<sup>o</sup> xxiv. p. 447. or Abr. vol. ii. p. 260.

*Aqueo-mercurial GAGE*, is the name of an apparatus contrived by Dr Hales, and applied in various forms to the branches of trees, in order to determine the force with which they imbibe moisture. Let  $e r$ , Fig. 4. be a cylindric glass, e. gr. of an inch diameter within, and eight inches long. Into this glass is introduced the branch of a young thriving apple tree  $b$ , about three feet long, with lateral branches; the diameter of the transverse cut  $i$  being  $\frac{1}{4}$ ths of an inch. Having fitted the joint  $r$  to the tube at  $r$ , by folding a piece of sheep's skin round the stem, it is cemented with a mixture of bees wax and turpentine melted together, in such proportion as to make a very stiff clammy paste when cold, and over the cement folds of wet bladders are bound firmly with pack thread. To the lower end  $e$  of the large tube, a smaller tube  $e x$  is cemented, being about  $\frac{1}{2}$  of an inch diameter, and 18 inches long, and in substance full  $\frac{1}{2}$  of an inch thick. These tubes are cemented together at  $e$  with common hard brick dust or powdered chalk cemented, and the joint is farther secured with the cement of bees wax and turpentine, over which a wet bladder is bound. The apparatus being thus prepared, the branch is turned downwards, and the glass tube upwards, and then both tubes are filled with water; with the finger applied to the open end of the small tube, it is inverted and immersed in the glass cistern  $x$ , full of mercury and water. In this situation the lower end of the branch was immersed six inches in water, viz. from  $r$  to  $i$ ; the water was imbibed by the branch at its transverse cut  $i$ ; and during its ascent into the sap vessels of the branch, the mercury rose in the tube  $e x$  from the cistern  $x$ , so that in half an hour it was risen  $5\frac{1}{4}$  inches high, as far as  $x$ . The height of the mercury indicated, in some measure, the force with which the sap was imbibed, though not the whole force; because, while the water was imbibed by the branch, its transverse cut was covered with innumerable little hemispheres of air, and many air bubbles issued out of the sap vessels, which partly filled the tube  $e r$ , as the water was drawn out of it: and therefore the height of the mercury could only be proportionable to the excess of the quantity of water drawn off above the quantity of the air which issued out of the wood. If the quantity of air issuing from the wood had been equal to the quantity of water imbibed, it is plain that the mercury could not rise at all, because there would be no room for it in the tube: but if nine parts in twelve of the water be imbibed by the branch, and only three such parts of air issue into the tube in the same time the mercury must rise near six inches, and so proportionably in other cases. Dr Hales observed, that the mercury rose highest, in most cases, when the sun was clear and warm, and that it subsided three or four inches towards evening, but rose again the next day as it grew warm, though seldom so high as at first. Dr Hales adapted the size and shape of the glass apparatus to a great variety of branches of several sizes and of different kinds of trees, and repeated the experiment above

**Gage.** above described, *mutatis mutandis*, in a variety of instances. See his *Vegetable Statics*, vol. i. chap. ii. p. 84, &c.

**Tide GAGE**, the name of an instrument used for determining the height of the tides by Mr Bayly, in the course of a voyage towards the south pole, &c. in the *Resolution and Adventure*, in 1772, 1773, 1774, and 1775. This instrument consists of a glass tube, whose internal diameter was seven tenths of an inch, lashed fast to a ten feet fir rod, divided into feet, inches, and quarters: this rod was fastened to a strong post fixed upright and firm in the water. At the lower end of the tube was an exceeding small aperture, through which the water was admitted. In consequence of this construction, the surface of the water in the tube was so little affected by the agitation of the sea, that its height was not altered one tenth of an inch, when the swell of the sea was two feet; and Mr Bayly was certain, that with this instrument he could discern a difference of one tenth of an inch in the height of the tide.

**Wind GAGE**, an instrument for measuring the force of the wind upon any given surface. It was invented by Dr Lind, who gives the following description of it, *Phil. Trans.* vol. lxxv.

Fig. 5.

This instrument consists of two glass tubes AB, CD, of five or six inches in length. Their bores, which are so much the better for being equal, are about four tenths of an inch in diameter. They are connected together like a siphon, by a small bent glass tube *a b*, the bore of which is about one tenth of an inch in diameter. On the upper part of the leg AB there is a tube of latten brass, which is kneed, or bent perpendicularly outwards, and has its mouth open towards F. On the other leg CD, is a cover with a round hole G in the upper part of it two tenths of an inch in diameter. This cover and the kneed tube are connected together by a slip of brass *e d*, which not only gives strength to the whole instrument, but also serves to hold the scale HI. The kneed tube and cover are fixed on with hard cement or sealing wax. To the same tube is soldered a piece of brass *e*, with a round hole in it to receive the steel spindle KL; and at *f* there is just such another piece of brass soldered to the brass hoop *g h*, which surrounds both legs of the instrument. There is a small shoulder on the spindle at *f*, upon which the instrument rests, and a small nut at *i*, to prevent it from being blown off the spindle by the wind. The whole instrument is easily turned round upon the spindle by the wind, so as always to present the mouth of the kneed tube towards it. The end of the spindle has a screw on it; by which it may be screwed into the top of a post or a stand made on purpose. It has also a hole at L, to admit a small lever for serewing it into wood with more readiness and facility. A thin plate of brass *k* is soldered to the kneed tube about half an inch above the round hole G so as to prevent rain from falling into it. There is likewise a crooked tube AB (fig. 6.) to be put occasionally upon the mouth of the kneed tube F, in order to prevent rain from being blown into the mouth of the wind gage when it is left out all night, or exposed in the time of rain.

The force or momentum of the wind may be ascertained by the assistance of this instrument, by filling

the tubes half full of water, and pushing the scale a little up or down, till the o of the scale, when the instrument is held up perpendicularly, be on the line with the surface of the water in both legs of the wind-gage. The instrument being thus adjusted, hold it up perpendicularly, and turning the mouth of the kneed tube towards the wind, observe how much the water is depressed by it in the one leg, and raised in the other. The sum of the two is the height of a column of water which the wind is capable of sustaining at that time; and every body that is opposed to that wind will be pressed upon by a force equal to the weight of a column of water, having its base equal to the altitude of the column of water sustained by the wind in the wind gage. Hence the force of the wind upon any body where the surface opposed to it is known may be easily found; and a ready comparison may be made betwixt the strength of one gale of wind and that of another.

The force of the wind may be likewise measured with this instrument, by filling it until the water runs out of the hole G. For if we then hold it up to the wind as before, a quantity of water will be blown out; and if both legs of the instrument are of the same bore, the height of the column sustained will be equal to double the column of water in either leg, or the sum of what is wanting in both legs. But if the legs are of unequal bores, neither of these will give the true height of the column of water which the wind sustained. But the true height may be obtained by the following formulæ.

Suppose that after a gale of wind which had blown the water from A to B (fig. 7), forcing it at the same time through the other tube out at E, the surface of the water should be found standing at some level DG, and it were required to know what was the height of the column EF or AB, which the wind sustained. In order to obtain this, it is only necessary to find the height of the columns DB or GF, which are constantly equal to one another; for either of these added to one of the equal columns AD, EG, will give the true height of the column of water which the wind sustained.

1. Let the diameters AC, EH, of the tubes, be respectively represented by  $cd$ ; and let  $a=AD$ , or EG, and  $x=DB$ , or FG: Then it is evident, that the column DB is to the column EG, as  $c^2x$  to  $d^2a$ . But these columns are equal. Therefore  $c^2x=d^2a$ ;

and consequently  $x=\frac{d^2a}{c^2}$ .

2. But if at any instant of time whilst the wind was blowing, it was observed, that, when the water stood at E, the top of the tube out of which it is forced, it was depressed in the other to some given level BF, the altitude at which it would have stood in each, had it immediately subsided, may be found in the following manner: Let  $b=AB$  or EF.—Then it is evident that the column DB is equal to the difference of columns EF, GF. But the difference of these columns

is as  $d^2b-d^2x$ ; and consequently  $x=\frac{d^2b}{c^2+d^2}$ .

For the cases when the wind blows in at the narrow leg of the instrument: Let  $AB=EF=b$ ,  $EG$ , or  $AD=a$ ,  $GF=DB=x$ , and the diameters EH, GA, respectively

Gahnia ||  
Gainage. ||  
respectively =  $d$ ,  $c$ , as before. Then it is evident, that the column AD is to the column GF as  $a c^2$  to  $d^2 x$ . But these columns are equal; therefore  $d^2 x = a c^2$ ; and consequently  $x = \frac{a c^2}{d^2}$ . It is also evident that the

column AD is equal to the difference of the columns AB, DB; but the difference of these columns is as  $b c^2 - c^2 x$ . Therefore  $d^2 x = b c^2 - c^2 x$ . Whence we get

$$x = \frac{b c^2}{d^2 + c^2}$$

The use of the small tube of communication  $ab$  (fig. 5.) is to check the undulation of the water, so that the height of it may be read off from the scale with ease and certainty. But it is particularly designed to prevent the water from being thrown up to a much greater or less altitude than the true height of the column which the wind is able at that time to sustain, from its receiving a sudden impulse whilst it is vibrating either in its ascent or descent. As in some cases the water in this instrument might be liable to freeze, and thus break the tubes, Dr Lind recommends a saturated solution of sea salt to be used instead of it, which does not freeze till Fahrenheit's thermometer falls to 0.

**GAHNIA**, a genus of plants belonging to the hexandria class. See *BOTANY Index*.

**GAIETA**, an ancient, handsome, and strong town of Italy, in the kingdom of Naples and in the Terra di Lavoro, with a fort, citadel, harbour, and bishop's see. It was taken by the Austrians in 1707, and by the Spaniards in 1734. It is seated at the foot of a mountain near the sea, in E. Long. 13. 37. N. Lat. 41. 30.

**GAIN**, the profit or lucre a person reaps from his trade, employment, or industry. Some derive the word from the German *gewin*: whereof the Italians had made *guadagno*; the French and English *gain*.

There are legal and reputable gains, as well as sordid and infamous ones. What is gained beyond a certain sum, by gaming, is all liable to be restored again, if the loser will take the benefit of the law.

**GAIN**, in *Architecture*, is the workman's term for the bevelling shoulder of a joist or other timber. It is used also for the lapping of the end of the joist, &c. upon a trimmer or girder; and then the thickness of the shoulder is cut into the trimmer; also bevelling upwards, that it may just receive the gain; and so the joist and trimmer lie even and level with the surface. This way of working is used in floors and hearths.

*To Gain the Wind*, in sea language, is to arrive on the weather side or to windward of some other vessel in sight, when both are plying to windward or sailing as near the wind as possible.

**GAINAGE**, **GAINAGIUM**, in our ancient writers, signifies the draught oxen, horses, wain, plough, and furniture, for carrying on the work of tillage by the baser sort of sokemen and villains.

Gainage is the same with what is otherwise called *wainage*. Bracton, lib. i. cap. 9. speaking of lords and servants, says, *Ut si eos destruunt, quod salvum non possit eis esse wainagium suum*. And again, lib. iii. tract. 2. cap. 1. *Villanus non amerciabitur, nisi salvo wainagio suo*: For anciently, as it appears both by *Magna*

Charta and other books, the villain, when amerced, had his gainage or wainage free, to the end his plough might not stand still: and the law, for the same reason, does still allow a like privilege to the husbandmen; that is, his draught horses are not in many cases distrainable.

**GAINAGE** is also used for the land itself, or the profit raised by cultivating it.

**GAINSBOROUGH**, a town of Lincolnshire in England, 150 miles from London, seated on the river Trent near the sea. It is a large well built town, with a pretty good trade, and has the title of an earldom. W. Long. 0. 40. N. Lat. 53. 26. The north marsh in its neighbourhood is noted for horse races. The Danes who invaded the kingdom brought their ships up to this place. It was here that Sweno the Dane was murdered by one of the English, who was never discovered.

**GALACTITES**, in the history of fossils, a substance much resembling the morochthus or French chalk, in many respects; but different from it in colour. The ancients found it in the Nile and in some rivers in Greece, and used it in medicine as an astringent, and for defluxions and ulcers of the eyes. At present it is common in Germany, Italy, and some parts of France, and is wholly overlooked, being esteemed a worse kind of morochthus. See *MOROCHTHUS*.

**GALACTOPHAGI**, and **GALACTOPOTÆ**, in antiquity, persons who lived wholly on milk, without corn or the use of any other food. The words are compounded of *γαλα*, *γαλακτος*, milk; *φασιν*, to eat; and *ποτος* of *πιω*, I drink.

Certain nations in Scythia Asiatica, as the Getæ, Nomades, &c. are famous, in ancient history, in quality of *galactophagi*, or milk-eaters. Homer makes their cloge, *Iliad*, lib. iii.

Ptolemy, in his geography, places the *Galactophagi* between the Riphæan mountains on one side, and the Hyrcanian sea on the other.

**GALANGALS**, in the *Materia Medica*. See *KEMPFERIA*.

**GALANTHUS**, the *SNOW-DROP*, a genus of plants belonging to the hexandria class, and in the natural method ranking under the ninth order, *Spathaceæ*. See *BOTANY Index*.

**GALATA**, a great suburb belonging to Constantinople, opposite to the seraglio, on the other side of the harbour. It is here the Greeks, Armenians, Franks, Christians, and Jews inhabit, and are allowed the exercise of their respective worship.

**GALATÆA** and **GALATHÆA**, in fabulous history, a sea nymph, daughter of Nereus and Doris. She was passionately loved by the Cyclops Polyphemus, whom she treated with coldness and disdain; while Acis, a shepherd of Sicily, enjoyed her unbounded affection. The happiness of these two lovers was disturbed by the jealousy of the Cyclops, who crushed his rival to pieces with a piece of a broken rock while he reposed on the bosom of Galatæa. The nymph was inconsolable for the loss of Acis; and as she could not restore him to life, she changed him into a fountain.

**GALATIA**, the ancient name of a province of Asia Minor, now called *Amasia*. It was bounded on the east by Cappadocia, on the west by Bithynia, on





Galax  
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Galba.

the south by Pamphylia, and on the north by the Euxine sea. It was the north part of Phrygia Magna; but upon being occupied by the Gauls was called *Galatia*; and because situated amidst Greek colonies, and itself mixed with Greeks, *Gallogræcia*. Strabo calls it *Galatia* and *Gallogræcia*; hence a twofold name of the people; *Galatæ* and *Gallogræci*. The Greeks called it *Gallia Parva*; to distinguish it from the *Transalpina*, both which they called *Galatia*. It was reduced under the subjection of the Romans in the time of Augustus, and is now in the hands of the Turks. Here St Paul founded a church, to which he directed that epistle which is still known by the name of the *Epistle to the Galatians*, and was written to reclaim them from the observation of Jewish ordinances, into which they had been seduced by some false teachers.

**GALAX**, a genus of plants belonging to the pentandria clais, and in the natural method ranking with those of which the order is doubtful. See **BOTANY**.

**GALAXY**, in *Astronomy*, that long, white, luminous track, which seems to encompass the heavens like a swath, scarf, or girdle: and which is easily perceivable in a clear night, especially when the moon does not appear. The Greeks call it Γαλαξίας, *Galaxy*, of Γαλα, γαλακτος, *Milk*; on account of its colour and appearance; the Latins, for the same reasons, call it *via lactea*; and we, the *milky way*. It passes between Sagittarius and Gemini, and divides the sphere into two parts; it is unequally broad; and in some parts is single, in others double.

The ancient poets, and even philosophers, speak of the Galaxy as the road or way by which the heroes went to heaven.

Aristotle makes it a kind of meteor, formed of a crowd of vapours, drawn into that part by certain large stars disposed in the regions of the heavens answering hereto.

Others, finding that the Galaxy was seen all over the globe, that it always corresponded to the same fixed stars, and that it transcended the height of the highest planets, set aside Aristotle's opinion, and placed the Galaxy in the firmament, or region of the fixed stars, and concluded it to be nothing but an assemblage of an infinite number of minute stars.

Since the invention of the telescope, this opinion has been abundantly confirmed. By directing a good telescope to any part of the milky way; where before we only saw a confused whiteness, we now descry an innumerable multitude of little stars, so remote, that a naked eye confounds them. See **ASTRONOMY**, N<sup>o</sup> 211.

**GALBA**, SERGIUS SULPICIOUS, a Roman emperor, born the 24th of December, five years before the Christian era. He was gradually raised to the greatest offices of the state, and exercised his power in the provinces with the greatest equity and unremitting diligence. He dedicated the greatest part of his time to solitary pursuits, chiefly to avoid the suspicions of Nero. His disapprobation of the emperor's oppressive command in the provinces was the cause of new disturbances. Nero ordered him to be put to death; but he escaped from the hands of the executioner, and was publicly saluted emperor. When he was seated on the throne, he suffered himself to be governed by favourites, who exposed the goods of the citizens to sale to

gratify their avarice. Exemptions were sold at a high price; and the crime of murder was blotted out, and impunity purchased, with a large sum of money. Such irregularities in the emperor's ministers greatly displeased the people; and when Galba refused to pay the soldiers the money which he had promised them when he was raised to the throne, they assassinated him in the 73d year of his age, and the eighth month of his reign. The virtues which had shone so bright in Galba when a private man, totally disappeared when he ascended the throne; and he who showed himself the most impartial judge, forgot the duties of an emperor and of a father of his people.

**GALBANUM**, in *Pharmacy*, a gum issuing from the stem of an umbelliferous plant growing in Persia and many parts of Africa. See **BUBON**.

The juice, as brought to us, is semipellucid, soft, tenacious; of a strong, and to some unpleasent, smell; and a bitterish warm taste: the better sort is in pale coloured masses, which, on being opened, appear composed of clear white tears. Geoffroy relates, that a dark greenish oil is to be obtained from this simple by distillation, which, upon repeated rectifications, becomes of an elegant sky blue colour. The purer sorts of galbanum are said by some to dissolve entirely in wine, vinegar, or water; but these liquors are only partial menstrua with regard to this drug; nor do spirit of wine or oils prove more effectual in this respect: the best dissolvent is a mixture of two parts spirit of wine and one of water. Galbanum agrees in virtue with gum ammoniacum; but is generally accounted less efficacious in asthma's, and more so in hysterical complaints. It is an ingredient in the gum pills, the gum plaster, and some other officinal compositions.

**GALE**, in the sea language, a term of various import. When the wind blows not so hard but that a ship may carry her top-sails a-trip (that is hoisted up to the highest), then they say it is a loom gale. When it blows very strong, they say it is a stiff, strong, or fresh gale. When two ships are near one another at sea, and, there being but little wind blowing, one of them finds more of it than the other, they say that the one ship gales away from the other.

**GALE**, Dr John, an eminent and learned minister among the Baptists, was born at London in 1680. He studied at Leyden, where he distinguished himself very early, and afterwards at Amsterdam, under Dr Limborch. He was chosen minister of the Baptist congregation at Barbican; where his preaching, being chiefly practical, was greatly resorted to by people of all persuasions. Four volumes of his sermons were published after his death, which happened in 1721. His Reflections on Dr Wall's History of Infant Baptism is the best defence of the Baptists ever published, and the reading of that performance induced the learned Mr William Whiston and Dr Foster to become Baptists.

**GALE**, *Theophilus*, an eminent nonconformist minister, born in 1628. He was invited to Winchester in 1657; and continued a stated preacher there until the re-establishment of the church by Charles II. when he rather chose to suffer the penalties of the act of conformity, than to submit to it contrary to his conscience. He was afterwards engaged by Philip lord Wharton as tutor to his sons, whom he attended to an academy at Caen in Normandy; and when this duty

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was fulfilled, he became pastor over a congregation of private conventiclers in Holborn. He died in 1678; and is principally known by an elaborate work, intitled, the *Court of the Gentiles*, calculated to show, that the Pagan philosophers derived their most sublime sentiments from the Scriptures.

GALE, *Dr Thomas*, a learned divine, born at Scrpton in Yorkshire, in the year 1636, was educated at Cambridge, and at length became professor of the Greek language in that university. He was afterwards chosen head master of St Paul's school, London; and was employed by the city in writing those elegant inscriptions on the monument erected in memory of the conflagration in 1666. In 1676 he was collated to a prebend in the cathedral of St Paul's; and was likewise elected a fellow of the Royal Society, to which he presented a Roman urn with its ashes. About the year 1697, he gave to the new library of Trinity college, in Cambridge, a great number of Arabic manuscripts; and in the same year he was admitted dean of York. He died in that city in 1702; and was interred in the cathedral, where a monument, with a Latin inscription, was erected to his memory. He was a learned divine, a great historian, one of the best Greek scholars of his age, and maintained a correspondence with the most learned men abroad as well as at home. He published, 1. *Historiæ Poeticæ Antiqui Scriptores*, octavo. 2. *Opuscula Mythologica, Ethica, et Physica*, in Greek and Latin, octavo. 3. *Herodoti Historia*, folio. 4. *Historiæ Anglicanæ Scriptores quinque*, in folio. 5. *Historiæ Britannicæ, Saxonice, Anglo-Danicæ, Scriptores quindecim*, in folio. 6. *Rhetores Selecti, &c.*

GALEA, in antiquity, a light casque, head piece, or morrion, coming down to the shoulders, and commonly of brass; though Camillus, according to Plutarch, ordered those of his army to be of iron, as being the stronger metal. The lower part of it was called *buccula*, and on the top was a crest. The velites wore a light galea, made of the skin of some wild beast to make it more terrible.

GALEASSE, a large low-built-vessel, using both sails and oars, and the biggest of all the vessels that make use of the latter. It may carry twenty guns, and has a stern capable of lodging a great number of marines. It has three masts, which are never to be lowered or taken down. It has also thirty-two benches of rowers; and to each bench six or seven slaves, who sit under cover. This vessel is at present used only by the Venetians.

GALEGA, a genus of plants belonging to the diadelphia class; and in the natural method ranking under the 32d order, *Papilionaceæ*. See BOTANY *Index*.

GALEN, CLAUDIUS, in Latin *Galenus*, prince of the Greek physicians after Hippocrates, was born at Pergamus in the lesser Asia, about the year 131. His father was possessed of a considerable fortune; was well versed in polite literature, philosophy, astronomy, and geometry; and was also well skilled in architecture. He himself instructed his son in the first rudiments of learning, and afterwards procured him the greatest masters of the age in philosophy and eloquence. Galen having finished his studies under their care, chose physic for his profession, and chiefly studied the works of Hippocrates. Having at length exhausted all the

sources of literature that were to be found at home, he resolved to travel, in order to converse with the most able physicians in all parts, intending at the same time to take every opportunity of inspecting on the spot the plants and drugs of the countries through which he passed. With this view he went to Alexandria, and staid some years in that metropolis of Egypt; from thence he travelled through Cilicia; passed through Palestine; visited the isles of Crete and Cyprus; and made two voyages to Lemnos, in order to examine the Lemnian earth, which was then esteemed an admirable medicine. With the same view he went into the Lower Syria, in order to obtain a thorough insight into the nature of the opobalsamum, or balm of Gilead; and having completed his design, returned home by the way of Alexandria.

Galen had been four years at Pergamus, where his practice was attended with extraordinary applause, when some seditious commotions induced him to go to Rome, where he resolved to settle: but the proofs he gave of his superior skill, added to the respect shown him by several persons of very high rank, created him so many enemies among his brethren of the faculty, that he was obliged to quit the city, after having resided there four or five years. But he had not long returned to Pergamus, when he was recalled by the emperors Aurelius and Verus. After their death, he retired to his native country; where he died about the year 200. He wrote in Greek; and is said to have composed two hundred volumes, which were unhappily burnt in the temple of Peace. The best editions of those that remain, are, that printed at Basil in 1538, in five volumes, and that of Venice in 1625, in seven volumes. Galen was of a weak and delicate constitution, as he himself asserts; but he nevertheless, by his temperance and skill in physic, arrived at a great age; for it was his maxim, always to rise from table with some degree of appetite. He is justly considered as the greatest physician of antiquity, next to Hippocrates; and he performed such surprising cures, that he was accused of magic.

GALEN, a military township in the state of New-York, situated on the creek of Cauadaque, about 12 miles north-west of Cayuga lake, and 13 south by east of Great Sodus.

GALENA, a name given by mineralogists to a species of lead ore. It was also the original name given by Andromachus to the theriaca, from its effect in bringing on a pleasing calm over the blood and spirits on taking it.

GALENIA, a genus of plants belonging to the octandria class; and in the natural method ranking under the 13th order, *Succulentæ*. See BOTANY *Index*.

GALENIC, or GALENICAL, in *Medicine*, is that manner of considering and treating diseases, founded on the principles of Galen, or introduced by GALEN. This author, collecting and digesting what the physicians before him had done, and explaining every thing according to the strictest doctrine of the Peripatetics, set physic on a new footing: he introduced the doctrine of the four elements; the cardinal qualities and their degrees; and the four humours or temperaments.

GALENIC is more frequently used as contradistinguished from *chemical*.

The distinction of *galenical* and *chemical* was occasioned

Galen  
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Galenic.

**Galenists** <sup>||</sup> Galilee. fioned by a division of the practitioners of medicine into two sects, which happened on the introduction of chemistry into medicine. Then the chemists, arrogating to themselves every kind of merit and ability, stirred up an opposition to their pretensions, founded on the invariable adherence of the other party to the ancient practice. And though this division into the two sects of galenists and chemists has long since ceased, yet the distinction of medicines which resulted from it is still retained.

Galenical medicines are those which are formed by the easier preparations of herbs, roots, &c. by infusion, decoction, &c. and by combining and multiplying ingredients; while those of chemistry draw their more intimate and remote virtues by means of fire and elaborate preparations, as calcination, digestion, fermentation, &c.

**GALENISTS**, a denomination given to such physicians as practise, prescribe, or write, on the galenical principles; and stand opposed to the *chemists*. See **GALENICAL**. At present the galenists and chemists are pretty well accommodated; and most of our physicians use the preparations and remedies of both.

**GALENISTS**, or *Galenites*, in church history, a branch of Mennonites or Anabaptists, who take in several of the opinions of the Socinians, or rather Arians, touching the divinity of our Saviour. In 1664 the Waterlandians were divided into two parties, of which the one were called *Galenists*, and the other *Apostolians*. They are thus called from their leader Abr. Galenus, a learned and eloquent physician of Amsterdam, who considered the Christian religion as a system that laid much less stress on faith than practice; and who was for taking into the communion of the Mennonites all those who acknowledged the divine origin of the books of the Old and New Testament, and led holy and virtuous lives.

**GALEON**. See **GALLEON**.

**GALEOPSIS**, a genus of plants belonging to the didynamia class; and in the natural method ranking under the 42d order, *Verticillata*. See **BOTANY Index**.

**GALERICULUM**, was a cap worn both by men and women amongst the ancient Romans. It consisted of skin, which was so neatly dressed with human hair, that the artificial covering could scarcely be distinguished from the natural. It was used by those whose hair was thin; and by wrestlers, to keep their own hair from receiving any injury from the nasty oils with which they were rubbed all over before they exercised. It seems to have resembled our wigs.

**GALIC**, or *GALIC Language*. See **HIGHLANDS**.

**GALICIA**, a province of Spain, bounded on the north and west by the ocean, on the south by Portugal, and on the east by Asturias and the kingdom of Leon. The air is temperate along the coast; but, in other places, it is cold and moist. It is but thin of people; and the produce is wine, flax, and citrons: here also are good pastures, copper, and lead; and the forests yield wood for building of ships. St Jago di Compostella is the capital town.

**GALILEE**, once a province of Judea, now of Turkey in Asia, was bounded by Mount Lebanon on the north, by the river Jordan and the sea of Galilee on the east, by the Chison on the south, and by the

Mediterranean on the west. It was the scene of many of our Saviour's miracles; but the bounds of the country are not now well known, nor yet the places where many of the towns stood.

**GALILEANS**, a sect of the Jews. Their founder was one Judas a native of Galilee, from which place they derived their name. Their chief, esteeming it an indignity for the Jews to pay tribute to strangers, raised up his countrymen against the edict of the emperor Augustus, which had ordered a taxation or enrolment of all the subjects of the Roman empire.

They pretended that God alone should be owned as Master and Lord, and in other respects were of the opinion of the Pharisees; but, as they judged it unlawful to pray for infidel princes, they separated themselves from the rest of the Jews, and performed their sacrifices apart.

As our Saviour and his apostles were of Galilee, they were suspected to be of the sect of Galileans; and it was on this principle, as St Jerome observes, that the Pharisees laid a snare for him; asking, Whether it was lawful to give tribute to Cæsar; that in case he denied it, they might have an occasion of accusing him.

**GALILEO**, **GALILEI**, the famous mathematician and astronomer, was the son of a Florentine nobleman, and born in the year 1564. He had from his infancy a strong inclination to philosophy and the mathematics; and made prodigious progress in these sciences. In 1592, he was chosen professor of mathematics at Padua; and during his abode there he *invented*, it is said, the telescope; or, according to others, improved that instrument, so as to make it fit for astronomical observations: (See **ASTRONOMY**, N<sup>o</sup> 27.) In 1611, Cosmo II. grand duke of Tuscany sent for him to Pisa, where he made him professor of mathematics with a handsome salary, and soon after inviting him to Florence, gave him the office and title of *principal philosopher and mathematician to his highness*.

He had been but a few years at Florence, before he was convinced by sad experience, that Aristotle's doctrine, however ill grounded, was held too sacred to be called in question. Having observed some solar spots in 1612, he printed that discovery the following year at Rome; in which, and in some other pieces, he ventured to assert the truth of the Copernican system, and brought several new arguments to confirm it. For these he was cited before the inquisition; and after some months imprisonment, was released upon a simple promise, that he would renounce his heretical opinions, and not defend them by word or writing. But having afterwards, in 1632, published at Florence his "Dialogues of the two greatest systems of the world, the Ptolemaic and Copernican," he was again cited before the inquisition, and committed to the prison of that ecclesiastical court at Rome. In June 22d N. S. that year, the congregation convened: and in his presence pronounced sentence against him and his books, obliging him to abjure his errors in the most solemn manner; committed him to the prison of their office during pleasure; and enjoined him, as a saving penance, for three years to come, to repeat once a-week the seven penitential psalms: reserving to themselves, however, the power of moderating, changing, or taking away altogether or in part, the above-mentioned punish-

Gallinaceus  
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Gall.

ment and penance. On this sentence, he was detained a prisoner till 1634; and his "Dialogues of the system of the World" were burnt at Rome.

He lived ten years after this, seven of which were employed in making still further discoveries with his telescope. But by the continual application to that instrument, added to the damage he received in his sight from the nocturnal air, his eyes grew gradually weaker, till he became totally blind in 1639. He bore this calamity with patience and resignation, worthy of a great philosopher. The loss neither broke his spirit, nor hindered the course of his studies. He supplied the defect by constant meditation: whereby he prepared a large quantity of materials, and began to dictate his own conceptions; when, by a distemper of three months continuance, wasting away by degrees, he expired at Arcetti near Florence, in January 1642, N. S. in the 78th year of his age.

Among various useful inventions of which Galileo was the author, is that of the simple pendulum, which he had made use of in his astronomical experiments. He had thoughts of applying it to clocks; but did not execute it: the glory of that invention was reserved for Vicenzio his son, who made the experiment at Venice in 1649; and M. Huygens afterwards carried this invention to perfection. He wrote a great number of treatises, several of which were published in a collection by Signior Mendessi, under the title of *L'opera di Galileo Galilei Lynceo*. Some of these, with others of his pieces, were translated into English and published by Thomas Salisbry, Esq. in his mathematical collections, &c. in two volumes folio. A volume also of his letters to several learned men, and solutions of several problems, were printed at Bologna in quarto. Besides these, he wrote many others, which were unfortunately lost through his wife's devotion; who, solicited by her confessor, gave him leave to peruse her husband's manuscripts; of which he tore and took away as many as he said were not fit to be published.

GALINACEUS LAPIS. See GALLINACEUS.

GALIUM, a genus of plants belonging to the tetrandria class; and in the natural method ranking under the 47th order, *Stellate*. See BOTANY Index.

GALL, in the animal economy. See BILE.

Gall was generally given amongst the Jews to persons suffering death under the execution of the law, to make them less sensible of their pain; but gall and myrrh are supposed to have been the same thing; because at our Saviour's crucifixion, St Matthew says, they gave him vinegar to drink mingled with gall; whereas St Mark calls it wine mingled with myrrh: The truth of the matter perhaps is, that they distinguished every thing bitter by the name of gall. The Greeks and Romans also gave such a mixture to persons suffering a death of torture.

A great number of experiments have been made upon the gall of different animals, but few conclusions can be drawn from them with any certainty. Dr Percival, however, hath shown, that putrid bile may be perfectly corrected and sweetened by an admixture of the vegetable acids, vinegar, and juice of lemons. These, he observes, have this effect much more completely than the mineral ones: and hence, he thinks, arises the great usefulness of the vegetable acids in autumnal diseases; which are always attended with a putrescent disposition

of the bile, owing to the heat of the preceding summer. On this occasion he takes notice of a common mistake among physicians, who frequently prescribe elixir of vitriol in those diseases where vinegar or lemon juice would be much more effectual.

From this effect of acids on the gall, he also thinks, we may see why the immoderate use of acids is so pernicious to digestion. It is necessary to health that the gall should be in some degree acrid and alkalescent: but as acids have the property of rendering it perfectly mild and sweet, they must be proportionably pernicious to the due concoction and assimilation of the food; which without an acrid bile cannot be accomplished. Hence the body is deprived of its proper nourishment and support, the blood becomes vapid and watery, and a fatal cachexy unavoidably ensues. This hath been the case with many unfortunate persons, who, in order to reduce their excessive corpulency, have indulged themselves in the too free use of vinegar. From the mild state of the gall in young children, Dr Percival also thinks it is, that they are so much troubled with acidities.

GALL-Bladder. See ANATOMY, N<sup>o</sup> 97.

GALL, in *Natural History*, denotes any protuberance or tumour produced by the puncture of insects on plants and trees of different kinds.

These galls are of various forms and sizes, and no less different with regard to their internal structure. Some have only one cavity, and others a number of small cells communicating with each other. Some of them are as hard as the wood of the tree they grow on, whilst others are soft and spongy; the first being termed *gall nuts*, and the latter *berry galls*, or *apple galls*.

The general history of the gall is this. An insect of the fly kind (the cynips) is instructed by nature to take care for the safety of her young, by lodging her eggs in a woody substance, where they will be defended from all injuries: she for this purpose wounds the leaves or tender branches of a tree; and the lacerated vessels, discharging their contents, soon form tumours about the holes thus made. The external coat of this excrescence is dried by the air; and grows into a figure which bears some resemblance to the bow of an arch, or the roundness of a kernel. This little ball receives its nutriment, growth, and vegetation, as the other parts of the tree, by slow degrees, and is what we call the *gall nut*. The worm that is hatched under this spacious vault, finds in the substance of the ball, which is as yet very tender, a subsistence suitable to its nature; gnaws and digests it till the time comes for its transformation to a nymph, and from that state of existence changes into a fly. After this, the insect, perceiving itself duly provided with all things requisite, disengages itself soon from its confinement, and takes its flight into the open air. The case, however, is not similar with respect to the gall nut that grows in autumn. The cold weather frequently comes on before the worm is transformed into a fly, or before the fly can pierce through its enclosure. The nut falls with the leaves: and although you may imagine that the fly which lies within is lost, yet in reality it is not so; on the contrary, its being covered up so close, is the means of its preservation. Thus it spends the winter in a warm house, where every crack and cranny of the nut is well stopped up; and lies buried as

Gall.

it

Gall,  
Galla.

it were under a heap of leaves, which preserves it from the injuries of the weather. This apartment, however, though so commodious a retreat in the winter, is a perfect prison in the spring. The fly, roused from its lethargy by the first heats, breaks its way through, and ranges where it pleases. A very small aperture is sufficient, since at this time the fly is but a diminutive creature. Besides, the ringlets whereof its body is composed dilate and become pliant in the passage.

Oak galls put, in a very small quantity, into a solution of vitriol in water, though but a very weak one, give it a purple or violet colour: which, as it grows stronger, becomes black; and on this property depends the art of making our writing ink, as also the arts of dyeing and dressing leather, and other manufactures. See *INK, CHEMISTRY Index.*

The best galls come from Aleppo: these are not quite round and smooth like the other sorts, but have several tubercles on the surface. Galls have a very austere styptic taste, without any smell: they are very strong astringents, and as such have been sometimes made use of both internally and externally, but are not much taken notice of by the present practice. Some recommend an ointment of powdered galls and hog's lard as very effectual in certain painful states of hæmorrhoids; and it is alleged, that the internal use of galls has cured intermittents after the Peruvian bark has failed. A mixture of galls with a bitter and aromatic has been proposed as a substitute for the bark.

*GALL, St.*, a considerable town in Swisserland, and in the Upper Thurgow, with a rich and celebrated abbey, whose abbot is a prince of the empire. This place has for some time been a republic, in alliance with the cantons. It is not very large; but is well built, neat, populous. It contains about 10,000 inhabitants, who are chiefly employed in the linen manufacture; and make annually, it is said, 40,000 pieces of linen, of 200 ells each; which renders it one of the richest towns in Swisserland. The inhabitants are Protestants; for which reason there are often great contests between them and the abbey about religious affairs. It is seated in a narrow barren valley, between two mountains, and upon two small streams. E. Long. 29. 5. N. Lat. 47. 38.

*GALL-Fly.* See *CYNIPS, ENTOMOLOGY Index.*

*GALLA*, an Abyssinian nation, originally dwelling, as Mr Bruce supposes, under the line, and exercising the profession of shepherds, which they still continue to do. For a number of years, our author tells us, they have been constantly migrating northwards, though the cause of this migration is not known. At first they had no horses; the reason of which was, that the country they came from did not allow these animals to breed: but as they proceeded northward and conquered some of the Abyssinian provinces, they soon furnished themselves with such numbers, that they are now almost entirely cavalry, making little account of infantry in their armies. On advancing to the frontiers of Abyssinia, the multitude divided, and part directed their course towards the Indian ocean; after which, having made a settlement in the eastern part of the continent, they turned southward into the countries of Bali and Dawaw, which they entirely conquered, and settled there in the year 1537. Another division having taken a westerly course, spread themselves in a semicircle along the banks

of the Nile; surrounding the country of Gojam, and passing eastward behind the country of the Agows, extended their possessions as far as the territories of the Gongas and Gafats. Since that time the Nile has been the boundary of their possessions; though they have very frequently plundered, and sometimes conquered, the Abyssinian provinces on the other side of the river, but have never made any permanent settlement in these parts. A third division has settled to the southward of the low country of Shoa, which the governor of that province has permitted, in order to form a barrier betwixt him and the territories of the emperor, on whom he scarcely acknowledges any dependence.

The Galla are of a brown complexion, and have long black hair; but some of them who live in the valleys are entirely black. At first their common food was milk and butter; but since their intercourse with the Abyssinians, they have learned to plough and sow their land, and to make bread. They seem to have predilection for the number seven, and each of the three divisions already mentioned are subdivided into seven tribes. In behaviour they are extremely barbarous; and live in continual war with the Abyssinians, whom they murder without mercy as often as they fall into their hands. They cut off the privities of the men, and hang them up in their houses by way of trophies; and are so cruel as to rip up women with child, in hopes of thus destroying a male. Yet notwithstanding their excessive cruelty abroad, they live under the strictest discipline at home; and every broil or quarrel is instantly punished according to the nature of the offence. Each of the three divisions of the Galla above mentioned has a king of its own; and they also have a kind of nobility, from among whom the sovereign can only be chosen: however, the commonalty are not excluded from rising to the rank of nobles if they distinguish themselves very much in battle. None of the nobility can be elected till upwards of 40 years of age, unless he has with his own hand killed a number of enemies which added to his own age makes up 40. There is a council of each of the seven tribes, which meets separately in its own district, to settle how many are to be left behind for the governing and cultivating of the territory, and other matters of importance. These nations have all a great veneration for a tree which grows plentifully in their country, called *wanzey*, and which these superstitious people are even said to adore as a god. Their assemblies for the choice of a king are all held under one of these trees; and when the sovereign is chosen, they put a bludgeon of this wood in his hand by way of sceptre, and a garland of the flowers upon his head.

The Galla are reported to be very good soldiers, especially in cases of surprize; but, like most other barbarians, have no constancy nor perseverance after the first attack. They will, however, perform extraordinary marches, swimming rivers holding by the horse's tail, and thus being enabled to do very great mischief by reason of the rapidity of their movements. They are excellent light horse for a regular army in a hostile country; but are very indifferently armed on account of the scarcity of iron among them. Their principal arms are lances made of wood sharpened at the end and hardened in the fire; and their shields are composed only of one single fold of bull's hide; so that they are extremely apt to warp by heat, or become too

soft.

Galla  
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Galle.

soft in wet weather. They are exceedingly cruel; and make a shrill horrid noise at the beginning of every engagement, which greatly terrifies the horses, and very often the barbarous riders which oppose them.

The Galla, according to Mr Bruce's account, are somewhat below the middle size, but extremely light and nimble. The women are fruitful; and suffer so little in childbearing, that they do not even confine themselves for a single day after delivery. They plough, sow, and reap the corn, which is trodden out by the cattle; but the men have all the charge of the cattle in the fields. In their customs they are filthy to the last degree; plaiting their hair with the guts of oxen, which they likewise twist round their middle, and which by the quick putrefaction occasion an abominable stench. They anoint their heads and whole bodies with butter or grease; in which, as well as in other respects, they greatly resemble the Hottentots. It has been supposed that they have no religion whatever; but Mr Bruce is of opinion that this is a mistake. The wanzey, he says, is undoubtedly worshipped by all the nations as a god; and they have likewise certain stones which are worshipped as gods: besides these, they worship the moon, and some stars, when in certain positions, and at some particular seasons of the year. They all believe in a resurrection; and have some faint notions of a state of happiness, but no idea of future punishment. Some of them to the southward profess the Mahometan religion, but those to the east and west are generally Pagans. All of them intermarry with each other; but will not allow strangers to live among them, though the Moors have at last found out a method of trading safely with them. The commodities they deal in are blue Surat cloths, myrrh, and salt; the last being the most valuable article.

The marriages among the Galla are celebrated with some of the disgusting customs of the Hottentots; and after these ceremonies the bridegroom promises to give the bride meat and drink while she lives, and to bury her when dead. Polygamy is allowed among them; but it is singular, that among these people the women solicit their husbands to take others to their embraces. The reason of this custom is, that the men may have numerous families of children, who may be capable of defending them against their enemies; as the Galla, according to our author, always fight in families, whether against foreign enemies or with one another.

GALLAND, ANTHONY, a learned antiquarian, member of the Academy of Inscriptions, and professor of Arabic in the Royal College of Paris, was born of poor parents at Rollo, a village in Picardy. Having studied at the Sorbonne and other universities, he travelled into the east; where he acquired great skill in the Arabic tongue, and in the manners of the Mahometans. He wrote several works; the principal of which are, 1. An Account of the Death of the Sultan Osman, and the Coronation of the Sultan Mustapha. 2. A Collection of Maxims, drawn from the works of the Orientals. 3. A Treatise on the Origin of Coffee. 4. The Arabian Nights Entertainments, &c.

GALLANT, or GALANT, a French term adopted into our language, and signifying polite, civil, and well bred, with a disposition to please, particularly the ladies. It also signifies brave or courageous.

GALLE, the name of several engravers, of whom

the principal was Cornelius, who flourished about the 1600. He learned the art of engraving from his father, and imitated his stiff style, till he went to Rome, where he resided a considerable time, and there acquired that freedom, taste, and correctness of drawing, which are found in his best works. He settled at Antwerp upon his return from Italy, where he carried on a considerable commerce in prints. His best prints are those done after Rubens.

GALLEON, in naval affairs, a sort of ships employed in the commerce of the West Indies. The Spaniards send annually two fleets; the one for Mexico, which they call the *flota*; and the other for Peru, which they call the *galleons*. See FLOTA.

By a general regulation made in Spain, it has been established, that there should be twelve men of war and five tenders annually fitted out for the armada or galleons; eight ships of 600 tons burden each, and three tenders, one of 100 tons, for the island Margarita, and two of 80 each, to follow the armada; for the New Spain fleet, two ships of 600 tons each, and two tenders of 80 each; and for the Honduras fleet, two ships of 500 tons each: and in case no fleet happened to sail any years, three galleons and a tender should be sent to New Spain for the plate.

They are appointed to sail from Cadiz in January, that they may arrive at Porto Bello about the middle of April; where, the fair being over, they may take aboard the plate, and be at Havannah with it about the middle of June; where they are joined by the flota that they may return to Spain with the greater safety.

GALLEOT, a small galley designed only for chase, carrying but one mast and two patereroes; it can both sail and row, and has 16 or 20 oars. All the seamen on board are soldiers, and each has a musket by him on quitting his oar.

GALLERY, in *Architecture*, a covered place in a house, much longer than broad, and usually in the wings of a building, its use being chiefly to walk in.

GALLERIES, in *Gardening*, are certain ornaments made with trees of different kinds; which are very common in all the French gardens, but are seldom introduced into the British ones, especially since the taste for clipped trees has been exploded. For those, however, who may still choose to have them, Mr Miller gives the following directions.

In order to make a gallery in a garden with porticoes and arches, a line must first be drawn of the length you design the gallery to be; which being done, it is to be planted with hornbeam, as the foundation of the gallery. The management of galleries is not difficult. They require only to be digged round about; and sheered a little when there is occasion. The chief curiosity required is in the ordering the fore part of the gallery, and in forming the arches. Each pillar of the porticoes or arches ought to be four feet distant from another, and the gallery 12 feet high and 10 feet wide, that there may be room for two or three persons to walk abreast. When the hornbeams are grown to the height of three feet, the distance of the pillars well regulated, and the ground work of the gallery finished, the next thing to be done is to form the frontispiece; to perform which, you must stop the hornbeam between two pillars for that purpose, which forms the arch. As it grows, you must with your sheers cut off those boughs which outshoot the others.

Galleon  
||  
Galleries.

Gallery,  
Galley.

thers. In time they will grow strong, and may be kept in form by the sheers. Portico galleries may be covered with lime trees.

**GALLERY**, in *Fortification*, a covered walk across the ditch of a town, made of strong beams covered over with planks, and loaded with earth: sometimes it is covered with raw hides, to defend it from the artificial fires of the besieged.

**GALLERY of a Mine**, is a narrow passage or branch of a mine carried on under ground to a work designed to be blown up. See **MINE**.

**GALLERY**, in a ship, that beautiful frame, which is made in the form of a balcony, at the stern of a ship without board; into which there is a passage out of the admiral's or captain's cabin, and is for the ornament of the ship.

**GALLEY**, a kind of low flat built vessel, furnished with one deck, and navigated with sails and oars, particularly in the Mediterranean. By the Greek authors under the eastern empire, this kind of vessel was called *γαλαρα* and *γαλαρα*; and by the Latin authors of the same time, *galea*; whence, according to some, the modern denomination. Some say it was called *galea*, on account of a casque or helmet which is carried on its prow, as Ovid attests, *de Trifibus*. The French call it *galere*; by reason, they say, that the top of the mast is usually cut in the form of a hat, which the Italians call *galero*. Others derive both *galea*, and *galere*, from a fish by the Greeks called *γαλιωρος*, or *ζιφιως*, and by us the *sword-fish*, which this vessel resembles. Lastly, Others derive the *galley*, *galea*, *galere*, *galeasse*, &c. from the Syriac and Chaldee *gaul*, and *galin*, a man exposed on the water in a vessel of wood.

The largest sort of these vessels is employed only by the Venetians. They are commonly 162 feet long above, and 133 feet by the keel; 32 feet wide, with 23 feet length of stern post. They are furnished with three masts, and 32 banks of oars; every bank containing two oars, and every oar being managed by six or seven slaves, who are usually chained thereto. In the fore part they have three little batteries of cannon, of which the lowest is of two 36 pounders, the second of two 24 pounders, and the uppermost of two 2 pounders: three 18 pounders are also planted on each quarter. The complement of men for one of these galleys is 1000 or 1200. They are esteemed extremely convenient for bombarding or making a descent upon an enemy's coast, as drawing but little water; and having by their oars frequently the advantage of a ship of war, in light winds or calms, by cannonading the latter near the surface of the water; by scouring her whole length with their shot, and at the same time keeping on her quarter or bow, so as to be out of the direction of her cannon.

The galleys next in size to these, which are also called *half galleys*, are from 120 to 130 feet long, 18 feet broad, and nine or ten feet deep. They have two masts which may be struck at pleasure; and are furnished with two large lateen sails, and five pieces of cannon. They have commonly 25 banks of oars, as described above. A size still less than these are called *quarter galleys*, carrying from 12 to 16 banks of oars. There are very few galleys now besides those in the Mediterranean, which are found by experience to be of little utility except in fine weather; a circumstance

which renders their service extremely precarious. They generally keep close under the shore, but sometimes venture out to sea to perform a summer cruise.

**GALLER-Worm**, in *Zoology*. See **IULUS**, **ENTOMOLOGY Index**.

**GALLI**, in antiquity, a name given to the priests of Cybele, from the river Gallus in Phrygia; but of the etymology of the name we have no certain account. All that we learn with certainty about them is, that they were eunuchs and Phrygians, and that in their solemn processions they danced, bawled, drummed, cut and flashed themselves, playing upon timbrels, pipes, cymbals, &c. and driving about an ass loaded with the sacred rites and trumpery of their goddesses. When a young man was to be initiated, he was to throw off his clothes, run crying aloud into the midst of their troop, and there draw a sword and castrate himself; after this he was to run into the street with the parts cut off, in his hand, throw them into some house, and in the same house put on a woman's dress.

These priests had the names also of *Curetes*, *Corybantes*, and *Daetyli*. The chief priest was called *Archigallus*. This order of priesthood is found both amongst the Greeks and Romans. See an account of them in *Lucret. lib. ii. and Juven. Sat. vi.*

**GALLI**, the *Gauls*. See **GALLIA** and **GAULS**.

**GALLI**, five small desolate islands on the coast of the Principato Citra of Naples. They are supposed to be the Syrenuse, or islands once inhabited by the Sirens, which Ulysses passed with so much caution and hazard. Great revolutions, however, have been occasioned in their shape, size, and number, by the effects of subterranean fire; and some learned persons go so far as to assert, that these rocks have risen from the bottom of the sea since Homer sang his rhapsodies; consequently, that those monsters dwelt on some other spot, probably Sicily or Capri. The tradition of Sirens residing hereabouts is very ancient and universally admitted; but what they really were, divested of their fabulous and poetical disguise, it is not easy to discover. See **SIREN**.

The Sirenuse were only three in number; and therefore if these and the Galli be the same, two more must have since risen, or the three have been split into five by a subterraneous convulsion. On the largest is a watch-tower, and the next has a deserted hermitage. The principal island is only a narrow semicircular ridge covered with a shallow coat of soil; two other little islands and some jagged rocks just peeping above the waves, correspond with this one so as to trace the outline of a volcanical crater. The composition of them all is at top a calcareous rock extremely shaken, tumbled, and confused, mixed with masses of breccia, disposed in a most irregular manner; below these is lava, and the deeper the eye follows it the stronger are the marks of fire: below the surface of the water, and in some places above it, the layers are complete blocks of basalt. Hence it is presumed by some, that central fires have heaved up to light the torrefied substances that originally lay near their focus, with all the intermediate strata that covered them from the sea. The layers incline downwards from east to west; the air seems to have forced its way into part of the mass while in fusion, and by checking its workings caused many large caverns.

Galley,  
Galli.

Gallia,  
Galliard.

caverns to be left in it. These islands are uncultivated and uninhabited since the old hermit of St Antonio died. Myrtle covers most of the surface.

GALLIA, a large country of Europe, called *Gallia* by the Greeks. The inhabitants were called *Galli*, *Celtæ*, *Celtiberi*, and *Celtescythæ*. Ancient Gaul was divided into four different parts by the Romans, called *Gallia Belgica*, *Narbonensis*, *Aquitania*, and *Celtica*. *Gallia Belgica* was the largest province, bounded by Germany, *Gallia Narbonensis*, and the German ocean; and contained the modern county of Alsace, Lorraine, Picardy, with part of the Low Countries, (and of Champagne, and of the Isle of France. *Gallia Narbonensis*, which contained the provinces now called *Languedoc*, *Provence*, *Dauphiné*, *Savoy*, was bounded by the Alps and Pyrenean mountains, by Aquitania, Belgium, and the Mediterranean. Aquitania *Gallia*, now called the provinces of *Poitou*, *Santonge*, *Guienne*, *Berry*, *Limosin*, *Gascogny*, *Auvergne*, &c. was situated between the *Garumna*, the Pyrenean mountains, and the ocean. *Gallia Celtica*, or *Lugdunensis*, was bounded by Belgium, *Gallia Narbonensis*, the Alps, and the ocean. It contained the country at present known by the name of *Lyonnois*, *Touraine*, *Franche Compté*, *Senenois*, *Switzerland*, and part of *Normandy*. Besides these grand divisions, there is often mention made of *Gallia Cisalpina* or *Citerior*, *Transalpina* or *Ulterior*, which refers to that part of Italy which was conquered by some of the Gauls who crossed the Alps. By *Gallia Cisalpina*, the Romans understood that part of Gaul which lies in Italy, and by *Transalpina*, that which lies beyond the Alps, in regard only to the inhabitants of Rome. *Gallia Cispadana*, and *Transpadana*, is applied to a part of Italy conquered by some of the Gauls; and then it means the country on this side of the Po, or beyond the Po, with respect to Rome. By *Gallia Togata*, the Romans understood *Cisalpina* Gaul, where the Roman gowns, *togæ*, were usually worn. *Gallia Narbonensis* was called *Braccata*, on account of the peculiar covering of the inhabitants for their thighs. The epithet of *Comata* is applied to *Gallia Celtica*, because the people suffered their hair to grow to an uncommon length. The inhabitants were great warriors, and their valour overcame the Roman armies, took the city of Rome and invaded Greece in different ages. They spread themselves over the greatest part of the world. They were very superstitious in their religious ceremonies, and revered the sacerdotal order as if they had been gods. They long maintained a bloody war against the Romans, and Cæsar resided ten years in their country before he could totally subdue them. See GAUL.

GALLIARD, or GAGLIARDA, a sort of dance anciently in great request; consisting of very different motions and actions, sometimes proceeding *terra à terra* or smoothly along; sometimes capering; sometimes along the room, and sometimes acrois. The word is French, *gailliarde*, or rather Italian; and literally signifies "gay, merry, sprightly." This dance was also called *Romanesque*, because brought from Rome.

Thoinot Arbeau, in his *Orchesography*, describes it as consisting of five steps, and five positions of the feet, which the dancers performed before each other, and

whereof he gives us the score or tablature, which is of six minims, and two triple times.

GALLIARDA, in the Italian music, the name of a tune that belongs to a dance called a *Galliard*. The air of it is lively in triple time.

GALLIC ACID. See CHEMISTRY Index.

GALLICAN, anything belonging to France; thus the term *Gallican church* denotes the church of France, or the assembly of the clergy of that kingdom.

GALLICISM, a mode of speech peculiar to the French language, and contrary to the rules of grammar in other languages. With us it is used to denote such phrases or modes of speech in English as are formed after the French idiom.

GALLINACEUS LAPIS, a glossy mineral substance which is supposed by some to be produced by the operation of volcanic fires; and is thought to be the same with the *lapis obsidianus* of the ancients.

GALLINÆ, an order of birds. See ORNITHOLOGY Index.

GALLINACIOUS, an appellation given to the birds of the order of the gallinæ.

GALLING, or EXCORIATION, in Medicine. See EXCORIATION.

GALLING of a Horse's Back, a disorder occasioned by heat, and the chafing or pinching of the saddle.

In order to prevent it, some take a hind's skin well garnished with hair, and fit it neatly under the pannel of the saddle, so that the hairy side may be next the horse.

When a horse's back is galled upon a journey, take out a little of the stuffing of the pannel over the swelling, and sew a piece of soft white leather on the inside of the pannel: anoint the part with salt butter, and every evening wipe it clean, rubbing it till it grow soft, anointing it again with butter, or, for want of that, with grease: wash the swelling, or hurt, every evening with cold water and soap; and strew it with salt, which should be left on till the horse be saddled in the morning.

GALLINULE. See FULICA, ORNITHOLOGY Index.

GALLIPOLI, a sea-port town of Italy, in the kingdom of Naples, and in the Terra-di-Otranto, with a bishop's see. It stands on a rocky island, joined to the continent by a bridge. From the remotest antiquity this was a station so favourable to commerce, that every maritime power wished to secure it; and it is a reproach to government, that nothing has been done to improve its natural advantages: at present, Mr Swinburne informs us, it has neither harbour nor shelter for shipping. Charles II. demolished Gallipoli for its adherence to Frederick of Arragon. The Venetians treated it with great cruelty in the 15th century: and in 1481 it was pillaged by the Turks. To preserve it from future calamities, Charles V. repaired and strengthened its fortifications; and, since that period, it has enjoyed the benefits of peace and trade, which have rendered it the most opulent and gayest town upon the coast, though its inhabitants do not exceed 6000 in number. Consumptions and spitting of blood are rather frequent here, occasioned by the great subtilty of the air, which is ventilated from every quarter. The buildings are tolerable, and some

Gallipoli  
||  
Gallois.

of the churches have good paintings. The cotton trade brings in about 30,000 ducats a-year. Good muslins, cotton stockings, and other parts of apparel, are manufactured here, and purchased by the Provençals; for Gallipoli has no direct trade with the metropolis. Silk and saffron were formerly objects of traffic; but heavy duties and oppression have caused them to be abandoned. The wine of this territory is good; but from dryness of climate, and shallowness of soil, the vintage frequently fails in quantity; and then the Gallipolitans have recourse to Sicily for a supply. Oil is the great support of the place: two thirds of the produce of its olive plantations are exported to France, and the north of Italy; the remainder is sent to Naples, and other ports of the kingdom. Neapolitan merchants, by means of agents settled at Gallipoli, buy up the oils, from year to year, long before an olive appears upon the tree; and the price is afterwards settled by public authority. The Neapolitans sell their oil to the merchants of Leghorn; and, if faithfully served by their factors in Terra di Otranto, ought to double their capital in two years. But, to balance this advantage, they run great risks, pay exorbitant interest, and have frequent bankruptcies to guard against. E. Long. 18. 10. N. Lat. 40. 20.

GALLIPOLI, a sea-port town of Turkey in Europe, in the province of Romania, seated at the mouth of the sea of Marmora, with a good harbour, and a bishop's see. It contains about 10,000 Turks, 3500 Greeks, besides a great number of Jews. The bazar or bezzestein, the place where merchandises are sold, is a handsome structure, with domes covered with lead. It is an open place, and has no other defence than a paltry square castle. The houses of the Greeks and Jews have doors not above three feet and a half high, to prevent the Turks riding into their houses. E. Long. 26. 59. N. Lat. 40. 30.

GALLIUM. See GALIUM, BOTANY *Index*.

GALLO, an island of the South sea, near the sea-coast of Peru, in South America, which was the first place possessed by the Spaniards when they attempted the conquest of Peru; it is also the place where the bucaniers used to come for wood and water, and to refit their vessels when they were in these parts. W. Long. 88. 0. N. Lat. 2. 30.

GALLO-Græcia, a country of Asia Minor, near Bithynia and Cappadocia. It was inhabited by a colony of Gauls, who assumed the name of *Gallogræci* because a number of Greeks had accompanied them in their emigration. See GALATIA.

GALLOIS, JOHN, born at Paris in 1632, was an universal scholar, but chiefly noted for having been, in conjunction with M. de Sallo who formed the plan, the first publisher of the *Journal des Sçavans*. The first journal was published January 5. 1665; but these gentlemen criticised new works so rigorously, that the whole tribe of authors united and cried it down. De Sallo declined entirely after the publication of the third number: but Gallois ventured to send out a fourth, on January 4. 1666; though not without a most humble advertisement at the beginning, wherein it was declared, that the author "would not presume to criticise, but simply give an account of the books." This, with the protection of M. Colbert, who was

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greatly taken with the work, gradually reconciled the public to it: and thus began literary journals, which have been continued from that time to this, under various titles, and by various writers. Gallois continued his journal to the year 1674, when more important occupations obliged him to turn it over to other hands. M. Colbert had taken him into his house to teach him Latin; and when he lost his patron in 1683, he was first made librarian to the king, and then Greek professor in the royal college. He died in 1707.

GALLON, a measure of capacity both for dry and liquid things, containing four quarts. But these quarts, and consequently the gallon itself, are different, according to the quality of the things measured: For instance, the wine gallon contains 231 cubic inches, and holds eight pounds avoirdupois of pure water; the beer and ale gallon contains 282 solid inches, and holds ten pounds three ounces and a quarter avoirdupois of water; and the gallon for corn, meal, &c. 272½ cubic inches, and holds nine pounds thirteen ounces of pure water.

GALLOP, in the manege, is the swiftest natural pace of a horse, performed by reaches or leaps; the two fore feet being raised almost at the same time; and when these are in the air, and just ready to touch the ground again, the two hind feet are lifted almost at once. The word is borrowed from the barbarous Latin *calupare*, or *calpare*, "to run." Some derive it from *caballicare*; others from the Greek *καλπαιζειν*, or *καλπαι*, to spur a horse.

GALLOPER, in artillery, is the name of a carriage which serves for a pound and a half gun. This carriage has shafts so as to be drawn without a limber, and is thought by some to be more convenient and preferable to other field carriages; and it may likewise serve for our light three and six pounders.

GALLOWAY, a county of Scotland, which gives the title of Earl to a branch of the noble family of Stuart. It is divided into two districts; the western, called *Upper Galloway*, being the same with Wigtonshire; and the eastern, or stewartry of Kirkcudbright, called *Lower Galloway*. See KIRKCUDBRIGHT and WIGTONSHIRE.

*Mull of Galloway*, the most southerly cape or promontory of all Scotland, in the county of Galloway, and on the Irish sea.

GALLOWAYS is the name of a peculiar sort of horses, so called from the county of Galloway in Scotland, where they are bred. Tradition reports that this kind of horses sprang from some Spanish stallions, which swam on shore from some of the ships of the famous Spanish armada, wrecked on the coast; and coupling with the mares of the country, furnished the kingdom with their posterity. They were much esteemed, and of a middling size, strong, active, nervous, and hardy.

GALLOWS, an instrument of punishment, whereon persons convicted capitally of felony, &c. are executed by hanging.

Among our ancestors it was called *furca*, "fork;" a name by which it is still denominated abroad, particularly in France and Italy. In this latter country, the reason of the name still subsists; the gallows being a real fork driven into the ground, across the legs whereof

Gallon  
||  
Gallows.

Gallus whereof is laid a beam, to which the rope is tied. See  
 Furca.

Gallus  
 ||  
 Galvani.

GALLUS, CORNELIUS, an ancient Roman poet, born at Forum Julium, now called *Frejus*, in France. He was a particular favourite with Augustus Cæsar, who made him governor of Egypt: but his maladministration there occasioned his banishment, and the loss of his estate; for grief of which he put an end to his own life. He wrote four books of love elegies; and Virgil has complimented him in many places.

GALLUS, or *Cock*. See PHASIANUS, ORNITHOLOGY Index.

GALLY, in printing, a frame into which the compositor empties the lines out of his composing-stick, and in which he ties up the page when it is completed.

The gally is formed of an oblong square board, with a ledge on three sides, and a groove to admit a false bottom called a *galley slice*.

GALVANI, LEWIS, was born at Bologna in Italy, in the year 1737. There many of his relations had arrived at distinguished eminence in jurisprudence and divinity, and he himself had the honour of giving his name to a supposed new principle in nature, which of consequence is called *Galvanism*, although this great man gave it the name of *animal electricity*. From a boy he became enamoured of the greatest austerities of the Catholic religion, and joined himself to a convent, the monks of which were celebrated for their attachment to the solemn duty of visiting the dying. He wished much to become a member of this order, but was prevailed on to relinquish the idea by one of the brotherhood, after which he turned his whole attention to the study of medicine in its various branches. He studied under Beccari, Tacconi, Galli, and in a particular manner Galleazzi, who took him into his own house; and he afterwards became his son-in-law. He acquired great reputation by his inaugural thesis, *De Ossibus*, in 1762, and was soon after chosen public lecturer in the university of Bologna, and reader in anatomy to the institute of that city. So much admired was his talent for lecturing, that vast numbers constantly attended him; and he employed his few leisure hours in making experiments, and in the useful study of comparative anatomy. We find in the Memoirs of the Institute of Bologna, a number of curious observations on the urinary organs, and on the organs of hearing in birds.

Soon after his anatomical and physiological knowledge was fully established throughout the Italian schools, a mere accident led him to that interesting discovery which will transmit his name with honour to the latest posterity. His amiable wife, for whom he cherished the most ardent love, and with whom he had been united for a number of years, was in a declining state of health, and was using a soup of frogs by way of restorative. Some of these animals being skinned for this purpose, were lying on a table in Galvani's laboratory, where also stood an electrical machine. One of those who assisted him in conducting his experiments, unintentionally brought the point of a scalpel near the crural nerves of a frog which lay near the conductor, when the muscles of the limb were very strongly convulsed. Madame Galvani, who was a woman of a penetrating

understanding, and a lover of science, happened to witness the phenomenon, of which she instantly informed her husband. On his arrival he repeated the experiment, and discovered that the convulsions only happened when the scalpel was in contact with the nerve, and a spark was drawn from the conductor at the same time. After an almost endless variety of experiments, conducted with great ingenuity, which it would be foreign to the design of this article to enumerate here, he concluded that all animals have within them an electricity of a peculiar nature; that this fluid is contained in most parts, but is most apparent in the nerves and muscles; that it is secreted by the brain, and diffused by the nerves through various parts of the body.

He compared each muscular fibre to a small Leyden phial, and attempted to explain the phenomena of muscular motion by analogies taken from that instrument. He first thought of its pathological influence in regard to rheumatic, convulsive, paralytic, and other nervous affections. His first publication on this grand discovery was entitled *Aloysii Galvani de viribus Electricitatis in Motu Musculari Commentarius*, which made its appearance in 4to, in the year 1791, and was printed for the Institute of Bologna. By this work the attention of philosophers both in Italy and other countries was instantly roused, and it was soon followed by numerous publications, in some of which the sentiments of Galvani were defended, and in others they were opposed. The celebrated Volta turned his attention to the subject, and adduced a number of arguments to prove that Galvani's opinion respecting animal electricity was erroneous, deriving the phenomena from the electric matter of the atmosphere, and allowing the nerves and muscles no higher a place than that of the most sensible tests hitherto discovered. The doctrine of Volta received many admirers and advocates; yet there are still numbers to be met with in the learned world who support the sentiments of Galvani, who still adhere to his original theory, in the defence of which he displayed much candour and modesty, as well as ingenuity, by which he may be justly considered as deserving that distinguished place among experimental philosophers, which the union of his name with the most interesting natural phenomena will probably secure to him for ever. See GALVANISM.

These important inquiries, joined to the duties of his office as a professor, and his extensive practice in the capacity of surgeon and man-midwife (*accoucheur*), in both which he eminently excelled, afforded abundant scope for his indefatigable industry. He composed a variety of memoirs on topics connected with his profession; but these, as far as we know, have never been published. He delighted to converse with men of science, in whose company new publications were read, and their merits investigated, which was certainly a valuable source of intellectual improvement.

The character of Galvani in private life is allowed to have been most amiable; and his sensibility, which was naturally strong, received a violent shock in the death of his amiable wife, in the year 1790. This event brought upon him the most alarming melancholy, which he even delighted to encourage, by visiting her tomb in the nunnery of St Catharine, and pouring forth his unavailing lamentations over her grave. He was ever punctual in the discharge of the duties of his religion, even

Galvani. even to the minutest rite, as he never lost the pious impressions which were made upon his mind at an early period of life. To this cause we may probably trace back his determination never to take what was called the civic oath of allegiance to the Cisalpine republic, for which he was barbarously deprived of all his offices and dignities. Devoured by melancholy, and nearly reduced to a state of indigence, he took up his residence in the house of his brother James, a man of respectability, where he fell into a state of extenuation and debi-

lity. At this time even *republican* governors appear to have been ashamed of their brutal conduct towards such an extraordinary man; in consequence of which a decree was passed for restoring him to his chair in the university, together with its emoluments; but this fit of generosity was too long in seizing them. He departed this life on the 5th of November, 1798, in the 61st year of his age, amidst the tears of his friends, and the regret of the public, in whose death the learned world has been deprived of one of its brightest ornaments.

Galvani.

## G A L V A N I S M.

<sup>1</sup>  
Experiments  
shewing

IF TWO pieces of metal, the one of zinc, and the other of silver, or the one of zinc and the other of copper, or, what answers the purpose equally well, a penny piece and a half crown piece, be so placed that the one shall touch the upper surface of the tongue, and the other shall touch its under surface, while the edges project over the point; as often as the edges of the metals in this situation are brought into contact, a peculiar sensation is produced in the tongue; there is something like a slight shock of electricity, and there is perceived at the same time an austere, astringent, or metallic taste.

If a bit of tin-foil be placed on one of the eyes, and a bit of copper held between the teeth or touching the tongue, and a communication be formed by means of a wire between the piece of metal on the eye and that on the tongue, a flash of light is seen, and this is produced as often as the communication is completed. But, in the above experiments, if metals of the same kind be employed, no perceptible effect whatever is produced.

If a pile composed of 50 or 60 pairs of plates of zinc and silver, or zinc and copper, be arranged in a regular series, with pieces of cloth moistened in a solution of common salt placed between each pair; and if one hand previously moistened with water touch the lower pair, and the other hand, also moistened, touch the upper pair of plates, the moment the communication between the bottom and top of the pile is completed, a smart shock is felt; and if 50 or 60 pairs of plates of copper and zinc be arranged in a trough as will be afterwards described, and the spaces between the pairs be filled with water, to which about  $\frac{1}{8}$  of pretty strong nitric

acid has been added, a similar shock is perceived, when the hands wetted with water touch the plates at the extremities of the trough. If a communication by means of wires and two pieces of well-prepared charcoal be made between the extremities of the trough, a very brilliant combustion is excited every time the two pieces of charcoal are brought into contact. By placing tinfoil, gold leaf, white or yellow Dutch metal or brass leaf, on a wire connected with one end of the trough, and touching the metallic leaves with a plate of copper or zinc connected with a wire from the other end of the trough, a rapid and brilliant deflagration is exhibited every time that the communication is effected.

The phenomena which are thus produced have received the name of *Galvanism*, from the name of Galvani, who first observed and published an account of some of them, and the power by which these effects are produced has been denominated the *galvanic power* or *fluid*. From its effects on animals being similar to those of the electrical fluid, it was at first called *animal electricity*; but then the knowledge of galvanism was limited to its effects on animals, and it was supposed to depend on something peculiar to animal life.

In the following treatise we propose to give a view of the progress and present state of galvanism; and for this purpose we shall arrange the whole under two great divisions. Under the first, we shall consider the phenomena of galvanism, or detail the facts which have been ascertained with regard to this power. The second part will be occupied in the history, progress, and theories, which have been held with regard to the nature of galvanism.

## PART I. OF THE PHENOMENA OF GALVANISM.

<sup>3</sup>  
Arrangement.

IN treating of the phenomena of galvanism, its progressive history suggests an arrangement sufficiently convenient for taking a view of the effects of the galvanic fluid. Those effects which are to be regarded as strictly chemical, were altogether unknown, till after its application to animals, and a great mass of facts relative to its effects on animal life had been accumulated. We may therefore first consider the effects produced on animals by the operation of the galvanic fluid, and in the next place those effects which are strictly chemical.

But before we proceed to this, it is necessary that the nature and construction of the apparatus, by which these effects were produced, should be understood. These topics, therefore, shall be the subjects of the three following chapters. In the first we shall treat of the construction of the apparatus by which the phenomena of galvanism are produced; the second will be employed in considering the effects of the galvanic fluid on animals; and the third will comprehend a view of its chemical effects.

Construction of Apparatus.

CHAP. I. *Of the Construction of the Apparatus for exhibiting the Phenomena of Galvanism.*

4  
Apparatus at first simple

ON the first discovery of galvanism, the apparatus for exhibiting its effects was extremely simple. It consisted merely of two pieces of different metals, such as has been described above, by which a peculiar sensation is produced on the tongue. This, it has been stated, is effected by means of a piece of zinc and a piece of copper, the one placed on the upper surface, and the other on the under surface of the tongue, while the projecting edges are brought into contact. In the same way, and with such an apparatus, a great variety of experiments, especially in cold blooded animals, were exhibited, when the knowledge of this remarkable power was first announced and investigated.

Plate  
CCXXIX.

For the purpose of exhibiting some of the simpler effects of galvanism, we shall describe the following apparatus, which is of very easy construction. AB, fig. 1. is an iron wire, sharp at the point A, and fixed in the wooden stand C. If a frog prepared in the way which we shall immediately describe, be fixed on the point of the wire at A, and a gold or a silver wire (a silver tea spoon will answer the purpose) be brought into contact with the side of the wire, as at the point D; and while in contact with the wire at D, it is brought into contact with the feet of the frog at E or F, the effect of the galvanic power will be immediately perceived. The limbs of the animal will be strongly convulsed, and will exhibit as much motion by the contraction of the muscles as if it were alive, and in full vigour. But if an iron wire, similar to AB, were substituted for the gold or silver wire, no such effect would be produced.

5  
Methods of preparing frogs for experiments.

Frogs, as they are most easily found, and as they are, perhaps, more convenient in other respects, have been oftener the subject of galvanic experiments than any other animal. To prepare them for these experiments, various methods have been followed. Some physiologists propose to remove only the integuments, and lay bare the muscles, while others open the cavities of the thorax and abdomen, remove the viscera which are contained in these cavities, and bring into view the nerves and muscles which are there distributed. Some again, after the above previous preparation, separate all the parts between the origin of the nerve and its insertion in the muscle, so that the latter may be attached by means of the nerves only, to the trunk of the body; while others, after a similar preparation, cut off the animal's head, that the effects produced by galvanism may not be confounded with the voluntary movements of the living animal. By another mode of preparation, each of the parts is separated from the body by dissection, after laying bare the muscles and nerves.

But in general a frog is understood to be prepared when it is divided with a pair of scissars into two portions, through the middle of the body and spine. The viscera are then removed, as well as the integuments of the inferior extremities. As the sciatic nerves of this animal rise very high upon the spine, they are distinctly seen after this treatment. When it is intended, as in some experiments, to am the nerves, as it is called, a pair of sharp-pointed scissars is introduced beneath

them, and the spine is cut through, but without dividing the nerves. A portion of the inferior part of the spine is afterwards to be separated, that room may be left for covering the nerves with a bit of tin-foil. This is what is usually understood by aming or coating the nerves. In some experiments it will be found more convenient to separate the lower extremities from the trunk, and to employ the crural nerve.

Phenomena similar to the above may be produced by placing a frog A prepared in the way described above, on a plate of zinc B, fig. 2. and on a plate of silver or copper C. If the communication between the plates A and B be completed by means of the conductor D, the muscles of the frog are immediately thrown into strong convulsions, and these motions are renewed as often as the contact is made by the conducting wire and the two metals.

The apparatus we have now described affords an example of the simplest galvanic combination, or what is usually denominated a single galvanic combination. Here it may be observed, that this combination must consist of three different conductors. The conductors of electricity have been arranged into two principal classes: to the first belong the metallic substances and charcoal, which have been otherwise called dry and perfect conductors; the second class consists of the imperfect conductors, which are water and other oxidating fluids, and the substances which contain these fluids. But although the conductors of electricity, for the sake of conveniency, are thus arranged, they differ from each other in their conducting power, and this difference is greatest among the substances comprehended under the second class. Now, if the three conductors of the galvanic fluid be all of the first class, or all of the second, the effect is scarcely perceptible. An active, simple galvanic combination, then, must consist of three different bodies, one conductor must belong to one class, and two different conductors must be taken from the other class. In fig. 3. and 4. are exhibited examples of active simple galvanic combinations. In fig. 2. the letters AB mark the bodies belonging to the first class or perfect conductors; and *a* marks the bodies belonging to the second class, or imperfect conductors; and in fig. 3. A marks one body belonging to the first class, and *ab* two bodies belonging to the second class, or the imperfect conductors. Of the three bodies forming a galvanic combination, if two of them belong to the first class, and one to the second, this combination is said to be of the first order; but if one of the three bodies only belong to the first class, and two to the second, the combination is said to be of the second order. Fig. 3. is a galvanic combination of the first order, and fig. 4. is one of the second. This may be further illustrated by examining fig. 5, 6, 7, which consist of two bodies only, and therefore are not active combinations; and also by examining fig. 8 and 9, which consist of three bodies, but two of them are of the same kind, and therefore act as a single body. In the last five figures, the capital letters denote the bodies belonging to the first class, and the small letters those belonging to the second.

In the single active galvanic combination, or the simple galvanic circle, the two bodies of one class must be in contact with each other in one or more points, while, at the same time, they are connected together at other points

Construction of Apparatus.

6

Single galvanic combinations

Construction of Apparatus.

points with the body belonging to the other class. Thus, if a prepared frog is convulsed by the contact of the same piece of metal in two different places, the fluids of those parts which must be somewhat different from each other, are the two conductors of the second class, and the metal constitutes the third body for the conductor of the first class. But if two metals be employed, the fluids of the prepared animal differing little from each other, are to be considered as one body of the second class.

7  
Action of galvanism accompanied by chemical action.

Here it may be necessary to anticipate a little, by observing, that in a simple galvanic circle, the conductor or conductors of one class must have some chemical action upon the other conductor or conductors, otherwise no galvanic action would be produced, or at least a very feeble one, from the combination of three bodies. This galvanic action, too, seems to be in proportion to the degree of chemical action, from which some have supposed, that this chemical agency is the primary cause of the phenomena.

It is found that the most active galvanic combinations, or galvanic circles belonging to the first order, are those in which two solids possessing different degrees of oxidability, are combined with a fluid which is capable of oxidating at least one of the solids. Gold, silver, and water, do not form an active galvanic combination, because water is incapable of oxidating either of these metals; but if a small quantity of nitric acid, or any other fluid which may be decomposed by the silver, be mixed with water, an active galvanic circle may thus be formed.

If zinc, silver, and water, or zinc, copper, and water, be combined together, an active galvanic circle is formed, and the water will be found to oxidate the zinc, if it hold any portion of atmospherical air in solution, and still more so, if it contain oxygen. But the combination of the same substances forms a much more powerful galvanic circle, if a little nitric acid be added to the water, because then the fluid has a strong action on the zinc, and oxidates it.

Galvanic combinations belonging to the second order are found to be most powerful, when two conductors of the second class have different chemical actions on the conductors of the first class, while at the same time they have an action upon each other. As an example of this, copper, silver, or lead, combined with a solution of an alkaline sulphuret, and diluted nitric acid, constitute a very active galvanic circle.

8  
Galvanic circles of the first order.

The following is a list of galvanic circles of the first order, composed of two conductors of the first class, and one of the second.

Zinc with gold, or charcoal, or silver, or copper, or tin, or iron, or mercury; and water containing a small quantity of any of the mineral acids.

Iron, with gold, or charcoal, or silver, or copper, or tin, and a weak solution of any of the mineral acids, as above.

Tin, with gold, or silver, or charcoal, and a weak solution of any of the mineral acids, as above.

Lead, with gold, or silver, and a weak acid solution, as above.

Any of the above metallic combinations, and common water, viz. water containing atmospherical air, or especially water containing oxygen air.

Copper, with gold, or silver, and a solution of nitrate

of silver and mercury; or the nitric acid; or the acetous acid.

Silver, with gold, and the nitric acid.

The following is a list of galvanic circles of the second order, consisting of one conductor of the first class, and two of the second.

Charcoal, or Copper, or Silver, or Lead, or Tin, or Iron, or Zinc,	with water, or with a solution of any hydro- genated alkaline sulphurets, capable of acting on the first three metals on- ly;	and a solution of nitrous acid, or oxygenated mu- riatic acid, &c. capable of acting upon all the me- tals.
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9  
Of the second order.

But the effects of the galvanic fluid are extremely feeble, when they are limited to the operation of even the most powerful simple combinations. In the progress of the knowledge of galvanism it was soon found, that these effects might be combined and increased to almost any degree. This is done by connecting together a number of active simple combinations, which, it is to be observed, must be so disposed that they may not counteract each other. A number of simple combinations thus connected together have received the name of *batteries*; and these batteries are said to belong to the first or second order, according as the simple combinations of which they are formed, are composed of substances of the first or second order of conducting powers. Thus, for example, if a plate of zinc be laid upon a plate of copper, and a piece of moistened card or leather be laid upon the zinc, and a similar arrangement of three other pieces be laid upon the first, and any number of combinations of the same kind be continued, taking care that they are always arranged in the same order, the whole will form a battery of the first order. But if a plate of copper be connected with a piece of cloth moistened with water, and the latter with another piece of cloth, moistened with a solution of sulphuret of potash, and this be connected with another piece of copper, repeating the same series to any convenient number, a battery of the second order will be formed of the whole.

10  
Batteries.

Batteries of the second order have been arranged by Mr Davy into the three following classes. 1. The most feeble battery is composed, when single metallic plates are so arranged that two of their surfaces or opposite extremities are in contact with different fluids, the one of which is capable, and the other is incapable, of oxidating the metal, a regular series of such combinations are formed. 2. When single combinations or elements of the series are each composed of a single plate of a metallic substance, capable of acting upon sulphurated hydrogen, or upon sulphurets dissolved in water, accompanied with portions of a solution of sulphuret of potash on one side, and water on the other. 3. The third class is the most powerful, being formed when metallic substances oxidable in acids, and capable of acting on solutions of sulphurets, are connected as plates with oxidating fluids, and solutions of sulphuret of potash, and so arranged that the opposite sides of every plate may undergo different chemical changes, the mode of alternation being regular.

The first attempt to increase the effects of the galvanic fluid, by combining a series of simple circles, was made by Volta; to this he gave the name *couronne de tasses*.

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Couronne de tasses.

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*tasses*. The following is the construction and mode of applying this apparatus.

Take any number of cups or glass tumblers A, B, C, D, E, fig. 10. Fill them about three fourths full with any of the saline solutions, which will be afterwards described, as that of common salt or sal ammoniac in water. To one extremity of a bent brass wire solder a plate of zinc of about two inches in diameter, and to the other extremity of the same wire, solder in the same manner a plate of copper of the same diameter. These connecting wires are represented in the figure by the letters *a, a, a, a*; and the plates of the different metals are marked with the letters Z and C, viz. zinc and copper. In arranging the plates in the vessels, it ought to be observed, that a plate of zinc and a plate of copper belonging to different wires, must be in the same vessel, and never two plates of the same kind. Thus in the first vessel A, there is a plate of copper; in the second B, connected by the same wire, there is a plate of zinc; in the same vessel B, there is also a plate of copper, which is connected by means of another wire to a plate of zinc in the third vessel C. The same order and arrangement are to be observed to whatever number of plates and vessels the series may extend.

Suppose now that the apparatus has been arranged in the way described above, and the vessels have been filled with a solution of common salt in water; if the number of vessels be not less than ten or twelve, a slight shock will be felt by immersing one hand in the vessel, at one extremity of the series, and the other hand in the vessel at the other extremity; as for instance, by putting the fingers of one hand in the vessel A, fig. 10. and suddenly plunging the fingers of the other hand in the vessel E. The shock will perhaps be more sensibly felt by previously wetting the palms of both hands, and taking a silver or pewter spoon in each hand, immerse the handle of the one into the vessel A, and the handle of the other into the vessel E.

The strength of this apparatus depends on the number of series of plates and vessels employed. But it is obvious that this series from the nature of the apparatus could not be greatly extended so as to afford any great increase of power. This occurred very early to the ingenious discoverer, as an insurmountable objection to the use of this apparatus. The views of this philosopher in investigating the nature of galvanism, seem at this time to have been chiefly directed to the discovery of instruments or apparatus, by means of which he might be enabled to augment its power. In the prosecution of his inquiries, therefore, he contrived another apparatus, which was afterwards known by the name of the galvanic pile, and sometimes, but more rarely by that of the voltaic pile or pile of Volta, from the name of the discoverer. This apparatus is constructed in the following manner.

A pile of moderate strength may be constructed of 60 pairs of plates of zinc and copper, each plate being about two inches diameter; it may be constructed also with similar plates of zinc and silver, or of almost any two other dissimilar metals. Such piles have been very conveniently constructed, with half crown pieces and plates of zinc of the same size, or more conveniently with penny pieces and plates of zinc of the same diameter. But of whatever different metals this kind of apparatus is to be constructed, the same order of ar-

range is to be observed throughout the whole series.

Suppose the metals to be employed in the construction of the pile are zinc and copper, (and these from views of economy have been most frequently employed), an equal number of pieces of cloth, pasteboard, or leather, of the same diameter with the metallic plates, is to be prepared. The use of these pieces of cloth is to retain the moisture, by means of which the communication between the plates is formed, and the galvanic combinations are completed; and in proportion to the length of time during which the pieces of cloth or other substances retain the fluid which they have absorbed, the operation of the pile continues. The pile is formed by placing a pair of plates, one of zinc, and one of copper, upon a stand, the one immediately above the other. Upon this pair of plates is then placed a piece of cloth which has been soaked in some saline solution, as that of common salt, or sal ammoniac. Upon this piece of cloth is placed another pair of plates, arranged in the same order as the first pair. It makes no difference which of the metals is placed first in the series, only it is necessary to take care that the same order be preserved throughout the whole pile. If the series, for instance, begins with copper, it runs in the following order: copper, zinc, cloth; copper, zinc, cloth, &c. to whatever number of pairs of plates and pieces of cloth the series may extend.

But if the number of series amount to 60 pairs, it will be necessary to have rods to confine the pairs of plates, and to retain them in a perpendicular column; for without this the weight at top would be so considerable, that the least inclination to one side (and this could not well be avoided) would derange the whole apparatus. The rods which have been employed for this purpose have been sometimes made of glass, and sometimes of wood. When wood is used, it should be pretty dry, or baked, by which means its conducting power is either greatly diminished or entirely destroyed.

The pile being constructed in this manner, its effects may be observed, by applying the fingers of one hand moistened with water to the lowest pair of plates, and then touching with the fingers of the other hand moistened in the same manner, the upper pair of plates, thus completing the communication between the extremities of the pile. Every time that this communication is made, a sensation is experienced, similar to a slight shock of electricity. The intensity of this shock is in proportion to the number of the pairs of plates, the nature of the fluid employed, and the care with which the pile has been erected, or the time that it has continued in action. With a pile of 60 pairs of plates, the shock will be perceptible through the fingers, or the whole of the hand, and in some persons, when it is in full activity, it will extend as high as the elbows.

In making experiments with this kind of apparatus, it will be found that 50 or 60 pairs of plates will be a sufficient number to be erected in one pile; but to increase the power of the galvanic fluid, a number of piles may be connected together. This may be done in two ways; either by combining the separate action of the different piles employed; as, for instance, if three piles are constructed, let the pairs of plates be arranged

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in each exactly in the same way, and let the conducting substances, as wires, pass from the top and bottom of each to one common conductor. In this case we have the action of three different currents of the galvanic fluid; but whatever number of piles may be employed, their mutual action may be so combined, that the whole effect may be produced by one single current. Suppose the metallic plates of one pile are arranged in the following order; copper, zinc, cloth; copper, zinc, cloth, &c. then the plates of the second must be arranged in a different order, namely, zinc, copper, cloth; zinc, copper, cloth, &c. and the plates of the third in the same way as the first, viz. copper, zinc, cloth; copper, zinc, cloth, &c. The three piles being thus arranged, let a metallic conductor, as a slip of copper or zinc, be placed between the tops of the first and second pile, and a similar conductor be placed between the bottom of the second and third piles; and when they are thus connected together, let the fingers of one hand moistened, be placed at the lowest pair of plates of the first pile, and the fingers of the other hand, also moistened, be brought in contact with the upper pair of plates of the third, a violent shock will be felt. The shock will be the same as if the whole number of pairs of plates of which the three piles are composed were formed into a single pile; for the same order of arrangement being observed from the bottom of the first pile to the top, and from the top of the second pile to the bottom, and again from the bottom of the third pile to the top, the current passes uninterruptedly through the whole series, as if it were uniformly arranged in one pile.

The effects of this apparatus may be farther observed in its chemical action. If the circle is completed, or the communication between the extremities of the apparatus by means of charcoal be formed, a spark is produced. This is done by attaching a piece of well prepared charcoal to a wire which communicates with one extremity of the apparatus, and another similar piece of charcoal to another wire communicating with the other extremity; if the two pieces of charcoal be brought into contact, thus completing the circle, a spark will be observed, and this may be repeated as long as the activity of the pile continues. The chemical effects of such an apparatus are also exhibited in the decomposition of water. The apparatus for effecting this decomposition, and the method of using it, will be afterwards described.

But it was soon found that the effects of this pile, although when it is first erected it possesses considerable energy, in a very short time it becomes extremely feeble, and at last altogether imperceptible. This is owing to the pieces of cloth or other substance which is interposed between the pairs of plates being deprived of their moisture, either by evaporation, or by being squeezed out, from the weight of the plates. The latter effect, it is obvious, must be in proportion to the height, and consequently the incumbent pressure of the upper on the lower part of the pile; and besides this, the liquid as it oozes out, trickles down the sides of the pile, so that the different pairs of plates are less perfectly insulated than they otherwise ought to be, to produce the full effect.

Various contrivances were thought of to obviate these inconveniences, and the first which was proposed

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was announced by the ingenious inventor of the pile himself. Volta inclosed his piles, after they were erected, with wax or pitch. By this contrivance, which he put in practice on two columns or piles, each consisting of 20 plates, he succeeded so far in preventing the inconveniences alluded to above, that their effects continued nearly undiminished for several weeks. By other contrivances the plates and pieces of cloth or pasteboard were arranged horizontally, by which means some of the inconveniences of the upright column were avoided; among these the unequal pressure was removed, but still it was found that the evaporation continued, so that it was not long before its operation began to diminish, and at last to be entirely interrupted.

As it was found that the chemical effects of the pile were greatly increased by employing plates of a larger surface, even when the number was greatly diminished, piles were erected both on the continent and in Britain, with plates from 10 to 14 inches square. Twelve or fourteen pairs of plates of the above size, arranged in the same way as those which have been already described, produced very considerable chemical effects, such as, burning phosphorus, setting fire to gunpowder, and deflagrating gold and silver leaf. The pieces of thick cloth or pasteboard moistened with water, to which a certain proportion of nitric acid was added, were usually employed in the construction of this pile; but it is unnecessary to mention that it was attended with similar inconveniences to those which accompanied the smaller pile. These inconveniences probably led to another and more effectual contrivance for exhibiting the effects of galvanism. But before we give an account of these, we shall farther illustrate the nature and construction of the pile with an explanation of fig. 11. and 12.

Fig. 11. is a representation of a pile composed of copper, zinc, and pieces of pasteboard, soaked in some saline solution. The pile is erected on the stand A, and the different parts of which it is composed are retained in their perpendicular position by means of the three rods made of glass or baked wood, *b, b, b*. The pieces of metal are marked *c, z*, and the pasteboard *p*, in the order in which they are placed. The pile being erected from bottom to top in the same order, let a piece of wire *e* be inserted under the lower pair of plates, and let another wire *f*, be kept in contact with the upper surface of the upper pair of plates; the different parts being thus disposed, if the fingers of one hand moistened be brought in contact with the wire *e*, and the fingers of the other hand also moistened, be brought in contact with the wire *f*, a shock will be felt, and thus it will be found that the energy of the pile will continue till the moisture of the pieces of pasteboard has evaporated, or the peculiar change which takes place on one of the metals during its action, and which will be taken notice of afterwards, has been effected.

Fig. 12. exhibits a view of a combination of three piles, A, B, C. In the column A the arrangement is copper, zinc, pasteboard; copper, zinc, pasteboard, &c. in the column B, this arrangement is reversed, from the bottom of the column, which is zinc, copper, pasteboard; zinc, copper, pasteboard, &c.; because it must be the same as if the column B were placed upon the top of the column A, the points A and B being brought

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into contact, only having a piece of pasteboard interposed. The third column C is arranged in the same manner as the column A, viz. copper, zinc, pasteboard; copper, zinc, pasteboard, &c. Thus, then, the three columns are so arranged, that the different series succeed each other from the bottom of column A to the top, from the top of column B to the bottom, and from the bottom of column C to the top, as if the whole had been disposed in one column A. A communication is then formed between the top of the column A and the top of column B, by a metallic conductor D, and between the bottom of column B, and the bottom of column C, by means of the metallic conductor E. If then the fingers of one hand moistened are brought into contact with the wire F, which communicates with the bottom of column A, and the fingers of the other hand also moistened are brought into contact with the wire G, a smart shock will be felt, from the combined action of the three columns or piles.

The inconveniences of the pile, as we have already hinted, were soon felt by those who were eager in the investigation of galvanism, and who wished their experiments to continue with undiminished energy, that they might be enabled to ascertain with precision the new and curious facts which presented themselves. These inconveniences, it is very probable, suggested the improvements in galvanic apparatus which we are now to describe.

13  
Galvanic  
trough.

By the invention of the trough, for which we are indebted to the ingenuity of Mr Cruikshank of Woolwich, the progress of galvanism became rapid and brilliant; for by this means philosophers were enabled not only to give a longer duration to their experiments, but to command a degree of energy in the galvanic fluid, which, before the discovery of this apparatus, was not even suspected. This apparatus, we believe, is now almost universally employed for galvanic experiments. We shall therefore give a more detailed account of the method of constructing and using it.

Troughs with plates of various sizes have been constructed, from 2 to 6, 8, and even 14 inches square; but as an example, we shall suppose the following trough to be constructed with plates of about four inches square. A wooden trough AB, fig. 13. is to be made of baked mahogany; the length may be about 30 inches, and, as we shall suppose the number of pairs of plates to be 50, an equal number of grooves is to be cut on the sides and bottom in the inside of the trough. These grooves are to be cut at equal distances from each other, and the width of each groove is to be such, as to correspond nearly to the thickness of each pair of plates, so that the latter may slip easily into the grooves.

14  
Casting of  
the zinc  
plates.

The plates are like those which have been already described in the construction of the pile made of zinc and copper. No difficulty has ever occurred in procuring plates of copper for this purpose; because all that is necessary is to cut them out of sheets of copper of the requisite thickness to any size that is wanted. But the case has been very different with regard to plates of zinc, especially where large plates were required. Attempts have been made to cast them in moulds of sand, such as are used for casting different utensils of other metals; but these attempts, it would appear, have been generally unsuccessful. The method

which it is said has succeeded best in forming plates of any considerable size is the following. The zinc of which the plates are to be composed is to be melted in a narrow-mouthed vessel, so that a small surface of fused metal may be exposed. The reason of this is, that the metal when it reaches a certain temperature is very rapidly oxidated in consequence of the strong affinity between this metal and oxygen. The metal in this state is converted into a fine flocculent substance, known by the name of flowers of zinc. This change therefore, as it is attended with a loss of the metal, is to be as much as possible avoided. A mould of stone of the dimensions of the proposed plates (in this case four inches), and about one-eighth of an inch in thickness, is to be prepared; but one formed of brass is found to answer the purpose still better. When the metal is in perfect fusion, the plates should be cast as quickly as possible, because, as the metal cools rapidly, cavities and imperfections would appear on the surface from its flowing unequally.

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The plates of zinc being prepared, plates of copper which need not exceed one-tenth of the thickness of the zinc plates are to be cut out of a sheet of copper to the requisite dimensions, viz. corresponding to the size of the zinc plates. The copper plates must be reduced by hammering to a smooth and plane surface that they may apply exactly to the surface of the zinc plates, and be in contact in as many points as possible.

The plates being thus prepared are to be soldered together; but it must be observed that it is not to be through the whole extent of the plate. It is found quite sufficient to solder them about one-fourth of an inch from the edges. The solder employed for this purpose is soft solder; and great precaution must be observed that the union at the edges be so close as to prevent any of the liquid with which the cells in the trough are to be filled from entering between the plates; for otherwise the power of its action would be greatly interrupted or perhaps entirely destroyed.

The operation of soldering was performed with considerable difficulty by many workmen; at least, it was found that in many cases the plates were either not in contact when the dimensions were large, or the joints were not perfectly secure. We are not certain in what way this operation is generally performed, but we know that this difficulty has been obviated by the following contrivance. The inside angles on the edges of the plates, that is, on the sides of the plates which are to be united together, are filed away, so that, when the plates are brought into close contact, a triangular groove all round the edge of the pair of plates remains. This groove is filled with solder, and the operation is conducted in the usual way. Plates soldered according to this contrivance have been found to answer the purpose extremely well. But this inconvenience is now rendered less embarrassing since the discovery of rendering zinc malleable and flexible was made, for plates of zinc of this description are of a much more equal thickness, are thinner and smoother, so that the copper can be brought into a closer contact. The plates which have been prepared of malleable zinc have the copper folded over the edge of the zinc plates, and in this way they are secured without difficulty, by soldering.

In whatever way the pairs of plates are to be secured, so that they may remain in close contact, they are afterwards

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wards to be fixed in the grooves of the box prepared for their reception; and here it is to be observed that each individual pair of plates is to be completely insulated. This is done by means of a particular kind of cement, the use of which is not only to retain the pairs of plates in their places, and to render their insulation complete, but also to defend the wood of the box against the action of the fluid which is employed to fill the cells of the trough.

16  
Cement for securing the plates.

The cement which is employed for this purpose is composed of rosin, bees-wax, and fine brick dust, or powdered red ochre. Different proportions of these substances, it would appear, have been recommended in the construction of galvanic troughs. According to some, five parts of rosin, four of bees-wax, and two of powdered red ochre, are found to answer this purpose extremely well. The rosin and bees-wax are melted together, that they may be completely incorporated, and the red ochre is afterwards added. According to others, four ounces of bees-wax, eight ounces of rosin, and about an ounce of fine brick dust, melted together in the same way, are also found to answer the same purpose equally well. With this cement the pairs of plates are secured in the grooves, and the intervening spaces on the inside of the bottom and sides of the trough are also covered with it, to defend the wood from the action of the fluid. It is scarcely necessary to observe, that the plates are to be arranged in the same way throughout the trough as the first pair; that is, if the copper side of the first pair of plates be towards the end of the trough at B, all the other pairs are to be so arranged as to have their copper sides towards the same point B, and the zinc sides towards the other end of the trough A. The plates being arranged in this way, the end of the trough B is called the copper end of the trough or battery, and the end A is called the zinc end.

Superior advantages are derived from arranging the plates in this way, to that of constructing them in the method described for the pile; for in this way the fluid can be applied more equally and with greater facility; the apparatus is more convenient for performing experiments; its action continues for a considerably longer time, and there is little or no trouble in cleaning the plates after the operation. It is otherwise with the pile, for, after it has been once used, the surface of the zinc plates is so much oxidated, that before they can be employed again, they must be scoured or filed, which, it is obvious, must be a troublesome and tedious process; but in the trough the oxidated surface of the plates is cleaned in every successive operation, the fluid which is employed dissolving the oxide which has collected on the surface of the zinc plates.

17  
Liquid to fill the trough.

In treating of the construction and action of the pile, we have already observed that different saline solutions were employed, to moisten the pieces of cloth or paste-board interposed between the pairs of plates. These solutions were muriate of soda or common salt, muriate of ammonia or sal ammoniac, and sometimes sulphate of potash. Similar solutions will answer the purpose of filling the cells of the trough, but these are found to be weaker than solutions of the acids; and, besides, as they are apt to crystallize on the plates, it becomes extremely troublesome to clean the trough. Acid solutions,

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therefore, which are more powerful, have been properly preferred; and the acid which seems to answer best, on different accounts, is the nitric; the proportion to be employed, it is obvious, must vary according to the strength of the acid. Of the common acid of the shops, one part with 16 of water will form a pretty active mixture; but when the acid is stronger, it may be necessary to add 20 parts of water. But this mixture is attended with the inconvenience of the evolution of nitrous gas, which, it is well known, is extremely disagreeable, and is injurious to respiration; and, on account of the high price of nitric acid, when a large quantity of this mixture is required, it becomes very expensive. Sulphuric acid mixed with water has also been employed for the same purpose, and it is found to answer very well. The use of this acid, however, is liable to many serious objections. Its action is too rapid; and, by its operation on the zinc, hydrogen gas is disengaged in such quantity as to be inconvenient to the operator. So much heat is evolved during its action, that the cement which is used for securing the plates in the trough, is apt to be rendered soft and loosened. Muriatic acid also has been employed, and this is recommended by some as in different respects the most convenient. One part of muriatic acid and 16 of water form a mixture which answers the purpose extremely well. The action of this mixture is slow and uniform, and the quantity of hydrogen gas which is evolved is so small as to produce little inconvenience. The use of this acid is attended with another advantage, that the plates are kept uniformly clean.

Whatever mixture has been employed, unless the operation has been continued for a very long time, when it is emptied from the trough, it may be bottled up, and reserved for future use; and if the most powerful action of the trough is not required, the same mixture may be employed several times. Here it may be worth while to notice, that the precaution of emptying the trough should be invariably observed, as soon as the experiments for which it was filled and prepared are finished; by this management there will be a considerable saving, both of the fluid and of the surface of the plates, which undergo oxidation. In filling the trough with the fluid, it should be observed that it does not rise higher than about  $\frac{1}{4}$  of an inch from the upper edge of the plates; and after the filling of the trough is completed, the upper edges of the plates, as well as the edges of the trough, should be carefully wiped dry, that there may be no communication between the fluid in the cells, but through the metallic substances.

A trough composed of 50 plates of three inches square, will be found suitable for a great variety of useful and entertaining experiments; but when it is found necessary to produce a more powerful action of the galvanic fluid, a greater number of pairs of plates, or the same number with a larger surface, according to the nature of the action required, must be employed. We have already observed, that several columns or piles may be so constructed as to have the full effect of their combined action, in the same way as if they formed a single pile. By similar management, different troughs or batteries may be so arranged as to combine together the effects of each, as if they constituted a single trough or battery. And all that is necessary to observe is, that to whatever extent the series may be carried, the surface of each of

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the plates must be opposed to the surface of a different plate; as, for instance, the zinc surface of one of the plates must be constantly opposite to the copper surface of the next plate in the series. The different troughs thus uniformly arranged, are to be connected together by means of metallic conductors. A slip of copper, for instance, about half the width of the trough, is inserted by its opposite extremities in the cells of the ends of two of the troughs.

When the plates are of very large size, their weight, with that of the quantity of fluid required to fill the cells, renders the trough very unmanageable. It is then necessary to fix it in a frame of sufficient strength, to support its weight by means of axles of brass or iron, fixed to the outside of the box. By this contrivance the fluid can be easily poured out into a proper vessel, placed under the trough.

We shall afterwards speak more particularly of the effects of plates of different extent of surface; here, however, it may be necessary to observe, that in combining together two or more troughs or batteries, to have the full effect of such a number of plates as may be employed, in proportion to the extent of their surfaces, the surface of the plates in each trough should be the same, otherwise, if troughs of different extent of surfaces be employed, the action of that trough which has the largest surface is diminished, and reduced to that of the action of the trough whose plates have the smallest extent of surface. This circumstance is necessary to be attended to, for, if it is overlooked in the construction or combination of different batteries, the effects will be so feeble as to produce disappointment without the cause being known.

In making experiments with the trough, the communication is to be formed between the two extremities, or the circle is to be completed in the same way as has been already directed in the management of the pile. For this purpose there is a projecting piece of wood fixed to the upper edge of each of the ends of the trough; this is perforated so as to admit a piece of wire which passes through to the fluid in the two last cells at the extremity of the trough. If then the wires are placed in this situation, and the moistened fingers of one hand touch the wire at one extremity, while the moistened fingers of the other hand are brought into contact with the wire at the other extremity of the trough, a shock will be felt; and in this way the circle is completed.

The other parts of the apparatus which are necessary to conduct experiments with a trough of this description, are so simple as scarcely to require any particular description. All that is wanted for desflagrating metals is to have a bent wire fixed at one extremity of the trough, and to have a polished plate of copper or zinc communicating with the other extremity of the trough by means of a flexible wire. The metal to be desflagrated is placed upon the bent wire, and the metallic plate is brought into contact with it.

The apparatus for the decomposition of water is the following. A glass tube, G, H, fig. 11. about three inches long, and  $\frac{1}{4}$  inch in diameter, is furnished with a tight cork at the upper end G, through which cork the wire *i* communicating with the upper part of the pile, passes. It may be also furnished with a cork at the other extremity H, but this must have grooves cut on

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posing  
water.

its sides, to allow the water to escape from the tube. The wire K communicating with the bottom of the pile, passes through this cork; or without the cork at this extremity, if the tube is retained in its perpendicular position by any other contrivance, the wire K may be passed within the tube. When this operation is to commence, the tube is to be filled with water, the cork at the upper extremity G being made air-tight, and then it is to be inverted, and the extremity H to be placed in a small cup or basin of water; after which the wire K being introduced, the circle is completed between the wires through the medium of the water in the tube, the decomposition of which will go on as long as the communication and the action of the pile are continued. This process will be observed by bubbles of air escaping from one of the wires, and rising to the top of the tube; or if the wires are of gold or of platina, bubbles of air will be seen passing from the extremity of both wires, and this air collecting at the top of the tube, forces out a quantity of water equal to the space which it occupies. The same experiment may be made by means of a still simpler apparatus. If the wires communicating with the extremities of the pile are introduced into a small glass phial filled with water, and inverted in a basin of water, the same process of decomposition will go on.

But an apparatus which is rather more complicated, but at the same time sufficiently convenient, is usually employed for this purpose. A small brass cup E, fig. 13. is supported by the wire F, which is fixed in the hole of the projecting piece of wood D, at one end of the trough; from the centre of the cup there arises a pair of brass pincers, which hold a piece of wire of gold or platina G. Over the pincers is placed a glass tube HI, which has at the upper extremity, I, a brass cap, to the inside of which is fixed another piece of wire of gold or platina. The two wires should be at a little distance from each other, as they appear in the figure. The tube is then filled with water, and is inverted over the pincers in the brass cup, which is also filled with water; and thus, by means of the water in the tube, a communication is formed between the two wires. A wire proceeding from the other extremity of the trough C, is connected with the top of the tube I, and, as soon as this communication is formed, the process of the decomposition of the water in the tube commences; for the galvanic circle, or the communication between the extremities of the trough or battery is completed. The gases, as they are disengaged from the wires in the tube, rise to the top, and the water which occupied the space now filled with air, is forced out into the cup. This process goes on as long as the communication continues, or till the surface of the water is lower than the extremity of the upper wire, when the communication is interrupted, and then the operation ceases.

With these observations we conclude what was intended to be said concerning the construction of galvanic apparatus. We shall notice what may be farther necessary to be explained, in the course of the detail which is to be given of the experiments in galvanism, or of the influence of the galvanic fluid on animals, as well as its chemical effects. We, therefore, now proceed, in the following chapter, to the consideration of some of these phenomena.

Construc-  
tion of  
Apparatus.

19  
Animal electricity.

It has been already observed, that the first effects of galvanism were exhibited on animals; and indeed it was supposed that these effects could only be exhibited by means of animals, and hence, from the coincidence which was observed with the properties of electricity already known, it was denominated *animal electricity*.

The first experiments which were made in investigating the nature and properties of the galvanic fluid, were chiefly performed on cold-blooded animals. It was indeed from observing its effects on them, as we shall find afterwards in tracing its history, that the discovery was first made. This discovery was made on the frog, and since that time the frog has been oftener the subject of galvanic experiments than any other animal. From being found in great numbers, from being conveniently got, as well as from the irritability of the muscular fibre, as it is denominated by physiologists, continuing for a long time, it has perhaps become the devoted victim of these investigations.

We have already mentioned a simple experiment with a prepared frog, in which it forms the communication between two dissimilar metals. When the frog, as in fig. 1. is prepared, that is, skinned, and the lower extremities separated from the spine, and suspended on the iron wire AB, if the extremities of the frog be touched with a different metallic substance, such as gold or silver, while this metallic substance is in contact with the iron wire at the point D, the limbs of the frog are thrown into convulsions, and this takes place as often as the communication is formed.

Soon after the discovery of Galvani, and after the result of his experiments and opinions on the subject of this discovery was announced to the world, the attention of philosophers became much occupied in repeating and extending these experiments. Among others, Valli, an Italian physician, instituted a series of experiments, an account of which was communicated to the French philosophers, who soon after repeated them. As these experiments afford us not only a pretty full view of the effects of the galvanic fluid on animals, but also the state of galvanism at the time, we shall here detail them.

*Experiment 1.*—When two metallic coatings or slips of metal, the one of lead, and the other of silver, were placed on a frog, fastened to a table, the coating of lead being placed on the belly of the animal, and that of silver on the pelvis, and a communication being formed by means of a slip or wire of copper, strong convulsive motions were produced in the animal.

*Exper. 2.*—The coating or slip of lead which was employed in the preceding experiment, was removed, and the abdomen was left bare. The copper wire was then applied to the abdomen the same way as before; while its other extremity was in contact with the coating of silver on the pelvis, convulsive motions were still produced, but they were less sensible than in the former experiment, and sometimes did not succeed at all.

*Exper. 3.*—When two coatings of the same metal were employed, as, for instance, silver or gold, the effects produced by means of copper forming the com-

munication, were found to be much fuller; and when the coatings were of similar metals, such as copper, lead, or tin, and the metal forming the communication was the same, no effect whatever was produced.

*Exper. 4.*—By placing the coating on the abdomen in a horizontal direction, so that the points of contact became less numerous, the effects were found to be proportionally diminished; but when the coating was brought into full contact with the surface of the abdomen, it was observed that they became equally powerful as before.

*Exper. 5.*—A frog was skinned and cut transversely through the middle; the nerves of the thighs were laid bare, joined together, and placed on a slip of gold, while the thighs themselves were in contact with a piece of silver. When the metallic conductor of copper was applied, slight contractions were produced. It was found also that contractions took place when both the coatings were of silver; but when coatings of tin, copper, or lead, were substituted for the silver coating which surrounded the nerves, powerful contractions took place. The gradation observed in the action of the metals, is the following. Lead produced the strongest contractions, next the tin, and lastly the copper; but in proportion as the vitality of the animal diminished, the metals were found also to lose their power of producing motion. The metals which retained this property longest were lead, tin, and zinc.

*Exper. 6.*—When plumbers lead was employed on each side as a coating, and when the metal forming the communication was the same, no effect was produced; but when lead of different qualities, as, for instance, lead of the assayer and plumbers lead, was used, and the metal forming the communication being either the one or the other, very singular effects took place.

While it was found that these two kinds of lead, by changing the different metals, were no longer susceptible of producing any effect in one of the coatings, silver, gold, bismuth, antimony, or zinc, substituted for the lead, produced very powerful contractions; and, what seemed still more singular, when the pieces of lead in the first part of this experiment were re-applied, slight convulsions took place.

*Exper. 7.*—After a short interruption of the experiments on the same animal, it appeared that it became susceptible of pretty strong convulsive motions, when the same experiments were repeated.

*Exper. 8.* When the galvanic power seemed to be nearly exhausted in the frog, it was found that the different metals, when they produced, by their contact, new convulsions, did not, when this effect could be no longer produced, leave to the animal the power of exhibiting anew any contractions with coatings of the different kinds of lead, as in experiment 6.

*Exper. 9.*—The following is the gradation of the diminution of effect, till it entirely ceased, when the plumbers lead always formed one of the coatings. With the assayers lead forming the other coating, the action became feeble, and it at last ceased. The next in order was tin, the next antimony, and so on in the order in which they are named as follows: zinc, copper, gold, silver. Iron, it was observed, had lost its power of producing any effect before the antimony; but whether it was deprived of this property before lead and tin, was not ascertained.

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Experiments of Valli and the French philosophers.

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*Exper. 10.*—Zinc, on losing the property of exciting convulsions in a frog, on which experiments had been made for an hour, was not found susceptible of any farther action, when the communication was formed by means of lead; but it was observed as a very singular circumstance, that contractions were still produced by this metal the moment that the person engaged in the experiment removed the conductor, and interrupted the circle. This experiment was frequently repeated.

*Exper. 11.*—The upper part of a frog which was skinned, and divided transversely, had the crural nerves, as in the former experiments, armed with a piece of lead, and placed in a glass filled with water, while the lower part was placed in another glass, also filled with water. Strong contractions were produced when the communication was formed by means of different persons holding each other by the hand, while two of them touched the water in the glasses. One of them held in his hand a piece of metal, which was brought into contact with the coating of lead.

*Exper. 12.*—When any one individual of the persons who thus formed the chain of communication between the two glasses withdrew himself, so that the communication was interrupted, no effect was perceptible.

*Exper. 13.*—When the frog was arranged in the same way as in experiment 11. having its parts placed in two glasses, no motion was excited when a communication was established with two fingers; nor was any motion produced, when a person with one hand armed with a piece of metal, touched the body of the frog, while he brought a finger of the other hand in contact with the metallic coating of the crural nerves. But by placing one finger on the inferior part of the frog, he touched with a piece of metal the coatings of the nerves, powerful contractions were produced.

*Exper. 14.*—When the animal was touched with a metallic substance in an insulated state, no perceptible effect was observed; but when the metals ceased to be insulated, very considerable motions were invariably produced.

*Exper. 15.*—The fore leg of a rabbit was separated from the body; the brachial nerves were laid bare, and armed with a bit of sheet lead. The communication between the lead on the nerve and one of the contiguous muscles was made with a piece of silver, and strong convulsive contractions took place in the limb; but when this experiment was varied, by substituting for the metallic conductors, plumbers and assayers lead, no farther motion was produced. When one of the coatings employed was lead, and the other iron, no perceptible motion was observed. But when lead as one of the coatings, was employed with silver, gold, copper, zinc, or antimony, as the other coating, the motions and contractions of the limb were renewed. The motions were very slight, which were produced by means of a coating of bismuth, along with a coating of lead.

*Exper. 16.*—This experiment was instituted to ascertain the state of the electricity in the animal which was the subject of it. With this view, the animal was placed in a vessel containing one or two of Coulomb's electrometers, and it was then successively electrified, both positively and negatively; and in both of these cases the balls of the electrometer were so much influenced

by the animal, as to shew, not only that its electricity was in a state of perfect rest, both before and during the time of the experiment, but also to exhibit in the system of the body on which the experiment was made, in a very distinct and striking manner, phenomena quite analogous to those of the Leyden phial.

*Exper. 17.*—The left crural nerve of a living frog being tied with a ligature so strongly, that the animal was deprived of the power of motion in that part of the limb below the point where the ligature was fixed; but when the nerve was armed with a metallic coating, in the way described in the former experiments, and a communication was formed between the part of the nerve above the ligature and the muscle, the motion and contraction of the limb were excited.

*Exper. 18.*—The ligature was afterwards placed on the left crural nerve, and brought in contact with the muscle. It was also fixed in such a way on the right crural nerve, so that part of it projected: the left part of the animal was then quite paralytic, and without motion, and the convulsive contractions which were produced when the communication was formed, were entirely limited to the right side; but when the same left crural nerve was more completely laid bare, and separated from the muscular substance which surrounded it, its conducting power was restored, and the communication being established, the convulsive motions became pretty strong. When, however, the ligature was again brought into contact with the muscle, the limb was again deprived of its power of motion.

*Exper. 19.*—One of the crural nerves of a frog being laid bare, was armed with a piece of sheet lead; and a communication having been formed between this nerve and the other crural nerve, which was unarmed, very strong convulsive motions were produced.

*Exper. 20.*—When one of the crural nerves was armed with two pieces of lead at different places in its course, and a communication formed between the two parts by a metallic conductor, violent agitations followed. It was observed, too, that the same effects took place, when the whole of the nerve was laid bare, and completely separated from the surrounding muscle.

*Exper. 21.*—A similar experiment was made on a hot-blooded living animal. The animal selected for this purpose was a guinea pig; but when the communication was established in the usual way, no effect followed, from which any thing precise or satisfactory could be deduced.

With a view to discover during what length of time frogs, which were made the subjects of these experiments, could resist their effects, and retain the power of having motion excited in them, Valli made a number of experiments. At 10 o'clock at night he prepared two frogs, which on the following morning at seven o'clock he found had become extremely feeble, but not entirely deprived of the power of motion. Slight convulsions were excited in both by means of the galvanic apparatus; but an hour having elapsed, they ceased to afford any farther symptoms of vitality. No effort that could be made, succeeded in producing motion. In other cases he prepared frogs, which by the following morning were found to be quite dry, and then no symptoms of motion could be exhibited. He separated several of the muscles from the body of a frog, and after having torn them, he found it impossible

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Effects of narcotics on animals subjected to galvanism.

to excite the irritability by any mechanical stimulus whatever; but, after previous preparation, and by means of a metallic conductor, motion was produced.

The same naturalist made a variety of experiments, to ascertain the effects of galvanism on animals which were destroyed with opium, and other narcotic substances; but the results of his experiments on animals to which opium had been exhibited internally, as well as applied externally, were found to be very different from each other. Four frogs were destroyed by means of powdered tobacco, were rendered completely insensible to any mechanical stimulus, and seemed to be in a state of total stupefaction; but by the application of the galvanic apparatus, symptoms of vitality appeared, and slight motions were produced. A number of lizards being poisoned with tobacco, exhibited, at the time of their death, convulsive motions; but they still continued to afford symptoms of vitality and motion on the application of galvanism.

23  
Of hydrogen gas, &c.

Animals were destroyed in a variety of ways, with a view of ascertaining what were the effects of galvanism, after the principle of life seemed to be extinguished. A small bird, which was for some time immersed in hydrogen gas, or inflammable air, shewed no symptoms of vitality or motion; but, on the application of galvanism, convulsive contractions of its limbs were produced. Two kittens were killed in azotic gas, and the fore legs were separated and prepared in the usual way. The same effects were produced as in the experiment with the bird.

Some animals were destroyed with the extract of hemlock; but it did not appear that the effects on the application of the galvanic apparatus were at all diminished by means of this poison. In frogs which were exposed to the exhalation of corrupted animal matters, perceptible motions were observed by means of galvanism; but these were very feeble.

Moscato deprived several frogs of life, by placing them in the vacuum of an air pump; and when these were subjected to experiment with the galvanic apparatus, slight motions were produced; but it was observed that these, although they followed each other in rapid succession, were excited with some difficulty. Here it was found that the blood was extravasated in the cellular membrane of the muscles, by which the flesh was tinged with a deep red colour. To this circumstance was ascribed the feeble effects produced in the above experiment, as it was supposed that the blood carried off part of the galvanic fluid, and thus prevented its action on the muscular fibres, through the medium of the nerves. This opinion was supported by another experiment, which was made on prepared frogs, in which there was no extravasation of blood; and in this case the galvanic effects did not seem to be in any degree diminished.

Before proceeding farther with an account of the experiments of the particular effects of galvanism on animals, we shall here relate two of a more general nature, the one with regard to the effects produced by the peculiar application of the metallic conductor, and the other with respect to the velocity of the galvanic fluid being increased, without increasing its intensity.

24  
Difference of effect in applying the conductor.

A difference, which appeared to be a very singular fact, was observed in the mode of applying the metallic conductor, to excite motion in animals by means of

galvanism. It was found, that the motions produced in the animal by this means were generally more powerful, when the conductor was applied, first to the muscles, and then to the coating, than if the reverse had taken place; that is, by applying first to the coating, and afterwards to the muscles; and indeed when the galvanic power began to be nearly exhausted, no motion whatever could be excited when the application was made, first to the coating and then to the muscles, while at the same time, by the contrary mode of application, motion could be easily produced.

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The other fact alluded to is, that the velocity of the galvanic fluid may be increased without increasing the degree of its intensity. This was proved by M. Valli in the following experiment. By means of a chain, which was in contact with the nerves of a prepared frog, he completed the galvanic circle. The animal at first exhibited convulsive contractions, but afterwards remained for some time without motion. When the conductor was removed to a very small distance, motion was again excited in the animal; soon after, however, this ceased. But when an insulated conductor was brought to the muscles of the frog, the motions were immediately renewed; and when they again ceased, a communication being formed between the operator himself and the conductor, the contractions were again excited. The conclusion which he deduced from the above experiment was, that the galvanic influence is constantly the same, however various the modes of its application. The same result, however, he observes, would not be obtained, if the experiment were made on an animal in which the principle of life was in full vigour.

Velocity of the galvanic fluid increased without increase of intensity.

From a number of experiments which were made by the same physiologist, it appeared that certain intervals were necessary, in order to obtain the same intensity of action in animals subjected to the influence of the galvanic fluid. Frogs, mice, rats, and tortoises, were the subjects of these experiments; they were destroyed by means of different poisons, or by respiring some of the noxious gases. In applying the galvanic apparatus to these animals, an interval of several minutes was required, when the motions excited became feeble, or had nearly ceased; and then, after this interval had elapsed, the same effects, and almost equally powerful as before, were produced.

With regard to the conducting power of the blood-vessels, two questions were proposed to Valli, by Vicq D'Azyr. 1. Whether the blood-vessels are to be considered as conductors of the galvanic fluid. And, 2. Whether, by coating the blood-vessels instead of the nerves, any motion through their medium could be excited? In the solution of these questions Valli observed, that the blood-vessels are undoubtedly to be considered as conductors of the galvanic fluid; but in whatever way this is effected, it seems to be through the nerves alone, in consequence of the way in which they are disposed, that muscular motion can be excited. The arteries and veins, he farther observes, are to be considered as less powerful conductors than the nerves; for no motion is obtained, if the vessels, without having any communication with the nerves, be distributed directly to the muscles. The tendons also, when the same communication is established, are also conductors as well as the bones, if they have not been deprived of

26  
Conducting power of blood vessels investigated.

the

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the periosteum. The membranes also possess this conducting power; but exhibit no motions when the communication with the nerves is interrupted.

It had been observed, that the nerves, when dry, exhibited, by means of friction, some symptoms of electricity. With a view to ascertain whether, in this dry state, the nerves were conductors of the galvanic fluid, and whether motions could be excited through this medium, Valli made several experiments; but in all these he was unsuccessful, for no motion was produced. In a series of experiments which were made on fowls, he found that ligatures applied to the nerves, did not prevent the contractions of the muscles, provided these ligatures were not applied to the nerves in immediate contact with the muscles.

27  
Effects on drowned animals, &c.

In order to ascertain what would be the effects of the galvanic fluid on animals which were drowned or suffocated, Valli made a number of experiments. Several pullets were drowned, and kept so long under water, that no symptoms of life appeared. By the application of the galvanic apparatus, muscular contractions were produced in some, while others, by the same application, exhibited no motion whatever. The same experiment was repeated on six pullets, which were also drowned; and on the application of the apparatus, strong convulsive motions were produced. These continued for nearly the space of an hour. In others which were also drowned, the brain and wings were laid bare; and after this previous preparation, when the galvanic apparatus was applied, strong muscular contractions were excited: none of the animals, however, as was expected, were restored to life. Similar experiments, followed by the same result, were made on rabbits.

Several pullets were exposed to the action of different gases, as hydrogen, nitrous, and azotic gases, and did not afterwards, by any mechanical stimulus whatever that could be applied, exhibit symptoms of life. The galvanic apparatus being applied, very feeble contractions were produced; and these succeeded each other after long intervals. Similar experiments were made with the same view, on frogs, and it appeared that these animals could resist the effects of those gases better than the others. Nitrous gas, he found, was more injurious than hydrogen gas. In some of the frogs on which the experiments were made, the application of the galvanic apparatus produced violent agitations; but having repeated three or four shocks, no farther motion could be excited, not even after some interval had elapsed.

To ascertain what were the effects of different kinds of air on animals subjected to the galvanic apparatus, he separated the hinder extremities of a frog, exposed the one to the action of nitrous gas, and the other to that of atmospherical air. After being subjected for a short time to the action of these airs, the galvanic apparatus was applied. Contractions were produced in both; but those which were induced in the limb exposed to the nitrous air, were feebler than the other; and when the action of the nitrous air was continued beyond a very limited time, no motion whatever could be excited. The same experiment was made on limbs exposed to the action of hydrogen gas; and it appeared that its effects in destroying the irritability of the muscular fibre, or in diminishing its susceptibility of being acted upon by galvanism, were less powerful than the nitrous gas. Azotic gas was also found to produce ef-

fects on frogs somewhat similar. The heart was indeed observed to palpitate after the death of the animal; but, in general, the contractions which were induced by galvanism were extremely feeble.

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It would lead us too much into detail to mention all the experiments which were made by this naturalist. We shall therefore only add a short account of the general results.

1. In frogs newly killed, he found, that a single metallic conductor was sufficient to excite convulsive contractions; and that in producing these motions, it was not found essentially necessary to apply a coating either to the muscle or nerve. Scissars, in which the steel appeared to be of a bad quality, might be successfully employed as a conductor; but gold, silver, copper, lead, and tin, in general, produced no effect.

28  
Results of Valli's experiments.

2. The galvanic fluid was found to pass through glass and sealing wax; but it was necessary that these substances should have their temperature considerably increased.

3. Water, in which the temperature was pretty high, or when raised to the boiling point, seemed to prevent the effects of galvanism from taking place, or at least diminished them greatly.

4. Water, the temperature of which was very much reduced, seemed also to be deprived of the property of conducting the galvanic fluid.

5. It was found, that when an individual formed part of the chain in cases where the galvanic apparatus was applied to the prepared feet of rabbits, cats, and dogs, the latter were unsusceptible of motion.

6. The diaphragm of a dog was immersed in a vessel of water, and so placed in the vessel, that the phrenic nerve, previously armed, projected from it; and on touching the coating with a piece of gold or silver coin, while one of the fingers of the other hand was put into the water, feeble contractions were excited in the muscle. In some other experiments on the same muscle of horses, it was found that no motion could be induced by means of galvanism, while the same power, with the same intensity, constantly excited contractions in that of dogs.

7. A metallic wire, which was entirely covered with sealing wax, produced no motion in frogs, which began to be exhausted when it was employed as a conductor. This was stated by Valli, as a proof that the galvanic fluid passes along the surface of conductors.

8. A ligature on the nerve, when placed near to the muscle, or in contact with it, interrupted or diminished the effects of galvanism: it was found also, that a ligature, applied in the same way, prevented the effects of artificial electricity.

9. A ligature was applied, at a small distance from the muscle, to the crural nerve of a frog, and another was prepared in the same way, but without any ligature; these being subjected to experiment, it appeared that galvanism produced a more perceptible action in the latter than in the former.

10. Weak shocks of artificial electricity produce motion in the muscles of that leg only where no ligature has been applied to the nerve; but in the other, muscular contractions can be excited by means of the galvanic apparatus. From this experiment, it was attempted to deduce a method of subjecting the intensity of galvanism

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nism to calculation. If, for example, it is found that the effects of artificial electricity are considered as amounting to five, six, or seven degrees, and this power is insufficient to excite contractions, while they are produced by means of galvanism, it may be said that the latter is five, six, or seven degrees stronger than the former.

11. Valli did not succeed in effecting the muscular contraction of the heart by means of galvanism; nor did he succeed in similar experiments made on the stomach, intestines, or bladder, although he armed or applied metallic coatings to the nerves of all these organs.

12. To produce contractions in the wing of a fowl, the nerves of which were coated and previously steeped in oil, very powerful shocks of artificial electricity were found requisite; but the effects of the galvanic fluid did not, by this process, seem to be at all diminished: it retained its whole energy.

29 Experiments by Fontana,

Fontana, in his experiments and investigations on this subject, found, that he could accelerate the motions of the heart, when these motions were going on; and when the motions had ceased, could bring it to produce contractions. By placing the heart between two pieces of metal, zinc and antimony, so that it shall be in contact with both, and then forming a communication by means of a metallic conductor between the two metals, its motions are excited, even after it is separated from the body and cut in pieces. According to the experiments of Marigli, part of the heart of a fowl, placed on a piece of charcoal, and another portion put on a piece of pasteboard, covered with tinfoil, gave repeated contractions, and was strongly convulsed.

30 by Delametherie,

M. Delametherie made a variety of experiments, at a very early period, on this subject. The following are some of the general results of these experiments.

1. He found that the effects of galvanism in a prepared frog were feeble.

2. That it possesses the greatest intensity at the time when the animal has been just deprived of life; from this he infers, that the intensity of the effect must be greater in the living animal; from which he thinks it follows, that it is only by means of good conductors that the galvanic fluid can be conveyed from the nerves to the muscles of a frog; and it is by means of the metals, which may vary in the degree of their conducting power, that this communication is established.

3. Plumbago and charcoal were found to be inferior in their conducting power to metallic substances; but by their means the galvanic fluid could be conveyed from the nerves to the muscles of a frog.

4. He did not find from his experiments that this effect could be produced by forming the communications by means of animal substances; for when a person touched at the same time the nerves and muscles of a frog which had been laid bare, the same effect did not follow.

31 by Volta.

Volta, whose name has been already mentioned as the inventor and improver of the apparatus by means of which the galvanic power could be greatly increased, was, at the same time, one of the most zealous and the most indefatigable inquirers into its nature and properties. The views which this philosopher entertained with regard to the nature of this fluid, were different

from those of Galvani. They are distinguished for their originality, exhibit a train of careful investigation, and have served as an excellent foundation on which the superstructure of galvanism was quickly raised. We shall therefore give a pretty full detail of the experiments and reasonings of this philosopher; and from the importance of his views, which we have stated above, it will not be less acceptable to the reader, if this detail be given, as we propose to do, in his own words. In this, indeed, something of what belongs to the second part of this treatise, will be unavoidably anticipated; but the sacrifice of strict method to perspicuity, will, we are persuaded, be readily admitted as a sufficient apology for this deviation.

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To understand clearly the peculiar views which Volta has embraced in the observations which we have now referred to, it will be necessary to anticipate a little farther, by stating, that, according to Galvani, the fluid which bears his name is a peculiar kind of electricity, which resides in the organs of the animal, and is essentially and inseparably connected with them. But, according to the theory of Volta, the whole phenomena of the galvanic fluid depend entirely on artificial electricity, which is excited into action, or put in motion, when conductors of a different nature are brought into contact; and these, he thinks, are to be considered as the primary exciters. The motion of this fluid is induced in three different ways, that is, by means of three conductors at least, which are of a different nature, being so arranged as to form the communication or circle. In the first way, two metals or conductors of the first class, of a dissimilar nature, are employed. These are brought directly into contact by one of their extremities; but the communication between the other extremities is established by means of moist conductors, or conductors belonging to the second class. This fluid is put in motion in another way, by a single metallic conductor of the first class, placed between two moist conductors of a dissimilar nature, between the latter of which a communication is established. In the third way of exciting the action of this fluid, or putting it in motion, a communication is formed among three conductors, each of which is of a different nature. To illustrate the variety of action observed in these conducting substances, the following account of the experiments of this naturalist, with his views and reasonings, was communicated by him in letters to Gren.

“ If a tin basin, says he, be filled with soap-suds, lime-water, or a strong ley, which is still better, and if you then lay hold of the basin with both your hands, having first moistened them with pure water; and apply the tip of your tongue to the fluid in the basin, you will immediately be sensible of an acid taste upon your tongue, which is in contact with the alkaline liquor. This taste is very perceptible, and, for the moment, pretty strong; but it is changed afterwards into a different one, less acid, but more saline and pungent, until it at last becomes alkaline and sharp in proportion as the fluid acts more upon the tongue, and as the activity of its peculiar taste and its chemical power, more called forth, produce a greater effect in regard to the sensation of acidity occasioned by the stream of the electric fluid, which, by a continued circulation, passes from the tin to the alkaline liquor, thence to the tongue, then through the person to the water, and thence to the

tin.

tin again. I explain the phenomenon in this manner, according to my principles; and indeed it cannot be explained in any other, as every thing tends to confirm my assertion, and to prove it in various ways. The contact of different conductors, particularly the metallic, including pyrites and other minerals as well as charcoal, which I call *dry conductors*, or of the first class, with moist conductors, or conductors of the second class, agitates or disturbs the electric fluid, or gives it a certain impulse. Do not ask in what manner; it is enough that it is a principle, and a general principle. This impulse, whether produced by attraction or any other force, is different or unlike, both in regard to the different metals and to the different moist conductors, so that the direction, or at least the power with which the electric fluid is impelled or excited, is different when the conductor A is applied to the conductor B, and to another, C. In a perfect circle of conductors, where either one of the second class is placed between two different from each other of the first class, or, contrariwise, one of the first class is placed between two of the second class different from each other, an electric stream is occasioned by the predominating force either to the right or to the left; a circulation of this fluid, which ceases only when the circle is broken, and which is renewed when the circle is again rendered complete. This method of connecting the different conductors will be more readily comprehended by turning to the figures, where the capital letters denote the different conductors or exciters (*moteurs*) of the first class, and the small letters those of the second class. Fig. 3. and 4. express the two cases abovementioned.

"I consider it as almost superfluous to observe, that when the circle consists merely of two kinds of conductors, however different or however numerous the pieces may be of which each consists, two equal powers are opposed to each other; that is, the electric fluid is impelled with equal force in two different directions, and consequently no stream can be formed from right to left, or, contrariwise, capable of exciting convulsive movements.

"There are other cases, however, and other modes of combination, where the powers are equally in equilibrium, and where no current of the electric fluid can take place; or, at least, none of such a force as to make an impression on the tendereft nerves, or to excite any convulsive movement in the best prepared frog that may be placed in the circle, notwithstanding the intervention of two or more different kinds of metals. This is the case when each of these metals is placed between two moist conductors, or of the second class, and which are very nearly of the same kind; or when, in a circle of three pieces, two of them of the same metal, and one of a different metal, are so connected, that the latter is immediately between the other two.

"When one of the ends of a piece of metal, which is a conductor of the first class, is immediately applied to another of the same class, but, instead of immediately touching with the other end, the other piece touches an intermediate conductor of the second class, either great or small, either a drop of water, a piece of raw or boiled flesh, or of sponge not moist, paste of meal, jelly, soap, cheese, or the white of an egg boiled to hardness; in this new combination, where a conductor of the second class is between two of the first class, the powers are no

longer opposed to each other; and this is sufficient to determine an electric stream. When, therefore, a prepared frog is placed as the conductor of the second class, it will always be violently agitated as often as this circle is made complete.

"It may be readily perceived that the two last experiments coincide with those announced by M. Humboldt, where a drop of water, a small bit of fresh meat, or a very thin stratum of any fluid, performs the whole wonder. When another drop of water, or any other aqueous conductor, is applied between the other end of the first conductor and the other corresponding piece, each piece of metal is insulated, as I shall express it, between two aqueous conductors; but then the powers from right to left, and from left to right, are again completely opposed to each other; consequently the electric stream is impeded, and the frog remains without any movement. It is, therefore, absolutely necessary that two different metals or conductors of the first class, should be in immediate contact with each other, on the one side, while with their opposite ends they touch conductors of the second class.

"We might consider this mutual contact of two different metals as the immediate cause which puts the electric fluid in motion, instead of ascribing that power to the contact of the two metals with the moist conductors. Thus, for example, in fig. 3. instead of admitting two different actions, at least, in regard to the magnitude of the power, one where B comes in contact with *a*, and another where A comes in contact with *a* also, by which an electric current arises in the direction from A to B, we might suppose only one action at the point where B comes in contact with A, which impels the fluid in that direction. In both suppositions the result, as may easily be seen, is the same. But though I have reasons for adopting the first as true rather than the second, yet the latter represents the proposition with more simplicity, and it may be convenient to adhere to it in the explanation, as it affords a readier view of it. We may then say, that in the cases above stated, no effect will be produced, because here there is no mutual contact of different metals; the effect also will be null, when a conductor of the first class, on two opposite sides, is in contact with two others of the same class; for the actions therefore are in equilibrium; and, lastly, that an electric current will be occasioned by the action which arises from the contact of conductors of the first class, and which is counteracted by no other contact of the like kind.

"Having seen the result of employing three pieces of metal, or conductors of the first class, viz. two of one kind and one of a different, when combined sometimes in one way and sometimes in another, with conductors of the second class, we shall now try what will be the result, according to my principles, with four pieces of metal, two of which are of one kind, for example, zinc, when connected with moist conductors of different kinds.

"I shall first observe, that when they are connected in a circle, the powers which endeavour to put the electric fluid in a streaming movement, will be opposed to each other, and in perfect equilibrium, and that consequently no movement can take place in the frog, here supposed to be the moist conductor *a*, or a part of it, however irritable and well prepared it may be;

be; and if the experiment be made with accuracy and the necessary precaution, so that the metals, in particular, be very clean and dry at the points of contact, it will perfectly confirm what I have above said; the frog will experience no agitation, no convulsive movement.

“ These movements, on the other hand, took place, as might be foreseen from my principles, as often as I omitted one of the middle pieces, or changed the order.

“ The conductors of the second class, which, in all the figures, are denoted by small letters, may be cups with water, in which the ends of the pieces of metal denoted by the large letters are immersed; or sponges or other bodies which have imbibed aqueous moisture. They may be either large or small, and may consist of one or more pieces, provided they be in proper contact; they may also be persons, if their skin be moistened at the places of contact, &c. By the last method the experiments will be very beautiful and incessant, when the circle consists of three or more persons (I have formed it frequently of ten, and even more), of two or more frogs properly prepared, and of four pieces of metal, two of silver and two of iron, tin, and particularly zinc. The change of effect, when you change the connection, is striking.

“ Let the position be as represented in fig. 14, where *g* is the prepared frog, which the two persons *p, p*, hold in their hands, one on the one side by the feet, and the other on the opposite by the rump. *Z, Z*, are two plates of zinc, which are held also by these persons, and *A, A* two pieces of silver, which are held by a third person, denoted also by *p*. It must not be forgotten that the hands should be very moist, as the dry skin is not a conductor sufficiently strong. As in this chain the actions of the electric exciters are opposed to each other, and in exact equilibrium, as may be readily perceived, no convulsion or agitation in the frog will take place.

“ Now, let one of the metallic pieces *A, Z*, which stand between the two persons *p, p*, or between any other moist conductors, be left in combination as it is; and let the position of the two other metallic pieces *A, Z*, be reversed, by converting fig. 14. into fig. 15. (so that the actions, instead of being contrary, will act together to impel the electric fluid to one side or to produce the same current); or introduce between *A* and *Z* another person, or any other conductor of the second class, so that the chain be formed as in fig. 16.; or take away one of the pieces *A, Z*, in fig. 14. and make the chain like those of fig. 17. and 19.; or, in the last place, remove the whole two pieces *A, Z*, either in the one or the other side, as represented fig. 19. (by which means it will correspond with fig. 17. as the whole chain *p, g, p, p*, may be considered as a single moist conductor of the second class.) In all these combinations, which are represented by fig. 15. 16. 17. 18. and 19. the actions arising from the metallic contacts are no longer contrary to each other, or in equilibrium, as they were in fig. 14.; consequently an electric stream is produced, and the frog *g*, which I suppose to be properly prepared, and which forms a part of the chain, will be violently agitated as often as the circle, when broken at any one place, particularly between metal and metal, is again restored.

“ In regard to the experiment where a moist conductor, or one of the second class, is to be introduced

between the two pieces *A, Z* (fig. 16.) that is, between two different metals, a drop of water, or a small bit of moistened sponge, or a thin stratum of any fluid, soap, or any other viscid matter, will be quite sufficient, as has been already observed. This surprising experiment I generally make in such a manner, that, instead of the piece of the metal, I employ a cup or spoon filled with water, and then cause the person who holds the perfectly dry and pure stick of tin, to touch with that stick sometimes the perfectly dry sides of the spoon or cup, and sometimes the water contained in them. It is wonderful to see, that, as by the latter method, the violent agitation of the frog never ceases, the first method, which corresponds with fig. 14. does not produce the least irritation; unless by accident there be a small drop of water, or a thin stratum of moisture, at the place of contact, by which the case represented fig. 16. would be restored. This may serve to shew with what care and attention the experiment must be made, in order to guard against error or deception, which might so easily arise, and every where exhibit anomalies.

“ When I introduce water or any other moist body, great or small, not merely between one pair of metallic pieces, *A, Z*, as fig. 16. but between two pairs, as represented fig. 20. each piece of metal is between like moist conductors, and by these means all the actions are again rendered contrary, or brought into equilibrium; or, according to the other mode of viewing the matter, there is no longer any action, for want of the mutual contact of two different metals, which, as we have seen, is certainly necessary to excite an electric current; and it is always found that the frog experiences no agitation.

“ I shall not enlarge farther on these combinations, which may be varied *ad infinitum* with a greater number of metallic pieces, and by which one may be enabled to foretel the phenomena which, according to my principles, will always be found to take place. It will be sufficient, for the present, to draw this conclusion, that in a circle consisting merely of two conductors, however different they may be, their mutual contact can produce no electric stream sufficient to excite sensibility, or muscular movement; and that, on the contrary, this effect infallibly follows as often as the chain is formed of three conductors, one of one class, and two different from each other of another class, which come into mutual contact with each other, and that this effect will be stronger, the greater the difference is between the latter; that in other cases, where there are more than three different conductors, the effect either is not produced, or will be produced in different degrees, according as the forces called forth by the different combinations, which will be expanded at each heterogeneous contact, and which are often in opposition, and endeavour to impel the electric fluid in opposite directions, are perfectly in equilibrium with each other (which must be a very rare case), or when the sum of those which exert themselves in one direction is more or less exceeded by the sum of those which act in another direction.

“ I shall here, however, leave the two complex combinations, and return to the simple cases, those with three different conductors, represented by fig. 3. which are more demonstrative; or, in other words, those with

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two different metals or conductors of the first class, which are in contact with each other, and are applied on the other side to moist conductors, or conductors of the second class. This method has been commonly employed since Galvani's discovery, and is in exact proportion with the diversity of metals, on which I consider the whole phenomena to depend.

"The other method of combination, which is expressed by fig. 4. or that of a metal placed between two different moist conductors, for example, between water on the one side, and an aqueous, saponaceous, or saline fluid on the other, I discovered in the autumn of 1794; and though since that period I have repeated the much varied experiments of different persons, both foreigners and others, among which was that of Humboldt, and though I wrote to several correspondents respecting it, that light has not yet been thrown on this new phenomenon which it seems to deserve.

"The singular circumstance before mentioned, in regard to the acid taste when the tongue is brought into contact with an alkaline liquid, belongs, as you may perceive, to this second method of exciting the electric fluid, and putting it in circulation (if the tin vessel be touched on the outside by the hand moistened with water, and on the inside by the alkaline liquor), and shews that this current is no less strong and active than that excited by the first method, viz. by employing two sufficiently well-chosen metals, such as lead and copper, iron and silver, zinc and tin. I must here observe, that though with tin alone, placed between water and an alkaline liquor, you obtain nearly the effect which is produced by two of the most different metals, as silver and zinc, combined with any conductor whatever of the second class; you can obtain the same, and even in a higher degree, with iron alone or silver alone, when the iron is introduced between water on the one side and nitrous acid on the other, or when the silver is applied between water and a solution of sulphur of pot-ash.

"If you take a frog, the head of which has been cut off, and which has been deprived of all life by thrusting a needle into the spinal marrow, and immerse it, without skinning it, taking out the bowels, or any other preparation, into two glasses of water, the rump into one, and the leg into the other as usual, it will be strongly agitated and violently convulsed when you connect the water in both glasses by a bow formed of two very different metals, such as silver and tin or lead, or, what is better, silver and zinc; but this will by no means be the case when the two metals are less different in regard to their powers, such as gold and silver, silver and copper, copper and iron, tin and lead. But what is more, the effect will be fully produced on this so little prepared frog when you immerse in one of the two glasses the end of a bow merely of tin or zinc, and into the other glass the other end of this bow, which has been rubbed over with a little alkali. You may perform the experiment still better with an iron bow, one end of which has been covered with a drop or thin coating of nitrous acid; and beyond all expectation, when you take a silver bow having a little sulphur of potash adhering to the end of it.

"Fig. 21. represents the form of this experiment, where *g* is the frog, *a, a*, the two glasses with water, *A* the bow formed of one single metal, and *m* the drop

or a thin stratum of a mucous, saline, &c. fluid, with which the bow has been rubbed over, and which on this side is between the metal and the water.

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"The very considerable difference in regard to the quantity of effect in the before-mentioned experiments already shews, that if the electric stream excited by contact is strongest towards a certain metal, when that metal is placed between a certain fluid on the one side, and another fluid on the other, there are other fluids which produce a greater effect with another kind of metal; so that it will be necessary to discover by experiment the particular arrangement of conductors suited to each metal, in which the fluids or conductors of the second class must be disposed according to their activity. I have paid great attention to this circumstance, and have formed several tables, which I shall publish as soon as I have brought them to perfection.

"I shall here, however, only observe, that in order to class, in some manner, the innumerable different moist conductors of this kind, I distinguish them into aqueous, spirituous, mucous, and gelatinous, saccharine, saponaceous, saline, acid, alkaline, and sulphurous (livers of sulphur) liquids; that I make subdivisions in the acids down to the best known simple mineral acids, (as I find in this respect great difference between the nitrous and the muriatic acids,) comprehending the principal vegetable acids and the acid of galls; and do the same in regard to the saline fluids, according as they are solutions of neutral salts, earthy salts, and particularly metallic salts.

"When it can be determined in what order all these kinds of fluids follow each other, in regard to the power in question, for the metal *A*, and another for the metal *B*, &c. we shall then be in a condition to determine what place must be assigned to a great number of other heterogeneous fluids, whether mineral, vegetable, or animal, which belong to several of the above classes. In general, the order for the greater part of the metals hitherto observed is as follows: 1st, pure water; 2d, water mixed with clay or chalk (which shews a pretty different effect when the before-mentioned experiment is made with two glasses, a bow of tin or zinc, and a properly prepared frog, which has a sufficient degree of vitality); 3d, a solution of sugar; 4th, alcohol; 5th, milk; 6th, mucilaginous fluids; 7th, animal gelatinous fluids; 8th, wine; 9th, vinegar, and other vegetable juices and acids; 10th, saliva; 11th, mucus of the nose; 12th, blood; 13th, brains; 14th, solution of salt; 15th, soap-suds; 16th, chalk-water; 17th, concentrated mineral acids; 18th, strong alkaline leys; 19th, alkaline fluids; 20th, livers of sulphur. With some metals there is, however, a considerable deviation from this order, in regard to livers of sulphur, alkaline fluids, and the nitrous and saline acids.

"As to the metals, which in their position between these different fluids are more or less proper for the electric effect in question, I have found in general, that tin exceeds all others, and that silver is the worst; except when one of the fluids betwixt which the silver is placed is water, or any other aqueous conductor, and the other liver of sulphur: in this case silver far exceeds zinc, and even tin. Iron also produces a much greater effect than any other metal, when it is in contact, on the one side, with mere water or an aqueous conductor,

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conductor, and on the other with the nitrous acid, were it even only a drop. The excitement occasioned in both cases is wonderful; since it exceeds, as I have already remarked, that produced, according to the usual method, by means of a double metallic bow, even of different metals, as zinc and silver, applied to conductors of the second class of the same kind. It is sufficiently strong and powerful to produce convulsive movements in a half-prepared frog, the bowels of which have not been taken out, when one of the two moist conductors is a concentrated alkaline solution, and the metal placed between them is zinc, or rather tin. With other metals and other fluids you can seldom produce convulsions in a frog, if it be not perfectly prepared, or at least embowelled.

“The reader will readily perceive, that when a bow of one and the same metal touches with both its ends the same kind of saline water, the same acid, the same alkaline fluid, &c. an electric stream will not take place, as happens also when it touches on each side merely water: in that case two opposite actions are opposed to each other, and keep each other in equilibrium. That these contrary powers, however, may be in perfect equilibrium, it is necessary that the fluids applied to both ends of the homogeneous metalline bow be exactly of the same kind and of the same strength. For this reason the most careful attention and a certain dexterity are required, in order to ensure success to the experiment, which I have often performed to the great astonishment of the spectators, and which any one may repeat as was done by my friend Humboldt. That philosopher has already published some of the most striking and decisive of these experiments in his second letter; and I shall here give a more particular account of them.

“Having placed a completely or only half-prepared frog as usual in two glasses of water, take a very clean bow of silver (it will be best when it has been washed with water from the glasses), and immerse both ends of it at once, or the one after the other, in the glasses; no agitation of the frog will be occasioned. Repeat the experiment, after you have daubed over one end of the bow with the white of an egg, liquid glue, saliva, mucus, blood, a solution of tartar, or any other fluid or conducting substance sufficiently different from pure water. First, immerse the pure end, or that moistened merely with water, in the water of one of the glasses; and afterwards the other end, daubed over with the above substances, in the water of the other glass; you will then infallibly produce a convulsive movement in the frog, and several times in succession, if you draw out the bow and again immerse it until nothing more of the above substances is left adhering to the metal, or until the metal, with its ends in both the glasses, touches only pure, or nearly pure, water. Daub both the above substances uniformly over both ends of the bow, and immerse them at the same time in both the glasses of water, and no convulsions will arise. They will often be produced in newly prepared and highly irritable frogs, when the saline fluid, or in general, the substance with which the two ends of the bow are daubed over, is not perfectly the same, or when the substance at the one end is more diluted than at the other, &c. Wash and clean carefully the one end of the bow, daub over the other more or less, and convul-

sions will be again produced as soon as the circle is made complete by the double immersion of the bow. Clean both ends completely, and no agitation will arise, as in the first experiment.

“For comparative experiments of this kind, I would recommend viscous fluids or substances rather than saline, because the latter are too soon dissolved in the water. It oft-times happens that the convulsions of the frog, when it is completely prepared and highly irritable, take place, though both ends of the metallic bow are daubed over with the same kind of saline fluid. The cause of this is, that when one end is immersed in the water after the other (and it may be easily seen that it is impossible to do so in a moment with sufficient accuracy), the one end of the bow loses a portion of its saline substance sooner than the other, or at least the adhering part is more diluted by the water, so that the fluid with which both ends have been daubed over is no longer the same.

“For these experiments I would also recommend silver, as a metal that is less liable than others to be attacked and changed by saline and other liquids. Tin, lead, copper, and in particular iron, are more susceptible of lasting variations; so that bows of these metals, and of iron above all, retain for a long time the power of producing convulsions in a newly prepared and highly irritable frog, even when both the ends of the bow are immersed in two glasses of water, although the places of the metal, attacked by any of the saline fluids, have been carefully washed and cleaned. A superficial alteration in the metal is sufficient to produce this change, as may be easily seen. These variations often shew themselves to the eye by a yellow blackish spot, &c. which it is difficult to remove. I do not here speak of lasting variations, that proceed to a greater depth, which can be produced in the end of the metallic bow, and particularly in iron, when its hardness is changed; a process by which such a bow can be rendered capable of producing not only convulsions in frogs, but also a particular sensation on the tongue, and light before the eyes, if both its ends, made perfectly clean, are only brought into contact with pure water. These, and many other experiments of the like kind, form the chief subject of my first letter to the abbé Vassalli, professor of natural philosophy at Turin, written in the beginning of the year 1794, and afterwards published with the other in Brugnatelli's Journal.

“If silver be less exposed to be attacked by saline and other fluids (except by liver of sulphur, which instantaneously renders it black); if it be less susceptible of considerable and lasting variations, and has therefore this advantage over other metals, that it is liable to fewer irregularities; tin, on account of its greater activity, that is, the strength of the effects which it produces by being brought into contact with almost all moist conductors, as I have already observed, is to be preferred to silver, and in a certain degree to all other metals. The experiment I have already described with a tin basin filled with an alkaline fluid, and held in the hands moistened with water, by which an acid sensation is excited on the tongue when brought into contact with the above fluid, is a proof of it; for it would be vain to expect a like effect from a basin of lead, iron, or copper, and much more so from one of silver. With the latter it would be obtained only when it contained

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tained liquid liver of sulphur; and in that case the acid taste would be pretty strong.

"The electric fluid is excited also with the greatest strength and activity, when the metal is tin, between water and a saline fluid: but it will be excited with still greater energy to produce an acid sensation on the tongue when the tin is between water and an insipid mucilaginous fluid; or when the experiment is made with a tin basin filled with a solution of gum, liquid glue, white of an egg, &c. The other metals, in like circumstances, produce some effect, but much weaker: silver produces the weakest, except with liver of sulphur, as I have already observed.

"A like experiment, which I made three years ago, and exhibited to various persons, not with two different fluids and one metal, as in that above described, but contrariwise, with two metals of a different kind and a fluid, is already known. I took a basin of tin (one of zinc is better), placed it on a silver stand, and filled it with water. When any of the persons in company applied the tip of his tongue to the water, he found it perfectly tasteless as long as he did not touch the silver stand; but as soon as he laid hold of the stand, and grasped it in his hands well moistened, he experienced on the tongue a very perceptible and pretty strong acid taste. This experiment will succeed, though the effect is proportionably weaker, with a chain of several persons who hold each other's hands, after they have been moistened with water, while the first applies the tip of his tongue to the water in the basin, and the last lays hold with his hands of the silver stand.

"If these experiments, in regard to the taste excited on the tongue by the action of two different metals, are striking, the others, in regard to the taste excited, modified and changed by one metal between two different fluids, are no less so, and they are also newer. They are still interesting on this account, that they discover to us the cause of that taste often perceived in water and other liquids, which is more or less considerable or various when drunk from vessels of metal, and particularly of tin. When the outer extremity of the vessel is applied to the under lip, rendered moist by the saliva, and the tongue is extended so as to be in contact with the water, beer, wine, &c. in the vessel, or when the tongue is bent as is done in drinking, is there not then a complete circle, and is not the metal between two more or less different liquids, that is, between the saliva of the under lip and the liquor in the cup or vessel? A stronger or weaker electric stream must thereby be occasioned, according as the fluids are different—a stream which will not fail in its way to affect the sensible organs of the tongue in the said circle.

"Besides the two methods already considered, of producing an electric current, that is, by means of one or more moist conductors, or conductors of the second class, placed between two different metals or conductors of the first class; or contrariwise by means of a conductor of the first class placed between two of the second class, also different; there is still a third method of exciting the electric fluid, though in a degree so much weaker, that it is scarcely capable of causing convulsions in a perfectly prepared frog, in which there is still a strong degree of vitality. This new method consists in forming the circle of three different conductors, all of the second class, without the intervention

of one of the first or a metal one: Some think they find in this method a strong objection against my principle.

Fig. 22. represents this third method compared with the other two. In the experiments of Professor Valli, respecting which so much noise has been made without any reason, *t* represents the leg of the frog, and particularly the hard tendinous part of the *musculus gastrocnemius*; *m* the rump, or the muscles of the back, or the ischiatic nerves, to which the said tendinous parts are applied; and *a* the blood, or the viscous saponaceous or saline fluid, applied to the point of contact.

"I have fully described this new method, where no metal is used, in my third and fourth letter to Professor Vassali, written in the autumn and winter of the year 1795. I have there shewn, that these new facts, far from altering my ideas and principles, serve rather to establish them; and that they render more general the principle that the conductors, by heterogeneous contact, that is, of two different from each other, become exciters of electricity, and confirm the beautiful law arising from it, that to produce an electric stream, the circle must necessarily be formed of three different conductors. You now see in what the whole secret, the whole magic consists; and that it depends not merely on metals, as might have been believed, but on all the different conductors. As long as we adhere to these principles, it will be easy to explain all the before-mentioned experiments without being reduced to the necessity of having recourse to any imaginary principle, or any peculiar and active electricity of the organs. By their assistance you will be enabled to invent new experiments, and to foretell the result of them, as I have several times done, and still do daily. If you, however, abandon these principles, you will find nothing but uncertainty and contradiction, and the whole will be an inexplicable problem.

"Some new facts, he observes in a farther communication, lately discovered, seem to shew that the immediate cause which excites the electric fluid, and puts it in motion, whether it be an attractive or a repulsive power, is to be ascribed much rather to the mutual contact of two different metals, than to their contact with moist conductors. But, though it cannot be denied, that in the latter case there exists an action, it is proved that it exerts itself in a far more considerable degree when the two metals mutually touch each other. There arises by the mutual contact, for example, of silver and tin, an action or power by which the former communicates the electric fluid, and the latter receives it; or the silver suffers it to escape, and the tin attracts it. This produces, when the circle is rendered complete by moist conductors, a stream, or continual circulation of the fluid. When the circle is complete, there is an accumulation in the tin at the expence of the silver; which indeed is very small, and far under the point necessary to enable it to announce itself by the most delicate electrometer. I have however been able, by the assistance of my condenser, constructed on a new plan, and still better by NICHOLSON'S doubler, to render it very perceptible: I shall here communicate the result obtained by my experiments, which I made some time ago with great satisfaction.

"Experiment I. The three plates of the doubler are of brass. I took two strong wires, one of silver and the

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the other of tin, and brought the former into contact with the moveable plates, and the other with one of the fixed plates; while they both rested on the table, or, what is better, on moist pasteboard, or any other moist conductor, so as to be in communication by the intervention of one or more conductors of the second class. I suffered the apparatus to remain some hours in this state, then removed the two wires, and put the machine in motion. After 20, 30, or 40 revolutions (or more when the atmosphere was not dry, or the insulation imperfect), I brought one of my straw electrometers into contact with the moveable plate, and observed indications of positive electricity (+E), which arose to 4, 6, 10 degrees, and more. If I suffered it to touch the fixed plates, I had the corresponding indications of the opposite kind of electricity (-E).

"The silver, therefore, poured the elastic fluid into the brass plate, when it had been some time in contact with it; and the tin attracted it from the other plate, which was also of brass, while in contact with it. This was confirmed by the following experiment, which is a real *experimentum crucis*.

"II. I reversed the experiment, so that the silver was in contact with one of the fixed plates, and the tin with the moveable one. The electricity which I obtained from the latter, after the apparatus had remained a sufficient time in that position, was negative (-E); while that of the fixed plate was positive (+E).

"III. I applied only the tin wire to the moveable plate, and insulated the two fixed ones, or brought them into communication with the table or any other moist conductors with which the tin wire was in contact. This simple contact of the tin with the brass of which the moveable plate consists, is sufficient to excite in it a very small degree of negative electricity; only a longer time is required.

"Those acquainted with the action of electric atmospheres, and the construction of the doubler, will need no farther explanation, to enable them to comprehend the mode of action of this very ingenious instrument; how the electricity, once obtained from the moveable plate, must occasion an opposite kind in the fixed plate, and *vice versa*; how the opposite kinds of electricity are increased by each revolution of the machine, &c. In the present experiment, therefore, when the moveable plate is -E, the fixed plate must be +E.

"IV. This is the reverse of the former. The piece of tin was applied to one of the fixed plates, and the metallic one was insulated from all metallic contact. The result was now reversed; that is, the fixed plates were electrified negatively, and the moveable one had positive electricity.

"All these experiments succeed much better, and in a shorter time, if, during the mutual contact of the different metals, the moveable plate be opposite to either of the other two that are fixed; but still better when a piece of thick paper, such as a card, not moist, and of a thickness equal to the intermediate space, is placed between the two plates that stand opposite to each other. It is of advantage to leave the card some time in its place, and not to remove it till the moment when the metals in contact are removed and the machine put in motion. To render the insulation com-

plete, and make the contact of the metals immediate, without the least moisture, which would be highly prejudicial, it will be proper to place the apparatus in the sun. Half an hour, and often less, will then be sufficient to obtain the required electricity, &c.; whereas, in other cases, several hours are necessary before the desired result can be obtained. This experiment is represented in fig. 23. 24. 25. and 26. LLL (fig. 22. and 23.) are the three brass plates of the doubler; A the piece of silver which is in contact with one of these plates; E the piece of tin applied to the other plate, which is opposite to the former; *a a*, the moist conductor, or chain of moist conductors which form a communication with the pieces of metal. When the silver, as in fig. 23. is in contact with the anterior moveable plate, it gives up to it a little of the electric fluid, and the latter accumulates as much of it as possible; consequently the electricity of the plate becomes positive, as the sign + of the plate shews: whereas the tin attracts the electric fluid from the corresponding fixed plate, which by these means has negative electricity, as the sign (-) of the plate indicates; and it even communicates this electricity to the other fixed plate, which therefore has the sign (-) also.

"In fig. 24. every thing is reversed: the moveable plate is negatively electrified (-E), while the two fixed plates become positive (+E).

"Lastly, in the 25th and 26th figure, it is seen that the tin abstracts the electric fluid from the brass plate with which it is in contact. This plate is therefore negatively electrified, or has -E; and by the action of its atmosphere occasions positive electricity (+E) in the other plate standing opposite, which is in communication, either with the third plate, as fig. 25, or, what is still better, with other conductors, as fig. 26. These opposite electricities increase afterwards with each revolution of the machine; the action of which, according to the theory of electric atmospheres, produces this effect to the degree mentioned, and justifies the appellation of doubler of electricity, which has been given to this instrument.

"I now come to the experiments, which shew that we are to seek for the cause which calls forth the action of the electric fluid; which excites it, of whatever kind it be; determines its transition, &c. much rather in the mutual contact of the metals, than in the contact of the moist conductors with these metals. Though, according to every circumstance, we must admit some action of this kind in the latter contact, it cannot be denied that the former is certainly the most effectual. At present I shall only mention the two following experiments, which I contrived in such a manner that they may serve to explain a question of this kind.

"V. I left the two fixed plates of brass without making any alteration; took off the third moveable plate, and supplied its place by one of tin; and arranged the machine in such a manner, that the latter stood opposite to one of the other two plates. I then applied to this tin plate a bit of brass, and to the opposite fixed plate of brass a piece of tin. After a convenient time, (for example an hour, when the weather was perfectly dry), I took away the two pieces of metal, or only that of brass, and made the moveable plate of tin, which

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which was in contact with the piece of brass, to revolve about 30 times. It then gave me very perceptible marks of positive electricity.

"VI. I reversed the former experiment, and made the piece of brass touch the brass plate, and the piece of tin the plate of the same metal. I, however, obtained nothing, or almost nothing; even when the apparatus was left a much longer time in that situation, and when the machine had made twice or three times as many revolutions.

"These two experiments are represented by fig. 27. and 28.; where L is the piece of brass, E that of tin, and *a a* the moist conductors which connect the two different pieces of metal.

"In the arrangement of fig. 28. the same contact of different metals, viz. brass on the one side, and tin on the other, with the same kind of moist conductor, takes place, as well as in the preceding experiment of fig. 27. The addition of the electric fluid in the one, and the abstraction of it in the other, ought therefore equally to take place, though in an inverted order, when the action on the fluid calls forth the moving power, by this contact of the two metals L, E, with the moist conductor between them; and yet this is not the case, as no signs of electricity are obtained even after a long time, and when the machine has been caused to make twice or three times as many revolutions. The condition essentially necessary to obtain electricity is, that the different metals must be in contact with each other, which is the case in fig. 27. but not in fig. 28.

"When the machine has been repeatedly turned, something may be obtained. This arises either from small remains of old electricity, which could not be destroyed or dissipated in the time during which the arrangement of fig. 26. was continued; or even from fresh electricity, which the moveable plate may have obtained from the atmosphere or vapours during the pretty considerable time of the machine being in a state of revolution; or some accidental difference, either between the two tin or the two brass pieces, may be the cause of some action on the electric fluid, or of some derangement in regard to the equilibrium. In the last place, the contact of the moist conductor with the tin on the one side, or with the brass on the other, may have a different action, which, in my opinion, must be very small, but yet is not entirely without effect.

"As it is now proved that, according to the arrangement of the sixth experiment, nothing, or almost nothing, is obtained by 40, 60, and even 80 revolutions of the doubler, while a great deal is obtained by that of the fifth with 20 or 30, we must therefore conclude that the contact of two metals of a different kind with moist conductors, without the mutual contact of these metals themselves (which is wanting in the sixth experiment, where brass is in contact with brass, and tin with tin), produces nothing, or almost nothing; and that, on the contrary, the mutual contact of the two metals of a different kind, which takes place in the fifth experiment, produces the whole, or almost the whole, effect."\*

\* *Phil. Mag.* vi. 59, 163, 306.

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Experiments of  
Fowler.

Dr Fowler instituted an elaborate series of experiments on this subject, in which he confirmed and extended many of the results which had been already obtained in the experiments and investigations of other naturalists. He found that metallic substances were the best agents

or conductors, and he concluded that the contact of two dissimilar metals is an essential condition in the production of the phenomena of galvanism. It did not indeed escape his observation, that in some cases a single metal produced muscular contraction, but this he ascribed to mechanical stimulus, which excited a painful sensation in the animal, not quite dead, or to the impurity of the metal, containing some portion of alloy, or solder. Future observation, however, proved, that these motions could be produced without any metal whatever. He found that the most powerful effects were produced by employing zinc, in combination with gold or silver. By means of these metals he produced contractions twenty-four hours after they had ceased. In the experiment by which this was established, the nerve was coated with tin, and a different metal was employed to complete the circle between the coating and the muscle. The same philosopher also found that the effects were increased in proportion to the bulk of the metals employed, and the extent of surface brought into contact; that a communication might be formed between the metals in contact, and the nerves of the animal which were exposed, by means of water; and that the temperature of the season and the nature of the animal's death seemed to have considerable influence on the duration of the phenomena. In many cases he was able to produce contractions in a frog, after three days had elapsed from the time that the head had been separated from the body. He seems to have directed his attention particularly to the conducting power of the substances employed in galvanic apparatus, and in tracing the analogy between this property and electricity. Although metals were found to be good conductors, this was not the case with the metallic oxides, or with the salts which have these oxides for their basis.

An earth-worm placed on a circular piece of zinc, exhibited contractions similar to those produced in living frogs, when a piece of silver was brought in contact to complete the circle. Worms of the same kind, suspended across a silver rod, and the head and tail being at the same time brought in contact with a piece of zinc, sustained a shock which seemed to pass through the whole body. A similar experiment, followed by the same result, was made on leeches. If an earth-worm or leech be placed on a piece of silver, resting on a plate of zinc, the animal experiences a painful sensation, when any part of its body comes in contact with the zinc. It seems to have the same disagreeable sensation when it is placed on the zinc, and any part of the body is brought into contact with the silver.

The inquiries of the same philosopher were also directed to ascertain whether the nerves in general are all equally subject to the galvanic influence, or whether its effects are limited to those which are subject to the power of the will. With this view the heart of a cow was separated from the body, soon after the animal was killed, and prepared in the way which has been already described, in the preparation of frogs; and while the contractions of the auricles still continued, the intercostal nerve being coated, and the apparatus arranged, the metals were brought into contact, but seemed to have no effect whatever on the contractions while they continued, and after they had ceased, had not the power of renewing them. He failed in many similar attempts on

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hot-

hot-blooded animals, but succeeded in producing muscular contractions in part of a frog, after an hour had elapsed from the time that the natural motions had ceased. He made a similar experiment on the heart of a cat which had been drowned in warm water, and he found that in this case the motion of the heart could be excited by means of galvanism; but when the animal was drowned in cold water, no effect could be produced.

It was another object of his investigations, to ascertain the effects of galvanism on the organs of the senses. The disagreeable taste which remains on the tongue, when two dissimilar metals, the one placed on the upper surface, and the other touching the under surface, are brought into contact, has been already taken notice of, and the method of applying the metals particularly described. The strongest impression, it was observed, was produced, when gold and zinc were employed. He introduced a metallic substance of a different kind into each ear, and having formed a communication between them, he experienced a shock in the head when these two metals were brought into contact. A bit of tin-foil was placed on the point of the tongue; the rounded end of a silver pencil case was applied to the internal angle of the eye; and when the other extremity of the pencil case and the tin-foil on the tongue were brought into contact, he perceived a flash of pale light, as well as the metallic taste in the tongue which is produced in a preceding experiment. The flash seemed most vivid when gold and zinc were employed. A similar effect is produced by introducing one of the metals between the upper lip and the gum, and the other between the under lip and the gum, and retaining them in this position to bring the edges in contact: or, by inserting one of the metals into the nose, and placing the other on the tongue, to form the communication between them.

Similar experiments were made by the late Professor Robison of Edinburgh. He particularly observed, that the effects of the galvanic fluid were more sensibly felt when one of the conducting metals was placed on a wound, or on the nerve of a carious tooth. From the peculiar impression on the tongue on the application of gold or silver trinkets, he could ascertain whether any folder was employed about them.

In another experiment the same philosopher seemed to think that he had proved that the effect was produced even before the metallic conductors were brought into direct contact. A piece of zinc was introduced between the gums and cheek on one side of the head, and a piece of silver was placed in the same way on the other side of the head. A rod of zinc was then applied to the zinc piece, and a rod of silver to the silver piece on the different sides of the head; the extremities of these rods which projected from the mouth were then cautiously brought into contact; and, as soon as this was completed, a strong sensation was produced in the gums. But before the direct contact was made between the extremities of the rods, he perceived a flash of light which was repeated when the rods were again separated to a small distance from each other. It is scarcely necessary to add, that when the arrangement of the rods was reversed, the effects ceased; that is,

when the zinc rod was substituted for the silver rod, and the silver one for that of zinc.

To the account of the experiments on animals now given, which were chiefly made on cold-blooded animals, we shall now add those of Aldini, the nephew of Galvani, which were made on the body of a man executed in London for murder. This man who was executed on the 17th January 1803, was 26 years of age, and seemed to have been of a strong, vigorous constitution. The body was exposed for an hour to a temperature two degrees below the freezing point Fahrenheit, at the end of which it was conveyed to a house not far distant, where the apparatus for the experiments had been arranged. The following is the account of these experiments in the author's own words.

"*Experiment 1.*—One arc being applied to the mouth, and another to the ear, wetted with a solution of muriate of soda (common salt), galvanism was communicated by means of three troughs combined together, each of which contained 40 plates of zinc, and as many of copper. On the first application of the arcs the jaw began to quiver, the adjoining muscles were horribly contorted, and the left eye actually opened.

"*Exper. 2.*—On applying the arc to both ears, a motion of the head was manifested, and a convulsive action of all the muscles of the face; the lips and eyelids were also evidently affected, but the action seemed much increased by making one extremity of the arc to communicate with the nostrils, the other continuing in one ear.

"*Exper. 3.*—The conductors being applied to the ear, and to the rectum, excited in the muscles contractions much stronger than in the preceding experiments. The action even of those muscles furthest distant from the points of contact with the arc was so much increased as almost to give an appearance of re-animation.

"*Exper. 4.*—In this state, wishing to try the power of ordinary stimulants, I applied volatile alkali to the nostrils and to the mouth, but without the least sensible action; on applying galvanism great action was constantly produced. I then administered the galvanic stimulus and volatile alkali together; the convulsions appeared to be much increased by this combination, and extended from the muscles of the head, face, and neck, as far as the deltoid. The effect in this case surpassed our most sanguine expectations, and vitality might, perhaps, have been restored, if many circumstances had not rendered it impossible.

"*Exper. 5.*—I next extended the arc from one ear to the *biceps flexor cubiti*, the fibres of which had been laid bare by dissection. This produced violent convulsions of all the muscles of the arm, and especially in the *biceps* and the *coraco-brachialis*, even without the intervention of salt-water.

"*Exper. 6.*—An incision having been made in the wrist, among the small filaments of the nerves and cellular membrane, on bringing the arc into contact with this part, a very strong action of the muscles of the fore-arm and hand was immediately perceived. In this, as in the last experiment, the animal moisture was sufficient to conduct the galvanic stimulus without the intervention of salt water.

"*Exper. 7.*—The short muscles of the thumb were dissected,

dissected, and submitted to the action of the galvanic apparatus, which induced a forcible effort to clench the hand.

“*Exper. 8.*—The effects of galvanism in this experiment were compared with those of other stimulants. For this purpose, the point of the scalpel was applied to the fibres, and even introduced into the substance of the *biceps flexor cubiti* without producing the slightest motion. The same result was obtained from the use of caustic volatile alkali and concentrated sulphuric acid. The latter even corroded the muscle, without inducing it to action.

“*Exper. 9.*—Having opened the thorax and the pericardium, exposing the heart *in situ*, I endeavoured to to excite action in the ventricles, but without success. The arc was first applied upon the surface, then in the substance of the fibres, to the *carnea columna*, to the *septum ventriculorum*, and lastly, in the course of the nerves by the coronary arteries, even with salt water interposed, but without the slightest visible action being induced.

“*Exper. 10.*—In this experiment the arc was conveyed to the right auricle, and produced a considerable contraction, without the intervention of salt water, but especially in that part called the *appendix auricularis*; in the left auricle scarcely any action was exhibited.

“*Exper. 11.*—Conductors being applied from the spinal marrow to the fibres of the *biceps flexor cubiti*, the *gluteus maximus*, and the *gastrocnemius*, separately, no considerable action in the muscles of the arm and leg was produced.

“*Exper. 12.*—The sciatic nerve being exposed between the great trochanter of the femur and the tuberosity of the ilchium, and the arc being established from the spinal marrow to the nerve divested of its theca, we observed, to our astonishment, that no contraction whatever ensued in the muscles, although salt water was used at both extremities of the arc. But the conductor being made to communicate with the fibres of the muscles and the cellular membrane, as strong an action as before was manifested.

“*Exper. 13.*—By making the arc to communicate with the sciatic nerve and the *gastrocnemius* muscle, a very feeble action was produced in the latter.

“*Exper. 14.*—Conductors being applied from the sciatic to the peroneal nerve, scarcely any motion was excited in the muscles.

“*Exper. 15.*—The sciatic nerve being divided about the middle of the thigh, on applying the conductors from the *biceps flexor cruris* to the *gastrocnemius*, there ensued a powerful contraction of both. I must here observe that the muscles continued excitable for seven hours and a half after the execution. The troughs were frequently renewed, yet towards the close they were very much exhausted. No doubt, with a stronger apparatus we might have observed muscular action much longer; for, after the experiments had been continued for three or four hours, the power of a single trough was not sufficient to excite the action of the muscles: the assistance of a more powerful apparatus was required. This shows that such a long series of experiments could not have been performed by the simple application of metallic coatings. I am of opinion that, in general, these coatings, invented in the first instance by Galvani, are passive. They serve merely to con-

duct the fluid pre-existent in the animal system; whereas, with the galvanic batteries of Volta, the muscles are excited to action by the influence of the apparatus itself.

“From the above experiments there is reason to conclude:

“1. That galvanism, considered by itself, exerts a considerable power over the nervous and muscular systems, and operates universally on the whole of the animal economy.

“2. That the power of galvanism, as a stimulant, is stronger than any mechanical action whatever.

“3. That the effects of galvanism on the human frame differ from those produced by electricity communicated with common electrical machines.

“4. That galvanism, whether administered by means of troughs, or piles, differs in its effects from those produced by the simple metallic coatings employed by Galvani.

“5. That when the surfaces of the nerves and muscles are armed with metallic coatings, the influence of the galvanic batteries is conveyed to a greater number of points, and acts with considerably more force in producing contractions of the muscular fibre.

“6. That the action of galvanism on the heart is different from that on other muscles. For, when the heart is no longer susceptible of the galvanic influence, the other muscles remain still excitable for a certain time. It is also remarkable that the action produced by galvanism on the auricles is different from that produced on the ventricles of the heart, as is demonstrated in experiment the tenth.

“7. That galvanism affords very powerful means of resuscitation in cases of suspended animation under common circumstances. The remedies already adopted in apoplexy, drowning, &c. when combined with the influence of galvanism, will produce much greater effect than either of them separately.”\*

Excepting the experiments of Aldini which we have just detailed, the greater number of those of which an account has been given, it has been already observed, were made on cold-blooded animals, and besides, the apparatus usually employed, was a single galvanic combination. After the construction of the pile was known, and still more so after batteries in the form of troughs were invented and employed, very different effects were exhibited on the animal body, both in the dead and living state.

With batteries composed of 200, 300, or 400 pairs of plates arranged in troughs, very powerful shocks will be felt when the circle is completed between the extremities of the battery by means of the two hands of any person, so that the fluid shall pass through the body. This experiment may be performed by touching with one hand wetted, a wire connected with one extremity of the battery, and with the other hand also moistened a wire proceeding from the other end of the battery. Every time that the contact is made a shock is felt. The effect will be more powerful if round balls of brass having brass rods attached to them after being well wetted, be placed in the palms of the hands also well wetted, and a communication be established between the ends of the battery. The same effect is produced when the circle is completed by means of a number of persons joining hands together; but it must be observed, that each person must take care to have

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phers which tended to improve and enlarge the knowledge of galvanism.

We shall limit the account of the experiments first alluded to above to the combustion of charcoal, the deflagration and combustion of metallic substances, the decomposition of water and some other fluids, and the precipitation of metals from their solution in acids.

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Combustion  
of charcoal.

*Exper. 1.*—With a battery composed of 50 pairs of plates, of three or four inches square, with proper management, a brilliant light may be produced from the combustion of charcoal. The charcoal for this experiment should be well prepared, from some of the harder woods, such as beech or boxwood. It has been said that it could only be properly prepared by exposing it to a degree of heat equal to that of a glass-house furnace; but we know from experience that so high a temperature is by no means absolutely necessary. We have prepared charcoal which was found to answer the purpose of the present experiment, with such a heat as can be easily commanded in a small chemical furnace. The wood which is to be converted into charcoal is divided into slips of about one-fourth of an inch square; it is then put into a crucible, which is filled up with sand, and may be covered with another crucible inverted, so as still more effectually to prevent the access of air. The crucible is then placed in the middle of the furnace, which is to be filled up with charcoal, and a strong heat maintained for eight or ten hours. After this the charcoal will be found sufficiently prepared, and this is of some consequence to be attended to, because on the complete conversion of the wood into this state much of the success of the experiment depends.

Slips of charcoal reduced to a fine point are attached to wires, which communicate with the extremities of the battery. The charcoal may be fixed to the conducting wires by means of a bit of thread, or fine iron or brass wire, or they may be fixed in pincers, or an instrument similar to that which is used for holding crayons or blacklead pencils; but in whatever way this part of the apparatus is contrived, when the two pieces of charcoal connected by means of metallic conductors with the extremities of the battery are brought into contact, combustion immediately takes place. The rapidity or brilliancy of this combustion is proportioned to the strength and activity of the battery. The light produced by such a battery as that we have described above, will be at times pretty vivid; but with two such batteries, whose action is combined, it is still more brilliant. When four batteries, consisting each of 50 pairs of plates of eight inches square, are employed for this experiment, nothing perhaps can exceed the brilliancy of the light which is given out during the combustion of the charcoal. With the smaller battery, the process is occasionally interrupted; but with the larger apparatus the combustion goes on for a short time, giving out a continued and uniform brilliant light. When this is the case, the rays seem to proceed from the point where the combustion is going on, and exhibit all the variety of the prismatic colours. When the pieces of charcoal are immersed in water, and brought into contact under its surface, the combustion also goes on with considerable rapidity.

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Of metals.

*Exper. 2.*—The deflagration and combustion of many metallic substances may be also effected with a battery composed of 50 pairs of three inch plates, and this may

be done with a very simple apparatus. A bent wire, such as we have already described, is inserted into the perforated, projecting piece of wood, at the extremity of the battery. The wire is to be bent at a right angle to that part of it which is fixed perpendicularly into the extremity of the trough, and on the horizontal part of it is placed the metallic substance to be deflagrated. A plate of copper, which must be perfectly clean and free from oxide, is to be connected with the other end of the battery by means of a conducting wire. When the apparatus is thus arranged, if the copper plate be brought into contact with gold or silver leaf, for instance, the combustion of these substances will take place, and this combustion, it is scarcely necessary to add, will be in proportion to the power of the battery and its energy. In the same way tin-foil, white and yellow Dutch metal, as it is called, may be subjected to experiment, and with a battery of moderate power, a brilliant combustion may be produced.

When a battery of greater power is employed, a very brilliant and rapid combustion of steel wire can be effected. This experiment is made by stretching a piece of wire, such as that which is used for the smaller strings of musical instruments, between the two metallic conductors connected with the opposite extremities of the battery; and thus completing the circle, the combustion takes place. When the experiment succeeds, several inches of the wire are almost instantaneously reduced to the state of oxide. In this way the energy of the battery may be in some measure ascertained, as it must be in proportion to the length of the wire which is burnt. When a very powerful battery is in action, 10 or 12 inches of such wire may be completely burnt; that is, not merely made red hot, but having undergone the process of combustion, and having passed from the metallic state to that of oxide.

*Exper. 3.*—We have already described the apparatus for the decomposition of water. To exhibit this experiment, it is only necessary to fill some of the tubes which have been mentioned for this purpose with water, and to complete the circle of communication between the extremities of the battery, the water in the tube to be decomposed forming part of this circle. If the conducting wires terminating in the tube consist of metals which do not readily undergo oxidation, such as gold or platina, the gases which are the constituent parts of water are separated from the wires, the oxygen gas from the one, and the hydrogen gas from the other, and are seen rising in bubbles to the top of the tube, displacing a quantity of water equal to the space occupied by the gases evolved. This process goes on till the surface of the water falls below the conducting wire passing through the top of the tube; and the circle being then interrupted, the process stops. When this is the case, if the two conducting wires within the tube can by any contrivance be brought into contact, a spark is produced, by which the gases are set fire to, and are again converted into the state of water. This combustion is attended with an explosion. Or if the tube be carefully taken from the apparatus under water, while the finger is placed upon the open end, and then inverted, the gas collected will rise through the water; it may then be set fire to by means of a burning body, a similar combustion will take place, attended with an explosion.

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Decomposition  
of water.

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But if the wires terminating in the tube be of brass or iron, or any metal which is easily oxidated, only one of the gases is collected in the tube; the other (the oxygen) combines with the metal, forming an oxide, which collects on the point of the wire.

By a very simple contrivance the gases may be collected separately. With this view two tubes in which the conducting wires terminate, are employed. These tubes being filled with water, must be inverted in the same basin of water, the latter of which forms the communication between the extremities of the battery.

45  
Other li-  
quids de-  
composed.

Other fluids, as oil, alcohol, ether, and ammonia in solution, may be also decomposed by a similar process. For the decomposition of oil, alcohol, and ether, the pieces of charcoal may be immersed in vessels containing these liquids; and, when they are brought into contact, the decomposition is effected, with the formation and evolution of carbonic acid gas, which is seen rising in bubbles to the surface.

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Precipita-  
tion of me-  
tals.

*Exper. 4.*—By means of galvanism, and with a battery of moderate power, metals may be precipitated from their solutions in acids. The apparatus to be employed for this purpose is similar to that for the decomposition of water, and the tube is filled with a solution of the metallic salt. The communication being then established, the metal is precipitated, and appears in an arborescent form on the point of the wire. In this way the acetate of lead, or sugar of lead, the nitrate of silver, and many other metallic salts, may be revived.

Many other curious and amusing experiments might have been related, but what we have now given will enable the reader to have a distinct notion of the chemical effects of galvanism. Many other of the chemical effects of the galvanic fluid are so closely connected with the peculiar views and theories of those who have discovered and observed them, that we shall not enter into any detail of them till we come to consider that part of the subject. In the mean time we shall occupy the remaining part of the present chapter with an account of some of the experiments on the chemical effects of galvanism which were observed by philosophers in the earlier part of its progress.

Mr Cruickshank, the inventor of the galvanic trough, very early directed his attention to this inquiry, and prosecuted it with great ardour and success. In one of his early communications on this subject we have a comprehensive view of some of the chemical phenomena of galvanism. We shall, therefore, give it in his own words.

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Experi-  
ments of  
Cruick-  
shanks.

“I shall not, says he, give any particular account of the apparatus employed, being a pile, and not differing materially from that in use. I shall only just observe, that it consisted of plates of zinc and silver, of about 1.6 inches square, and that the number of each employed in the following experiments varied from 40 to 100, according to the power required.

“I found that a solution of the muriate of ammonia answered better for moistening the interposed papers than common water.

“When the machine was in full action, sparks which were perfectly visible in the day time, could be taken at pleasure, by making a communication in the usual way between the extremities of the pile, and a small report or snap could be heard; the shock given at that time was very strong, and a gold-leaf electrometer, placed in the circle of communication, was very sensibly

affected: these circumstances, some of which, I believe, have been already ascertained by Messrs. Nicholson and Carlisle, shew the strong resemblance of this influence to electricity. These gentlemen have likewise discovered that galvanism decomposes water with much greater facility than electricity, but with phenomena somewhat different.

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“*Exper. 1.*—A quantity of common water was introduced into a glass tube, being confined at each end by corks, but perfectly at one by a cement of rosin and bees-wax: pieces of silver wire were passed through the corks, and brought within an inch of each other in the fluid, their other extremities being at the same time connected with those of the machine or pile, one with the lower zinc plate, and the other with the upper silver plate. In future, to avoid circumlocution, I shall call the wire attached to the silver plate, the silver wire, and the other the zinc wire. The tube was then placed upright in a cup containing water, with the uncemented end downwards. As soon as the communication was made between the extremities of the pile by the wires, a quantity of small air bubbles began to ascend from the end of the wire connected with the silver, as observed by Messrs. Nicholson and Carlisle; but a white cloud at the same time made its appearance at the one, proceeding from the zinc, or the zinc wire. This cloud gradually increased, and assumed a darker colour, and at last it became purple, or even black. A very few air bubbles were likewise collected upon and ascended from this wire, but when the machine was in full force, a considerable stream could be observed.

“The gas was collected, and found to be a mixture of hydrogen and oxygen, in the proportion of three parts of the former to one of the latter. No great dependence, however, was placed upon this in point of accuracy. The zinc wire was found to be much corroded, and looked as if a considerable portion of it had been dissolved. As the cloud which was formed around this wire became purple on exposure to the light, I suspected it might be luna cornea, or muriate of silver proceeding from the silver, which had been somehow dissolved, and afterwards precipitated in this state, by the muriatic salts in the common water. This led to the following experiments:

“*Exper. 2.*—The glass tube was now filled with distilled water, to which a little tincture of litmus was added; when the communication was made by the wires as in the former experiment, a quantity of gas arose from both wires, but in the greatest quantity from that connected with the silver. In a few minutes a fine red line, extending some way upwards, was perceived at the extremity of the zinc wire; this increased, and in a short time the whole fluid below the point of this wire became red; the fluid however, above the silver wire, looked of a deeper blue than before, the slight tinge of purple being destroyed.

“*Exper. 3.*—I next filled the tube with distilled water, tinged with the tincture of Brazil wood; it was no sooner placed in the circle of communication, than the fluid surrounding the silver wire, particularly towards its extremity, became purple, and this tinge increased so fast, that the whole fluid surrounding this wire, and occupying the upper part of the tube, soon assumed as deep a colour, as could be produced by ammonia.

“The portion of the fluid in contact with the zinc wire

Chemical  
Effects.

wire became very pale, and almost colourless, nor could the purple tinge extend below its upper extremity. From these experiments it would appear, that an acid, probably the nitrous, is produced at the wire proceeding from the zinc, and an alkali, probably ammonia, at that in contact with the silver. These facts sufficiently explain the action upon the silver wire, and the nature of the whitish cloud proceeding from it, and afterwards becoming purple. When lime water was employed instead of common or distilled water, the wire was likewise acted upon, but in a less degree, and the cloud had at first an olive colour, exactly resembling the precipitate of silver by lime-water.

"The quantity of silver dissolved or corroded, if I may use the expression, in these experiments, was very considerable, and where common or distilled water had been employed, a small portion of it remained in solution, which was discovered by the addition of the muriatic acid. Indeed a much larger quantity would probably have been suspended, had it not been for the alkali generated at the same time, and which manifestly produced a precipitate at, or near, the upper extremity of the zinc wire, where, after a certain time, a dark zone or stratum was always formed.

"*Exper. 4.*—It is a well known fact, that hydrogen gas when heated, or in its nascent state, reduces the calces of the metals; I expected, therefore, that by filling the glass tube with a metallic solution, I might be enabled to separate the hydrogen from the oxygen gas, and thus procure the latter in its simple or pure state. With this view the tube was filled with a solution of the acetate of lead, to which an excess of acid was added, to counteract the effects of the alkali. When the communication was made in the usual way, no gas could be perceived, but after a minute or two, some fine metallic needles were perceived at the extremity of the wire connected with the silver. These soon increased, and assumed the form of a feather, or rather that of the crystals of the muriate of ammonia. The lead thus precipitated was perfectly in its metallic state, and very brilliant; a little gas escaped from the wire connected with the zinc, and it was considerably corroded as usual.

"A solution of the sulphate of copper was next employed, and with the same result, the copper being precipitated in its metallic form by the wire connected with the silver. In this instance the metal did not crystallize, but formed a kind of button at the end of the wire, which adhered so completely to the silver, that it was found impossible to separate it.

"The most beautiful precipitate, however, was that of silver from its solution in the nitrous acid. In this case, the metal shot into fine needle-like crystals, articulated, or joined to each other, as in the Arbor Diana.

"What became of the oxygen gas usually produced in these experiments?

"*Exper. 5.*—A quantity of pure water mixed with distilled vinegar was introduced into the tube, and placed in the circle of communication; some gas was disengaged from the silver wire, but no cloud appeared at the extremity of the zinc. After some time, however, a quantity of metallic silver was precipitated by the silver wire, and this precipitate at last became very copious; a perfectly similar effect was produced, when

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Effects.

the tube was filled with very dilute sulphuric acid; in these cases the precipitated silver had the appearance of shining scales, like that thrown down by copper in the usual way. It may be proper to observe, that in all these precipitations and reductions, nothing but wires of pure silver were employed. The results in this last experiment were exactly what was expected; the vinegar prevented the alkali from precipitating the silver, dissolved by the generated acid; in consequence of which, when a sufficient quantity of the metal was taken up, it was again thrown down by the silver wire in its metallic form.

"*Exper. 6.*—A solution of the muriate of ammonia being introduced into the tube, and exposed to this influence, a little gas was disengaged from the silver wire, while the zinc one was incrustated with a substance which soon became black, and was found to be luna cornea. The liquor which remained in the tube after the operation had been finished, was highly alkaline, and smelled strongly of ammonia; common salt was decomposed in a similar manner. This experiment accounts for the decomposition of the muriate of soda and ammonia, which always takes place when the papers in the pile are moistened with a solution of these salts.

"A solution of the nitrate of magnesia appeared to be likewise decomposed by this process; for after some time, a white powder resembling magnesia, was precipitated on the surface of the silver wire, very little gas was disengaged.

"*Exper. 7.*—In order to ascertain how far this influence might be carried, provided the circle of communication was complete, two tubes were employed, and connected by a silver wire passing through corks; the tubes were filled with water and secured by corks; two other wires being then passed through these corks, the arc was connected with the silver, and the other with the zinc, at the extremity of the pile. A quantity of gas as usual was disengaged at the extremity of the silver wire, and the portion of the connecting wire in the same tube was partly dissolved, and as mentioned in experiment 1st; but the other portion of the same wire in the other tube gave out gas, while the communicating zinc wire was corroded. And I make no doubt that a similar effect would be produced, if any number of tubes were connected in a similar manner, by which means a large quantity of gas might be procured in a short time.

"Besides silver wires, I likewise employed those of copper or iron, and it did not appear that these were more corroded or acted upon than the silver; indeed, in some of the above experiments, not less than half, or three-quarters of an inch of the wire was entirely consumed. The copper wire connected with the zinc gives out a greenish blue substance resembling the nitrate of copper with excess of the metal, or when part of the acid has been expelled by heat, &c. In examining the gas which was procured at different times, I always found it mixed with a little oxygen gas, but sometimes this did not exceed one-eighth of the whole, in bulk; however, I paid but little attention to this part of the process, for as my wires were always corroded, no conclusion with regard to the composition of water could be drawn from it."\*

We might have here detailed a greater variety of experiments,

\* *Nichols.*  
*Jour. 4to.*  
vol. iv. 187.

History. experiments, which have been made to ascertain the chemical effects of galvanism, and to elucidate the nature and properties of the fluid which is supposed to be concerned in these changes. In particular we might give an account of the later experiments and researches of philosophers, in investigating the formation of muriatic acid, and an alkali which is supposed to be soda, by means of this power. This forms one of the most curious subjects of inquiry which has yet occurred with

History. regard to galvanism; but as some part of the investigations of those who have occupied their attention with this inquiry, is connected with theoretical views, we shall reserve the consideration of the whole to the second part of this treatise, the object of which is, to give a historical detail of the progress of galvanism, with the opinions of philosophers concerning the nature of the galvanic fluid. To this therefore we now proceed.

## PART II. OF THE HISTORY AND PROGRESS OF GALVANISM.

IN the first part of this treatise we have given a pretty full view of the method of constructing apparatus for the purpose of exhibiting the phenomena of galvanism, and we have entered at considerable length into a detail of the experiments which have been made, to ascertain the effects of the galvanic fluid on animals, as well as those experiments by which its chemical effects are illustrated, with some of the theoretical views and opinions of those who have been engaged in researches concerning the properties of this fluid. It is now proposed, in the second part, first, to consider the progressive history of galvanism, with the theories by which philosophers have attempted to account for its effects; secondly, we shall endeavour to trace the analogy between artificial electricity and galvanism; and lastly, give an account of the experiments and inquiries which have been made concerning the formation of muriatic acid and soda by means of this power. These will form the subjects of the three following chapters.

### CHAP. I. *History of the Discovery and Progress of Galvanism.*

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First hint  
of galva-  
nism.

THE first hint which is usually quoted as connected with the phenomena of galvanism, is extracted from a book entitled the General Theory of Pleasures, by Sultzer, which was published in the year 1767. In this work the author particularly describes the experiment with two dissimilar pieces of metal which we have related at the beginning of this treatise, and by which we have endeavoured to illustrate what is understood by galvanism, in its effects on the living body. The experiment alluded to is that in which a piece of zinc and a piece of silver being placed, the one in contact with the upper, and the other with the under surface of the tongue, and their projecting edges being brought into contact, a taste is produced, which the author observes, resembles vitriol of iron. This sensation is ascribed to a vibration of the particles of the metals affecting the nerves of the tongue.

Other hints and experiments have been quoted, which seem to be connected with the phenomena of galvanism; but as they were not prosecuted, and as no conclusion, with the view of establishing any particular point, was deduced from them, it would be unnecessary to give an account of them, excepting those of Vassalli, member of the royal academy of Turin, who published in 1789, a theory on this subject, supported by a series of experiments which he had instituted. Here he throws out a conjecture, that a provision has been made by nature in the system of a living animal,

by which the electricity accumulated in any particular part of the body is preserved and retained for some necessary purpose of its existence. It had indeed been supposed by some, that the animation of the blood depended on the electric fluid, but according to others, this fluid and the nervous fluid were to be considered as one and the same.

This subject was particularly investigated and illustrated, when in the year 1791 a remarkable discovery <sup>49</sup> Galvani's discovery. which was made by Dr Galvani, professor of anatomy in the university of Bologna in Italy, was announced to the world. This discovery, like most others, was accidental. Some frogs deprived of the skin were placed upon a table near which the professor happened to be engaged in experiments with an electrifying machine. The crural nerve of one of the frogs was touched by a person present, with the point of a scalpel during the time that the machine was working. The whole animal was thrown into convulsions. The same experiments were afterwards repeated with the same success. Every time that the scalpel was applied to the nerve, while the machine was in motion, violent convulsions were produced. But when the machine ceased to move, on the application of the scalpel to the nerve no effect followed. To this accidental discovery this branch of science owed its origin, and from the name of the discoverer was called *Galvanism*.

Since the period of this discovery, a great many experiments have been made, and many curious phenomena have been observed, which have excited much interest and attention among philosophers. We shall now present our readers with a historical sketch of the progress of these discoveries.

The experiment which has been mentioned was repeated by Galvani in every possible way he could think of. He varied it both by means of artificial and atmospheric electricity, and the result of all these experiments he found to be uniform and consistent. When Galvani first began his researches, he supposed that the phenomena depended on common electricity, passing through the animals on which the experiments were made. He had observed that the same effects were produced, but in a smaller degree, in living frogs and in other animals, as in those which had been newly deprived of life. In the course of some experiments which he made on atmospheric electricity, he suspended some frogs, by means of metallic hooks fixed in the spine, from iron palisades; and he observed that the muscles of these animals were frequently and involuntarily contracted, as if they had received a shock of electricity. At first he ascribed these convulsions to

<sup>History</sup> the changes in the state of the electricity in the atmosphere; but after a repetition of the experiments he found that he was mistaken. He discovered, however, at last, after many ingenious experiments, that he could at pleasure produce the convulsions, by touching two different parts of the animal, each with a piece of metal, and then bringing these pieces of metal into contact. The experiment may be made in the following manner. Let the crural nerve of a frog be laid bare to about an inch in extent; let a piece of zinc be placed in contact with the nerve, and let a piece of silver be placed on the muscles with which the nerve communicates. Then bring the zinc and silver into contact, and the whole limb will be instantly thrown into convulsions.

<sup>50</sup> His theory. After Galvani had published his experiments, the convulsions thus excited were ascribed to the action of some unknown fluid to which the name *Galvanism* was given, or *Animal Electricity*. According to Galvani, a fluid is secreted in the brain, the same with the nervous fluid; but being analogous to common electricity, might with more propriety be termed animal electricity. The conductors of this fluid are the nerves. It is carried off by them as it is secreted, and deposited on the interior surface of the muscular fibres, which being non-conductors of the fluid, do not permit it to pass through them. The state of the muscular fibres exactly resembled that of a charged Leyden jar. Their inner surface is electrified positively, and the outer surface is electrified negatively. The communication between the exterior and interior surfaces of the muscular fibres is formed by the nerves. They convey the redundant electricity from the internal to the external surface, and, like the effect of the electrical stimulus, every discharge is attended with a muscular contraction.

<sup>51</sup> Volta's. On the other hand Volta, another philosopher who carried his researches far into this subject, and of whose experiments and views we have given a long detail, adopted a different opinion. He thought that the convulsions occasioned by the galvanic apparatus were entirely independent of the action of the nervous fluid, and were to be ascribed to common electricity excited by the metallic conductors which are employed. These different opinions were supported with much ingenuity in a controversy which commenced between Galvani and Volta. The writers on galvanism divided themselves into two parties. While one party maintained with Volta, that the phenomena were owing to the action of common electricity on the muscular fibres, another party thought that they were entirely dependent upon something peculiar to animal matter. By many this seemed to have been considered as the nervous fluid, which was supposed to be the same with, or analogous to, common electricity.

It had been long asserted, that porter, and some other liquors, drank out of a pewter pot, had a different taste from what it has when drank out of glass or earthen ware. Pure mercury, it has been observed, retains its metallic splendour for a long time; but when amalgamated with any other metal, it is soon tarnished or oxidated. The Etruscan inscriptions on pure lead are in good preservation to this day; whereas some medals of lead and tin, of no great antiquity, are much corroded; and works of metal, whose parts are soldered together by the interposition of other metals, soon tarnish about

the places where the different metals are joined. When the copper sheeting of ships is fastened on by means of iron nails, the nails, but particularly the copper, are readily corroded about the place of contact. A piece of zinc placed in water for a considerable time scarcely undergoes any change; but if a piece of silver happen to touch the zinc whilst it is in the water, it is soon corroded or oxidated.

In the course of a very few years after the publication of Galvani's discovery, a great number of writers appeared, and presented to the world a great body of facts which they had ascertained by experiments and observations. The following are among the most important: 1. When a piece of metal is placed on the muscle of an animal just dead, and still moist, and another piece of a different metal is placed on the nerve which leads to the muscle, or on another part of the muscle, and if the two pieces of metal be brought into contact, a contraction or convulsion of the muscle takes place. 2. A single piece of metal, or two pieces of the same metal, have no effect in exciting contraction of the muscle. It is necessary to have two perfect conductors of electricity in contact, before any convulsion can be produced. 3. The muscle must be moist. The effect is not prevented by a ligature on a nerve; but the susceptibility of a muscle to be thrown into convulsions is diminished, and at last destroyed by the application of opium, which destroys its irritability. The same change takes place if the muscle be allowed to remain for some time after death. 4. The different muscles of the body are differently affected by the galvanic influence. They are not equally susceptible of the same degree of convulsive effect. 5. If a plate of zinc be placed on the upper surface of the tongue, and a plate of silver or copper be applied to its under surface; and if the two pieces of metal thus placed be brought into contact, a strong metallic taste is immediately perceived. An acid taste is perceived, when the tongue is dipped into an alkaline solution contained in a tin or zinc cup held in the moist hand. 6. If a piece of metal, as a silver spoon, be placed on the ball of the eye, and another piece of a different metal, as a piece of zinc, be placed on the tongue, and if the two pieces of metal be brought into contact, a flash of fire is instantly perceived; and it is perceived, both when the metals are brought into contact, and when they are separated. 7. Another fact, which was ascertained by Aldini, who performed a great many experiments in galvanism during his visit to this country, is, that convulsions may be excited merely by forming a proper chain of muscles and nerves. This is proved by the following experiment. He took a prepared frog, and held it suspended in one hand by the foot. The sciatic nerves were brought into contact with the tongue of an ox, the head of which had been recently separated from the body. He then introduced the other hand moistened with a solution of common salt in water into the ear of the animal, thus completing the circle. Every time that the communication was formed, the muscles of the frog were thrown into convulsions.

Most of the facts which we have now related, were ascertained by the different philosophers, whose researches were directed to the subject of galvanism, between the years 1791 and 1794. Hitherto the connection between galvanism and animal bodies was considered by

<sup>52</sup> Recapitulation of facts.

moist

History. most writers, so close and intimate, that they supposed the one could not exist independent of the other. Some facts, however, which were established by Fabroni and others, seemed to favour the opinion of those who considered galvanism as the action of a peculiar fluid on the animal fibre. This fluid is developed by the mutual action of the metals employed as exciting causes, and it exists in other bodies as well as in those which are endowed with life. We have already mentioned that two pieces of different metals put into water produce changes on the water which neither of them separately could effect. This was observed by Fabroni, from which he concluded that a chemical change was effected by the metals on each other. To this change he supposed part at least of the phenomena of galvanism was owing. Thus he explained the necessity of two different metals and of moisture in the production of these phenomena. Those metals, he also observed, which occasioned the most rapid changes on each other in water, were most powerful in exciting galvanic convulsions.

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Phenomena  
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Metals and charcoal, it was ascertained by Volta, being good conductors of electricity, attract and repel that fluid with different forces. When two different metals in their natural state of electricity are brought into contact, electric matter passes from the one to the other; the one becomes electrified positively, and the other negatively. From this he concluded, that the electricity which occasioned the galvanic phenomena did not reside in the animal fibres, but in the metals employed as exciters, and that the convulsions were produced by the electric matter passing through these fibres.

The seeming inconsistency which appeared in the opinions of Volta and Fabroni was removed by succeeding discoveries, which demonstrated that both electricity and chemistry were concerned in the galvanic phenomena. Galvanism was now no longer considered as something connected with living matter, which was totally inexplicable, but as something developed by the mutual action of inorganic substances on each other, the effect or energy of which might be estimated and measured by its action on the muscular fibres. The discovery of the galvanic pile by Volta put it in the power of philosophers to increase the power or energy of the galvanic influence at pleasure. This pile, and the method of constructing it, have been already described.

A description has also been given of a different apparatus, the invention of Mr Cruickshank of Woolwich, which has been employed in place of Volta's pile. This is called the *galvanic trough*, and it consists of a number of square plates of different metals as in the other, which are foldered together in pairs, and fixed by means of cement in a box of baked wood, at a small distance from each other.

A striking analogy was at once observed between this apparatus and charged electrics. A great deal of discussion took place on the subject; much investigation followed; and philosophers held different opinions concerning the phenomena of galvanism, whether it was to be considered as the same with common electricity, or as something specifically different.

It was at last ascertained by Nicholson and Carlisle that the zinc end of the pile was in the state of positive electricity, and the silver or copper end in the negative

state. The zinc end of the pile, then, according to the commonly received theory of electricity, gives out the electric fluid, which enters at the silver or copper end. And if the circle be completed by means of metallic wires or charcoal, when the pile is sufficiently powerful, sparks similar to what take place by the discharge of common electricity may be perceived. Electric batteries have been charged by means of the pile; metallic wires, tin-foil, gold leaf are burnt; and mixtures of hydrogen and oxygen gas are exploded in the same way as happens when electric discharges are made to pass through them. From the whole of the phenomena, there seems now to be little doubt of the identity of the two fluids.

History.

Chemistry, however, has a very considerable share in the phenomena of galvanism. The action of the pile is most powerful in oxygen gas: it ceases entirely in the vacuum of an air-pump, or in azotic gas. The electrical machine also, it has been ascertained, cannot be excited in any gas unless it contain oxygen; and it seems probable, that the effect of the amalgam, which is employed in exciting the electrical machine, bears a proportion to the facility or rapidity of its oxidation. But we shall discuss this point more fully in the second chapter.

When the action of the pile has continued for some time, it gradually becomes weaker, till at last its energy is entirely lost. This power can only be renewed by cleaning the plates, the surfaces of which have been very much changed. It was observed that the time in which the action of the pile ceased, was in proportion to the energy which it originally possessed. When it was strongest, the duration of its action was shortest. It was observed also, that one of each pair of plates was covered with a coat of oxide; and when this process of oxidation was finished, and the surface of the plate was entirely covered, the action ceased. Of the two metals employed in the construction of the pile, that which is most easily oxidated, always undergoes this process. When zinc and silver, or zinc and copper, are used, the zinc is always oxidated; and unless this oxidation take place, there is no action of the pile. Its action or energy is proportional to the oxidation of the metal; and thus it appears that this oxidation is essentially necessary to the action of the pile. For, unless the liquid which is employed to moisten the pieces of card or cloth between the pairs of plates, or that which fills the cells in the trough, be capable of oxidating the zinc, no action follows. There is no action at all with silver and zinc, and perfectly pure water. *In vacuo* the action of the pile soon ceases, even with common water; for the oxygen which is held in solution by the water soon combines with the zinc, and then the process stops. The action is increased by oxygen gas, because the oxidation of the zinc is facilitated. Its action is also increased, and goes on even *in vacuo*, when nitric acid, which supplies oxygen for the process of oxidation, is substituted for the water. Thus, by estimating the proportion between the oxidation of the metals and the action of the pile, it may be determined what metals are proper for forming piles, and with what liquids they may be employed. In the choice of the different metals, it must be observed, that one of them must always be more easily oxidated than the other. Two perfect conductors which are unequally oxidable, with an im-

perfect

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Analogous  
to those of  
electricity

History.

perfect conductor which is capable of oxidating the most oxidable of the perfect conductors, constitute the elements of the galvanic battery.

But some of the most important phenomena of galvanism are exhibited in its chemical effects. Most of these were first observed by the chemical philosophers of this country. We have already detailed many of the experiments by which these effects are illustrated; and we shall here only, for the sake of giving a connected view of the subject, merely recapitulate some of them.

55  
Recapitulation of the chemical effects.

When water forms part of the circle between the extremities of the battery, and the conducting wires are brought within a small distance of each other, being immersed in a glass of water, the water is decomposed, and it will be recollected that the phenomena are different according to the nature of the wires employed. When the wires are of gold or platinum, they undergo no change; oxygen gas is evolved in small bubbles from the positive wire, and hydrogen gas from the negative wire; and if the gases be collected separately by the apparatus formerly described, they are found to be in the proportions of the component parts of water. If one of the wires be immersed into one glass, and another into a separate glass, by completing the circle with a finger plunged into each glass, the process goes on, and the hydrogen gas is extricated in the one vessel, while the oxygen is given out from the wire in the other. This fact was first discovered by Mr Davy. When spring water is used, or water having azotic gas in solution, an acid is formed at the extremity of the positive wire, and an alkali at the extremity of the negative wire. The acid was found to be nitric, and the alkali ammonia. If the wires be plunged in different glasses, and the connexion be formed by means of an animal body, the positive wire produces in the water tinged with an infusion of litmus, a red colour, while the negative wire also reddens an infusion of brazil wood.

If other wires beside those of gold or platinum be used, it is found that the positive wire undergoes oxidation, but little or no gas is separated from it; while the negative wire, as in the former case, gives out hydrogen gas. When the wires are immersed into metallic solutions, as acetate of lead, nitrate of silver, &c. the silver or lead is revived, and deposited on the negative wire; and if solutions which contain sulphuric, nitric, or oxymuriatic acids, are used for the immersion of the conducting wires, the acids are decomposed, oxygen gas is evolved from the positive wire, and sulphur or hydrogen gas makes its appearance at the negative wire. The decomposition of ammonia has already been mentioned. This was discovered by Mr Henry. The hydrogen is given out by the negative wire, while the azotic gas is evolved by the positive wire. When plumbago or charcoal are employed as conductors in place of metals, it is found that carbonic acid is evolved from the positive end, and hydrogen gas from the negative.

It may be necessary here to describe a galvanic battery, constructed by Mr Davy, on principles somewhat different from that of Volta. In the Voltaic pile there are two perfect conductors, and one imperfect conductor; but this consists of two imperfect, and one perfect conductor: the two imperfect conductors are nitrous

acid and liquid sulphuret of potash. A trough is divided into cells with slips of horn and plates of zinc, arranged alternately; nitrous acid is poured into the first cell, and sulphuret of potash into the second; the two liquids being separated by the slip of horn, a communication is formed between them by means of a moist piece of cloth laid over the horn, and in the same way the rest of the cells are filled. In this case the liquids are the imperfect conductors, and the zinc is the perfect one; and the action of the battery continues till the oxidation of one of the surfaces of the zinc takes place, the other surface remaining unchanged.

Theory.

Having finished the short view which we proposed to give of the history and progress of galvanism, we should next proceed to detail some of the later experiments and discoveries which have been made on this subject. What we here chiefly allude to, is the discovery of the formation of muriatic acid and soda by means of the galvanic fluid. But this is proposed to be the subject of a separate chapter. We shall therefore proceed in the next chapter to consider the hypothesis by means of which the phenomena of galvanism have been explained, and to point out the analogy between electricity and galvanism.

#### CHAP. II. *Of the Theory of Galvanism, and the Analogy between the Galvanic Fluid and Electricity.*

WE have already observed, that the philosophers who were occupied in researches on galvanism, early divided themselves into two parties. According to one party, with Volta at their head, the phenomena of galvanism, were ascribed to the action of common electricity on the muscular fibres; while another party maintained the opinion that they depended entirely on something peculiar to animal matter. This was the opinion of Galvani himself, the original discoverer, and it was supported by his nephew Aldini, with certain modifications. The greater number of philosophers have now adopted the opinion of Volta, as being more consistent with the phenomena. We shall therefore now give a more particular account of the hypothesis which has been more generally followed in explaining these phenomena on the principles of electricity.

According to the received principles of electricity, <sup>56</sup> Theory of electricity. there is a subtle fluid which exists in all bodies; but the existence of this fluid can only be recognised when the proportion which a body contains is greater or less than the quantity which is natural to it. When the quantity is greater than usual, the body is said to be electrified *positively* or *plus*; and when the quantity is less than usual, the body is said to be electrified *negatively* or *minus*. The electric fluid penetrates certain bodies, and passes through them with facility, and these bodies are called *conductors of electricity*; but there are other bodies which it cannot pass through without difficulty, these bodies are called *non-conductors* or *electrics*. Of conductors there are two kinds; one of which is denominated *perfect*, because the electric fluid passes through them with ease; the other is called *imperfect* conductors, because the fluid passes through them with difficulty. The perfect conductors are solid bodies which are susceptible of oxidation; and when they enter into combination with oxygen, they lose their properties as perfect conductors. The metals and charcoal are

Theory.

are the only perfect conductors which are known. The imperfect conductors are those bodies which contain oxygen, and when they are deprived of it, they lose the properties of imperfect conductors. They are all liquid bodies, and usually contain water as one of their component parts. See ELECTRICITY.

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Affinity of  
the electric  
fluid for  
conductors;

There is an affinity between the perfect conductors and the electric fluid, in consequence of which this fluid remains in combination with the perfect conductor, till it is attracted by some body, for which it has a stronger affinity, or is expelled by some body combining with the conductor, for which the conductor has a stronger affinity than it has for the electric fluid. Perfect conductors possess different forces or degrees of affinity for the electric fluid. Thus, if two perfect conductors be brought into contact, the proportion of electric matter in each of them changes. That conductor which has the strongest affinity for the fluid, is electrified positively, or plus; and the conductor which has the weaker affinity is electrified negatively, or minus. If a plate of zinc and one of copper, each of which possesses its natural proportion of electric fluid, be brought into contact, the zinc is electrified plus, and the copper minus; or, if iron and silver be brought into contact, the iron is electrified plus, and the silver minus; and if no other circumstances operate to change the state of the electricity, these two states will be permanent.

But, when a perfect conductor in the positive state of electricity, enters into combination with oxygen, it parts with the excess of electric fluid which it contained, and the discharge is made towards that side of the conductor which is combined with oxygen. The affinity of imperfect conductors for the electric fluid is weaker than that of the perfect conductors, so that, if a perfect and imperfect conductor be brought into contact, the perfect conductor becomes plus, and the imperfect, minus; and this state is not changed, if the imperfect conductor cannot communicate oxygen to the perfect one.

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gen.

Between the electric fluid and hydrogen there is also an affinity, so that the electric fluid combines with hydrogen, provided this latter be present when the fluid is separated from a perfect conductor. The electric fluid is differently conducted through the bodies which are called perfect and imperfect conductors. The fluid passes through the perfect conductors, in its simple and uncombined state; but unless the fluid be combined with hydrogen, it cannot pass through the imperfect conductors, and this compound of electricity and hydrogen is capable of passing invisibly through liquid conductors.

Let us now suppose a plate of copper and another of zinc, to be brought into contact, the zinc is immediately electrified plus, and the copper minus; but let us suppose also, that the surface of the zinc farthest from the copper, is brought into contact with a liquid which can communicate oxygen to that surface, so that it becomes oxidated, such, for instance, is water impregnated with common air, or with an acid. As soon, then, as the oxygen of the imperfect conductor combines with the zinc, the excess of its electricity is separated, and passes towards the imperfect conductor; but the zinc is oxidated by the decomposition of the water, the oxygen of which combines with the metal, while the hydrogen is set free. The electricity of the perfect conductor en-

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ters into combination with the hydrogen, and in this state it can pass through the imperfect conductor. If then the imperfect conductor be in contact on the other side with a perfect conductor, such as a plate of copper, which cannot, in this case, be oxidated, the electric fluid leaves the imperfect conductor, and enters the perfect one; but it cannot combine with a perfect conductor while it is in union with hydrogen; the hydrogen, therefore, is left behind, and accordingly, when the electric fluid passes from the perfect to the imperfect conductor, a portion of hydrogen gas is given out at the surface of the perfect conductor; or, if that surface has undergone any degree of oxidation, the hydrogen combines with the oxygen, and thus leaves the conductor in the metallic state. But, farther, if a plate of zinc be in contact with a plate of copper, the fluid having a greater affinity for the zinc, will enter it; and if the zinc be again followed by another imperfect conductor, its surface is oxidated, the electricity is disengaged; it combines with hydrogen, and passes through the imperfect conductor as in the former case. Whatever the number of these sets of bodies may be, if they are arranged in the same order, the same phenomena will be exhibited.

Let us now suppose, that a battery is constructed, either in the form of a pile or trough, of any given number of pairs of plates; and suppose, if this battery is in the form of a pile, that the uppermost plate is zinc, the lowest is therefore of copper; the zinc is electrified plus, and the copper minus. If, then, a communication is established between the upper and lower plates of the pile, by means of conductors, according to the laws of electricity, the excess at the top of the pile immediately passes to the bottom. A current of electricity, therefore, will pass through the pile, and will continue till the surfaces of the zinc next the imperfect conductors are completely oxidated, when the action ceases, because the double decompositions on which this action depends, can no longer take place.

The number of repeated charges which pass through the pile, must be in proportion to the number of plates, so that the intensity of the pile increases with the number of plates of which it is composed. Hence it is, that the effects of galvanism on animals is found to be in proportion to the number of plates employed in the battery; but this depends upon its intensity, or the number of discharges followed by intervals, which pass through the body in a given time.

But, on the other hand, the effect of the galvanic fluid on metallic substances depends on the absolute quantity which passes through the metal in a given time. But the absolute quantity of fluid discharged from a single pair of plates, must be proportional to the surface of these plates; and hence it is, that the quantity of electricity discharged from a pile in a given time, depends upon the surface of the plates. When a battery is discharged, the small charge contained in each pair of plates, passes through the discharger; but there must be an interval between each of those separate charges, for they cannot be supposed to pass instantaneously, although the interval being too small to be perceptible, the discharge of the battery seems to be instantaneous. As then the number of small discharges which are apparently instantaneous, when a battery is discharged, is in proportion to the number of plates,

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**Theory.** the intensity of each little discharge is proportional to the places which the pair of plates occupies in the battery; and hence it is, that the shock is increased by the number of plates more rapidly than the effect of the battery on metals is increased; but, on the contrary, the surface of the plates being increased, the effect on metals is also increased, because the quantity discharged at once from the upper pair is increased; and it seems to be in this way that the effect on metallic substances is produced.

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Chemical  
effects.

In the same way the chemical changes which are effected by means of galvanism may be explained. Let it be exposed, that a gold wire, connected with the upper plate of the battery, terminates in a glass of water, and another gold wire from the lower plate of the battery, terminates in the same water. The circle is then completed by the gold wire, which is a perfect conductor. The current of electricity passes through the wire which is connected with the uppermost plate to the base of the battery, and it would pass uninterruptedly, if there were no interval between the wires. This interval is supplied with water, and, when the electric fluid reaches the extremity of the wire, it must pass through the water, but it can only pass through an imperfect conductor when it is in combination with hydrogen. It therefore combines with the hydrogen of the water, which is accordingly decomposed at the point of the wire. The oxygen is disengaged, and the hydrogen in combination with the electricity passes through the water till it reach the point of the other wire; and the affinity between this wire and the electric fluid being greater than the affinity of the latter for water, the electric fluid enters the wire, and passes on to the other end of the battery; but the hydrogen is previously separated from the extremity of this second wire, in the form of gas, because the fluid cannot enter the wire in combination with hydrogen.

If the wires are immersed in ammonia, the hydrogen is derived from that substance of which it forms one of the component parts; the azotic gas, the base of which is its other constituent, is evolved at the extremity of the first wire, and hydrogen gas at the extremity of the second. But, if the wires are plunged in the water which contains common air, and consequently a certain portion of azote, as oxygen gas combines with azote in its nascent state, or at the moment of its evolution, the compound resulting from this combination is nitric acid. Hydrogen gas also, in its nascent state, will combine with azote, and ammonia is the result of this combination. Hence it is, that in some experiments nitric acid is found at the point of the positive wire, and ammonia at the point of the negative wire, when common water is employed.

When liquids holding in solution a metallic salt, the base of which is an oxide of the metal, are employed; as hydrogen gas possesses the property of reducing or reviving metals, if in its nascent state it comes in contact with their oxides, the metallic salts are in this case decomposed, and the metal is revived. It is found deposited on the negative wire. When copper or iron wires are employed to complete the circle, instead of wires of gold or platina, as oxygen has the property of combining with these metals, at the moment of its disengagement, it is deposited on the positive wire, and in this case none is separated from it; but if the circle

be completed by means of charcoal or plumbago, and the interval between these conducting substances be water, carbonic acid gas is separated from the positive conductor, because the oxygen in its nascent state is susceptible of combination with carbone; and the hydrogen in the same state combining with carbone, carbureted hydrogen is given out by the negative conductor.

Such is the hypothetical explanation which has been given of the action of galvanism, and the phenomena which it exhibits. A fuller view of the analogy between galvanism and electricity has been given by Dr Wollaston.

"Notwithstanding, he observes, the power of Mr Volta's electric pile is now known to be proportional to the disposition of one of the metals to be oxidated by the fluid interposed, a doubt has been entertained by many persons, whether this power arises from the chemical action of the fluid on the metal, or, on the contrary, whether the oxidation itself may not be occasioned by electricity, set in motion by the contact of metals that have different conducting powers.

"That the oxidation of the metal is the primary <sup>62</sup>Electricity cause of the electric phenomena observed, is, I think, to be evolved inferred from the following experiments, which exhibit the galvanic process reduced to its most simple <sup>62</sup>Electricity cause of the electric phenomena observed, is, I think, to be evolved inferred from the following experiments, which exhibit the galvanic process reduced to its most simple state. <sup>62</sup>Electricity cause of the electric phenomena observed, is, I think, to be evolved inferred from the following experiments, which exhibit the galvanic process reduced to its most simple state.

"*Exper. 1.*—If a piece of zinc and a piece of silver have each one extremity immersed in the same vessel, containing sulphuric or muriatic acid diluted with a large quantity of water, the zinc is dissolved, and yields hydrogen gas, by decomposition of the water; the silver, not being acted upon, has no power of decomposing water; but, whenever the zinc and silver are made to touch, or any metallic communication is made between them, hydrogen gas is also formed at the surface of the silver.

"Any other metal besides zinc, which by assistance of the acid employed is capable of decomposing water, will succeed equally, if the other wire consists of a metal on which the acid has no effect.

"*Exper. 2.*—If zinc, iron or copper, is employed with gold in diluted nitric acid, nitrous gas is formed; in the same manner, and under the same circumstances, as the hydrogen gas in the former experiment.

"*Exper. 3.*—Experiments analogous to the former, and equally simple, may also be made with many metallic solutions. If, for instance, the solution contains copper, it will be precipitated by a piece of iron, and appear on its surface. Upon silver merely immersed in the same solution, no such effect is produced; but as soon as the two metals are brought into contact, the silver receives a coating of copper.

"In the explanation of these experiments, it is necessary to advert to a point established by means of the electric pile.

"We know that when water is placed in a circuit of conductors of electricity, between the two extremities of a pile, if the power is sufficient to oxidate one of the wires of communication, the wire connected with the opposite extremity affords hydrogen gas.

"Since the extrication of hydrogen, in this instance, is seen to depend on electricity, it is probable, that in other instances, electricity may be also requisite for its conversion into gas. It would appear, therefore, that in the solution of a metal, electricity is evolved during the

Theory. the action of the acid upon it; and that the formation of hydrogen gas, even in that case, depends on a transition of electricity between the fluid and the metal.

"We see, moreover, in the first experiment, that the zinc, without contact of any other metal, has the power of decomposing water; and we can have no reason to suppose that the contact of the silver produces any new power, but that it serves merely as a conductor of electricity, and thereby occasions the formation of hydrogen gas.

"In the third experiment also, the iron by itself has the power of precipitating copper, by means, I presume, of electricity evolved during its solution; and here likewise the silver, by conducting that electricity, acquires the power of precipitating the copper in its metallic state.

"The explanation here given receives additional confirmation from comparative experiments which I have made with common electricity; for it will be seen, that the same transfer of chemical power, and the same apparent reversion of the usual order of chemical affinities in the precipitation of copper by silver, may be effected by a common electrical machine.

"The machine with which the following experiments were conducted, consists of a cylinder seven inches in diameter, with a conductor on each side, 16 inches long, and three and a half inches diameter, each furnished with a sliding electrometer, to regulate the strength of the spark received from them.

"*Exper. 4.*—Having a wire of fine silver  $\frac{1}{100}$  of an inch in diameter, I coated the middle of it for two or three inches, with sealing wax, and by cutting through in the middle of the wax, exposed a section of the wire. The two coated extremities of the wire, thus divided, were immersed in a solution of sulphate of copper, placed in an electric circuit between the two conductors; and sparks, taken at  $\frac{1}{10}$  of an inch distance, were passed by means of them through the solution. After 100 turns of the machine, the wire which communicated with (what is called) the negative conductor, had a precipitate formed on its surface, which, upon being burnished, was evidently copper; but the opposite wire had no such coating.

"Upon reversing the direction of the current of electricity, the order of the phenomena was of course reversed; the copper being shortly re-dissolved by assistance of the oxidating power of positive electricity, and a similar precipitate formed on the opposite wire.

"*Exper. 5.*—A similar experiment made with gold wires  $\frac{1}{100}$  of an inch diameter, in a solution of corrosive sublimate, had the same success.

"The chemical agency, therefore, of common electricity, is thus proved to be the same with the power excited by chemical means; but, since a difference has been observed in the comparative facility with which the pile of Volta decomposes water, and produces other effects of oxidation and de-oxidation of bodies exposed to its action, I have been at some pains to remove this difficulty, and can at least produce a very close imitation of the galvanic phenomena, by common electricity.

"It has been thought necessary to employ powerful machines, and large Leyden jars, for the decomposition of water; but when I considered that the decomposition must depend on duly proportioning the strength of the charge of electricity to the quantity of water,

and that the quantity exposed to its action at the surface of communication depends on the extent of that surface, I hoped that, by reducing the surface of communication, the decomposition of water might be effected by smaller machines, and with less powerful excitation, than have hitherto been used for that purpose; and, in this hope, I have not been disappointed.

"*Exper. 6.*—Having procured a small wire of fine gold, and given it as fine a point as I could, I inserted it into a capillary glass tube; and after heating the tube, so as to make it adhere to the point and cover it in every part, I gradually ground it down, till, with a pocket lens, I could discern that the point of the gold was exposed.

"The success of this method exceeding my expectations, I coated several wires in the same manner, and found, that when sparks from the conductors before-mentioned were made to pass through water, by means of a point so guarded, a spark passing to the distance of one-eighth of an inch would decompose water, when the point exposed did not exceed  $\frac{1}{100}$  of an inch in diameter. With another point, which I estimated at  $\frac{1}{150}$ , a succession of sparks  $\frac{1}{8}$  of an inch in length, afforded a current of small bubbles of air.

"I have since found, that the same apparatus will decompose water, with a wire  $\frac{1}{40}$  of an inch diameter, coated in the manner before described, if the spark from the prime conductor passes to the distance of  $\frac{4}{10}$  of an inch of air.

"*Exper. 7.*—In order to try how far the strength of the electric spark might be reduced by proportional diminution of the extremity of the wire, I passed a solution of gold in *aqua regia* through a capillary tube, and, by heating the tube, expelled the acid. There remained a thin film of gold, lining the inner surface of the tube, which, by melting the tube, was converted into a very fine thread of gold, through the substance of the glass.

"When the extremity of this thread was made the medium of communication through water, I found that the mere current of electricity would occasion a stream of very small bubbles to rise from the extremity of the gold, although the wire, by which it communicated with the positive or negative conductor, was placed in absolute contact with them. Hence it appears, that decomposition of water may take place by common electricity, as well as by the electric pile, although no discernible sparks are produced.

"The appearance of two currents of air may also be imitated, by occasioning the electricity to pass by fine points of communication on both sides of the water: but, in fact, the resemblance is not complete; for, in every way in which I have tried it, I observed that each wire gave both oxygen and hydrogen gas, instead of their being formed separately, as by the electric pile.

"I am inclined to attribute the difference in this respect to the greater intensity with which it is necessary to employ common electricity; for, that positive and negative electricity, so excited, have each the same chemical power as they are observed to have in the electric pile, may be ascertained by other means.

"In the precipitation of copper by silver, an instance of de-oxidation (or phlogification) by negative electricity has been mentioned; the oxidating power of positive

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and in  
changing  
the blue  
colour of  
vegetables.

sitive electricity may be also proved, by its effects on vegetable blue colours.

"*Exper. 8.*—Having coloured a card with a strong infusion of litmus, I passed a current of electric sparks along it, by means of two fine gold points, touching it at the distance of an inch from each other. The effect, as in other cases, depending on the smallness of the quantity of water, was most discernible when the card was nearly dry. In this state a very few turns of the machine were sufficient to occasion a redness at the positive wire, very manifest to the naked eye. The negative wire, being afterwards placed on the same spot, soon restored it to its original blue colour.

"By Mr Volta's apparatus the same effects are produced in a much less time.

"Besides the similarity which has thus been traced between the effects of electricity excited by the common machine, and those observed from the electric pile, I think it appears also probable, that they originate from the same source.

"With regard to the latter, its power is known to depend on oxidation; so also does the excitement in the former appear very much to depend on the same process; for,

"*Exper. 9.*—I have found that, by using an amalgam of silver or of platina, which are not liable to be oxidated, I could obtain no electricity. An amalgam of tin, on the contrary, affords a good degree of excitement. Zinc acts still better; but the best amalgam is made with both tin and zinc, a mixture which is more easily oxidated than either metal separately.

"*Exper. 10.*—But, as a farther trial whether oxidation assists in the production of electricity, I mounted a small cylinder, with its cushion and conductor, in a vessel so contrived, that I could at pleasure change the contained air.

"After trying the degree of excitement in common air, I substituted carbonic acid gas, and found that the excitement was immediately destroyed, but that it returned upon re-admission of atmospheric air.

"In conformity to this hypothesis, we find that the metal oxidated is, in each case, in a similar state of electricity; for the cushion of the machine, by oxidation of the amalgam adhering to it, becomes negative; and in the same manner, zinc, oxidated by the accumulated power of an electric pile, or simply by action of an acid, is also negative.

"This similarity in the means by which both electricity and galvanism appear to be excited, in addition to the resemblance that has been traced between their effects, shews that they are both essentially the same, and confirms an opinion that has already been advanced by others, that all the differences discoverable in the effects of the latter, may be owing to its being less intense, but produced in much larger quantity\*."

This analogy was still farther established by the experiments of Van Marum, in which he succeeded in charging an electrical battery, consisting of 137½ square feet, by means of the galvanic pile. On examining the power of the shocks which were given by the battery charged with the pile, it was found that the shock from 100 pairs of plates was about equal to a shock from the battery, when it was charged by means of 200. A pile of 200 pairs of plates seemed to have

fix times the power of an electrical machine, having a plate of 31 inches diameter.

The following experiments made by Mr Cuthbertson, with galvanic batteries, are supposed by him to afford a distinguishing property between the galvanic and electric fluids. 1. Charcoal was deflagrated and ignited for above an inch in length. 2. Iron wire  $\frac{1}{10}$  of an inch diameter was melted into a ball of  $\frac{1}{10}$  inch diameter. 3. Platina wire  $\frac{1}{10}$  inch diameter, was melted into a ball  $\frac{1}{10}$  inch diameter. 4. Brass wire  $\frac{1}{10}$  inch diameter, three-fourths of an inch in length was ignited. 5. Brass wire  $\frac{1}{10}$  inch diameter was red hot at the end. 6. Iron wire  $\frac{1}{10}$  inch diameter was red hot for 16 inches in length. 7. Iron wire, 12 inches deflagrated, and melted into a ball. 8. Iron wire six inches in length was deflagrated. 9. Iron wire eight inches in length was ignited.

The first seven experiments above were made with two troughs, each containing 30 pairs of plates, six inches square, but in the last two experiments, one of these troughs only was used. The conclusion drawn from the four last experiments is, that double quantities of galvanic fluid only burn double lengths of wire, and not the square, as electrical discharges do\*.

To discover what quantity of coated glass would be required to take a charge sufficient to ignite the same lengths of wire, the two last experiments were compared with common electrical discharges. Two jars, each containing about 170 square inches of coating, were set to the conductor of a 24-inch single-plate electrical machine, with the author's universal electrometer, loaded with 31 grains. Eight inches of the same kind of wire were laid in the circuit, and with 57 revolutions of the plate the electrometer discharged the jars, and the wire was ignited as perfectly as in experiment 9th. Afterwards six inches of the wire being laid in the circuit, a discharge was produced with the same number of revolutions of the machine, and the wire was deflagrated, and fused into balls, in the same manner as in the 8th experiment. Hence he concluded, that 340 square inches of coated glass, properly constructed, are sufficient to bear a charge equal to a galvanic battery of 1080 square inches of surface. On comparing the above experiments with some others made some time before, the author finds it necessary to modify the conclusion which he had deduced from them. With a pile of 16 pairs of plates, of 10 inches diameter, eight of which were laid upon each other in the usual manner, and cloths moistened with diluted muriatic acid interposed, he burnt half an inch of wire of  $\frac{1}{10}$  inch diameter; and when the other eight pairs were added, he burnt four inches of the same wire. This was repeated with the eight in pairs with the same result, with respect to the burning of metals, but it gave strong and loud sparks from metal to metal, which might be heard at the distance of 300 yards. This result, he observes, had not been attained from troughs, to be heard at any distance. In the last experiment the cloths were moistened with a strong solution of muriate of ammonia. Comparing this effect of the pile and the trough, Mr Cuthbertson thinks, there is some defect in the arrangement or construction of the latter.

In many experiments which Volta made on piles composed of a single metal, and a single wet stratum, which

\* *Phil. Trans.* 1801. p. 427.

\* *Phil. Mag.* xviii. 358.

66  
Distinguishing property between galvanic and electricity.

Formation of Muriatic Acid, &c.

which of themselves are inactive, it was found that they became more or less active, after affording a passage for a longer or shorter time to an electric current, which was set in motion by an active pile. According to Ritter, the active pile or common electrometer transmits a real charge to the pile, which is itself inactive, and this he calls the *charged pile*. Volta, however, is of opinion, that no charge is transmitted but by means of the ordinary chemical action; for the electrical current being continued, changes the single wet stratum interposed between two pieces of gold, for example, into two different fluids; one acid, by which the electric current issues out of the metal, and the other alkaline, by which it enters, thus constituting a pile of the second order, composed of one metal, and two fluids of different natures. The action of this pile, however, soon ceases, because the fluids soon mix together\*.

\* Nichol. Journ. xi. 144.

CHAP. III. Of the Formation of Muriatic Acid and Soda, by means of Galvanism.

SOME of the most curious phenomena which have yet been exhibited in galvanism, relate to the formation of muriatic acid by means of this power. In the account which has been given of Mr Cruickshank's experiments, it will be recollected that he made the discovery of the formation of an acid and alkali, during the action of the galvanic battery. This acid, he concluded, was the nitric, and the alkali, ammonia. The theory of the production of these substances in the galvanic pile has been already mentioned, and it corresponds with the explanation of the principles which have been adopted for explaining the phenomena of galvanism; later researches, however, have been conducted with more accurate observation, or have opened a wider field of discovery. The truth of this remark will be fully confirmed, if it be at last finally ascertained, that common salt, the component parts of which are muriatic acid and soda, is produced by the action of galvanism.

† Vol. xxi P 279. 67 Mr Peel's discovery of the formation of muriate of soda.

The first hint of this discovery was given by Mr Peel of Cambridge, in a letter dated April 1805, addressed to the editor of the Philosophical Magazine †, of which the following account is given in his own words. "I took, (says he), about a pint of distilled water, and decomposed one half of it by means of galvanism; the other half I evaporated, and I found to remain at the bottom of the glass a small quantity of salt, which upon examination I found to be muriate of soda, or common salt.—What induced me to try the experiment was this; I knew that when water was decomposed by means of galvanism, the water near one of the wires had alkaline, while that near the other had acid properties. This being the case, I inferred, that if an alkali and an acid were really produced, I should, by decomposing a large quantity of water, obtain a small quantity of some kind of neutral salt: as was actually the case on trying the experiment. The salt could not have been contained in the water before I made the experiment, because I used every precaution to have it free from impurities. I even took the trouble to repeat the experiment, though a tedious one, and I again obtained the same result." He adds, that a similar experiment being repeated by a friend of his, afforded a similar result.

It having been suggested to Mr Peel, that it might be worth while to vary the experiment, by employing

water formed of its elements, he gives the following account of the result of this process, in another letter, dated June 1805.

Formation of Muriatic Acid, &c.

"Having proceeded, he observes, to the formation of water from its elements, with which to repeat my former experiment, I found when the oxygen and hydrogen gases were quite pure, and exactly in due proportion, that no residuum of air was left, and that the water formed was not in the slightest degree acidulous. When the process was not conducted with great accuracy, or any precaution to have it accurate was omitted, I then found the water acidulous, and the acid that caused this acidity to be the nitric acid.

"The acidulous water thus obtained I neutralized with lime, from which I distilled the water, and this water I decomposed by the galvanic process, as in the experiment detailed in my former letter.

"I did not imagine the using water so obtained could make the least difference on the result of the experiment; but as a wish was expressed to have the trial made, I again undertook that interesting but very tedious labour.

"When I came to examine the residuum, to my great astonishment I found that not muriate of soda, but muriate of potash, was produced. I must own I feel myself entirely at a loss how to account for this, nor shall I attempt it; all I can say is, that this, as well as my former experiment, was conducted with the greatest care and accuracy that I could bestow\*."

\* Phil. Mag. xxii.

About the same time a discovery of a similar nature was made by Professor Pacchiani of Pisa. This discovery, which relates to the composition of muriatic acid, was first announced in this country in the number of the Edinburgh Medical and Surgical Journal, published the 1st July 1805. The following is an account of his experiments, and the conclusions which he deduces from them in his own words. "The simplicity of the apparatus, (he says), and of the means adopted to attain my views, the care with which I endeavoured to avoid every source of error, have, I hope, sufficiently secured me against those illusions which frequently deceive young men ardent in the pursuit of science, and even those practised in the art of extorting from nature her secrets. Want of time prevents me from relating the series of experiments by which I arrived at the discovery I have mentioned; but you may see it by perusing the manuscript of my memoir, which will be immediately published, to submit my researches and their results to the judgment of the learned. For the present, I shall select from the experiments and facts therein described those whose which are decisive, and which establish, in an evident manner, the following truths:

68 Pacchiani's of muriatic acid.

"I. Muriatic acid is an oxide of hydrogen, and consequently composed of hydrogen and oxygen.

"II. In the oxygenated muriatic acid, and therefore, *à fortiori*, in muriatic acid, there is a much less proportion of oxygen than in water.

"III. Hydrogen is susceptible of very many and different degrees of oxidation, contrary to what is universally believed by pneumatic chemists, who assert that hydrogen is susceptible only of one invariable degree of oxidation, that in which it forms water.

"Having at first examined the phenomenon of the decomposition of water by the galvanic pile, and having, by accurate experiments, ascertained the true theory,

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of Muriatic  
Acid, &c.

theory, I readily discovered a very simple and exact apparatus, in which I could distinctly perceive the changes which happen to water, which, from the continued action of the galvanic pile, is continually losing its oxygen at the surface of a wire of very pure gold immersed in it.

"I therefore proceeded to examine these gradual changes of water thus losing its oxygen; and I at last observed a very singular fact, which unequivocally indicated the formation of an acid. In other antecedent experiments I had examined the nature of the air obtained before arriving at this remarkable point, and I always found, by means of the eudiometer of Giobert, that it was very pure oxygen, as the residuum scarcely amounted to one-sixtieth.

"Having thus examined the nature of the air formed in various experiments, from the first moment of decomposition, until there were evident indications of the formation of an acid, I began to endeavour to determine, in a more positive manner, the existence and nature of this acid.

"When the water, or, to speak more accurately, the residual fluid, occupied about half the capacity of the receiver, which at first contained the water, this residual fluid presented the following characters:

"Its colour was an orange yellow, more or less deep, according as the bulk of the residual liquor was greater or less, and it resembled in appearance a true solution of gold.

"From the inferior orifice of the vessel, which was closed with a piece of taffety, and then with double bladder, there escaped a smell which was easily recognized to be that of oxygenated muriatic acid.

"The gold wire had in part lost its metallic lustre, and its surface appeared as if corroded by a solvent.

"The bit of taffety which had been in contact with the coloured fluid, in consequence of its action, was easily torn, as is usual with similar bodies when half burnt (*Semi-combusto*).

"Around the edges of the vessel, on the bladder, there was formed a deep purple ring, which surrounded a circular space rendered entirely colourless, or white.

"A drop of this fluid tinged the skin of the hand, after some hours, with a beautiful rose colour.

"Having obtained, in various successive experiments, the same liquid, possessing constantly the same properties, I chose that obtained in the last experiment to subject it to chemical examination. The very able chemist of this university, Signior Giuseppe Branchi, had the goodness to enter zealously into my views; and in his laboratory we easily proved,

"1. The existence of a volatile acid, by the white vapours which were formed by ammonia placed near it.

"2. That this acid was oxygenated muriatic acid, since it formed in nitrate of silver a curdy precipitate, the luna cornea of the antients, or the muriate of silver of the moderns. From these facts we may draw the following positive and undeniable results:

"1. Muriatic acid is an oxide of hydrogen, and is therefore composed of hydrogen and oxygen.

"2. Oxygenated muriatic acid, and of course muriatic acid, contains less oxygen than water does.

"3. Hydrogen has not one degree of oxygenation, but many. One of these constitutes water, another be-

low it oxygenated muriatic acid, and, below this, there is another which constitutes muriatic acid."

Mr Henry of Manchester, in an account of his investigations on this subject, observes that there is a considerable point of difference between the English and the Italian chemist. The result of Mr Peel's experiment was found to be muriate of soda; but in Professor Pacchiani's, in which an interrupted gold wire was employed, it appeared to be muriate of gold. This ingenious chemist, with the same view, made the following experiment. He took a glass tube  $4\frac{1}{2}$  inches long, .35 inches diameter, in which were secured with corks, two slips of platina, having their extremities at a proper distance to effect the decomposition of the water. The quantity of water, at the beginning of the experiment, amounted to two drams. After being exposed to the galvanic action for six days, it was so far diminished, that  $\frac{1}{2}$  inch of the tube was unfilled. The water which was employed was carefully purified, by being first distilled, and then, after adding nitrate of silver, by a second distillation. After the experiment was finished, with the addition of nitrate of silver, it became opalescent in a few seconds, and being exposed to the light, exhibited those changes which indicate the presence of muriatic acid. It did not appear that muriate of platina had been produced, for muriate of ammonia being added to one portion, and carbonate of soda to another, produced no precipitation.

In making this experiment, Mr Henry suggests a very useful precaution. The water employed, he observes, should never, on any account, come into contact with the fingers, because there is a constant excretion of muriate of soda from the skin, and in this way the purest water is very soon contaminated. He recommends also, that glass stoppers should be employed in place of corks, for transmitting the conducting wires\*.

In another communication by Mr Peel on the same subject, he relates the following experiments, which were undertaken, he says,

"1st, To determine whether the difference in the result of the before-mentioned experiments was owing in any degree to my having employed lime to neutralize the water employed in my second experiment, before it was distilled. <sup>70</sup> New experiments by Mr Peel

"2d, To ascertain whether the salts found in the residual water, or any component part of them, came from the galvanic battery by means of the wires.

"To determine the first point, I varied my experiment by employing for decomposition water distilled under different circumstances.

"*Exper. 1.*—The water employed in this experiment was distilled from water containing lime. A portion of it was decomposed in the manner that has before been stated. The remaining water yielded muriate of potash.

"*Exper. 2.*—Water distilled from water containing magnesia was decomposed in the same manner. The result was muriate of soda.

"*Exper. 3.*—In this experiment double distilled snow water was employed. The result was muriate of soda.

"*Exper.*

Formation  
of Muriatic  
Acid, &c.

69  
Henry's re-  
marks.

\* *Ibid.* 183.

Format on  
of Muriatic  
Acid, &c.

"*Exper. 4.*—Water distilled from barytes was now used. The result was still muriate of soda.

"The water which I used in the experiment detailed in my first letter was distilled from pump water (the pump is on the premises where I live), which I have not myself analyzed, but a friend has been so good as to take upon him that trouble. He has not been able to detect in it the minutest portion of magnesia. In one of the above experiments, having used water distilled from magnesia, I obtained muriate of soda; but, having obtained the same result from distilled snow water, and from water distilled from barytes, I conclude that the production of the soda has nothing to do with the presence of magnesia.

"But, in the production of potash, the presence of lime seems to be essential, and, as you hinted, a portion of lime must have been carried over with the distilled water; a fact which few would suspect, and which probably may often be the cause of differences in the results of chemical investigations, conducted, to all appearance, in a similar manner.

"To determine the second point which I had in view, namely, whether the salts found in the residual water, or any component part of them, came from the galvanic battery by means of the conducting wires, I made similar experiments to those before stated, employing for the decomposition of the distilled water a powerful electrical machine instead of a galvanic battery, but without obtaining results different from what have been already stated\*."

\* *Ibid.* xxii.  
258.  
71  
and others.

tp. 185.

It is stated in the same number of the Philosophical Magazine, that the following result was obtained in an experiment on the same subject. By continuing to pass the galvanic fluid from a trough composed of 40 pairs of square inch plates, through distilled water, contained in a glass tube, the tube being furnished at one end with a wire of gold, and at the other with a wire of platina, it was found that a coating of oxide of gold was deposited on the gold wire, from which it is concluded, that oxymuriatic acid was found in the process †. A more particular account was afterwards given by the author of this experiment, and of the precautions he observed in repeating it. He took a clean glass tube, which was bent as in the former experiment; but, instead of the gold wire, he employed one of platina, so that both wires were of the same metal. One of the wires was only introduced a short way into the tube containing the distilled water; the other wire introduced at the other extremity, passed nearly through its whole length, till it reached beyond the point at which the short wire terminated. After the apparatus had stood for three days, with the zinc end of the trough connected with the short platina wire, the latter assumed the colour of gold, and the long one became black from the lower end to the height of the short wire, and continued so for the space of three weeks. The water being diminished one-third, the short wire was connected with the copper end of the trough, and in one day's time the long wire became bright, and the short one black. After two days had elapsed, that part of the long wire which reached to the height of the short one, assumed a yellowish golden tinge. Both the wires remained so for three days, when they were placed in their first situation. The black powder then left the short wire, and the long one became black. A slip of

blue test paper being immersed in the remaining water, its colour was changed, which indicates the production of an acid. Formation of Muriatic Acid, &c.

Pacchiani, the discoverer, in another letter on this subject addressed to Fabroni, seems to think that those who have failed in obtaining the same results in the decomposition of water, have either been influenced in conducting their experiments by preconceived opinions, or have deviated from the process which he followed. But for an account of his views and reasonings, see *An. de Chim.* tom. lvi. or *Phil. Mag.* xxiv. 176. We shall only observe, that he still considers himself warranted to draw the same conclusion with regard to the formation of the acid, by the action of galvanism.

Mr Sylvester of Sheffield made the following experiment on this subject. The water which he employed was not changed by adding nitrate of silver. This water was introduced into a tube which was secured at one end with a bit of bladder. At the other end was a cork, through which a wire of platina was passed, nearly to the bottom of the tube. The tube was then set in a wine glass, containing also pure water, and into this was also introduced another wire of platina, the extremity of which came under the end of the tube, and as near as possible to the bladder. The wire within the tube was connected with the zinc end of the trough, and the wire in the glass, which was in contact with the bladder, proceeded from the copper end. After the process had continued for an hour, the liquid in the tube was put to the test of nitrate of silver, and when a sufficient precipitate was obtained, to ascertain the presence of muriatic acid, the liquid in the glass contained an alkali, which the author suspected was ammonia\*.

\* *Nichol.*  
*Journal.*  
xiv. 97.

Brugnatelli observes, that, after having galvanised several times, both negatively and positively, a certain quantity of pure water with golden wires, inserted in separate tubes, till he found, by the usual tests, that acid was produced on the one part, and alkali on the other, when the two liquids were mixed to perfect saturation, and evaporated in the air, he always obtained muriate of soda crystallized in cubes. He has therefore no doubt, that water negatively and positively galvanised, by means of gold wires, produces or disengages muriatic acid in the one case, and soda in the other †.

Such are the authorities for this curious phenomenon which we have hitherto had an opportunity of consulting; but although in general it would appear that the experiments made with the view of ascertaining the truth of the discovery announced by Pacchiani, have most generally succeeded, some other experiments, made with the same view, have failed. For this purpose a series of experiments was instituted by the Galvanic Society of Paris, whose attention was directed to endeavour, as well by means of electricity as of galvanism, to confirm this important discovery; but although they employed a very simple apparatus, and one which seemed least susceptible of any foreign influence, they do not think it possible to produce any thing by the action of the galvanic pile, except the decomposition of a greater or less proportion of the water submitted to its action. The water remaining in the tube being carefully examined, produced no effect on the tinctures of turnsole or brazil wood, or the solution of nitrate of silver.

† *Phil.*  
*Mag.* xxv.

Formation  
of Muriatic  
Acid, &c.

silver. Hence it is concluded that neither muriatic acid nor soda was formed in this experiment.

Some other experiments made with the same view have also failed; but according to De Buch, certain precautions seem to be necessary in conducting this experiment, which, if overlooked, it cannot be expected, he thinks, to be followed with success. For the particulars of these, see Phil. Mag. xxiv. 244. For an account of the analogy between the peculiarity of structure of the torpedo, by which it is enabled to give electric shocks, and the galvanic battery, see TORPEDO; and for the medical effects of galvanism, see MATERIA MEDICA.

THE following facts, which seem to extend the analogy of galvanism with electricity on the one hand, and with magnetism on the other, were omitted in the preceding treatise.

Ritter, one of the most indefatigable philosophers, in prosecuting experiments and inquiries on this subject, has succeeded in charging a piece of money with the galvanic fluid, and with this some of the phenomena of galvanism can be exhibited. To effect this, he places a louis d'or between two pieces of pasteboard, thoroughly wetted, and keeps it for six or eight minutes in the chain of circulation connected with the pile. In this way the louis becomes charged, without being immediately in contact with the conducting wires. If this louis be afterwards applied to the crural nerves of a frog, recently prepared, the usual contractions will be produced. It is found that the charge is retained, in proportion to the time that the piece has remained in the circuit of the pile. Some have retained it for five

minutes. Ritter has also discovered, that the piece of gold thus galvanised, exerts at once the action of two metals; the half next the negative pole, while in the circle, became positive, and the half towards the positive pole became negative. He also tried the effect of golden needles charged with galvanism, and balanced on a pivot, and he perceived, to his surprise, that these needles had a certain dip and variation;—that the angle of variation was uniformly the same, differing, however, from that of the magnetic needle, and that the positive pole always dips\*.

If the facts which the above experiments seem to prove, should be fully ascertained, there is an obvious analogy, not only between electricity and galvanism, but also between the latter and magnetism.

A galvanic pile has been constructed by Dr Baronio of Milan, entirely of vegetable matters. For this purpose he cut discs of horse-radish and beet-root, of two inches in diameter. He then prepared equal discs of walnut-tree wood; the latter discs were raised at their edges, to contain a little solution of acidulous tartrate of potash in vinegar, in which they had been previously boiled to free the wood from resin. Sixty pairs of discs were employed in the following order; viz. horse-radish, beet-root, discs of wood, in each of which the solution was put. The spinal marrow of a prepared frog was connected with the pile, by means of a leaf of cochlearia; the muscles of the frog were connected with the top of the pile by means of a double band of gray paper wetted with vinegar, and as often as this circuit was completed, contractions were excited in the animal.

\*Nichols,  
Journal,  
xiii. 99.

## G A L

## G A L

Galway.

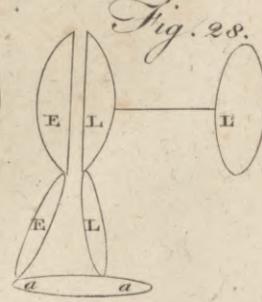
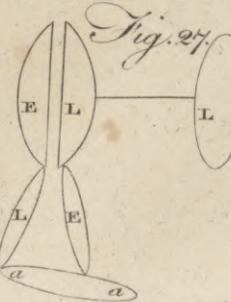
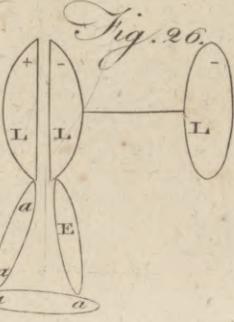
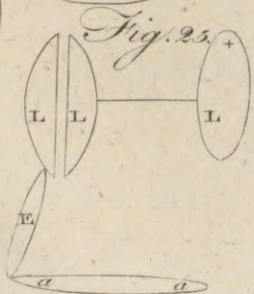
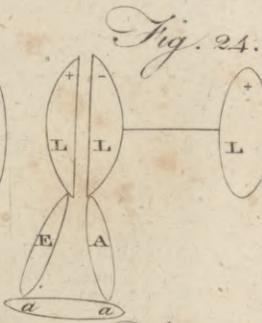
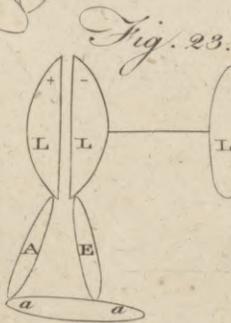
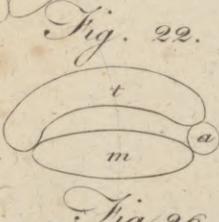
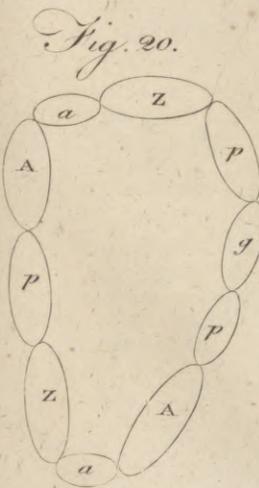
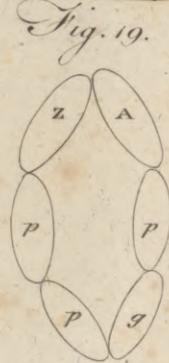
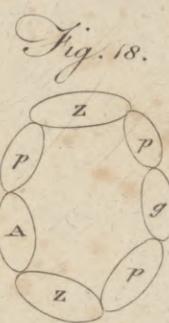
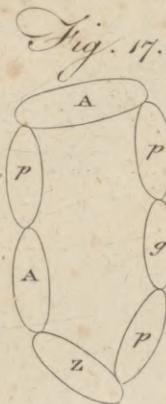
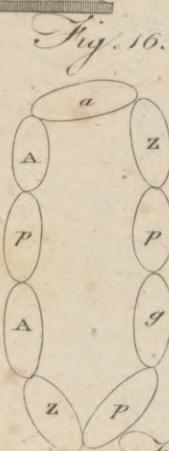
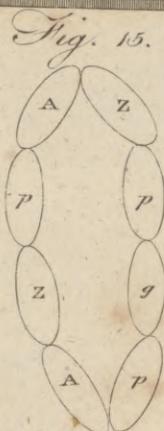
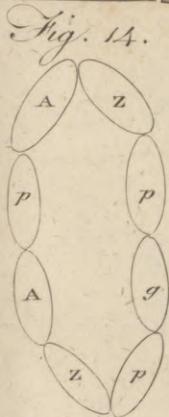
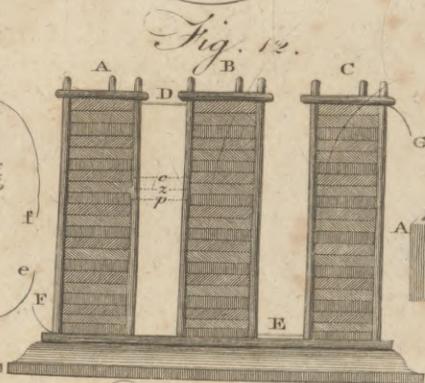
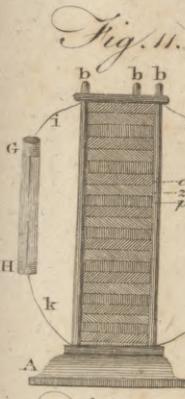
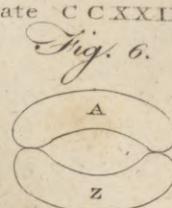
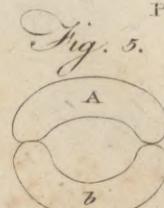
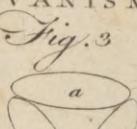
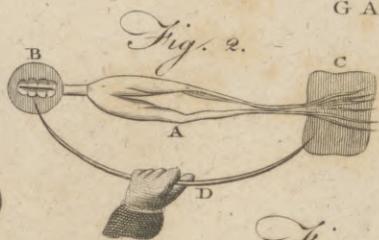
GALWAY, or GALLOWAY, a county of Ireland, which is 82 miles in length, and 42 in breadth, bounded by the counties of Clare, Tipperary, King's County, Roscommon, and the sea. The river Shannon washes the frontiers of the east and south-east, and forms a lake several miles in length. There is another great lake called *Corbis* or *Carib*, which is near 20 miles long, and five broad. This county contains 15,420 houses, 136 parishes, 17 baronies, and 13 boroughs. The capital town is of the same name.

GALWAY, a town of Ireland, in the county of the same name, and province of Connaught, of which it is the capital. It is seated on the bay of Galway on the western ocean, 108 miles west of Dublin, and gives title of Viscount to the family of Monkton. It is surrounded with strong walls, has large straight streets, and the houses are generally well built with stone. It has a good trade into foreign parts, on account of its harbour, which is defended by a fort. It is governed by a mayor, sheriffs, and recorder, and returns two members to parliament. It has but one parish church, which is a large and beautiful Gothic structure, an exchange, barracks for 10 companies of foot, a charter school, and an hospital. This was one of the strongest towns in the kingdom; it held out some time against General Ginkle, who invested and took it after the battle of Aughrim. Its fortifications were then repaired. The walls are flanked by bastions, but are mostly gone to decay. The salmon and herring fish-

eries are carried on here with great spirit, and employ 700 boats; the quantity of kelp manufactured and exported is considerable; and the growth of the linen manufacture, though of late introduction, is become very important. In 1296, Sir William de Burgh founded a monastery here for Franciscan friars, on St Stephen's island, situated without the north gate of the town. In 1381, there being two popes at Rome, and the people of Ireland being doubtful to which they should pay obedience, Pope Urban, to fix them entirely to his interest, empowered the guardian of this monastery to excommunicate every person in the province of Connaught who should adhere to his rival, Clement VII. who he assured them was antipope.—Near the west gate of the town, without the walls, was the monastery of St Mary of the Hill: on the nuns forsaking it, the secular clergy entered into and kept possession of it for a considerable time; but on the petition of the inhabitants of the town to Pope Innocent VIII, it was granted to the Dominican friars, by a bull dated the 4th December 1488. There are no remains of this foundation except the cemetery; the whole building having been demolished by the townsmen in the year 1652, in order to prevent Cromwell from turning it into a fortification against themselves: there was also an Augustinian friary, on a hill near this town, founded by Stephen Lynch, and Margaret his wife, in the year 1508, at the earnest solicitation of Richard Nangle, a friar of the same order, who afterwards became bishop of Tuam.

Galway.

GAMA,





Gama  
||  
Game.

GAMA, VASCO, or VASQUES DE, a celebrated navigator, was born at Sines, a seaport town in the province of Alentejo, in Portugal. When King Emanuel resolved to extend the discoveries formerly made of the southern parts of Africa, and the seas lying between these and the East Indies, the well-known prudence and courage of De Gama pointed him out as a proper person to conduct such an enterprise. He sailed from Lisbon in the month of July 1497, with no more formidable a squadron than three small armed vessels and a store ship, with which he did not reach the Cape of Good Hope till the end of four months, owing to violent and contrary winds. He doubled this promontory, and afterwards coasted along the south-east side of Africa, till he reached Melinda, having touched at different ports on his way. At this place he procured a Mahometan pilot, by whom he was conducted in safety to the coast of Malabar, and he reached Calicut in the month of May. The prince at first received him in a hospitable manner, but a plot being at length laid for his destruction by the Mahometan merchants, he made the best of his way to Europe as soon as he discovered it. He arrived at Lisbon in September 1499, with the loss of the majority of his crew, arising from fatigue and disease. Having spent some time in devotion at a hermitage, he made a splendid entrance into the city, and besides pecuniary rewards, was honoured by the king with the title of count of Videgueira. By this voyage the practicability of a new passage to the Indies was fully established. De Gama undertook a second voyage, with the title of admiral of the Indian, Persian, and Arabian seas, having 20 sail of ships under his command. This voyage began in February 1502, and after compelling several princes in his route to pay tribute to him, he arrived at Cochin, where a deputation from the Christians of St Thomas, to whom he promised protection, waited upon him. The Zamorin being extremely suspicious of these new visitors, fitted out a fleet, but De Gama anticipated the design, and began the attack, making a prize of two large vessels of prodigious value. He left a squadron at Cananor after this victory, and sailed for Lisbon, at which place he arrived in the month of September 1503. On the accession of John III. to the throne, De Gama, then very far advanced in years, was prevailed upon to undertake a third voyage, with the exalted rank of viceroy of the Indies. He conquered the people of Calicut in a naval engagement, and died at Cochin in the year 1525.

GAMBIA, a large river of Negroland in Africa, running from east to west to the Atlantic ocean; it is supposed to be a branch of the Niger.

GAMBOGE is a concreted vegetable juice, partly of a gummy and partly of a resinous nature, chiefly brought in large cakes or rolls from Cambaja in the East Indies. See CHEMISTRY and MATERIA MEDICA Index.

GAME, in general, signifies any diversion or sport, that is performed with regularity, and restrained to certain rules. See GAMING.

Games are usually distinguished into those of exercise and address, and those of hazard. To the first belong chess, tennis, billiards, &c. and to the latter those performed with cards, or dice, as back-gam-

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mon, ombre, piquet, whist, &c. See BACK-GAME Games.

GAMES, in antiquity, were public diversions, exhibited on solemn occasions. Such among the Greeks were the Olympic, Pythian, Isthmian, Nemean, &c. games; and, among the Romans, the Apollinarian, Circensian, Capitoline, &c. games. See OLYMPIC, PYTHIAN, FUNERAL, &c.

GAME, in Law, signifies birds, or prey, taken or killed by fowling or hunting.

The property of such animals *feræ naturæ* as are known under the denomination of *game*, with the right of pursuing, taking, and destroying them, is vested in the king alone, and from him derived to such of his subjects as have received the grants of a chase, a park, or a free warren.

By the law of nature, indeed, every man, from the prince to the peasant, has an equal right of pursuing, and taking to his own use, all such creatures as are *feræ naturæ*, and therefore the property of nobody, but liable to be seized by the first occupant. But it follows from the very end and constitution of society, that this natural right, as well as many others belonging to man as an individual, may be restrained by positive laws enacted for reasons of state, or for the supposed benefit of the community. This restriction may be either with respect to the *place* in which this right may, or may not, be exercised; with respect to the *animals* that are the subjects of this right; or with respect to the *persons* allowed or forbidden to exercise it. And, in consequence of this authority, we find that the municipal laws of many nations have exerted such power of restraint; have in general forbidden the entering on another man's grounds, for any cause, without the owner's leave; have extended their protection to such particular animals as are usually the objects of pursuit; and have invested the prerogative of hunting and taking such animals in the sovereign of the state only, and such as he shall authorize. Many reasons have concurred for making these constitutions: as, 1. For the encouragement of agriculture and improvement of lands, by giving every man an exclusive dominion over his own soil. 2. For the preservation of the several species of these animals, which would soon be extirpated by a general liberty. 3. For prevention of idleness and dissipation in husbandmen, artificers, and others of lower rank; which would be the unavoidable consequence of universal license. 4. For prevention of popular insurrections and resistance to the government, by disarming the bulk of the people: which last is a reason oftener meant than avowed, by the makers of forest or game laws. Nor certainly, in these prohibitions is there any *natural* injustice, as some have weakly enough supposed: since, as Puffendorf observes, the law does not hereby take from any man his present property, or what was already his own; but barely abridges him of one means of acquiring a future property, that of occupancy; which indeed the law of nature would allow him, but of which the laws of society have in most instances very justly and reasonably deprived him.

Yet, however defensible these provisions in general may be, on the footing of reason, or justice, or civil policy, we must, notwithstanding, acknowledge, that,

Game.

in their present shape, they owe their immediate original to slavery. It is not till after the irruption of the northern nations into the Roman empire, that we read of any other prohibitions, than that natural one of not sporting on any private grounds without the owner's leave.

With regard to the rise and original of our present civil prohibitions, it will be found, that all forest and game laws were introduced into Europe at the same time, and by the same policy, as gave birth to the feudal system; when those swarms of barbarians issued from their northern hive, and laid the foundation of most of the present kingdoms of Europe, on the ruins of the western empire. For when a conquering general came to settle the economy of a vanquished country, and to part it out among his soldiers or feudatories, who were to render him military service for such donations; it behoved him, in order to secure his new acquisitions, to keep the *rustici* or natives of the country, and all who were not his military tenants, in as low a condition as possible, and especially to prohibit them the use of arms. Nothing could do this more effectually than a prohibition of hunting and sporting: and therefore it was the policy of the conqueror to reserve this right to himself, and such on whom he should bestow it; which were only his capital feudatories, or greater barons. And, accordingly, we find, in the feudal constitutions, one and the same law prohibiting the *rustici* in general from carrying arms, and also proscribing the use of nets, snares, or other engines for destroying the game. This exclusive privilege well suited the martial genius of the conquering troops, who delighted in a sport which in its pursuit and slaughter bore some resemblance to war. *Vita omnis* (says Cæsar, speaking of the ancient Germans) *in venationibus atque in studiis rei militaris consistit*. And Tacitus in like manner observes, that *quoties bella non ineunt, multum venatibus, plus per otium transigunt*. And indeed, like some of their modern successors, they had no other amusement to entertain their vacant hours; for they despised all arts as effeminate, and had no other learning than what was couched in such rude ditties as were sung at the solemn carousals which succeeded these ancient huntings. And it is remarkable, that, in those nations where the feudal policy remains the most uncorrupted, the forest or game laws continue in their highest rigour. Formerly in France, all game was properly the king's; and in some parts of Germany it is death for a peasant to be found hunting in the woods of the nobility.

With us, in Britain, also hunting has ever been esteemed a most princely diversion and exercise. The whole island was replenished with all sorts of game in the time of the Britons; who lived in a wild and pastoral manner, without enclosing or improving their grounds; and derived much of their subsistence from the chase, which they all enjoyed in common. But when husbandry took place under the Saxon government, and lands began to be cultivated, improved, and enclosed, the beasts naturally fled into the woody and desert tracts, which were called the *forests*; and, having never been disposed of in the first distribution of lands, were therefore held to belong to the crown. These were filled with great plenty of

game, which our royal sportsmen reserved for their own diversion, on pain of a pecuniary forfeiture for such as interfered with their sovereign. But every freeholder had the full liberty of sporting upon his territories, provided he abstained from the king's forests.

However, upon the Norman conquest, a new doctrine took place; and the right of pursuing and taking all beasts of chase or *venary*, and such other animals as were accounted *game*, was then held to belong to the king, or to such only as were authorized under him. And this, as well upon the principles of the feudal law, that the king is the ultimate proprietor of all the lands in the kingdom, they being all held of him as the chief lord, or lord paramount of the fee; and that therefore he has the right of the universal soil, to enter thereon, and to chase and take such creatures at his pleasure: as also upon another maxim of the common law, that these animals are *bona vacantia*, and, having no other owner, belong to the king by his prerogative. As therefore the former reason was held to vest in the king a *right* to pursue and take them anywhere, the latter was supposed to give the king, and such as he should authorize, a *sole* and *exclusive* right.

This right, thus newly vested in the crown, was exerted with the utmost rigour, at and after the time of the Norman establishment; not only in the ancient forests, but in the new ones which the Conqueror made, by laying together vast tracts of country, depopulated for that purpose, and reserved solely for the king's royal diversion; in which were exercised the most horrid tyrannies and oppressions, under colour of forest law, for the sake of preserving the beasts of chase; to kill any of which, within the limits of the forest, was as penal as the death of a man. And, in pursuance of the same principle, King John laid a total interdiction upon the *winged* as well as the *four-footed* creation: *capturam avium per totam Angliam interdixit*\*. \* *M. Paris*, The cruel and insupportable hardships which these forest laws created to the subject, occasioned our ancestors to be as zealous for their reformation, as for the relaxation of the feudal rigours and the other exactions introduced by the Norman family; and accordingly we find the immunities of *charita de foresta* as warmly contended for, and extorted from the king with as much difficulty, as those of *magna charta* itself. By this charter, confirmed in parliament †, many forests were disafforested, or stripped of their oppressive privileges, and regulations were made in the regimen of such as remained; particularly killing the king's deer was made no longer a capital offence, but only punished by a fine, imprisonment, or abjuration of the realm. And by a variety of subsequent statutes, together with the long acquiescence of the crown without exerting the forest laws, this prerogative is now become no longer a grievance to the subject.

But as the king reserved to himself the *forest* for his own exclusive diversion, so he granted out from time to time other tracts of lands to his subjects under the names of *chases* or *parks*; or gave them license to make such in their own grounds; which indeed are smaller forests in the hands of a subject, but not governed by the forest laws; and by the common law no person is

† Hen. III.

at

**Game.** at liberty to take or kill any beasts of chase, but such as have an ancient chase or park; unless they be also beasts of prey.

As to all inferior species of game, called *beasts and fowls of warren*; the liberty of taking or killing them is another franchise or royalty, derived likewise from the crown, and called *free warren*; a word which signifies preservation or custody: as the exclusive liberty of taking and killing fish in a public stream or river is called a *free fishery*; of which, however, no new franchise can at present be granted by the express provision of *magna charta*, c. 16. The principal intention of granting a man these franchises or liberties was in order to protect the game, by giving him a sole and exclusive power of killing it himself, provided he prevented other persons. And no man but he who has a chase or free warren, by grant from the crown, or prescription, which supposes one, can justify hunting or sporting upon another man's soil; nor indeed, in thorough strictness of common law, either hunting or sporting at all.

However novel this doctrine may seem, it is a regular consequence from what has been before delivered, that the sole right of taking and destroying game belongs exclusively to the king. This appears, as well from the historical deduction here made, as because he may grant to his subjects an exclusive right of taking them; which he could not do, unless such a right was first inherent in himself. And hence it will follow, that no person whatever, but he who has such derivative right from the crown, is by common law entitled to take or kill any beast of chase, or other game whatsoever. It is true, that, by the acquiescence of the crown, the frequent grants of free warren in ancient times, and the introduction of new penalties of late by certain statutes for preserving the game, this exclusive prerogative of the king is little known or considered; every man that is exempted from these modern penalties looking upon himself as at liberty to do what he pleases with the game: whereas the contrary is strictly true, that no man however well *qualified* he may vulgarly be esteemed, has a right to encroach on the royal prerogative by the killing of game, unless he can show a particular grant of free warren; or a prescription which presumes a grant; or some authority under an act of parliament. As for the latter; there are but two instances wherein an express permission to kill game was ever given by statute: the one by 1 Jac. I. c. 27. altered by Jac. I. c. 12. and virtually repealed by 22 and 23 Car. II. c. 25. which gave authority, so long as they remained in force, to the owners of free warren, to lords of manors, and to all freeholders having 40l. per annum in lands of inheritance, or 80l. for life or lives, or 400l. personal estate (and their servants), to take partridges and pheasants, upon their own, or their master's free warren, inheritance, or freehold: the other by 5 Ann. c. 14. which empowers lords and ladies of manors to appoint gamekeepers, to kill game for the use of such lord or lady; which with some alteration still subsists, and plainly supposes such power not to have been in them before. The truth of the matter is, that these game laws do indeed *qualify* nobody, except in the instance of a gamekeeper, to kill game: but only to save the trouble and formal process of an action by the person injured,

who perhaps too might remit the offence, these statutes inflict *additional* penalties, to be recovered either in a regular or summary way, by any of the king's subjects, from certain persons of inferior rank who may be found offending in this particular. But it does not follow that persons excused from these additional penalties are therefore *authorized* to kill game. The circumstance of having 100l. per annum, and the rest, are not properly qualifications, but exemptions. And these persons so exempted from the penalties of the game statutes, are not only liable to actions of trespass by the owners of the land; but also if they kill game within the limits of any royal franchise, they are liable to the actions of such who may have the right of chase or free warren therein.

Upon the whole, it appears, that the king, by his prerogative, and such persons as have, under his authority, the ROYAL FRANCHISE OF CHACE, PARK, OR *Free WARREN* †, are the *only* persons who may acquire † See those any property, however fugitive and transitory, in these animals *feræ naturæ*, while living; which is said to be vested in them *propter privilegium*. And it must also be observed, that such persons as may thus lawfully hunt, fish, or fowl, *ratione privilegii*, have only a qualified property in these animals; it not being absolute or permanent, but lasting only so long as the creatures remain within the limits of such respective franchise or liberty, and ceasing the instant they voluntarily pass out of it. It is held indeed, that if a man starts any game within his own grounds, and follows it into another's and kills it there, the property remains in himself. And this is grounded on reason and natural justice: for the property consists in the possession; which possession commences by the finding it in his own liberty, and is continued by the immediate pursuit. And so, if a stranger starts game in one man's chase or free warren, and hunts it into another liberty, the property continues in the owner of the chase or warren; this property arising from privilege, and not being changed by the act of a mere stranger. Or if a man starts game on another's private grounds, and kills it there, the property belongs to him in whose ground it was killed, because it was also started there; this property arising *ratione soli*. Whereas if, after being started there, it is killed in the grounds of a third person, the property belongs not to the owner of the first ground, because the property is local; nor yet to the owner of the second, because it was not started in his soil; but it vests in the person who started and killed it, though guilty of a trespass against both the owners. See the article *Game Laws*.

It will probably be considered by sportsmen who have not an opportunity of seeing the book, as a curious piece of information, to have the following, which we extract from Daniel's Rural Sports, concerning the quantity of game killed in different countries.

"The lists of the game, says he, that has been killed upon particular manors in England by parties, and even by single gentleman, exhibit such a wanton registry of slaughter, as no sportsman can read without regret; but to prove that *British* are rather more merciful than *French* shooters, the account of the former game establishment at Chantilli is first presented to the reader, in the words of the very ingenious person who recorded it.

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"The game establishment at Chantilli was the most extraordinary establishment of the kind in Europe.

"The following list of the quantity of different kinds of game killed at Chantilli, in a period of 32 years, beginning with the year 1748, and ending with the year 1779, was copied from the household registers there, and what seems unaccountable, never was printed before, not even in France! The copy was taken in 1788, and the statement, as an object in natural history, is no small curiosity, and as such it is philosophically interesting.

Hares	-	-	77,750
Rabbits	-	-	587,470
Partridges	-	-	116,574
Red, ditto	-	-	12,426
Pheafants	-	-	86,193
Quails	-	-	19,696
Ralles	-	-	449
Woodcocks	-	-	2,164
Snipes	-	-	2,856
Ducks	-	-	1,353
Wood pigeons	-	-	317
Curlews	-	-	32
Bustards	-	-	2
Larks	-	-	106
Thrushes	-	-	1,313
Stags	-	-	1,682
Hinds	-	-	1,682
Fawns	-	-	519
Does	-	-	1,921
Young does	-	-	135
Roe-bucks	-	-	4,669
Young, ditto	-	-	810
Wild boars	-	-	1,942
Marcaffins	-	-	818

Connected with this establishment, there was a park of 21 miles, and a forest of 48 miles in extent, and while the family were at the place, they had 500 horses, as many servants, and from 60 to 80 couple of dogs.

"The Germans too, says Mr Daniel, have a happy knack at a massacre. In 1788 a party of 10 persons at the chateau of Prince Adam Daversperg, in Bohemia, were out five hours on the 9th and 10th of September, allowed that the first day 6168 shots were fired, and 876 hares, 259 pheafants, 362 partridges, beside quails, rabbits, &c. were bagged, or rather waggoned. On the second day 5904 shots were discharged, and 181 hares, 634 pheafants, and 736 partridges were killed, besides some that were picked up in the evening. The number of shots in the two days were 11,972, the game carried home were

Hares,	1099
Pheafants	958
Partridges	1201

besides small game. It is added that the birds were all shot on the wing.

"In Germany, during the month of October 1797, Prince Lichtenstein, and eleven other gentlemen, killed in one day, when they were out fourteen hours, 39,000 pieces of game; it was of all sorts, but chiefly hares and partridges. The king of Naples and Sir W. Hamilton killed 800 head of game in the neighbourhood of Ca-

farte, of which 640 were partridges, in a very short space of time.

"Upon Mr Colquhoun's manor in our own country, at Writtham in Norfolk, the late duke of Bedford, and six other gentlemen, in 1796, killed 80 cock pheafants, 40 hares, besides partridges, in one day. At Houghton, in the same county, the duke of Bedford, and seven others, killed in the same space, 165 hares, 42 pheafants, 5 rabbits, a couple of woodcocks, and a brace of partridges; and this was done, although the woods had been beat five times before during the season."\*

\* *GAME Cock*, fighting cock, or one kept for sport; a barbarous practice, which is a disgrace to any civilized nation. See *Cock-Fighting*.

**GAMELIA**, in Grecian antiquity, a nuptial feast, or rather sacrifice, held in the ancient Greek families on the day before a marriage; thus called from a custom they had of shaving themselves on this occasion, and presenting their hair to some deity to whom they had particular obligations.

**GAMELION**, in the ancient chronology, was the eighth month of the Athenian year, containing 29 days, and answering to the latter part of our January and beginning of February. It was thus called, as being, in the opinion of the Athenians, the most proper season of the year for marriage.

**GAMING**, the art of playing or practising any game, particularly those of hazard; as cards, dice, tables, &c.

Gaming has at all times been looked upon as a thing of pernicious consequence to the commonwealth; and is therefore severely prohibited by law. It is considered as a practice generally intended to supply, or retrieve, the expences occasioned by LUXURY: it being a kind of tacit confession, that the company engaged therein do, in general, exceed the bounds of their respective fortunes; and therefore they cast lots to determine upon whom the ruin shall at present fall, that the rest may be saved a little longer. But taken in any light, it is an offence of the most alarming nature, tending by necessary consequence, to promote public idleness, theft, and debauchery, among those of a lower class; and, among persons of a superior rank, it hath frequently been attended with the sudden ruin and desolation of ancient and opulent families, and abandoned prostitution of every principle of honour and virtue, and too often hath ended in self-murder. To restrain this pernicious vice among the inferior sort of people, the statute 33 Hen. VIII. c. 9. was made; which prohibits to all but gentlemēn, the games of tennis, tables, cards, dice, bowls, and other unlawful diversions there specified, unless in the time of Christmas, under pecuniary pains and imprisonment. And the same law, and also the statute 23 Geo. II. c. 24. inflict pecuniary penalties, as well upon the master of any public house wherein servants are permitted to game, as upon the servants themselves, who are found to be gaming there. But this is not the principal ground of modern complaint: it is the gaming in high life that demands the attention of the magistrate; a passion to which every valuable consideration is made a sacrifice, and which we seem to have inherited from our ancestors, the ancient Germans; whom Tacitus describes to have been bewitched with the spirit of play to a most exorbitant

Gamelia  
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\* Vol. ii.

**Gaming.** bitant degree. "They addict themselves (says he) to dice (which is wonderful) when sober, and as a serious employment, with such a mad desire of winning or losing, that, when stript of every thing else, they will stake at last their liberty, and their very selves. The loser goes into a voluntary slavery; and, though younger and stronger than his antagonist, suffers himself to be bound and sold. And this perseverance in so bad a cause they call the point of honour: *ea est in re prava pervicacia, ipsi fidem vocant.*" One would almost be tempted to think Tacitus was describing a modern Englishman. When men are thus intoxicated with so frantic a spirit, laws will be of little avail: because the same false sense of honour that prompts a man to sacrifice himself, will deter him from appealing to the magistrate. Yet it is proper that laws should be, and be known publicly, that gentlemen may consider what penalties they wilfully incur, and what a confidence they repose in sharpers; who, if successful in play, are certain to be paid with honour, or, if unsuccessful, have it in their power to be still greater gainers by informing. For, by stat. 16. Car. II. c. 7. if any person by playing or betting shall lose more than 100l. at one time, he shall not be compellable to pay the same; and the winner shall forfeit treble the value, one moiety to the king, the other to the informer. The statute 9 Ann. c. 14. enacts, that all bonds and other securities, given for money won at play, or money lent at the time to play withal, shall be utterly void: that all mortgages and encumbrances of lands, made upon the same consideration, shall be and endure to the heir of the mortgager: that, if any person at one time loses 100l. at play, he may sue the winner, and recover it back by action of debt at law; and, in case the loser does not, any other person may sue the winner for treble the sum so lost; and the plaintiff in either case may examine the defendant himself upon oath: and that in any of these suits no privilege of parliament shall be allowed. The statute farther enacts, that if any person cheats at play, and at one time wins more than 100l. or any valuable thing, he may be indicted thereupon, and shall forfeit five times the value, shall be deemed infamous, and suffer such corporal punishment as in case of wilful perjury. By several statutes of the reign of King George II. all private lotteries by tickets, cards, or dice, (and particularly the games of faro, basset, ace of hearts, hazard, passage, roly polly, and all other games with dice, except backgammon), are prohibited under a penalty of 200l. for him that shall create such lotteries, and 50l. a-time for the players. Public lotteries, unless by authority of parliament, and all manner of ingenious devices, under the denomination of *sales* or otherwise, which in the end are equivalent to lotteries, were before prohibited by a great variety of statutes under heavy pecuniary penalties. But particular descriptions will ever be lame and deficient, unless all games of mere chance are at once prohibited; the invention of sharpers being swifter than the punishment of the law, which only hunts them from one device to another. The stat. 13 Geo. II. c. 19 to prevent the multiplicity of horse races, another fund of gaming, directs, that no plates or matches under 50l. value shall be run, upon penalty of 200l. to be paid by the owner of each horse running, and 100l. by such as advertise the

plate. By statute 18 Geo. I. c. 34. the statute 9 Ann. is farther enforced, and some deficiencies supplied: the forfeitures of that act may now be recovered in a court of equity; and, moreover, if any man be convicted, upon information or indictment, of winning or losing at any sitting 10l. or 20l. within 24 hours, he shall forfeit five times the sum. Thus careful has the legislature been to prevent this destructive vice: which may show that our laws against gaming are not so deficient as ourselves and our magistrates in putting those laws in execution.

*Chance, or Hazard, in GAMING.* Hazard, or chance, is a matter of mathematical consideration, because it admits of more and less. Gamesters either set out upon an equality of chance, or are supposed to do so. This equality may be altered in the course of the game, by the greater good fortune or address of one of the gamesters, whereby he comes to have a better chance, so that his share in the stakes is proportionably better than at first. This more and less runs through all the ratios between equality and infinite difference, or from an infinitely little difference till it come to an infinitely great one, whereby the game is determined. The whole game, therefore, with regard to the issue of it, is a chance of the proportion the two shares bear to each other.

The probability of an event is greater or less, according to the number of chances by which it may happen, compared with the number of all the chances by which it may either happen or fail.

M. de Moivre, in a treatise *de Mensura Sortis*, has computed the variety of chances in several cases that occur in gaming, the laws of which may be understood by what follows.

Suppose  $p$  the number of cases in which an event may happen, and  $q$  the number of cases wherein it may not happen, both sides have the degree of probability, which is to each other as  $p$  to  $q$ .

If two gamesters, A and B, engage on this footing, that, if the cases  $p$  happen, A shall win; but if  $q$  happen, B shall win, and the stake be  $a$ ; the chance of

A will be  $\frac{pa}{q+p}$ , and that of B  $\frac{qa}{p+q}$ ; consequently, if they sell the expectancies, they should have that for them respectively.

If A and B play with a single dice, on this condition, that, if A throw two or more aces at eight throws, he shall win; otherwise B shall win; What is the ratio of their chances? Since there is but one case wherein an ace may turn up, and five wherein it may not, let  $a=1$ , and  $b=5$ . And again, since there are eight throws of the die, let  $n=8$ ; and you will have  $a^n + b^n - nab^n - 1$ , to  $b^n + nab^n - 1$ : that is, the chance of A will be to that of B as 663991 to 10156525, or nearly as 2 to 3.

A and B are engaged at single quoits; and, after playing some time, A wants 4 of being up, and B 6; but B is so much the better gamester, that his chance against A upon a single throw would be as 3 to 2; What is the ratio of their chances? Since A wants 4, and B 6, the game will be ended at nine throws; therefore, raise  $a+b$  to the ninth power, and it will be  $a^9 + 9a^8b + 36a^7b^2 + 84a^6b^3 + 126a^5b^4 + 126a^4b^5 + 84a^3b^6 + 36a^2b^7 + 6ab^8 + b^9$ : call  $a_3$ , and  $b_2$ , and you will have the ratio of chances in numbers, viz. 1759077 to 194048.

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A and B play at single quoits, and A is the best gamster, so that he can give B 2 in 3: What is the ratio of their chances at a single throw? Suppose the chances as  $x$  to 1, and raise  $x+1$  to its cube, which will be  $x^3+3x^2+3x+1$ . Now since A could give B 2 out of 3, A might undertake to win three throws running; and consequently the chances in this case will be as  $x^3$  to  $3x^2+3x+1$ . Hence  $x^3=3x^2+3x+1$ ; or  $2x^3=x^3+3x^2-3x+1$ . And therefore  $x\sqrt[3]{2}=x+1$ ; and, consequently,  $x=\frac{1}{\sqrt[3]{2}-1}$ . The chances, therefore, are  $\frac{1}{\sqrt[3]{2}-1}$ , and 1, respectively.

Again, suppose I have two wagers depending, in the first of which I have 3 to 2 the best of the lay, and in the second 7 to 4; What is the probability I win both wagers?

1. The probability of winning the first is  $\frac{3}{5}$ , that is the number of chances I have to win, divided by the number of all the chances: the probability of winning the second is  $\frac{7}{11}$ : therefore, multiplying these two fractions together, the product will be  $\frac{21}{55}$ , which is the probability of winning both wagers. Now, this fraction being subtracted from 1, the remainder is  $\frac{34}{55}$ , which is the probability I do not win both wagers: therefore the odds against me are 34 to 21.

2. If I would know what the probability is of winning the first, and losing the second, I argue thus; the probability of winning the first is  $\frac{3}{5}$ , the probability of losing the second is  $\frac{4}{11}$ : therefore multiplying  $\frac{3}{5}$  by  $\frac{4}{11}$ , the product  $\frac{12}{55}$  will be the probability of my winning the first, and losing the second; which being subtracted from 1, there will remain  $\frac{43}{55}$ , which is the probability I do not win the first, and at the same time lose the second.

3. If I would know what the probability is of winning the second, and at the same time losing the first, I say thus: The probability of winning the second is  $\frac{7}{11}$ ; the probability of losing the first is  $\frac{2}{5}$ : therefore, multiplying these two fractions together, the product  $\frac{14}{55}$  is the probability I win the second, and also lose the first.

4. If I would know what the probability is of losing both wagers, I say, the probability of losing the first is  $\frac{2}{5}$ , and the probability of losing the second  $\frac{4}{11}$ : therefore the probability of losing them both is  $\frac{8}{55}$ : which, being subtracted from 1, there remains  $\frac{47}{55}$ : therefore, the odds of losing both wagers is 47 to 8.

This way of reasoning is applicable to the happening or failing of any events that may fall under consideration. Thus if I would know what the probability is of missing an ace four times together with a die, this I consider as the failing of four different events. Now the probability of missing the first is  $\frac{5}{6}$ , the second is also  $\frac{5}{6}$ , the third  $\frac{5}{6}$ , and the fourth  $\frac{5}{6}$ ; therefore the probability of missing it four times together is  $\frac{5}{6} \times \frac{5}{6} \times \frac{5}{6} \times \frac{5}{6} = \frac{625}{1296}$ ; which being subtracted from 1, there will remain  $\frac{671}{1296}$  for the probability of throwing it once or oftener in four times: therefore the odds of throwing an ace in four times, is 671 to 625.

But if the flinging of an ace was undertaken in three times, the probability of missing it three times would be  $\frac{5}{6} \times \frac{5}{6} \times \frac{5}{6} = \frac{125}{216}$ ; which being subtracted from 1, there will remain  $\frac{91}{216}$  for the probability of throwing it once

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or oftener in three times: therefore the odds against throwing it in three times are 125 to 91. Again, suppose we would know the probability of throwing an ace once in four times, and no more; since the probability of throwing it the first time is  $\frac{1}{6}$ , and of missing it the other three times, is  $\frac{5}{6} \times \frac{5}{6} \times \frac{5}{6}$ , it follows, that the probability of throwing it the first time, and missing it the other three successive times, is  $\frac{1}{6} \times \frac{5}{6} \times \frac{5}{6} \times \frac{5}{6} = \frac{125}{1296}$ ; but because it is possible to hit every throw as well as the first, it follows, that the probability of throwing it once in four throws, and missing it the other three, is  $\frac{4 \times 125}{1296} = \frac{500}{1296}$ ; which being subtracted from 1, there

will remain  $\frac{796}{1296}$  for the probability of throwing it once, and no more, in four times. Therefore, if one undertake to throw an ace once, and no more, in four times, he has 500 to 796 the worst of the lay, or 5 to 8 very near.

Suppose two events are such, that one of them has twice as many chances to come up as the other; what is the probability that the event, which has the greater number of chances to come up, does not happen twice before the other happens once, which is the case of flinging 7 with two dice before 4 once? Since the number of chances is as 2 to 1, the probability of the first happening before the second is  $\frac{2}{3}$ , but the probability of its happening twice before it is but  $\frac{2}{3} \times \frac{2}{3}$  or  $\frac{4}{9}$ : therefore it is 5 to 4, seven does not come up twice before four once.

But, if it were demanded, what must be the proportion of the facilities of the coming up of two events, to make that which has the most chances come up twice, before the other comes up once? The answer is, 12 to 5 very nearly: whence it follows, that the probability of throwing the first before the second is  $\frac{12}{17}$ , and the probability of throwing it twice is  $\frac{12}{17} \times \frac{12}{17}$ , or  $\frac{144}{289}$ ; therefore the probability of not doing it is  $\frac{145}{289}$ ; therefore the odds against it are as 145 to 144, which comes very near an equality.

Suppose there is a heap of thirteen cards of one colour, and another heap of thirteen cards of another colour; What is the probability, that, taking one card at a venture out of each heap, I shall take out the two aces?

The probability of taking the ace out of the first heap is  $\frac{1}{13}$ ; the probability of taking the ace out of the second heap is  $\frac{1}{13}$ ; therefore the probability of taking out both aces is  $\frac{1}{13} \times \frac{1}{13} = \frac{1}{169}$ , which being subtracted from 1, there will remain  $\frac{168}{169}$ : therefore the odds against me are 168 to 1.

In cases where the events depend on one another, the manner of arguing is somewhat altered. Thus, suppose that out of one single heap of thirteen cards of one colour I should undertake to take out first the ace; and, secondly, the two: though the probability of taking out the ace be  $\frac{1}{13}$ , and the probability of taking out the two be likewise  $\frac{1}{13}$ : yet, the ace being supposed as taken out already, there will remain only twelve cards in the heap, which will make the probability of taking out the two to be  $\frac{1}{12}$ ; therefore the probability of taking out the ace, and then the two, will be  $\frac{1}{13} \times \frac{1}{12}$ .

In this last question the two events have a dependence on each other; which consists in this, that one of the events

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events being supposed as having happened, the probability of the other's happening is thereby altered. But the case is not so in the two heaps of cards.

If the events in question be  $n$  in number, and be such as have the same number  $a$  of chances by which they may happen, and likewise the same number  $b$  of chances by which they may fail, raise  $a+b$  to the power  $n$ . And if A and B play together, on condition that if either one or more of the events in question happen, A shall win, and B lose, the probability of

A's winning will be  $\frac{a+b|n-b^n}{a+b|n}$ ; and that of B's win-

ning will be  $\frac{b^n}{a+b|n}$ ; for when  $a+b$  is actually raised to the power  $n$ , the only term in which  $a$  does not occur is the last  $b^n$ : therefore all the terms but the last are favourable to A.

Thus if  $n=3$ , raising  $a+b$  to the cube  $a^3+3a^2b+3ab^2+b^3$ , all the terms but  $b^3$  will be favourable to A; and therefore the probability of A's winning will be  $\frac{a^3+3a^2b+3ab^2}{a+b|3}$ , or  $\frac{a+b|3-b^3}{a+b|3}$ ; and the probabili-

ty of B's winning will be  $\frac{b^3}{a+b|3}$ . But if A and B play on condition, that if either two or more of the events in question happen, A shall win; the probabili-

ty of A's winning will be  $\frac{a+b|n-nab^{n-1}-n}{n+b|n}$ ; for

the only two terms in which  $aa$  does not occur are the two last, viz.  $nab^{n-1}$  and  $b^n$ .

GAMMONING, among seamen, denotes several turns of a rope taken round the bowsprit, and reeved through holes in knees of the head, for the greater security of the bowsprit.

GAMMUT, GAMUT, *GAM-ut*, in *Musick*, a scale whereon we may learn to sound the musical notes, *ut, re, mi, fa, sol, la*, in their several orders and dispositions. See *MUSIC*.

The invention of this scale is owing to Guido Aretin, a monk of Arezzo, in Tuscany, about the year 1009; though it is not so properly an invention, as an improvement on the diagram or scale of the ancients. See *ARETIN*.

Several alterations have been made in the gammut. M. Le Maire, particularly, has added a seventh note; viz. *fi*; and the English usually throw out both *ut* and *fi*, and make the other five serve for all.

GANDER, in *Ornithology*, the male of the goose kind. See *ANAS*, *ORNITHOLOGY Index*.

GANG-WAY, is the several passages or ways from one part of the ship to the other; and whatsoever is laid in any of those passages is said to lie in the gang-way.

GANGANELLI. See *CLEMENT XIV*.

GANGES, a large and celebrated river of India. It has its source in the mountains which border on Little Thibet, in 96 degrees of longitude, and 3,° 45' of latitude. It crosses several kingdoms, running from north to south; and falls into the bay of Bengal by several mouths. The waters are lowest in April and May, and highest before the end of September. It overflows yearly like the Nile; and renders the king-

dom of Bengal as fruitful as that of the Delta in Egypt. The people in these parts hold the water of this river in high veneration; and it is visited annually by a prodigious number of pilgrims from all parts of India. The English have several settlements on this river, which will be taken notice of in their proper places. The greatest happiness that many of the Indians wish for, is to die in this river.

GANGLION, in *Anatomy*, denotes a knot frequently found in the course of the nerves, and which is not morbid; for wherever any nerve sends out a branch, or receives one from another, or where two nerves join together, there is generally a ganglion or plexus, as may be seen at the beginning of all the nerves of the medulla spinalis, and in many other places of the body.

GANGLION, in *Surgery*, a hard tubercle, generally moveable, in the external or internal part of the carpus, upon the tendons or ligaments in that part; usually without any pain to the patient.

GANGRENE, a very great and dangerous degree of inflammation, wherein the parts affected begin to corrupt, and put on a state of putrefaction. See *MEDICINE*, and *SURGERY*.

GANNET, or *SOLAND Goose*, in *Ornithology*. See *PELICANUS*, *ORNITHOLOGY Index*.

GANTLET, or GAUNTLET, a large kind of glove made of iron, and the fingers covered with small plates. It was formerly worn by the cavaliers, when armed at all points. The word is derived of the French *ganteler*; and that from *gand*, or *gant*, "glove."

The casque and gauntlets were always borne in the ancient marches in ceremony. Gauntlets were not introduced till about the 13th century.

The gauntlet was frequently thrown like the glove, by way of challenge.

GANTLOPE. See *GAUNTLOPE*.

GANYMEDE, in mythology, a beautiful youth of Phrygia, son of Tros and brother to Ilus; according to Lucian, he was the son of Dardanus. Jupiter was charmed with him; and carrying him away, made him his cupbearer in the room of Hebe. Some say that he caused him to be carried away by an eagle, and others affirm he was himself the ravisher under the form of that bird. He deified this youth; and to comfort his father made a present to him of some of those very swift horses upon which the gods rode.

GAOL (*Gaola*. Fr. *Geole*, i. e. *Caveola*, "a cage for birds"), is used metaphorically for a prison. It is a strong place or house for keeping of debtors, &c. and wherein a man is restrained of his liberty to answer an offence done against the laws: and every county hath two goals, one for debtors, which may be any house where the sheriff pleases; the other for the peace and matters of the crown, which is the county gaol.

If a gaol be out of repair, or insufficient, &c. justices of peace, in their quarter sessions, may contract with workmen for the rebuilding or repairing it; and by their warrant order the sum agreed on for that purpose to be levied on the several hundreds, and other divisions in the county by a just rate, 11 and 12 Will. III. c. 19. See *PRISON*.

*GAOL Delivery*. The administration of justice being originally in the crown, in former times our kings

Ganglion  
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Gaol.

Gaoler  
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Garamond.

in person rode through the realm once in seven years, to judge of and determine crimes and offences; afterwards justices in eyre were appointed; and since, justices of assize and gaol delivery, &c. A commission of gaol delivery, is a patent in nature of a letter from the king to certain persons, appointing them his justices, or two or three of them, and authorizing them to deliver his gaol, at such a place, of the prisoners in it: for which purpose it commands them to meet at such a place, at the time they themselves shall appoint; and informs them, that, for the same purpose, the king hath commanded his sheriff of the same county to bring all the prisoners of the gaol, and their attachments, before them at the day appointed.

The justices of gaol delivery are empowered by the common law to proceed upon indictments of felony, trespass, &c. and to order to execution or reprieve: they may likewise discharge such prisoners, as on their trials are acquitted, and those against whom, on proclamation being made, no evidence has appeared: they have authority to try offenders for treason, and to punish many particular offences, by statute, 2 *Hawk.* 24. 2. *Hale's Hist. Placit. Cor.* 35.

GAOLER, the keeper of a gaol or prison. Sheriffs are to make such gaolers for whom they will be answerable: but if there be any default in the gaoler, an action lies against him for an escape, &c. yet the sheriff is most usually charged; 2d *Inst.* 592. Where a gaoler kills a prisoner by hard usage, it is felony; 3 *Inst.* 52. No fee shall be taken by gaolers, but what is allowed by law, and settled by the judges, who may determine petitions against their extortions, &c. 2. *Geo.* II. c. 22.

GAONS, a certain order of Jewish doctors, who appeared in the East, after the closing of the Talmud. The word *Gaons* signifies "excellent, sublime;" as in the divinity schools we formerly had Irrefragable, Sublime, Resolute, Angelic, and Subtile doctors. The Gaons succeeded the Seburæans or Opinians about the beginning of the sixth century. Chanan Meischtia was the head and first of the excellents. He restored the academy of Pandebita, which had been shut up for 30 years.

GAR FISH, *Horn fish*, or *Sea needle*. See *ESOX*, *ICHTHYOLOGY Index*.

GARAMA, in *Ancient Geography*, the capital of the Garamantes in Libya Interior; near the springs of the Cinyphus, now in ruins. Garamantes the people. It lay to the south of Gætulia, extending from the springs of the Cinyphus, and the adjacency of the river Gir, to the mountains which form at the *Vallis Garamantica* (Pliny): or from the springs of the Bagrades to the lake Nuba (Ptolemy).

GARAMOND, CLAUDE, a very ingenious letter-founder, was born at Paris; where he began, in the year 1510, to found his printing types free from all the remains of the Gothic, or (as it is generally called) the *black letter*, and brought them to such perfection, that he had the glory of surpassing all who went before him, and of being scarcely ever excelled by his successors in that useful art. His types were prodigiously multiplied: both by the great number of matrices he struck, and the types formed in resemblance of his in all parts of Europe. Thus in Italy, Germany, England, and Holland, the booksellers, by way of

recommending their books, distinguished the type by his name; and in particular the small Roman was by way of excellence known among the printers of these nations by the name of *Garamond's small Roman*. By the special command of King Francis I. he founded three sizes of Greek types for the use of Robert Stephens, who with them printed all his beautiful editions of the New Testament, and other Greek authors. He died at Paris in 1561.

GARASSE, FRANCIS, a remarkable Jesuitical writer, the first author of that irreconcilable enmity that still subsists between the Jesuits and Jansenists, in the church of Rome, was born at Angoulesme in 1585, and entered the Jesuits college in 1600. As he had a quick imagination, a strong voice, and a peculiar turn to wit, he became a popular preacher in the chief cities of France; but not content with this honour, he distinguished himself still more by his writings, which were bold, licentious, and produced much controversy. The most considerable in its consequences was entitled *La somme theologique des veritez capitales de la religion Chretienne*; which was first attacked by the abbot of St Cyran, who observing in it a prodigious number of falsifications of the Scriptures and of the fathers, besides many heretical and impious opinions, conceived the honour of the church required him to undertake a refutation. Accordingly he published a full answer to it; while Garasse's book was also under examination of the doctors of the Sorbonne, by whom it was afterwards condemned. Garasse replied to St Cyran; but the two parties of Jesuits and Jansenists, of whom these were respectively the champions, grew to an implacable animosity against each other, that is not even now likely to subside. The Jesuits were forced to remove their brother to a distance from Paris; where, probably weary of his inactive obscurity, when the plague raged at Poitiers in 1631, he begged leave of his superior to attend the sick, in which charitable office he caught the disorder, and died.

GARBÉ, in *Heraldry*, a sheaf of any kind of grain, borne in several coats of arms, and said to represent summer, as a bunch of grapes does autumn.

GARBLE, a word used to signify the action of separating the dross and dust from spice, drugs, &c. *Garbling* is the cleansing and purifying the good from the bad; and may come from the Italian *garbo*, i. e. finery or neatness: and hence, probably, we say, when we see a man in a neat habit, that he is in handsome *garb*.

GARCILASSO, DE LA VEGA, an eminent Spanish poet, was born at Toledo, in 1503. He was the younger son of a man of rank, who had been employed in negotiating business of importance. Garcilasso was distinguished for his wit and bravery, and in a particular manner for his poetical talents. He was chiefly instrumental in giving popularity to an innovation of his friend Boscan, who introduced measures borrowed from the Italians. His works consist chiefly of pastorals, which have a tedious prolixity. He is chiefly noted for tenderness, which is remarkably conspicuous in some of his sonnets. He is freer of bombast than the generality of his countrymen, owing to his familiar acquaintance with the ancients; and it is said that his learning and taste were superior to his genius. He followed the profession of arms, and attended Charles V.

Garcinia  
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Garden.

in a number of his expeditions. He lost his life at the attack of a fortress in Provence, when only 33 years of age. Garcilasso is also the name of an author, a native of Cusco in Peru, who composed a history of Florida in the Spanish language, and another of Peru and its Incas.

GARCINIA, a genus of plants belonging to the dodecandria class; and in the natural method ranking under the 18th order, *Bicornes*. See BOTANY Index.

GARCON, or GARSOON, a French term, literally signifying a boy or male child any time before his marriage.—It is also applied to divers inferior officers, among us called *groom*, *garçons*. Thus all the servants in the French king's chambers, wardrobe, &c. who do the lesser offices thereof under the proper officers, are called *garçons de la chambre, de la garde-robe, &c.*

GARDANT, or GUARDANT, in *Heraldry*, denotes any beast full faced, and looking right forward.

GARDEN, FRANCIS, better known to the public by the title of *Lord Gardenstone*, was born at Edinburgh June 24th, in the year 1721. His father was Alexander Garden of Troup, an opulent landholder in Aberdeenshire; his mother was Jane, daughter of Sir Francis Grant of Cullen, S. C. I.

After passing through the usual course of liberal education at the school and the university, he betook himself to the study of law for his profession; and in the year 1744 he was admitted a member of the Faculty of Advocates, and called to the Scottish bar.

In his practice as an advocate he soon began to be distinguished, by a strong, native rectitude of understanding; by that vivacity of apprehension and imagination, which is commonly denominated *genius*; by manly candour in argument, often more persuasive than subtlety and sophistical artifice; by powers which, with diligence, might easily attain to the highest eminence of the profession. But the same strength, openness, and ardour of mind, which distinguished him so advantageously among the pleaders at the bar, tended to give him a fondness for the gay enjoyments of convivial intercourse, which was unfavourable to his progress in juridical erudition. Shining in the social and convivial circle, he became less solicitously ambitious than he might otherwise have been, of the character of an eloquent advocate, or of a profound and learned lawyer. The vivacity of his genius was averse from austere and plodding study, while it was captivated by the fascinations of polite learning, and of the fine arts. Nor did he always escape those excesses in the pursuit of pleasure into which the temptations of opening life are apt, occasionally, to seduce the most liberal and ingenuous youth. But his cheerful conviviality, his wit, humour, taste, good-nature, and benevolence of heart, rendered him the delight of all his acquaintance. He became his majesty's solicitor July 3d, 1764.

At length the worth of his character, and his abilities as a lawyer, recommended him to the office of a judge in the courts of session and justiciary, the supreme judicatures, civil and criminal, for Scotland. His place in the court of session he continued to occupy till his death; but had, some years before, resigned the office of a commissioner of justiciary, and in recompence got a pension of 200l. per annum.

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Clear discernment, strong good sense, conscientious honesty, and amiable benevolence, remarkably distinguished all his opinions and conduct as a judge.

In the year 1762 he purchased the estate of Johnston, in the county of Kincardine. Within a few years after he began to attempt a plan of the most liberal improvement of the value of this estate, by an extension of the village of Laurencekirk, adjoining. He offered leases of small farms, and of ground for building upon, which were to last for the term of one hundred years; and of which the conditions were extremely inviting to the labourers and tradesmen of the surrounding country. These offers were eagerly listened to. More desirous to make the attempt beneficial to the country than to derive profit from it to himself, he was induced, within a few years, to reduce his ground-rents to one-half of the original rate.—Weavers, joiners, shoemakers, and other artificers in a considerable number, resorted to settle in the rising village. His lordship's earnestness for the success of his project, and to promote the prosperity of the good people whom he had received under his protection, led him to engage in several undertakings; by the failure of which he incurred considerable losses. Projects of a print-field, and of manufactures of linen and of stockings, attempted with sanguine hopes in the new village, and chiefly at his lordship's risk and expence, misgave in such a manner as might well have finally disgusted a man of less steady and ardent philanthropy with every such engagement. But the village still continued to advance. It grew up under his lordship's eye, and was the favourite object of his care. In the year 1779, he procured it to be erected into a burgh of barony; having a magistracy, an annual fair, and a weekly market. He provided in it a good inn for the reception of travellers; and with an uncommon attention to the entertainment of the guests who might resort to it, furnished this inn with a library of books for their amusement. He invited an artist for drawing, from the continent, to settle at Laurencekirk. He had the pleasure of seeing a considerable linen-manufacture at length fixed in it. A bleachfield was also established as a natural counterpart to the linen-manufacture. Before his lordship's death, he saw his plan of improving the condition of the labourers, by the formation of a new village at Laurencekirk, crowned with success beyond his most sanguine hopes. He has acknowledged, with an amiable frankness, in a memoir concerning this village, "That he had tried, in some measure, a variety of the pleasures which mankind pursue; but never relished any so much as the pleasure arising from the progress of his village."

In the year 1785, upon the death of his elder brother, Alexander Garden of Troup, M. P. for Aberdeenshire, Lord Gardenstone succeeded to the possession of the family estates, which were very considerable. Until this time his lordship's income had never been more than adequate to the liberal expence into which his rank, and the generosity of his nature, unavoidably led him. But the addition of a fortune of about three thousand pounds a-year to his former revenue, gave him the power of performing many acts of beneficence with which he could not before gratify his good heart. It was happy, likewise, that his succession to this ample income, at a period when the vigour

Garden.

**Garden.** of his constitution was rapidly yielding to the infirmities of old age, enabled him to seek relief, by a partial cessation from business, by travel, and by other means, which could not have been easily compatible with the previous state of his fortune.

In the month of Sept. 1786, he set out from London for Dover, and passed over into France. After visiting Paris, he proceeded to Provence, and spent the winter months in the genial climate of Hieres. In the spring of 1787 he returned northwards, visiting Geneva, Switzerland, the Netherlands, and the Dutch provinces, and passing through Germany into Italy. With a fond curiosity, attentive alike to the wonders of nature, to the noble monuments of the arts, and to the awful remains of ancient grandeur, with which Italy abounds, he visited all its great cities, and surveyed almost every remarkable and famous scene that it exhibits.

His first object, in these travels, was to obtain the restoration of his declining health by the influence of a milder climate, by gentle, continued, and varied exercise; by that pleasing exhilaration of the temper and spirits, which is the best medicine to health, and is most successfully produced by frequent change of place, and of the objects of attention. But the curiosities of nature and art, in those countries through which he travelled, could not fail to attract, in a powerful manner, the curiosity of a mind cultivated and ingenious as his. He, whose breast glowed with the most ardent philanthropy, could not view the varied works and manners of a diversity of nations of his fellow men, without being deeply interested by all those circumstances which might appear to mark their fortunes as happy or wretched. He eagerly collected specimens of the spars, the shells, the strata, of rocks, and the veins of metals, in the several countries through which he passed. He amassed also cameos, medals, and paintings. He enquired into science, literature, and local institutions. He wrote down his observations, from time to time; not indeed with the minute care of a pedant, or the ostentatious labour of a man travelling with a design to publish an account of his travels; but simply to aid memory and imagination in the future remembrance of objects useful or agreeable.

After an absence of about three years, he returned to his native county. The last years were spent in the discharge of the duties of his office as a judge; in social intercourse with his friends, among whom was the venerable Lord Monboddo, and others of the most respectable characters that our country has to boast of; in the performance of a thousand generous offices of benevolence and humanity; in cherishing those fine arts, of which he was an eminent admirer and judge; and above all, in promoting the comfort, and encouraging the industry of his dependants, and in lending his aid to every rational attempt at the improvement of public economy and public virtue.

St Bernard's Well, in the neighbourhood of Edinburgh, had been, long since, distinguished for the medicinal virtues of its waters. But various circumstances had also concurred of late to throw it into neglect. Yet its waters being strongly mineralized by a sulphurated hydrogenous gas, were, by this means, unquestionably qualified to operate, with highly beneficial effects, in the cure of various diseases. The qualities of

this mineral water falling under Lord Gardenstone's notice, he was induced to purchase the property of the well, to direct it to be cleared from surrounding obstacles, which contaminated the virtues of the water, or made it inaccessible; to erect a beautiful and commodious edifice over it; and to appoint proper persons to distribute the water, for a very trivial compensation, to the public. The well lies at a distance from Edinburgh, which is very convenient for a summer morning's walk. Within the few years which have passed since Lord Gardenstone's benevolent care brought it into notice, it has attracted many of the inhabitants of that city to visit in the mornings of spring and summer. And, undoubtedly, the agreeable exercise to which they have thus been allured, and the salutary effects of the water, have contributed, in no mean degree, to dispel disease, and to confirm, or re-establish health. Such monuments are worthy to preserve the memory of a patriotic and a good man!

As an amusement for the last two or three years of his life, when his increasing infirmities precluded him from more active exercise, and from mingling so frequently in the society of his friends as was agreeable to his social and convivial temper, he bethought himself of revising some of the *jeux d'esprit*, and light fugitive pieces, in which he had indulged the gaiety of his fancy, in his earlier days; and a small volume of poems was published, in which the best pieces are, upon good authority, ascribed to Lord Gardenstone. He revised also the memorandums which he had made upon his travels, and permitted them to be sent to press. The two former volumes were published one after another while his lordship was yet alive; the third after his death. They met with a very favourable reception in the world, and were honoured with the high approbation of the most respectable writers of periodical criticism. They convey much agreeable information, and bespeak an elegant, enlightened, and amiable mind. The last volume is filled chiefly with memorandums of his lordship's travels in Italy; and contains many interesting criticisms upon some of the noblest productions of the fine arts of painting and sculpture.

His lordship's health had long been declining; and he died a bachelor on the 22d of July 1793, lamented by his relations and friends, by his tenants and humble dependants, and by all true patriots and good men to whom his merits and virtues were known.

**GARDEN**, a piece of ground properly laid out, cultivated, and ornamented with a variety of plants, flowers, fruits, &c. See **GARDENING**.

Gardens are usually distinguished into flower garden, fruit garden, and kitchen garden: the first of which, being designed for pleasure and ornament, is to be placed in the most conspicuous part, that is, next to the back front of the house; and the two latter, being designed for use, should be placed less in sight. But though the fruit and kitchen gardens are here mentioned as two distinct gardens, yet they are now usually in one; and that with good reason, since they both require a good soil and exposure, and equally require to be placed out of the view of the house.

In the choice of a place proper for a garden, the most essential points to be considered are, the situation, the soil, the exposure, water, and prospect.

1st, As to the situation, it ought to be such a one

**Garden.**

**Garden.** as is wholesome, and in a place neither too high nor too low; for if a garden be too high, it will be exposed to the winds, which are very prejudicial to trees; and if it be too low, the dampness, the vermine, and the venomous creatures that breed in ponds and marshy places, add much to their insalubrity. The most happy situation is on the side of a hill, especially if the slope be easy, and in a manner imperceptible; if a good deal of level ground be near the house; and if it abounds with springs of water: for, being sheltered from the fury of the winds and the violent heat of the sun, a temperate air will be there enjoyed; and the water that descends from the top of the hill, either from springs or rain, will not only supply fountains, canals, and cascades for ornament, but, when it has performed its office, will water the adjacent valleys, and, if it be not suffered to stagnate, will render them fertile and wholesome.

2dly, A good earth or soil is next to be considered; for it is scarce possible to make a fine garden in a bad soil. There are indeed ways to meliorate ground, but they are very expensive; and sometimes, when the expence has been bestowed of laying good earth three feet deep over the whole surface, a whole garden has been ruined, when the roots of the trees have come to reach the natural bottom. To judge of the quality of the soil, observe whether there be any heath, thistles, or such like weeds, growing spontaneously in it; for they are certain signs that the ground is poor. Or if there be large trees growing thereabouts, observe whether they grow crooked, ill shaped, and grubby; and whether they are of a faded green, and full of moss, or infested with vermine: if this be the case, the place is to be rejected. But, on the contrary, if it be covered with good grass fit for pasture, you may then be encouraged to try the depth of the soil. To know this, dig holes in several places, six feet wide and four deep; and if you find three feet of good earth it will do very well, but less than two will not be sufficient. The quality of good ground, is neither to be stony nor too hard to work; neither too dry, too moist, nor too sandy and light; nor too strong and clayey, which is the worst of all for gardens.

3dly, The next requisite is water; the want of which is one of the greatest inconveniences that can attend a garden, and will bring a certain mortality upon whatever is planted in it, especially in the greater droughts that often happen in a hot and dry situation in summer; besides its usefulness in fine gardens for making fountains, canals, cascades, &c. which are the greatest ornaments of a garden.

4thly, The last thing to be considered is the prospect of a fine country; and though this is not so absolutely necessary as water, yet it is one of the most agreeable beauties of a fine garden: besides, if a garden be planted in a low place that has no kind of prospect, it will not only be disagreeable but unwholesome.

In the laying out and planting of gardens, the beauties of nature should always be studied; for the nearer a garden approaches to nature, the longer it will please. According to Mr Miller, the area of a handsome garden may take up 30 or 40 acres, but not more; and the following rules should be observed in the disposition of it. There ought always to be a descent of at least

three steps from the house to the garden; this will render the house more dry and wholesome, and the prospect on entering the garden more extensive.—The first thing that ought to present itself to view should be an open lawn of grass, which ought to be considerably broader than the front of the building; and if the depth be one half more than the width, it will have a better effect: if on the sides of the lawn there are trees planted irregularly, by way of open groves, the regularity of the lawn will be broken, and the whole rendered more like nature. For the convenience of walking in damp weather, this lawn should be surrounded with a gravel walk, on the outside of which should be borders three or four feet wide for flowers: and from the back of these the prospect will be agreeably terminated by a slope of evergreen shrubs; which, however, should never be suffered to exclude agreeable prospects, or the view of handsome buildings. These walks may lead through the different plantations, gently winding about in an easy natural manner; which will be more agreeable than either those long straight walks, too frequently seen in gardens, or those serpentine windings that are twisted about into so many short turns as to render it difficult to walk in them; and as no garden can be pleasing where there is a want of shade and shelter, these walks should lead as soon as possible into plantations, where persons may walk in private, and be sheltered from the wind.

Narrow rivulets, if they have a constant stream, and are judiciously led about a garden, have a better effect than many of the large stagnating ponds or canals so frequently made in large gardens. When wildernesses are intended, they should not be cut into stars and other ridiculous figures, nor formed into mazes of labyrinths, which in a great design appear trifling.

In short, the several parts of a garden should be diversified; but in places where the eye takes in the whole at once, the two sides should be always the same. In the business of designs, the aim should be always at what is natural, great, and noble. The general disposition of a garden and of its parts ought to be accommodated to the different situations of the ground, to humour its inequalities, to proportion the number and sorts of trees and shrubs to each part, and to shut out from the view of the garden no objects that may become ornamental. But for a more extended view of this subject, see the article GARDENING.

A practical attention to a garden, is by some esteemed a degrading employment. It is true, indeed, that pastoral and agricultural manners, if we may form a judgment from the dignified descriptions of Virgil, are greatly degenerated. The employments of shepherds and husbandmen are now become mean and sordid. The work of the garden is usually left to a peasant. Nor is it unreasonable to assign the labour, which wearies without amusement, to those who are sufficiently amused by the prospect of their wages. But the operations of grafting, of inoculating, of pruning, of transplanting, are curious experiments in natural philosophy; and that they are pleasing as well as curious, those can testify who remember what they felt on seeing their attempts in the amusement of practical gardening attended with success. Among the employments suitable to old age, Cicero has enumerated the superintendance of a garden.

**Garden.** It requires no great exertion of mind or body; and its satisfactions are of that kind which please without violent agitation. Its beneficial influence on health is an additional reason for an attention to it at an age when infirmities abound.

In almost every description of the seats of the blessed, ideas of a garden seem to have predominated. The word Paradise itself is synonymous with garden. The fields of Elysium, that sweet region of poetry, are adorned with all that imagination can conceive to be delightful. Some of the most pleasing passages of Milton, are those in which he represents the happy pair engaged in cultivating their blissful abode. Poets have always been delighted with the beauties of a garden. Lucan is represented by Juvenal as reposing in his garden. Virgil's Georgics prove him to have been captivated with rural scenes; though, to the surprise of his readers, he has not assigned a book to the subject of a garden. Our Shenstone made it his study; but, with all his taste and fondness for it, he was not happy in it. The captivating scenes which he created at the Leasowes, afforded him, it is said, little pleasure in the absence of spectators. The truth is, he made the embellishment of his grounds, which should have been the amusement of his life, the business of it; and involved himself in such troubles, by the expences it occasioned, as necessarily excluded tranquil enjoyment.

It is the lot of few, in comparison, to possess territories like his, extensive, and sufficiently well adapted to constitute an ornamented farm. Still fewer are capable of supporting the expence of preserving it in good condition. But let not the rich suppose they have appropriated the pleasures of a garden. The possessor of an acre, or a smaller portion, may receive a real pleasure, from observing the progress of vegetation, even in a plantation of culinary plants. A very limited tract, properly attended to, will furnish ample employment for an individual. Nor let it be thought a mean care; for the same hand that raised the cedar, formed the hyssop on the wall. Even the orchard, cultivated solely for advantage, exhibits beauties unequalled in the shrubbery; nor can the greenhouse produce an appearance to exceed the blossom of the apple and the almond.

*Hanging GARDENS*, in antiquity, gardens raised on arches by Nebuchadnezzar king of Babylon, in order to gratify his wife Amyctis, daughter of Astyages king of Media. Quintus Curtius makes them equal in height to the walls of the city, viz. 50 feet. They contained a square of 400 feet on every side, and were carried up into the air in several terraces laid above one another, and the ascent from terrace to terrace was by stairs 10 feet wide. The arches sustaining the whole pile were raised above one another, and it was strengthened by a wall, surrounding it on every side, of 22 feet in thickness. The floors of each of the terraces were laid in the following manner; on the top of the arches were first laid large flat stones 16 feet long and 4 broad, and over them was a layer of reeds

mixed with a great quantity of bitumen, over which were two rows of bricks closely cemented together by plaster, and over all were laid thick sheets of lead; and lastly, upon the lead was laid the mould of the garden. The mould or earth was of such a depth as to admit the largest trees to take root and grow; and it was covered with various kinds of trees, plants, and flowers. In the upper terrace there was an aqueduct or engine, whereby water was drawn up out of the river for watering the whole garden.

*Floating GARDENS*. We are informed by the abbe Clavigero in his History of Mexico, that when the Mexicans were brought under subjection to the Colhuan and Tepanecan nations, and confined to the miserable little islands in the lake of Mexico, they ceased for some years to cultivate the land, because they had none, until necessity and industry together taught them to form moveable fields and gardens, which floated on the waters of the lake. The method which they pursued to make these, and which they still practise, is extremely simple. They plait and twist willows and roots of marsh plants or other materials together, which are light, but capable of supporting the earth of the garden firmly united. Upon this foundation they lay the light bushes which float on the lake; and over all, the mud and dirt which they draw up from the bottom of the same lake. Their regular figure is quadrangular; their length and breadth various: but generally they are about eight perches long, and not more than three in breadth, and have less than a foot of elevation above the surface of the water. These were the first fields which the Mexicans owned after the foundation of Mexico; there they first cultivated the maize, great pepper, and other plants necessary for their support. In progress of time, as those fields grew numerous from the industry of the people, there were among them gardens of flowers and odoriferous plants, which were employed in the worship of their gods, and served for the recreation of the nobles. At present they cultivate flowers and every sort of garden herbs upon them. Every day of the year, at sunrise, innumerable vessels loaded with various kinds of flowers and herbs, which are cultivated in those gardens, are seen arriving by the canals, at the great market place of that capital. All plants thrive there surprisngly; the mud of the lake is an extremely fertile soil, and requires no water from the clouds. In the largest gardens there is commonly a little tree, and even a little hut to shelter the cultivator and defend him from rain or the sun. When the owner of a garden, or the *Chinampa* as he is usually called, wishes to change his situation, to remove from a disagreeable neighbour, or to come nearer to his own family, he gets into his little vessel, and by his own strength alone, if the garden is small, or with the assistance of others if it is large, he tows it after him, and conducts it wherever he pleases with the little tree and hut upon it. That part of the lake where those floating gardens are, is a place of infinite recreation, where the senses receive the highest possible gratification.



preceding article, were a still greater prodigy. But as they are supposed to have been formed on terraces and the walls of the palace, whither soil was conveyed on purpose, Mr Walpole concludes, 'they were what sumptuous gardens have been in all ages till the present, unnatural, enriched by art, possibly with fountains, statues, balustrades, and summer houses, and were any thing but verdant and rural.'

Others, however, have allowed them greater praise. They seem in many respects, to have been laid out with good taste. Their elevation not only produced a variety and extent of view, but was also useful in moderating the heat. Such a situation would likewise suit a greater variety of trees and plants than a plain surface, and would contain a larger as well as a more diversified extent.

The suiting of the situation to the nature of the trees seems, from the account given by Josephus, to have been one view † in the erecting the building in such a manner. And the success seems to have been answerable, as the trees are said to have flourished extremely well †, and to have grown as tall as in their native situations. On the whole, then, however different these may appear from modern gardens, they seem to have been formed with judgment and taste, and well adapted to the situation and circumstances.

It seems probable, from several circumstances, that the eastern gardens were adjoining to the house or palace to which they belonged. Thus, King Ahasuerus goes immediately from the banquet of wine to walk in the garden of the palace §. The garden of Cyrus, at Sardis, mentioned by Xenophon \*, was probably contiguous to the palace: as was that of Attalus, mentioned by Justin ||. The hanging gardens at Babylon, were not so much adjacent to the palace, as a part of the palace itself, since several of the royal apartments were beneath them ¶.

It is not clear what the taste for gardening was among the Greeks. The Academus, we know, was a wooded shady place; and the trees appear to have been of the olive species. It was situated beyond the limits of the walls, and adjacent to the tombs of the heroes; and though we are nowhere informed of the particular manner in which this grove was disposed or laid out, it may be gathered from Pausanias, in his Attica, that it was an elegant ornamented place. At the entrance was an altar dedicated to Love, which was said to be the first erected to that deity. Within the Academus, were the altars of Prometheus, of the Muses, of Mercury, of Minerva, and Hercules; and at a small distance was the tomb of Plato. So that in all probability, it was highly adapted by art, as well as nature, to philosophic reflection and contemplation.

We are told by Plutarch, that before the time of Cimon, the Academus was a rude and uncultivated spot: but that it was planted by that general, and had water conveyed to it; whether this water was brought merely for use to refresh the trees, or for ornament, does not appear. It was divided into gymnasia, or places of exercise, and philosophic walks, shaded with trees. These are said to have flourished very well, until destroyed by Sylla (when he besieged Athens), as well as those in the Lyceum.

Near the academy were the gardens of the philosophers, of Plato and of the Epicurus; which, however,

were probably but small. The scene of Plato's Dialogue concerning Beauty is elegantly described as being on the banks of the river Ilissus, and under the shade of the plantain; but no artificial arrangement of objects is mentioned, nor any thing which will lead us to imagine the prospect to be any other than merely natural.

Among the Romans, a taste of gardening, any otherwise than as a matter of utility, seems not to have prevailed till a very late period; at least the writers on husbandry, Cato, Varro, Columella, and Palladius, make not the least mention of a garden as an object of pleasure, but solely with respect to its productions of herbs and fruits. The Lucullan gardens are the first we find mentioned of remarkable magnificence; though probably from the extravagance to which these were arrived, they were not the first. Plutarch speaks of them as incredibly expensive, and equal to the magnificence of kings. They contained artificial elevations of ground to a surprising height, of buildings projected into the sea, and vast pieces of water made upon land. In short, his extravagance and expence were so great, that he acquired thence the appellation of the Roman Xerxes. It is not improbable, from the above account, and from the consideration of Lucullus having spent much time in Asia, in a situation wherein he had an opportunity of observing the most splendid constructions of this kind, that these gardens might be laid out in the Asiatic style. The vast masses of building said to have been erected, might have borne some resemblance, in the arrangement and style, to the Babylonian gardens; and the epithet of the Roman Xerxes might be applicable to the taste, as well as to the size and expence of his works.

The Tusculan villa of Cicero, though often mentioned, is not anywhere described in his works, so as to give an adequate idea of the style in which his gardens or grounds were disposed.

There is but little to be traced in Virgil relative to this subject. Pines †, it seems probable, were a favourite ornament in gardens; and flowers §, roses especially, were much esteemed, perfumes indeed having been always highly valued in warm climates. Virgil places Anchises in Elysium, in a grove of bays: and is careful to remark, that they were of the sweet scented kind. The Pæstan roses were chiefly valued for their excellent odour; and the same quality appears to be the cause why they were placed by Tibullus as ornaments to the Elysian fields. There appears also to have prevailed among the Romans a piece of luxury relative to gardens, which is equally prevalent at present among us, namely the forcing of flowers at seasons of the year not suited to their natural blowing: and roses were then, as at present, the principal flowers upon which these experiments were tried, as appears from Martial † and others.

When Roman authors (Mr Walpole remarks), whose climate instilled a wish for cool retreats, speak of their enjoyments in that kind, they sigh for grottoes, caves, and the refreshing hollows of mountains, near ir-rigorous and shady founts; or boast of their porticoes, walks of planes, canals, baths, and breezes from the sea. Their gardens are never mentioned as affording shade and shelter from the rage of the dog star. Pliny has left us descriptions of two of his villas. As he used his Laurentine villa for his winter retreat, it is not surprising

‡ Contra Apion, lib. i. § 19.

† Curt. lib. v.

§ Esther vii. 7. \* Oecon.

|| Lib. xxxvi. c. 4.

¶ Diod. lib. ii.

† Eclog. vii. 65, &c. § Gcor. iv. 113.

† Vide Epigr. lib. vi. ep. 80. lib. xiv. ep. 127. and Lampridius in vit. Elagab.

surprising that the garden makes no considerable part of the account. All he says of it is, that the gestatio or place of exercise, which surrounded the garden (the latter consequently not being very large), was bounded by a hedge of box, and, where that was perished, with rosemary; that there was a walk of vines; and that most of the trees were fig and mulberry, the soil not being proper for any other sorts. On his Tuscan villa he is more diffuse; the garden makes a considerable part of the description:—and what was the principal beauty of that pleasure ground? Exactly what was the admiration of this country about threecore years ago; box trees cut into monsters, animals, letters, and the names of the master and the artificer. In an age when architecture displayed all its grandeur, all its purity, and all its taste; when arose Vespasian's amphitheatre, the temple of Peace, Trajan's forum, Domitian's baths, and Adrian's villa, the ruins and vestiges of which still excite our astonishment and curiosity; a Roman consul, a polished emperor's friend, and a man of elegant literature and taste, delighted in what the mob now scarce admire in a college garden. All the ingredients of Pliny's corresponded exactly with those laid out by London and Wise on Dutch principles. He talks of slopes, terraces, a wilderness, shrubs methodically trimmed, a marble basin, pipes spouting water, a cascade falling into the basin, bay trees alternately planted with planes, and a straight walk from whence issued others parted off by hedges of box and apple trees, with obelisks placed between every two. There wants nothing but the embroidery of a parterre, to make a garden in the reign of Trajan serve for a description of one in that of King William. In one passage above, Pliny seems to have conceived that natural irregularity might be a beauty; *in opere urbanissimo*, says he, *subita velut illati ruris imitatio*. Something like a rural view was contrived amidst so much polished composition. But the idea soon vanished, lineal walks immediately enveloped the slight scene, and names and inscriptions in box again succeeded to compensate for the daring introduction of nature.

In the paintings found at Herculaneum are a few traces of gardens, as may be seen in the second volume of the prints. They are small square enclosures, formed by trellis-work and espaliers, and regularly ornamented with vases, fountains, and caretides, elegantly symmetrical, and proper for the narrow spaces allotted to the garden of a house in a capital city.

From what has been said, it appears how naturally and insensibly the idea of a kitchen garden slid into that which has for so many ages been peculiarly termed a *garden*, and by our ancestors in this country distinguished by the name of a *pleasure garden*. A square piece of ground was originally parted off in early ages for the use of the family:—to exclude cattle, and ascertain the property, it was separated from the fields by a hedge. As pride and desire of privacy increased, the enclosure was dignified by walls; and in climes where fruits were not lavished by the ripening glow of nature and soil, fruit trees were assisted and sheltered from surrounding winds by the like expedient: for the inundation of luxuries, which have swelled into general necessities, have almost all taken their source from the simple fountain of reason.

When the custom of making square gardens enclo-

ed with walls was thus established to the exclusion of nature and prospect, pomp and solitude combined to call for something that might enrich and enliven the insipid and unanimated partition. Fountains, first invented for use, which grandeur loves to disguise and throw out of the question, received embellishments from costly marbles, and at last, to contradict utility, tossed their waste of waters into the air in spouting columns. Art, in the hands of rude man, had at first been made a succedaneum to nature; in the hands of ostentatious wealth, it became the means of opposing nature; and the more it traversed the march of the latter, the more nobility thought its power was demonstrated. Canals measured by the line were introduced in lieu of meandering streams, and terraces were hoisted aloft in opposition to the facile slopes that imperceptibly unite the valley to the hill. Balustrades defended these precipitate and dangerous elevations, and flights of steps rejoined them to the subjacent flat from which the terrace had been dug. Vases and sculpture were added to these unnecessary balconies, and statues furnished the lifeless spot with mimic representations of the excluded sons of men. Thus difficulty and expence were the constituent parts of those sumptuous and selfish solitudes; and every improvement that was made, was but a step farther from nature. The tricks of water-works to wet the unwary, not to refresh the panting spectator; and parterres embroidered in patterns like a petticoat, were but the childish endeavours of fashion and novelty to reconcile greatness to what it had surfeited on. To crown these impotent displays of false taste, the sheers were applied to the lovely wildness of form with which nature has distinguished each various species of tree and shrub. The venerable oak, the romantic beech, the useful elm, even the aspiring circuit of the lime, the regular round of the chestnut, and the almost moulded orange tree, were corrected by such fantastic admirers of symmetry. The compass and square were of more use in plantations than the nurseryman. The measured walk, the quincunx, and the etoile, imposed their unsatisfying sameness on every royal and noble garden. Trees were headed, and their sides pared away; many French groves seem green chests set upon poles. Seats of marble, arbours, and summer houses, terminated every vista; and symmetry, even where the space was too large to permit its being remarked at one view, was so essential, that, as Pope observed,

—————each alley has a brother,  
And half the garden just reflects the other.

Knots of flowers were more defensibly subjected to the same regularity. Leisure, as Milton expressed it,

—————in trim gardens took his pleasure.

In the garden of Marshal de Biron at Paris, consisting of 14 acres, every walk is buttoned on each side by lines of flower pots, which succeed in their seasons.

It does not precisely appear what our ancestors meant by a bower: it was probably an arbour; sometimes it meant the whole frittered enclosure, and in one instance it certainly included a labyrinth. Rosamond's bower was indisputably of that kind; though whether composed of walls or hedges, we cannot determine. A square and a round labyrinth were so capital ingredients of

of a garden formerly, that in Du Cerceau's architecture, who lived in the time of Charles IX. and Henry III. there is scarce a ground plot without one of each.

In Kip's Views of the Seats of our Nobility and Gentry, we see the same tiresome and returning uniformity. Every house is approached by two or three gardens, consisting perhaps of a gravel walk and two grass plats or borders of flowers. Each rises above the other by two or three steps, and as many walls and terraces, and so many iron gates, that we recollect those ancient romances in which every entrance was guarded by nymphs or dragons. Yet though these and such preposterous inconveniences prevailed from age to age, good sense in this country had perceived the want of something at once more grand and more natural. These reflections, and the bounds set to the waste made by royal spoilers, gave origin to Parks. They were contracted forests, and extended gardens. Hentzner says, that, according to Rous of Warwick, the first park was that at Woodstock. If so, it might be the foundation of a legend that Henry II. secured his mistress in a labyrinth: it was no doubt more difficult to find her in a park than in a palace, where the intricacy of the woods and various lodges buried in covert might conceal her actual habitation.

It is more extraordinary that, having so long ago stumbled on the principle of modern gardening, we should have persisted in retaining its reverse, symmetrical and unnatural gardens. That parks were rare in other countries, Hentzner, who travelled over great part of Europe, leads us to suppose, by observing that they were common in England. In France they retain the name, but nothing is more different both in compass and disposition. Their parks are usually square or oblong enclosures, regularly planted with walks of chestnuts or limes, and generally every large town has one for its public recreation.

"One man, one great man we had (continues Mr Walpole), on whom nor education nor custom could impose their prejudices; who, 'on evil days though fallen, and with darkness and solitude compassed round,' judged that the mistaken and fantastic ornaments he had seen in gardens, were unworthy of the Almighty hand that planted the delights of Paradise. He seems with the prophetic eye of taste to have conceived, to have foreseen modern gardening; as Lord Bacon announced the discoveries since made by experimental philosophy. The description of Eden is a warmer and more just picture of the present style than Claud Lorraine could have painted from Hagley or Stourhead. The first lines we shall quote exhibit Stourhead on a more magnificent scale:

Thro' Eden went a river large,  
Nor chang'd his course, but thro' the shaggy hill,  
Pass'd underneath ingulph'd: for God had thrown  
That mountain as his garden mound, high rais'd  
Upon the rapid current——

Hagley seems pictured in what follows:

Which thro' veins  
Of porous earth with kindly thirst updrawn,  
Rose a fresh fountain, and with many a rill  
Water'd the garden——

What colouring, what freedom of pencil, what landscape in these lines!

———from that sapphire fount the crisped brooks,  
Rolling on orient pearl and sands of gold,  
With mazy error under pendant shades,  
Ran nectar, visiting each plant, and fed  
Flow'rs worthy of Paradise, which not *nice art*  
In beds and curious knots, but *nature boon*,  
Pour'd forth profuse on hill, and dale, and plain,  
Both where the morning sun first warmly smote  
The *open field*, and where the unpierc'd shade  
Imbrown'd the noontide bow'rs—*Thus was this place*  
*A happy rural seat of various view.*

Read this transporting description, paint to your mind the scenes that follow, contrast them with the savage but respectable terror with which the poet guards the bounds of his paradise, fenced

———with the champaign head  
Of a steep wilderness, whose hairy sides  
With thicket overgrown, grotesque and wild,  
Access denied; and over head up grew  
Insuperable height of loftiest shade,  
Cedar and pine, and fir, and branching palm,  
A sylvan scene, and, as the ranks ascend,  
Shade above shade, a woody theatre,  
Of stateliest view——

and then recollect, that the author of this sublime vision had never seen a glimpse of any thing like what he has imagined; that his favourite ancients had dropped not a hint of such divine scenery; and that the conceits in Italian gardens, and Theobalds and Nonfuch, were the brightest originals that his memory could furnish. His intellectual eye saw a nobler plan, so little did he suffer by the loss of sight. It sufficed him to have seen the materials with which he could work. The vigour of a boundless imagination told him how a plan might be disposed, that would embellish nature, and restore art to its proper office, the just improvement or imitation of it.

"Now let us return to an admired writer, posterior to Milton, and see how cold, how insipid, how tasteless, is his account of what he pronounced a perfect garden. We speak not of his style, which it was not necessary for him to animate with the colouring and glow of poetry. It is his want of ideas, of imagination, of taste, that deserve censure, when he dictated on a subject which is capable of all the graces that a knowledge of beautiful nature can bestow. Sir William Temple was an excellent man; Milton, a genius of the first order.

"We cannot wonder that Sir William declares in favour of parterres, fountains, and statues, as necessary to break the sameness of large grass plots, which he thinks have an ill effect upon the eye, when he acknowledges that he discovers fancy in the gardens of Alcinous. Milton studied the ancients with equal enthusiasm, but no bigotry; and had judgment to distinguish between the want of invention and the beauties of poetry. Compare his paradise with Homer's garden, both ascribed to a celestial design. For Sir William, it is just to observe, that his ideas centered in a fruit garden. He had the honour of giving to his country many delicate fruits,

fruits, and he thought of little else than disposing them to the best advantage.

“The best figure of a garden (says he) is either a square or an oblong, and either upon a flat or a descent: they have all their beauties, but the best I esteem an oblong upon a descent. The beauty, the air, the view make amends for the expence, which is very great in finishing and supporting the terrace walks, in levelling the parterres, and in the stone stairs that are necessary from one to the other. The perfectest figure of a garden I ever saw, either at home or abroad, was that of Moor Park in Hertfordshire, when I knew it about 30 years ago. It was made by the Countess of Bedford, esteemed among the greatest wits of her time, and celebrated by Dr Donne; and with very great care, excellent contrivance, and much cost; but greater sums may be thrown away without effect or honour, if there want sense in proportion to money, or ‘if nature be not followed;’ which I take to be the great rule in this, and perhaps in every thing else, as far as the conduct not only of our lives but our governments.’ [We shall see how natural that admired garden was.] ‘Because I take the garden I have named to have been in all kinds the most beautiful and perfect, at least in the figure and disposition, that I ever have seen, I will describe it for a model to those that meet with such a situation, and are above the regards of common expence. It lies on the side of a hill, upon which the house stands, but not very steep. The length of the house, where the best rooms and of most use or pleasure are, lies upon the breadth of the garden; the great parlour opens into the middle of a terrace gravel walk that lies even with it, and which may be, as I remember, about 300 paces long, and broad in proportion; the border set with standard laurels and at large distances, which have the beauty of orange trees out of flower and fruit. From this walk are three descents by many stone steps, in the middle and at each end, into a very large parterre. This is divided into quarters by gravel walks, and adorned with two fountains and eight statues in the several quarters. At the end of the terrace walk are two summer houses, and the sides of the parterre are ranged with two large cloisters open to the garden, upon arches of stone, and ending with two other summer houses even with the cloisters, which are paved with stone, and designed for walks of shade, there being none other in the whole parterre. Over these two cloisters are two terraces covered with lead and fenced with balusters; and the passage into these airy walks is out of the two summer houses at the end of the first terrace walk. The cloister facing the south is covered with vines, and would have been proper for an orange house, and the other for myrtles or other more common greens, and had, I doubt not, been cast for that purpose, if this piece of gardening had been then in as much vogue as it is now. From the middle of this parterre is a descent by many steps flying on each side of a grotto, that lies between them, covered with lead and flat, into the lower garden, which is all fruit trees ranged about the several quarters of a wilderness, which is very shady; the walks here are all green, the grotto embellished with figures of shell rock-work, fountains, and water works. If the hill had not ended with the lower garden, and the wall were not bounded by a common way that goes through the

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park, they might have added a third quarter of all greens; but this want is supplied by a garden on the other side the house, which is all of that sort, very wild, shady, and adorned with rough rock work and fountains. This was Moor Park when I was acquainted with it, and the sweetest place, I think, that I have seen in my life, either before or since, at home or abroad.’

“It is unnecessary to add any remarks on this description. Any man might design and build as sweet a garden, who had been born in and never stirred out of Holborn. It was not, however, peculiar to Sir William Temple to think in that manner. How many Frenchmen are there who have seen our gardens, and still prefer natural flights of steps and shady cloisters covered with lead! Le Naute, the architect of the groves and grottoes at Versailles, came hither on a mission to improve our taste. He planted St James’s and Greenwich Parks—no great monuments of his invention.

“To do farther justice to Sir William Temple, we must not omit what he adds. ‘What I have said of the best forms of gardens is meant only of such as are in some sort regular; for there may be other forms wholly irregular, that may, for ought I know, have more beauty than any of the others: but they must owe it to some extraordinary dispositions of nature in the seat, or some great race of fancy or judgment in the contrivance, which may reduce many disagreeing parts into some figure, which shall yet, upon the whole, be very agreeable. Something of this I have seen in some places, but heard more of it from others who have lived much among the Chineses, a people whose way of thinking seems to lie as wide of ours in Europe as their country does. Their greatest reach of imagination is employed in contriving figures, where the beauty shall be great and strike the eye, but without any order or disposition of parts, that shall be commonly or easily observed. And though we have hardly any notion of this sort of beauty, yet they have a particular word to express it: and when they find it hit their eye at first sight, they say the Sharawadgi is fine or is admirable, or any such expression of esteem: but I should hardly advise any of these attempts in the figure of gardens among us; they are adventures of too hard achievement for any common hands; and though there may be more honour if they succeed well, yet there is more dishonour if they fail, and it is twenty to one they will; whereas in regular figures it is hard to make any great and remarkable faults.’

“Fortunately Kent and a few others were not quite so timid, or we might still be going up and down stairs in the open air. It is true, we have heard much lately, as Sir William Temple did, of irregularity and imitations of nature in the gardens or grounds of the Chinese. The former is certainly true: they are as whimsically irregular, as European gardens are formally uniform and unvaried:—but with regard to nature, it seems as much avoided, as in the squares and oblongs and straight lines of our ancestors. An artificial perpendicular rock starting out of a flat plain, and connected with nothing, often pierced through in various places with oval hollows, has no more pretension to be deemed natural than a lincal terrace or a parterre. The late Mr Joseph Spence, who had both taste and zeal

for the present style, was so persuaded of the Chinese emperor's pleasure ground being laid out on principles resembling ours, that he translated and published, under the name of Sir Harry Beaumont, a particular account of that enclosure from the collection of the letters of the Jesuits. But except a determined irregularity, one can find nothing in it that gives any idea of attention being paid to nature. It is of vast circumference, and contains 200 palaces, besides as many contiguous for the eunuchs, all gilt, painted, and varnished. There are raised hills from 20 to 60 feet high, streams and lakes, and one of the latter five miles round. These waters are passed by bridges:—but even their bridges must not be straight—they serpentine as much as the rivulets, and are sometimes so long as to be furnished with resting places, and begin and end with triumphal arches. The colonnades undulate in the same manner. In short, this pretty gaudy scene is the work of caprice and whim, and, when we reflect on their buildings, presents no image but that of unsubstantial tawdriness. Nor is this all. Within this fantastic paradise is a square town, each side a mile long. Here the eunuchs of the court, to entertain his imperial majesty with the bustle and business of the capital in which he resides, but which it is not of his dignity ever to see, act merchants and all sorts of trades, and even designedly exercise for his royal amusement every art of knavery that is practised under his auspicious government. Methinks this is the childish solace and repose of grandeur, not a retirement from affairs to the delights of rural life. Here too his majesty plays at agriculture: there is a quarter set apart for that purpose; the eunuchs sow, reap, and carry in their harvest, in the imperial presence; and his majesty returns to Peking, persuaded that he has been in the country.

“Having thus cleared our way by ascertaining what have been the ideas on gardening in all ages as far as we have materials to judge by, it remains to show to what degree Mr Kent invented the new style, and what hints he had received to suggest and conduct his undertaking.

“We have seen what Moor Park was, when pronounced a standard. But as no succeeding generation in an opulent and luxurious country contents itself with the perfection established by its ancestors, more perfect perfection was still sought; and improvements had gone on, till London and Wise had stocked all our gardens with giants, animals, monsters, coats of arms, and mottoes, in yew, box, and holly. Absurdity could go no farther, and the tide turned. Bridgman, the next fashionable designer of gardens, was far more chaste; and whether from good sense, or that the nation had been struck and reformed by the admirable paper in the *Guardian*, N<sup>o</sup> 173, he banished verdant sculpture, and did not even revert to the square precision of the foregoing age. He enlarged his plans, disdained to make every division tally to its opposite; and though he still adhered much to straight walks with high clipped hedges, they were only his great lines; the rest he diversified by wildness, and with loose groves of oak, though still within surrounding hedges. As his reformation gained footing, he ventured, in the royal garden at Richmond, to introduce cultivated fields, and even morsels of a forest appearance, by the sides of

those endless and tiresome walks that stretched out of one into another without intermission. But this was not till other innovators had broke loose too from rigid symmetry.

“But the capital stroke, the leading step to all that has followed, was the destruction of walls for boundaries, and the invention of fosses—an attempt then deemed so astonishing, that the common people called them Ha! Ha's! to express their surprise at finding a sudden and unperceived check to their walk.

“A sunk fence may be called the *leading step*, for these reasons. No sooner was this simple enchantment made, than levelling, mowing, and rolling, followed. The contiguous ground of the park without the sunk fence was to be harmonized with the lawn within; and the garden in its turn was to be set free from its prime regularity, that it might assort with the wilder country without. The sunk fence ascertained the specific garden; but that it might not draw too obvious a line of distinction between the neat and the rude, the contiguous out-lying parts came to be included in a kind of general design; and when nature was taken into the plan, under improvements, every step that was made pointed out new beauties, and inspired new ideas. At that moment appeared Kent, painter enough to taste the charms of landscape, bold, and opinionative enough to dare and to dictate, and born with a genius to strike out a great system from the twilight of imperfect essays. He leaped the fence, and saw that all nature was a garden. He felt the delicious contrast of hill and valley changing imperceptibly into each other, tasted the beauty of the gentle swell or concave scoop, and remarked how loose groves crowned an easy eminence with happy ornament; and while they called in the distant view between their graceful stems, removed and extended the perspective by delusive comparison.

“Thus the pencil of his imagination bestowed all the arts of landscape on the scenes he handled. The great principles on which he worked were perspective, and light and shade. Groups of trees broke too uniform or too extensive a lawn; evergreens and woods were opposed to the glare of the champaign; and where the view was less fortunate, or so much exposed as to be beheld at once, he blotted out some parts by thick shades, to divide it into variety, or to make the richest scene more enchanting by reserving it to a farther advance of the spectator's step. Thus, selecting favourite objects, and veiling deformities by screens of plantation; sometimes allowing the rudest waste to add its soil to the richest theatre; he realized the compositions of the greatest masters in painting. Where objects were wanting to animate his horizon, his taste as an architect could bestow immediate termination. His buildings, his seats, his temples, were more the works of his pencil than of his compasses. We owe the restoration of Greece and the diffusion of architecture to his skill in landscape.

“But of all the beauties he added to the face of this beautiful country, none surpassed his management of water. Adieu to canals, circular basins, and cascades tumbling down marble steps, that last absurd magnificence of Italian and French villas. The forced elevation of cataracts was no more. The gentle stream was taught to serpentine seemingly at its pleasure; and where

where discontinued by different levels, its course appeared to be concealed by thickets properly interspersed, and glittered again at a distance, where it might be supposed naturally to arrive. Its borders were smoothed, but preserved their waving irregularity. A few trees scattered here and there on its edges sprinkled the tame bank that accompanied its meanders; and when it disappeared among the hills, shades descending from the heights leaned towards its progress, and framed the distant point of light under which it was lost, as it turned aside to either hand of the blue horizon.

“ Thus, dealing in none but the colours of nature, and catching its most favourable features, men saw a new creation opening before their eyes. The living landscape was chastened or polished, not transformed. Freedom was given to the forms of trees: they extended their branches unrestricted; and where any eminent oak, or master beech, had escaped maiming and survived the forest, bush and bramble was removed, and all its honours were restored to distinguish and shade the plain. Where the united plumage of an ancient wood extended wide its undulating canopy, and stood venerable in its darkness, Kent thinned the foremost ranks, and left but so many detached and scattered trees, as softened the approach of gloom, and blended a chequered light with the thus lengthened shadows of the remaining columns.

“ Succeeding artists have added new master strokes to these touches; perhaps improved or brought to perfection some that have been named. The introduction of foreign trees and plants, which we owe principally to Archibald duke of Argyle, contributed essentially to the richness of colouring so peculiar to our modern landscape. The mixture of various greens, the contrast of forms between our forest trees and the northern and West Indian firs and pines, are improvements more recent than Kent, or but little known to him. The weeping willow, and every florid shrub, each tree of delicate or bold leaf, are new tints in the composition of our gardens.

“ But just as the encomiums are that have been bestowed on Kent's discoveries, he was neither without assistance or faults. Mr Pope undoubtedly contributed to form his taste. The design of the prince of Wales's garden at Carlton house was evidently borrowed from the poet's at Twickenham. There was a little of affected modesty in the latter, when he said, of all his works he was most proud of his garden. And yet

it was a singular effort of art and taste to impress so much variety and scenery on a spot of five acres. The passing through the gloom from the grotto to the opening day, the retiring and again assembling shades, the dusky groves, the larger lawn, and the solemnity of the termination at the cypresses that lead up to his mother's tomb, are managed with exquisite judgment; and though Lord Peterborough assisted him

To form his quincunx and to rank his vines,

those were not the most pleasing ingredients of his little perspective.

“ Having routed professed art (for the modern gardener exerts his talents to conceal his art), Kent, like other reformers, knew not how to stop at the just limits. He had followed Nature, and imitated her so happily, that he began to think all her works were equally proper for imitation. In Kensington garden he planted dead trees to give a greater air of truth to the scene—but he was soon laughed out of this excess. His ruling principle was, that nature abhors a straight line. His mimics (for every genius has his apes,) seemed to think that she could love nothing but what was crooked. Yet so many men of taste of all ranks devoted themselves to the new improvements, that it is surprising how much beauty has been struck out, with how few absurdities. Still in some lights the reformation seems to have been pushed too far. Though an avenue crossing a park or separating a lawn, and intercepting views from the seat to which it leads, are capital faults; yet a great avenue cut through woods, perhaps before entering a park, has a noble air, and,

Like footmen running before coaches

To tell the inn what lord approaches,

announces the habitation of some man of distinction. In other places the total banishment of all particular neatness immediately about a house, which is frequently left gazing by itself in the middle of a park, is a defect. Sheltered and even close walks, in so very uncertain a climate as ours, are comforts ill exchanged for the few picturesque days that we enjoy; and whenever a family can purloin a warm and even something of an old-fashioned garden from the landscape designed for them by the undertaker in fashion, without interfering with the picture, they will find satisfactions in those days that do not invite strangers to come and see their improvements.”

## PART I. PRINCIPLES OF GARDENING.

GARDENING, in the perfection to which it has been lately brought in Britain, is entitled to a place of considerable rank among the liberal arts. It is (says Mr Wheatley) as superior to landscape painting as a reality to a representation: it is an exertion of fancy; a subject for taste; and being released now from the restraints of regularity, and enlarged beyond the purposes of domestic convenience, the most beautiful, the most simple, the most noble scenes of nature, are all

within its province. For it is no longer confined to the spots from which it takes its name; but, as already observed, regulates also the disposition and embellishment of a park, a farm, a forest, &c.: and the business of a gardener is to select and apply whatever is great, elegant, or characteristic in any of them; to discover, and to show all the advantages of the place upon which he is employed; to supply its defects, to correct its faults, and to improve its beauties.

Ground,  
Wood.

SECT. I. *Materials of Gardening.*

THESE may be divided into two general classes; *Natural* and *Facitious*.

§ 1. *Of the NATURAL MATERIALS.*

These, according to Mr Wheatley's enumeration, are—Ground, Wood, Water, and Rocks.

I. GROUND. By this is meant that portion of naked surface which is included within the place to be improved; whether that surface be swamp, lawn, roughet, or broken ground; and whether it be a height, a valley, a plain, or a composition of swells, dips, and levels.

† Page 62. The following passage has been quoted from Mr Gilpin's observations on the Wye †, as affording a sublime idea of what ground ought to be.—“ Nothing (says he) gives so just an idea of the beautiful swellings of ground as those of water, where it has sufficient room to undulate and expand. In ground which is composed of very refractory materials, you are presented often with harsh lines, angular insertions, and disagreeable abruptnesses. In water, whether in gentle or in agitated motion, all is easy, all is softened into itself; and the hills and valleys play into each other in a variety of the most beautiful forms. In agitated water, abruptnesses indeed there are, but yet they are such abruptnesses as in some part or other unite properly with the surface around them; and are on the whole peculiarly harmonious. Now, if the ocean in any of these swellings and agitations could be arrested and fixed, it would produce that pleasing variety which we admire in ground. Hence it is common to fetch our images from water, and apply them to land: we talk of an undulating line, a playing lawn, and a billowy surface; and give a much stronger and more adequate idea by such imagery, than plain language could possibly present.”

The exertions of art, however, are here inadequate; and the artist ought not to attempt to create a mountain, a valley or a plain: he should but rarely meddle even with the smaller inequalities of grounds. Roughets and broken ground may generally be reduced to lawn, or hid with wood; and a swamp may be drained or covered with water; whilst lawn may be variegated at pleasure by wood, and sometimes by water.

II. WOOD, as a general term, comprehends all trees and shrubs in whatever disposition; but it is specifically applied in a more limited sense, and in that sense we shall now use it.

Every plantation must be either a *wood*, a *grove*, or *clump*. A wood is composed both of trees and underwood, covering a considerable space. A grove consists of trees without underwood. A clump differs from either only in extent: it may be either close or open; when close, it is sometimes called a *thicket*; when open, a *group of trees*; but both are equally clumps, whatever may be the shape or situation.

1. One of the noblest objects in nature (Mr Wheatley observes) is the *surface of a large thick wood*, commanded from an eminence, or seen from below hanging

on the side of a hill. The latter is generally the more interesting object. Its aspiring situation gives it an air of greatness; its termination is commonly the horizon; and, indeed, if it is deprived of that splendid boundary, if the brow appears above it (unless some very peculiar effect characterises that brow), it loses much of its magnificence: it is inferior to a wood which covers a less hill from the top to the bottom; for a whole space filled is seldom little. But a wood commanded from an eminence is generally no more than a part of the scene below; and its boundary is often inadequate to its greatness. To continue it, therefore, till it winds out of sight, or loses itself in the horizon, is generally desirable: but then the varieties of its surface grow confused as it retires; while those of a hanging wood are all distinct, the furthest parts are held up to the eye, and none are at a distance though the whole be extensive.

The varieties of a surface are essential to the beauty of it: a continued smooth shaven level of foliage is neither agreeable nor natural; the different growths of trees commonly break it in reality, and their shadows still more in appearance. These shades are so many tints, which, undulating about the surface, are its greatest embellishment; and such tints may be produced with more effect, and more certainty, by a judicious mixture of greens; at the same time an additional variety may be introduced, by grouping and contrasting trees very different in shape from each other; and whether variety in the greens or in the forms be the design, the execution is often easy, and seldom to a certain degree impossible. In raising a young wood, it may be perfect. In old woods, there are many spots which may be either thinned or thickened: and there the characteristic distinctions should determine what to plant, or which to leave; at the least will often point out those which, as blemishes, ought to be taken away; and the removal of two or three trees will sometimes accomplish the design. The number of beautiful forms and agreeable masses, which may decorate the surface, is so great, that where the place will not admit of one, another is always ready; and as no delicacy of finishing is required, no minute exactness is worth regarding; great effects will not be disconcerted by small obstructions and little disarrangements.

The contrasts, however, of masses and of groups must not be too strong, where *greatness* is the character of the wood; for unity is essential to greatness: and if direct opposites be placed close together, the wood is no longer one object; it is only a confused collection of several separate plantations. But if the progress be gradual from the one to the other, shapes and tints widely different may assemble on the same surface; and each should occupy a considerable space: a single tree, or a small cluster of trees, in the midst of an extensive wood, is in size but a speck, and in colour but a spot; the groups and the masses must be large to produce any sensible variety.

When, in a romantic situation, very broken ground is overspread with wood, it may be proper on the surface of the wood to mark the inequalities of the ground. *Rudeness*, not greatness, is the prevailing idea; and a choice directly the reverse of that which is productive of unity will produce it. Strong contrasts, even oppo-

Wood.

Of the surface of a wood.

<sup>Wood.</sup> sitions, may be eligible; the aim is rather to disjoint than to connect: a deep hollow may sink into dark greens; an abrupt bank may be shown by a rising stage of aspiring trees, a sharp ridge by a narrow line of conical shapes: firs are of great use upon such occasions; their tint, their form, their singularity, recommend them.

A hanging wood of thin forest trees, and seen from below, is seldom pleasing: these few trees are by the perspective brought nearer together; it loses the beauty of a thin wood, and is defective as a thick one: the most obvious improvement, therefore, is to thicken it. But, when seen from an eminence, a thin wood is often a lively and elegant circumstance in a view; it is full of objects; and every separate tree shows its beauty. To increase that vivacity which is the peculiar excellence of a thin wood, the trees should be characteristically distinguished both in their tints and their shapes; and such as for their airiness have been proscribed in a thick wood, are frequently the most eligible here. Differences also in their growths are a further source of variety; each should be considered as a distinct object, unless where a small number are grouped together; and then all that compose the little cluster must agree: but the groups themselves, for the same reason as the separate trees, should be strongly contrasted; the continued underwood is their only connexion, and that is not affected by their variety.

<sup>2</sup>  
Of the outline of a wood.

Though the surface of a wood, when commanded, deserves all these attentions, yet the *outline* more frequently calls for our regard: it is also more in our power; it may sometimes be great, and may always be beautiful. The first requisite is irregularity. That a mixture of trees and underwood should form a long straight line, can never be natural; and a succession of easy sweeps and gentle rounds, each a portion of a greater or less circle, composing all together a line literally serpentine, is, if possible, worse. It is but a number of regularities put together in a disorderly manner, and equally distant from the beautiful both of art and of nature. The true beauty of an outline consists more in breaks than in sweeps; rather in angles than in rounds; in variety, not in succession.

Every variety in the outline of a wood must be a *prominence* or a *recess*. Breadth in either is not so important as length to the one and depth to the other. If the former ends in an angle, the latter diminishes to a point; they have more force than a shallow dent, or a dwarf excrescence, how wide soever. They are greater deviations from the continued line which they are intended to break; and their effect is to enlarge the wood itself, which seems to stretch from the most advanced point, back beyond the most distant to which it retires. The extent of a large wood on a flat, not commanded, can by no circumstance be so manifestly shown as by a deep recess; especially if that recess wind so as to conceal the extremity, and leave the imagination to pursue it. On the other hand, the poverty of a shallow wood might sometimes be relieved by here and there a prominence, or clumps which by their apparent junction should seem to be prominences from it. A deeper wood with a continued outline, except when commanded, would not appear so considerable.

An inlet into a wood seems to have been cut, if the opposite points of the entrance tally; and that show of

art depreciates its merit: but a difference only in the situation of those points, by bringing one more forward than the other, prevents the appearance, though their forms be similar. Other points, which distinguish the great parts, should in general be strongly marked: a short turn has more spirit in it than a tedious circuit; and a line broken by angles has a precision and firmness, which in an undulated line are wanting; the angles should indeed commonly be a little softened; the rotundity of the plant which forms them is sometimes sufficient for the purpose; but if they are mellowed down too much, they lose all meaning. Three or four large parts thus boldly distinguished, will break a very long outline. When two woods are opposed on the sides of a narrow glade, neither has so much occasion for variety in itself as if it were single; if they are very different from each other, the contrast supplies the deficiency to each, and the interval between them is full of variety. The form of that interval is indeed of as much consequence as their own: though the outlines of both the woods be separately beautiful, yet if together they do not cast the open space into an agreeable figure, the whole scene is not pleasing; and a figure is never agreeable, when the sides too closely correspond: whether they are exactly the same, or exactly the reverse of each other, they equally appear artificial.

Every variety of outline hitherto mentioned may be traced by the underwood alone; but frequently the same effects may be produced with more ease, and with much more beauty, by a few trees standing out from the thicket, and belonging, or seeming to belong, to the wood, so as to make a part of its figure. Even where they are not wanted for that purpose, detached trees are such agreeable objects, so distinct, so light, when compared to the covert about them, that skirting along it in some parts, and breaking it in others, they give an unaffected grace, which can no otherwise be given to the outline. They have a still further effect, when they stretch across the whole breadth of an inlet, or before part of a recess into the wood; they are themselves shown to advantage by the space behind them; and that space, seen between their stems they in return throw into an agreeable perspective.

<sup>3</sup>  
Of a grove.

2. The prevailing character of a wood is generally grandeur: the principal attention therefore which it requires, is to prevent the excesses of that character, to diversify the uniformity of its extent, to lighten the unwieldiness of its bulk, and to blend graces with greatness. The character of a *grove* is beauty. Fine trees are lovely objects: a grove is an assemblage of them; in which every individual retains much of its own peculiar elegance, and whatever it loses is transferred to the superior beauty of the whole. To a grove, therefore, which admits of endless variety in the disposition of the trees, differences in their shapes and their greens are seldom very important, and sometimes they are detrimental. Strong contrasts scatter trees which are thinly planted, and which have not the connexion of underwood; they no longer form one plantation; they are a number of single trees. A thick grove is not indeed exposed to this mischief, and certain situations may recommend different shapes and different greens for their effects upon the surface; but in the outline they are seldom much regarded. The eye attracted into the depth

<sup>Wood.</sup>  
Wheatley's  
Observat.  
on Modern  
Gardening.

Wood.

Ibid.

of the grove, passes by little circumstances at the entrance; even varieties in the form of the line do not always engage the attention; they are not so apparent as in a continued thicket, and are scarcely seen if they are not considerable.

But the surface and the outline are not the only circumstances to be attended to. Though a grove be beautiful as an object, it is besides delightful as a spot to walk or to sit in; and the choice and the disposition of the trees for effects within, are therefore a principal consideration. Mere irregularity alone will not please: strict order is there more agreeable than absolute confusion: and some meaning better than none. A regular plantation has a degree of beauty; but it gives no satisfaction, because we know that the same number of trees might be more beautifully arranged. A disposition, however, in which the lines only are broken, without varying the distances, is equally improper. The trees should gather into groups, or stand in various irregular lines, and describe several figures: the intervals between them should be contrasted both in shape and in dimensions: a large space should in some places be quite open; in others the trees should be so close together, as hardly to leave a passage between them; and in others as far apart as the connexion will allow. In the forms and the varieties of these groups, these lines, and these openings, principally consists the interior beauty of a grove.

† New  
Esler in  
Surrey.

The force of them is most strongly illustrated at Claremont †, where the walk to the cottage, though destitute of many natural advantages, and eminent for none; though it commands no prospect; though the water below it is a trifling pond; though it has nothing, in short, but inequality of ground to recommend it; is yet the finest part of the garden: for a grove is there planted in a gently curved direction, all along the side of a hill, and on the edge of a wood, which rises above it. Large recesses break it into several clumps, which hang down the declivity: some of them approaching, but none reaching quite to the bottom. These recesses are so deep as to form great openings in the midst of the grove; they penetrate almost to the covert: but the clumps being all equally suspended from the wood; and a line of open plantation, though sometimes narrow, running constantly along the top; a continuation of grove is preserved, and the connexion between the parts is never broken. Even a group, which near one of the extremities stands out quite detached, is still in style so similar to the rest as not to lose all relation. Each of these clumps is composed of several others still more intimately united; each is full of groups, sometimes of no more than two trees, sometimes of four or five, and now and then in larger clusters; an irregular waving line, issuing from some little crowd, loses itself in the next; or a few scattered trees drop in a more distant succession from the one to the other. The intervals, winding here like a glade, and widening there into broader openings, differ in extent, in figure, and direction; but all the groups, the lines, and the intervals, are collected together into large general clumps, each of which is at the same time both compact and free, identical and various. The whole is a place wherein to tarry with secure delight, or saunter with perpetual amusement.

The grove at Esler place was planted by the same masterly hand; but the necessity of accommodating the

Wood.

young plantation to some large trees which grew there before, has confined its variety. The groups are few and small: there was not room for larger or for more; there were no opportunities to form continued narrow glades between opposite lines; the vacant spaces are therefore chiefly irregular openings, spreading every way, and great differences of distance between the trees are the principal variety; but the grove winds along the bank of a large river, on the side and at the foot of a very sudden ascent, the upper part of which is covered with wood. In one place, it presses close to the covert; retires from it in another; and stretches in a third across a bold recess, which runs up high into the thicket. The trees sometimes overspread the flat below; sometimes leave an open space to the river; at other times crown the brow of a large knoll, climb up a steep, or hang on a gentle declivity. These varieties in the situation more than compensate for the want of variety in the disposition of the trees; and the many happy circumstances which concur,

—In Esler's peaceful grove,  
Where Kent and Nature vie for Pelham's love,

render this little spot more agreeable than any at Claremont. But though it was right to preserve the trees already standing, and not to sacrifice great present beauties to still greater in futurity; yet this attention has been a restraint; and the grove at Claremont, considered merely as a plantation, is in delicacy of taste, and fertility of invention, superior to that at Esler.

It is, however, possible to secure both a present and a future effect, by fixing first on a disposition which will be beautiful when the trees are large, and then intermingling another which is agreeable while they are small. These occasional trees are hereafter to be taken away; and must be removed in time, before they become prejudicial to the others.

The consequence of variety in the disposition, is variety in the light and shade of the grove; which may be improved by the choice of the trees. Some are impenetrable to the fiercest sunbeam; others let in here and there a ray between the large masses of their foliage; and others, thin both of boughs and of leaves, only chequer the ground. Every degree of light and shade, from a glare to obscurity, may be managed, partly by the number, and partly by the texture, of the trees. Differences only in the manner of their growths have also corresponding effects: there is a closeness under those whose branches descend low, and spread wide; a space and liberty where the arch above is high; and frequent transitions from the one to the other are very pleasing. These still are not all the varieties of which the interior of a grove is capable; trees, indeed, whose branches nearly reach the ground, being each a sort of thicket, are inconsistent with an open plantation: but though some of the characteristic distinctions are thereby excluded, other varieties more minute succeed in their place; for the freedom of passage throughout brings every tree in its turn near to the eye, and subjects even differences in foliage to observation. These, slight as they may seem, are agreeable when they occur; it is true, they are not regretted when wanting; but a defect of ornament is not necessarily a blemish.

3. It has been already observed, that *clumps* differ <sup>4</sup>Of Clumps, only

<sup>Wood.</sup> only in extent from woods; if they are close; or from groves, if they are open: they are small woods, and small groves, governed by the same principles as the larger, after allowances made for their dimensions. But besides the properties they may have in common with woods or with groves, they have others peculiar to themselves which require examination.

<sup>Ibid.</sup>

They are either *independent* or *relative*: when independent, their beauty, as single objects, is solely to be attended to; when relative, the beauty of the individuals must be sacrificed to the effect of the whole, which is the greater consideration.

The *occasions* on which independent clumps may be applied, are many. They are often desirable as beautiful objects in themselves; they are sometimes necessary to break an extent of lawn, or a continued line whether of ground or of plantation; but on all occasions a jealousy of art constantly attends them, which irregularity in their figure will not always alone remove. Though elevations show them to advantage, yet a hillock evidently thrown up on purpose to be crowned with a clump, is artificial to a degree of disgust: some of the trees should therefore be planted on the sides, to take off that appearance. The same expedient may be applied to clumps placed on the brow of a hill, to interrupt its sameness: they will have less ostentation of design, if they are in part carried down either declivity. The objection already made to planting many along such a brow, is on the same principle: a single clump is less suspected of art; if it be an open one, there can be no finer situation for it, than just at the point of an abrupt hill, or on a promontory into a lake or a river. It is in either a beautiful termination, distinct by its position, and enlivened by an expanse of sky or of water about and beyond it. Such advantages may balance little defects in its form: but they are lost if other clumps are planted near it; art then intrudes, and the whole is displeasing.

But though a multiplicity of clumps, when each is an independent object, seldom seems natural; yet a number of them may, without any appearance of art, be admitted into the same scene, if they bear a *relation* to each other: if by their succession they diversify a continued outline of wood, if between them they form beautiful glades, if altogether, they cast an extensive lawn into an agreeable shape, the *effect* prevents any scrutiny into the means of producing it. But when the reliance on that effect is so great, every other consideration must give way to the beauty of the whole. The figure of the glade, of the lawn, or of the wood, are principally to be attended to: the finest clumps, if they do not fall easily into the great lines, are blemishes; their connexions, their contrasts, are more important than their forms.

<sup>5</sup> Of a Lake. III. WATER. All inland water is either *running* or *stagnated*. When stagnated, it forms a *lake* or a *pool*, which differ only in extent; and a *pool* and a *pond* are the same. Running waters are either a *rivulet*, a *river*, or a *rill*; and these differ only in breadth: a *rivulet* and a *brook* are synonymous terms; a *stream* and a *current* are general names for all.

1. Space or expansion is essential to a *lake*. It cannot be too large as a subject of description or of contemplation; but the eye receives little satisfaction

when it has not a form on which to rest: the ocean itself hardly atones by all its grandeur for its infinity; and a prospect of it is, therefore, always most agreeable, when in some part, at no great distance, a reach of shore, a promontory, or an island, reduces the immensity into shape. An artificial lake, again, may be comparatively extravagant in its dimensions. It may be so out of proportion to its appendages, as to seem a waste of water; for all size is in some respects relative: if this exceeds its due dimensions, and if a flatness of shore beyond it adds still to the dreariness of the scene; wood to raise the banks, and objects to distinguish them, are the remedies to be employed. If the length of a piece of water be too great for its breadth, so as to destroy all idea of circuit, the extremities should be considered as too far off, and made important to give them proximity; while at the same time the breadth may be favoured, by keeping down the banks on the sides. On the same principle, if the lake be too small, a low shore will, in appearance, increase the extent.

But it is not necessary that the whole scene be bounded: if form be impressed on a considerable part, the eye can, without disgust, permit a large reach to stretch beyond its ken; it can even be pleased to observe a tremulous motion in the horizon, which shows that the water has not there yet attained its termination. Still short of this, the extent may be kept in uncertainty; a hill or a wood may conceal one of the extremities, and the country beyond it, in such a manner as to leave room for the supposed continuation of so large a body of water. Opportunities to choose this shape are frequent, and it is the most perfect of any: the scene is closed, but the extent of the lake is undetermined; a complete form is exhibited to the eye, while a boundless range is left open to the imagination.

But mere form will only give content, not delight: that depends upon the outline, which is capable of exquisite beauty; and the *bays*, the *creeks*, and the *promontories*, which are ordinary parts of that outline, together with the accidents of *islands*, of *inlets*, and of *outlets* to rivers, are in their shapes and their combinations an inexhaustible fund of variety.

Bays, creeks, and promontories, however, though extremely beautiful, should not be very numerous: for a shore broken into little points and hollows has no certainty of outline; it is only ragged, not diversified; and the distinctness and simplicity of the great parts are hurt by the multiplicity of subdivisions. But islands, though the channels between them be narrow, do not so often derogate from greatness: they intimate a space beyond them whose boundaries do not appear; and remove to a distance the shore which is seen in perspective between them. Such partial interruptions of the sight suggest ideas of extent to the imagination.

2. Though the windings of a *river* are proverbially descriptive of its course; yet without being perpetually wreathed, it may be natural. Nor is the character expressed only by the turnings. On the contrary, if they are too frequent and sudden, the current is reduced into a number of separate pools, and the idea of progress is obscured by the difficulty of tracing it. Length is the strongest symptom of continuation: long

Water.

6  
Of a River.

Water.  
Ibid.

long reaches are therefore characteristic of a river, and they conduce much to its beauty; each is a considerable piece of water, and variety of beautiful forms may be given to their outlines.

A river requires a number of *accompaniments*. The changes in its course furnish a variety of situations; while the fertility, convenience, and amenity, which attend it, account for all appearances of inhabitants and improvement. Profusion of ornament on a fictitious river, is a just imitation of cultivated nature. Every species of building, every style of plantation, may abound on the banks; and whatever be their characters, their proximity to the water is commonly the happiest circumstance in their situation. A lustre is from thence diffused on all around; each derives an importance from its relation to this capital feature: those which are near enough to be reflected, immediately belong to it; those at a greater distance still share in the animation of the scene; and objects totally detached from each other, being all attracted towards the same interesting connexion, are united into one composition.

In the front of Blenheim was a deep broad valley, which abruptly separated the castle from the lawn and the plantations before it; even a direct approach could not be made without building a monstrous bridge over the vast hollow; but this forced communication was only a subject of raillery; and the scene continued broken into two parts, absolutely distinct from each other. This valley has been lately flooded: it is not filled; the bottom only is covered with water; the sides are still very high; but they are no longer the steep slopes of a chasm, they are the bold shores of a noble river. The same bridge is standing without alteration: but no extravagance remains; the water gives it propriety. Above it the river first appears, winding from behind a small thick wood in the valley; and soon taking a determined course, it is then broad enough to admit an island filled with the finest trees; others corresponding to them in growth and disposition, stand in groups on the banks, intermixed with younger plantations. Immediately below the bridge, the river spreads into a large expanse: the sides are open lawn. On that furthest from the house formerly stood the palace of Henry II. celebrated in many an ancient ditty by the name of Fair Rosamond's Bower. A little clear spring, which rises there, is by the country people still called Fair Rosamond's Well. The spot is now marked by a single willow. Near it is a fine collateral stream, of a beautiful form, retaining its breadth as far as it is seen, and retiring at last behind a hill from the view. The main river, having received this accession, makes a gentle bend: then continues for a considerable length in one wide direct reach; and, just as it disappears, throws itself down a high cascade, which is the present termination. On one of the banks of this reach is the garden: the steeps are there diversified with thickets and with glades; but the covert prevails, and the top is crowned with lofty trees. On the other side is a noble hanging wood in the park: it was depreciated when it sunk into a hollow, and was poorly lost in the bottom; but it is now a rich appendage to the river, falling down an easy slope quite to the water's edge, where, with overshadowing, it is reflected on the surface. Another face of

the same wood borders the collateral stream, with an outline more indented and various; while a very large irregular clump adorns the opposite declivity. This clump is at a considerable distance from the principal river: but the stream it belongs to brings it down to connect with the rest; and the other objects, which were before dispersed, are now, by the interest of each in a relation, which is common to all, collected into one illustrious scene. The castle itself is a prodigious pile of building; which, with all the faults in its architecture, will never seem less than a truly princely habitation; and the confined spot where it was placed, on the edge of an abyss, is converted into a proud situation, commanding a beautiful prospect of water, and open to an extensive lawn, adequate to the mansion, and an emblem of its domain. In the midst of this lawn stands a column, a stately trophy, recording the exploits of the duke of Marlborough and the gratitude of Britain. Between this pillar and the castle is the bridge, which now, applied to a subject worthy of it, is established in all the importance due to its greatness. The middle arch is wider than the Rialto, but not too wide for the occasion; and yet that is the narrowest part of the river; but the length of the reaches is everywhere proportioned to their breadth. Each of them is alone a noble piece of water; and the last, the finest of all, loses itself gradually in a wood, which on that side is also the boundary of the lawn, and rises into the horizon. All is great in the front of Blenheim: but in that vast space no void appears; so important are the parts, so magnificent the object. The plain is extensive, the valley is broad, the wood is deep. Though the intervals between the building are large, they are filled with the grandeur which buildings of such dimensions and so much pomp diffuse all around them; and the river in its long varied course, approaching to every object, and touching upon every part, spreads its influence over the whole.

In the composition of this scene, the river, both as a part itself, and as uniting the other parts, has a principal share. But water is not lost though it be in so confined or so concealed a spot as to enter into no view; it may render that spot delightful. It is capable of the most exquisite beauty in its form; and though not in space, may yet in disposition have pretensions to greatness; for it may be divided into several branches, which will form a cluster of islands all connected together, make the whole place irrisuous, and, in the stead of extent, supply a quantity of water. Such a sequestered scene usually owes its retirement to the trees and the thickets with which it abounds; but, in the disposition of them, one distinction should be constantly attended to. A river flowing through a wood which overspreads one continued surface of ground, and a river between two woods, are in very different circumstances. In the latter case, the woods are separate; they may be contrasted in their forms and their characters, and the outline of each should be forcibly marked. In the former no outline ought to be discernible; for the river passes between trees, not between boundaries; and though in the progress of its course, the style of the plantations may be often changed, yet on the opposite banks a similarity should constantly prevail, that the identity of the wood may never be doubtful.

Water.

Water.  
Ibid.

A river between two woods may enter into a view; and then it must be governed by the principles which regulate the conduct and the accompaniments of a river in an open exposure. But when it runs through a wood, it is never to be seen in a prospect; the place is naturally full of obstructions; and a continued opening, large enough to receive a long reach, would seem an artificial cut. The river must therefore necessarily wind more than in crossing a lawn, where the passage is entirely free. But its influence will never extend so far on the sides: the buildings must be near the banks; and, if numerous, will seem crowded, being all in one track, and in situations nearly alike. The scene, however, does not want variety: on the contrary, none is capable of more. The objects are not indeed so different from each other as in an open view; but they are very different, and in much greater abundance; for this is the interior of a wood, where every tree is an object, every combination of trees a variety, and no large intervals are requisite to distinguish the several dispositions; the grove, the thicket or the groups, may prevail, and their forms and their relations may be constantly changed without restraint of fancy, or limitation of number.

Water is so universally and so deservedly admired in a prospect, that the most obvious thought in the management of it, is to lay it as open as possible; and purposely to conceal it would generally seem a severe self-denial: yet so many beauties may attend its passage through a wood, that larger portions of it might be allowed to such retired scenes than are commonly spared from the view, and the different parts in different styles would be fine contrasts to each other. If the water at Wotton\* were all exposed, a walk of near two miles along the banks would be of a tedious length, from the want of those changes of the scene which now supply through the whole extent a succession of perpetual variety. The extent is so large as to admit of a division into four principal parts, all of them great in style and in dimensions, and differing from each other both in character and situation. The two first are the least. The one is a reach of a river, about the third of a mile in length, and of a competent breadth, flowing through a lovely mead, open in some places to views of beautiful hills in the country, and adorned in others with clumps of trees, so large, that their branches stretch quite across, and form a high arch over the water. The next seems to have been once a formal basin encompassed with plantations, and the appendages on either side still retain some traces of regularity; but the shape of the water is free from them; the size is about 14 acres; and out of it issue two broad collateral streams, winding towards a large river, which they are seen to approach, and supposed to join. A real junction is however impossible, from the difference of the levels; but the terminations are so artfully concealed, that the deception is never suspected, and when known is not easily explained. The river is the third great division of the water; a lake into which it falls, is the fourth. These two do actually join; but their characters are directly opposite; the scenes they belong to are totally distinct; and the transition from the one to the other is very gradual; for an island near the confux, dividing the breadth, and concealing the end of the lake, mode-

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rates for some way the space; and permitting it to expand but by degrees, raises an idea of greatness, from uncertainty accompanied with increase. The reality does not disappoint the expectation; and the island, which is the point of view, is itself equal to the scene: it is large, and high above the lake; the ground is irregularly broken; thickets hang on the sides; and towards the top is placed an Ionic portico, which commands a noble extent of water, not less than a mile in circumference, bounded on one side with wood, and open on the other to two sloping lawns, the least of an hundred acres, diversified with clumps, and bordered by plantations. Yet this lake, when full in view, and with all the importance which space, form, and situation can give, is not more interesting than the sequestered river, which has been mentioned as the third great division of the water. It is just within the verge of a wood, three quarters of a mile long, everywhere broad, and its course is such as to admit of infinite variety without any confusion. The banks are cleared of underwood; but a few thickets still remain, and on one side an impenetrable covert soon begins: the interval is a beautiful grove of oaks, scattered over a green sward of extraordinary verdure. Between these trees and these thickets the river seems to glide gently along, constantly winding, without one short turn or one extended reach in the whole length of the way. This even temper in the stream suits the scenes through which it passes; they are in general of a very sober cast, not melancholy, but grave; never exposed to a glare; never darkened with gloom; nor, by strong contrasts of light and shade, exhibiting the excess of either. Undisturbed by an extent of prospect without, or a multiplicity of objects within, they retain at all times a mildness of character; which is still more forcibly felt when the shadows grow faint as they lengthen, when a little rustling of birds in the spray, the leaping of the fish, and the fragrant of the woodbine, denote the approach of evening; while the setting sun shoots its last gleams on a Tuscan portico, which is close to the great basin, but which from a seat near this river is seen at a distance, through all the obscurity of the wood, glowing on the banks, and reflected on the surface of the water. In another still more distinguished spot is built an elegant bridge, with a colonnade upon it, which not only adorns the place where it stands, but is also a picturesque object to an octagon building near the lake, where it is shown in a singular situation, overarched, encompassed, and backed with wood, without any appearance of the water beneath. This building in return is also an object from the bridge; and a Chinese room, in a little island just by, is another: neither of them are considerable, and the others which are visible are at a distance; but more or greater adventitious ornaments are not required in a spot so rich as this in beauties peculiar to its character. A profusion of water pours in from all sides round upon the view; the opening of the lake appears; a glimpse is caught of the large basin: one of the collateral streams is full in sight, and the bridge itself is in the midst of the finest part of the river: all seem to communicate the one with the other. Though thickets often intercept, and groups perplex the view, yet they never break the connexion between the several pieces of water; each may still be traced

Water.

\*Vale of  
Aylsbury,  
Bucking-  
hamshire.

<sup>Water.</sup>  
Ibid. along large branches or little catches; which in some places are overshadowed and dim; in others gladden through a glade, or glimmer between the boles of trees in a distant perspective; and in one, where they are quite lost to the view, some arches of the stone bridge, but partially seen among the wood, preserve their connexion.

<sup>7</sup>  
Of a Rill and a Rivulet. 3. If a large river may sometimes, a smaller current undoubtedly may often, be conducted through a wood: it seldom adorns, it frequently disfigures, a prospect, where its course is marked, not by any appearance of water, but by a confused line of clotted grass, which disagrees with the general verdure. A *Rivulet* may, indeed, have consideration enough for a home scene, though it be open; but a *Rill* is always most agreeable when most retired from public view. Its characteristic excellencies are vivacity and variety, which require attention, leisure, and silence, that the eye may pore upon the little beauties, and the ear listen to the low murmurs of the stream without interruption. To such indulgence a confined spot only is favourable; a close copse is therefore often more acceptable than a high wood, and a sequestered valley at all times preferable to any open exposure: a single rill at a very little distance is a mere water course; it loses all its charms; it has no importance in itself, and bears no proportion to the scene. A number of little streams have indeed an effect in any situation, but not as objects; they are interesting only on account of the character they express, the irrisuous appearance which they give to the whole.

The full tide of a large river has more force than activity, and seems too unwieldy to allow of very quick transitions. But in a rill, the agility of its motion accounts for every caprice; frequent windings disguise its insignificance; short turnings show its vivacity; sudden changes in the breadth are a species of its variety; and however fantastically the channel may be wreathed, contracted, and widened, it still appears to be natural. We find an amusement in tracing the little stream through all the intricacies of its course, and in seeing it force a passage through a narrow strait, expatiate on every opportunity, struggle with obstructions, and puzzle out its way. A rivulet, which is the mean betwixt a river and a rill, partakes of the character of both: it is not licensed to the extravagance of the one, nor under the same restraints as the other: it may have more frequent bends than the river, longer reaches than a rill: the breadth of a stream determines whether the principal beauty results from extent or from variety.

The murmurs of a rill are amongst the most pleasing circumstances which attend it. If the bed of the stream be rough, mere declivity will occasion a constant rippling noise: when the current drops down a descent, though but of a few inches, or forcibly bubbles up from a little hollow, it has a deep gurgling tone, not uniformly continued, but incessantly repeated, and therefore, more engaging than any. The flattest of all, is that sound rather of the splashing than the fall of water, which an even gentle slope, or a tame obstruction, will produce: this is less pleasing than the others; but none should be entirely excluded: all in their turns are agreeable; and the choice of them is much in our power. By observing their causes, we

may often find the means to strengthen, to weaken, or to change them; and the addition or removal of a single stone, or a few pebbles, will sometimes be sufficient for the purpose.

A rill cannot pretend to any sound beyond that of a little water fall: the roar of a cascade belongs only to a larger stream; but it may be produced by a rivulet to a considerable degree, and attempts to do more have generally been unsuccessful. A vain ambition to imitate nature in her great extravagancies betrays the weakness of art. Though a noble river, throwing itself headlong down a precipice, be an object truly magnificent, it must however be confessed, that in a single sheet of water there is a formality which its vastness alone can cure. But the height, not the breadth, is the wonder: when it falls no more than a few feet, the regularity prevails; and its extent only serves to expose the vanity of affecting the style of a cataract in an artificial cascade. It is less exceptionable if divided into several parts: for then each separate part may be wide enough for its depth; and in the whole, variety, not greatness, will be the predominant character. But a structure of rough, large, detached stones, cannot easily be contrived of strength sufficient to support a great weight of water: it is sometimes from necessity almost smooth and uniform, and then it loses much of its effects. Several little falls in succession are preferable to one great cascade which in figure or in motion approaches to regularity.

When greatness is thus reduced to number, and length becomes of more importance than breadth, a rivulet vies with a river: and it more frequently runs in a continued declivity, which is very favourable to such a succession of falls. Half the expence and labour which are sometimes bestowed on a river, to give it at the best a forced precipitancy in one spot only, would animate a rivulet through the whole of its course. And, after all, the most interesting circumstance in falling waters is their animation. A great cascade fills us with surprise: but all surprise must cease; and the motion, the agitation, the rage, the froth, and the variety of the water, are finally the objects which engage the attention: for these a rivulet is sufficient; and they may there be produced without that appearance of effort which raises a suspicion of art.

To obviate such a suspicion, it may be sometimes expedient to begin the descent out of sight; for the beginning is the difficulty: if that be concealed, the subsequent falls seem but a consequence of the agitation which characterises the water at his first appearance; and the imagination is, at the same time, let loose to give ideal extent to the cascades. When a stream issues from a wood, such management will have a great effect: the bends of its course in an open exposure may afford frequent opportunities for it; and sometimes a low broad bridge may furnish the occasion: a little fall hid under the arch will create a disorder; in consequence of which, a greater cascade below will appear very natural.

IV. ROCKS. Rocks are themselves too vast and too stubborn to submit to our controul; by the addition or removal of appendages which we can command, parts may be shown or concealed, and the characters with their impressions may be weakened, or enforced;

Rocks.

8  
Of Caf. cades.9  
Of Rocks.

Rocks. forced: to adapt the accompaniments accordingly, is the utmost ambition of art when rocks are the subject.

Ibid.

Their most distinguished characters are, *dignity, terror, and fancy*: the expressions of all are constantly wild: and sometimes a rocky scene is only wild, without pretensions to any particular character.

Rills, rivalets, and cascades, abound among rocks: they are natural to the scene; and such scenes commonly require every accompaniment which can be procured for them. Mere rocks, unless they are particularly adapted to certain impressions, though they may surprise, cannot be long engaging, if the rigour of their character be not softened by circumstances which may belong either to these or to more cultivated spots: and when the dreariness is extreme, little streams and waterfalls are of themselves insufficient for the purpose; an intermixture of vegetation is also necessary, and on some occasions even marks of inhabitants are proper.

Large clefts, sloping or precipitous, with a dale at bottom, furnish scenes of the wildest nature. In such spots, verdure alone will give some relief to the dreariness of the scene; and shrubs or bushes, without trees, are a sufficiency of wood: the thickets may also be extended by the creeping plants, such as pyracantha, vines, and ivy, to wind up the sides or cluster on the tops of the rocks. And to this vegetation may be added some symptoms of inhabitants, but they must be slight and few; the use of them is only to cheer, not to destroy, the solitude of the place; and such therefore should be chosen as are sometimes found in situations retired from public resort; a cottage may be lonely, but it must not here seem ruinous and neglected; it should be tight and warm, with every mark of comfort about it, to which its position in some sheltered recess may greatly contribute. A cavity also in the rocks, rendered easy of access, improved to a degree of convenience, and maintained in a certain state of preservation, will suggest similar ideas of protection from the bitterest inclemencies of the sky, and even of occasional refreshment and repose. But we may venture still further; a mill is of necessity often built at some distance from the town which it supplies; and here it would at the same time apply the water to a use, and increase its agitation. The dale may besides be made the haunt of those animals, such as goats, which are sometimes wild, and sometimes domestic; and which accidentally appearing, will divert the mind from the sensations natural to the scene, but not agreeable if continued long without interruption. These and such other expedients will approximate the severest retreat to the habitations of men, and convert the appearance of a perpetual banishment into that of a temporary retirement from society.

But too strong a force on the nature of the place always fails. A winding path, which appears to be worn, not cut, has more effect than a high road, all artificial and level, which is too weak to overbear, and yet contradicts, the general idea. The objects therefore to be introduced must be those which hold a mean between solitude and population; and the inclination of that choice towards either extreme, should be directed by the degree of wildness which prevails; for though that runs sometimes to an excess which requires correction, at other times it wants encouragement, and at all times

it ought to be preserved: it is the predominant character of rocks, which mixes with every other, and to which all the appendages must be accommodated; and they may be applied so as greatly to increase it: a licentious irregularity of wood and of ground, and a fantastic conduct of the streams, neither of which would be tolerated in the midst of cultivation, become and improve romantic rocky spots; even buildings, partly by their style, but still more by their position, in strange, difficult, or dangerous situations, distinguish and aggravate the native extravagancies of the scene.

Greatness is a chief ingredient in the character of *dignity*, with less of wildness than in any other. The effect here depends more upon amplitude of surface, than variety of forms. The parts, therefore, must be large: if the rocks are only high, they are but stupendous, not majestic: breadth is equally essential to their greatness; and every slender, every grotesque shape, is excluded. Art may interpose to show these large parts to the eye, and magnify them to the imagination, by taking away thickets which stretch quite across the rocks, so as to disguise their dimensions; or by filling with wood the small intervals between them, and thus, by concealing the want, preserving the appearance of continuation. When rocks retire from the eye down a gradual declivity, we can, by raising the upper ground, deepen the fall, lengthen the perspective, and give both height and extent to those at a distance: this effect may be still increased by covering that upper ground with a thicket, which shall cease, or be lowered, as it descends. A thicket, on other occasions, makes the rocks which rise out of it seem larger than they are. If they stand upon a bank over-spread with shrubs, their beginning is at the least uncertain; and the presumption is, that they start from the bottom. Another use of this brushy underwood is to conceal the fragments and rubbish which have fallen from the sides and the brow, and which are often unsightly. Rocks are seldom remarkable for the elegance of their forms; they are too vast, and too rude, to pretend to delicacy: but their shapes are often agreeable: and we can affect those shapes to a certain degree, at least we can cover many blemishes in them, by conducting the growth of shrubby and creeping plants about them.

For all these purposes mere underwood suffices: but for greater effects larger trees are requisite: they are worthy of the scene; and not only improvements, but accessions to its grandeur: we are used to rank them among the noblest objects of nature; and when we see that they cannot aspire to the midway of the heights around them, the rocks are raised by the comparison. A single tree is, therefore, often preferable to a clump: the size, though really less, is more remarkable: and clumps are besides generally exceptionable in a very wild spot, from the suspicion of art which attends them; but a wood is free from that suspicion, and its own character of greatness recommends it to every scene of magnificence.

On the same principle all possible consideration should be given to the streams. No number of little rills are equal to one broad river; and in the principal current, some varieties may be sacrificed to importance: but a degree of strength should always be preserved: the water, though it needs not be furious, should not be

Rocks.  
Ibid.

dull; for dignity, when most serene, is not languid; and space will hardly atone for want of animation.

This character does not exclude marks of inhabitants, though it never requires them to tame its wildness: and without inviting, it occasionally admits an intermixture of vegetation. It even allows of buildings intended only to decorate the scene: but they must be adequate to it, both in size and in character. And if cultivation is introduced, that too should be conformable to the rest; not a single narrow patch cribbed out of the waste; but the confines of a country shelving into the vale, and suggesting the idea of extent: nothing trivial ought to find admittance. But, on the other hand, no extravagance is required to support it; strange shapes in extraordinary positions, enormous weights unaccountably sustained, trees rooted in the sides, and torrents raging at the foot of the rocks, are at the best needless excesses. There is a temperance in dignity, which is rather hurt by a wanton violence on the common order of nature.

The terrors of a scene in nature are like those of a dramatic representation: they give an alarm; but the sensations are agreeable, so long as they are kept to such as are allied only to terror, unmixed with any that are horrible and disgusting. Art may therefore be used to heighten them, to display the objects which are distinguished by greatness, to improve the circumstances which denote force, to mark those which intimate danger, and to blend withal here and there a cast of melancholy.

Greatness is as essential to the character of *terror* as to that of *dignity*: vast efforts in little objects are but ridiculous; nor can force be supposed upon trifles incapable of resistance. On the other hand, it must be allowed, that exertion and violence supply some want of space. A rock wonderfully supported, or threatening to fall, acquires a greatness from its situation, which it has not in dimensions; so circumstanced, the size appears to be monstrous; a torrent has a consequence which a placid river of equal breadth cannot pretend to: and a tree, which would be inconsiderable in the natural soil, becomes important when it bursts forth from a rock.

Such circumstances should be always industriously sought for. It may be worth while to cut down several trees, in order to exhibit one apparently rooted in the stone. By the removal perhaps of only a little brushwood, the alarming disposition of a rock, strangely undermined, rivetted, or suspended, may be shown; and if there be any soil above its brow, some trees planted there, and impending over it, will make the object still more extraordinary. As to the streams, great alterations may generally be made in them: and therefore it is of use to ascertain the species proper to each scene, because it is in our power to enlarge or contract their dimensions; to accelerate or retard their rapidity; to form, increase, or take away obstructions; and always to improve, often to change, their characters.

Inhabitants furnish frequent opportunities to strengthen the appearances of force, by giving intimations of danger. A house placed at the edge of a precipice, any building on the pinnacle of a crag, makes that situation seem formidable, which might otherwise have been unnoticed: a steep, in itself not very remarkable,

becomes alarming, when a path is carried assant up the side: a rail on the brow of a perpendicular fall, shows that the height is frequented and dangerous: and a common foot bridge thrown over a cleft between rocks has a still stronger effect. In all these instances, the imagination immediately transports the spectator to the spot, and suggests the idea of looking down such a depth: in the last, that depth is a chasm, and the situation is directly over it.

In other instances, exertion and danger seem to attend the occupations of the inhabitants:

—————Half way down

Hangs one that gathers samphire; dreadful trade!

is a circumstance chosen by the great poet of nature, to aggravate the terrors of the scene he describes.

The different species of rocks often meet in the same place, and compose a noble scene, which is not distinguished by any particular character; it is only when one eminently prevails, that it deserves such a preference as to exclude every other. Sometimes a spot, remarkable for nothing but its wildness, is highly romantic: and when this wildness rises to *fancy*; when the most singular, the most opposite forms and combinations are thrown together; then a mixture also of several characters adds to the number of instances which there concur to display the inexhaustible variety of nature.

So much variety, so much fancy, are seldom found within the same extent as in Dovedale\*. It is about two miles in length, a deep, narrow, hollow valley: both the sides are of rock; and the Dove in its passage between them is perpetually changing its course, its motion, and appearance. It is never less than ten, nor so much as twenty, yards wide, and generally about four feet deep; but transparent to the bottom, except when it is covered with a foam of the purest white, under waterfalls, which are perfectly lucid. These are very numerous, but very different. In some places they stretch straight across, or assant the stream: in others, they are only partial; and the water either dashes against the stones, and leaps over them, or, pouring along a steep rebounds upon those below; sometimes it rushes through the several openings between them; sometimes it drops gently down; and at other times it is driven back by the obstruction, and turns into an eddy. In one particular spot, the valley almost closing, leaves hardly a passage for the river, which, pent up and struggling for a vent, rages, and roars, and foams, till it has extricated itself from the confinement. In other parts, the stream, though never languid, is often gentle; flows round a little desert island, glides between bits of bulrushes, disperses itself among tufts of grass or of moss, bubbles about a water dock, or plays with the slender threads of aquatic plants which float upon the surface. The rocks all along the dale vary as often in their structure as the stream in its motion. In one place, an extended surface gradually diminishes from a broad base almost to an edge: in another, a heavy top hanging forwards, overshadows all beneath: sometimes many different shapes are confusedly tumbled together; and sometimes they are broken into slender sharp pinnacles, which are upright, often two or three together, and often in more numerous clusters. On this side of the  
dale,

Rocks.

\*Near Ashbourne in Derbyshire.

Rocks. dale, they are universally bare; on the other, they are intermixed with wood; and the vast height of both the sides, with the narrowness of the interval between them, produces a further variety: for whenever the sun shines from behind the one, the form of it is distinctly and completely cast upon the other; the rugged surface on which it falls diversifies the tints; and a strong reflected light often glares on the edge of the deepest shadow. The rocks never continue long in the same figure or situation, and are very much separated from each other: sometimes they form the sides of the valley, in precipices, in steeps, or in stages; sometimes they seem to rise in the bottom, and lean back against the hill; and sometimes they stand out quite detached, heaving up in cumbrous piles, or starting into conical shapes, like vast spars, 100 feet high; some are firm and solid throughout; some are cracked; and some, split and undermined, are wonderfully upheld by fragments apparently unequal to the weight they sustain. One is placed before, one over another, and one fills at some distance behind an interval between two. The changes in their disposition are infinite; every step produces some new combination; they are continually crossing, advancing, and retiring: the breadth of the valley is never the same 40 yards together: at the narrow pass which has been mentioned, the rocks almost meet at the top, and the sky is seen as through a chink between them: just by this gloomy abyss, is a wider opening, more light, more verdure, more cheerfulness than anywhere else in the dale. Nor are the forms and the situations of the rocks their only variety: many of them are perforated by large natural cavities, some of which open to the sky, some terminate in dark recesses, and through some are to be seen several more uncouth arches, and rude pillars, all detached, and retiring beyond each other, with the light shining in between them, till a rock far behind them closes the perspective: the noise of the cascades in the river echoes amongst them; the water may often be heard at the same time gurgling near, and roaring at a distance; but no other sounds disturb the silence of the spot: the only trace of men is a blind path, but lightly and but seldom trodden, by those whom curiosity leads to see the wonders they have been told of Dovedale. It seems indeed a fitter haunt for mere ideal beings: the whole has the air of enchantment. The perpetual shifting of the scenes; the quick transitions, the total changes, then the forms all around, grotesque as chance can cast, wild as nature can produce, and various as imagination can invent; the force which seems to have been exerted to place some of the rocks where they are now fixed immovable, the magic by which others appear still to be suspended; the dark caverns, the illuminated recesses, the fleeting shadows, and the gleams of light glancing on the sides, or trembling on the stream; and the loneliness and the stillness of the place, all crowding together on the mind, almost realize the ideas which naturally present themselves in this region of romance and of fancy.

The solitude of such a scene is agreeable, on account of the endless entertainment which its variety affords, and in the contemplation of which both the eye and the mind are delighted to indulge: marks of inhabitants and cultivation would disturb that solitude;

and ornamental buildings are too artificial in a place so absolutely free from restraint. The only accompaniments proper for it are wood and water; and by these sometimes improvements may be made. When two rocks similar in shape and position are near together, by skirting one of them with wood, while the other is left bare, a material distinction is established between them: if the streams be throughout of one character, it is in our power, and should be our aim, to introduce another. Variety is the peculiar property of the spot, and every accession to it is a valuable acquisition. On the same principle, endeavours should be used not only to multiply, but to aggravate differences, and to increase distinctions into contrasts: but the subject will impose a caution against attempting too much. Art must almost despair of improving a scene, where nature seems to have exerted her invention.

### § 2. Of FACTITIOUS ACCOMPANIMENTS.

THESE consist of Fences, Walks, Roads, Bridges, Seats, and Buildings. *Practical Treatise on Planting and Gardening, p. 593.*

“ I. The FENCE, where the place is large, becomes necessary; yet the eye dislikes constraint. Our ideas of liberty carry us beyond our own species: the imagination feels a dislike in seeing even the brute creation in a state of confinement. The birds waiving themselves from wood to grove are objects of delight; and the hare appears to enjoy a degree of happiness unknown to the barriered flock. Besides, a tall fence frequently hides from the sight objects the most pleasing; not only the flocks and herds themselves, but the surface they graze upon. These considerations have brought the unseen fence into general use.

This species of barrier it must be allowed incurs a degree of deception, which can scarcely be warranted upon any other occasion. In this instance, however, it is a species of fraud which we observe in nature's practice: how often have we seen two distinct herds feeding to appearance in the same extended meadow; until coming abruptly upon a deep sunk rivulet, or an unfordable river, we discover the deception.

Besides the sunk fence, another sort of unseen barrier may be made, though by no means equal to that, especially if near the eye. This is constructed of paling, painted of the invisible green. If the colour of the back ground were permanent, and that of the paint made exactly to correspond with it, the deception would at a distance be complete; but back grounds in general changing with the season, this kind of fence is the less eligible.

Clumps and patches of woodiness scattered promiscuously on either side of an unseen winding fence, assist very much in doing away the idea of constraint. For by this means

The wand'ring flocks that browse between the shades,  
Seem oft to pass their bounds; the dubious eye  
Decides not if they crop the mead or lawn.

MASON.

“ II. The WALK, in extensive grounds, is as necessary as the fence. The beauties of the place are disclosed that they may be seen; and it is the office of the walk

Bridge, &c. walk to lead the eye from view to view; in order that whilst the tone of health is preserved by the favourite exercise of nature, the mind may be thrown into unison by the harmony of the surrounding objects.

The direction of the walk must be guided by the points of view to which it leads, and the nature of the ground it passes over: it ought to be made subservient to the natural impediments (the ground, wood, and water) which fall in its way, without appearing to have any direction of its own. It can seldom run with propriety any distance in a straight line; a thing which rarely occurs in a natural walk. The paths of the Negroes and the Indians are always crooked; and those of the brute creation are very similar. Mr Mason's description of this path of nature is happily conceived.

The peasant driving through each shadowy lane  
His team, that bends beneath th' incumbent weight  
Of laughing Ceres, marks it with his wheel;  
At night and morn, the milkmaid's careless step  
Has through yon pasture green, from stile to stile  
Imprest a kindred curve: the scudding hare  
Draws to her dew sprent feat, o'er thymy heaths,  
A path as gently waving—

*Eng. Gard. v. 60.*

“ III. The ROAD may be a thing of necessity, as an approach to the mansion; or a matter of amusement only, as a drive or a ride, from which the grounds and the surrounding country may be seen to advantage. It should be the study of the artist to make the same road answer, as far as may be, the twofold purpose.

The road and the walk are subject to the same rule of nature and use. The direction ought to be natural and easy, and adapted to the purpose intended. A road of necessity ought to be straighter than one of mere convenience: in this, recreation is the predominant idea; in that, utility. But even in this the direct line may be dispensed with. The natural roads upon heaths and open downs, and the grassy glades and green roads across forests and extensive wastes, are proper subjects to be studied.

“ IV. The BRIDGE should never be seen where it is not wanted: a useless bridge is a deception; deceptions are frauds; and fraud is always hateful, unless when practised to avert some greater evil. A bridge without water is an absurdity; and half a one stuck up as an eye-trap is a paltry trick, which, though it may strike the stranger, cannot fail of disgusting when the fraud is found out.

In low situations, and wherever water abounds, bridges become useful, and are therefore pleasing objects: they are looked for; and ought to appear not as objects of ornament only, but likewise as matters of utility. The walk or the road therefore ought to be directed in such a manner as to cross the water at the point in which the bridge will appear to the greatest advantage.

In the construction of bridges also, regard must be had to ornament and utility. A bridge is an artificial production, and as such it ought to appear. It ranks among the noblest of human inventions; the ship and the fortress alone excel it. Simplicity and firmness are the leading principles in its construction. Mr Wheatley's observation is just when he says, “ The single

wooden arch, now much in fashion, seems to me generally misapplied. Elevated without occasion so much above, it is totally detached from the river; it is often seen straddling in the air, without a glimpse of water to account for it; and the ostentation of it as an ornamental object, diverts all that train of ideas which its use as a communication might suggest.” But we beg leave to differ from this ingenious writer when he tells us, “ that it is spoiled if adorned; it is disfigured if only painted of any other than a dusky colour.” In a rustic scene, where nature wears her own coarse garb, “ the vulgar foot bridge of planks only guarded on one hand by a common rail, and supported by a few ordinary piles,” may be in character; but amidst a display of ornamented nature, a contrivance of that kind would appear mean and paltry; and would be an affectation of simplicity rather than the lovely attribute itself. In cultivated scenes, the bridge ought to receive the ornaments which the laws of architectural taste allow; and the more polished the situation, the higher should be the style and finishings.

“ V. SEATS have a twofold use; they are useful as places of rest and conversation, and as guides to the points of view in which the beauties of the surrounding scene are disclosed. Every point of view should be marked with a seat; and, speaking generally, no seat ought to appear but in some favourable point of view. This rule may not be invariable, but it ought seldom to be deviated from.

In the ruder scenes of neglected nature, the simple trunk, rough from the woodman's hands, and the butts or stools of rooted trees, without any other marks of tools upon them than those of the saw which severed them from their stems, are seats in character; and in romantic or reclusive situations, the cave or the grotto are admissible. But wherever human design has been executed upon the natural objects of the place, the seat and every other artificial accompaniment ought to be in unison; and whether the bench or the alcove be chosen, it ought to be formed and finished in such a manner as to unite with the wood, the lawn, and the walk, which lie around it.

The colour of seats should likewise be suited to situations: where uncultivated nature prevails, the natural brown of the wood itself ought not to be altered; but where the rural art presides, white or stone colour has a much better effect.”

“ VI. BUILDINGS probably were first introduced into gardens merely for contrivance, to afford refuge from a sudden shower, and shelter against the wind; or, at the most, to be seats for a party; or for retirement. They have since been converted into objects, and now the original use is too often forgotten in the greater purposes to which they are applied: they are considered as objects only; the inside is totally neglected, and a pompous edifice frequently wants a room barely comfortable. Sometimes the pride of making a lavish display to a visitor without any regard to the owner's enjoyments, and sometimes too scrupulous an attention to the style of the structure, occasions a poverty and dulness within, which deprive the buildings of part of their utility. But in a garden they ought to be considered both as beautiful objects and as agreeable

*Mr Wheatley's Observations resumed.*

**Buildings.** agreeable retreats: if a character becomes them, it is that of the scene they belong to; not that of their primitive application. A Grecian temple or Gothic church may adorn spots where it would be affectation to preserve that solemnity within which it is proper for places of devotion: they are not to be exact models, subjects only of curiosity or study: they are also seats: and such seats will be little frequented by the proprietor; his mind must generally be indisposed to so much simplicity, and so much gloom, in the midst of gaiety, richness, and variety.

But though the interior of buildings should not be disregarded, it is by their exterior that they become *objects*; and sometimes by the one, sometimes by the other, and sometimes by both, they are entitled to be considered as *characters*.

**10**  
**Of buildings intended for objects.** 1. As objects, they are designed either to *distinguish*, or to *break*, or to *adorn*, the scenes to which they are applied.

The differences between one wood, one lawn, one piece of water, and another, are not always very apparent: the several parts of a garden would, therefore, often seem similar, if they were not distinguished by buildings; but these are so observable, so obvious at a glance, so easily retained in the memory, they mark the spots where they are placed with so much strength, they attract the relation of all around with so much power, that parts thus distinguished can never be confounded together. Yet it by no means follows, that therefore every scene must have its edifice: the want of one is sometimes a variety; and other circumstances are often sufficiently characteristic: it is only when these too nearly agree, that we must have recourse to buildings for differences: we can introduce, exhibit, or contrast them as we please: the most striking object is thereby made a mark of distinction; and the force of this first impression prevents our observing the points of resemblance.

**Observ. on Mod. Gardening.**

The uniformity of a view may be broken by similar means, and on the same principle: when a wide heath, a dreary moor, or a continual plain, is in prospect, objects which catch the eye supplant the want of variety: none are so effectual for this purpose as buildings. Plantations or water can have no very sensible effect, unless they are large or numerous, and almost change the character of the scene: but a small single building diverts the attention at once from the sameness of the extent; which it breaks, but does not divide; and diversifies, without altering its nature. The design, however, must not be apparent. The merit of a cottage applied to this purpose, consists in its being free from the suspicion: and a few trees near it will both enlarge the object, and account for its position. Ruins are a hackneyed device immediately detected, unless their style be singular, or their dimensions extraordinary. The semblance of an ancient British monument might be adapted to the same end, with little trouble, and great success. The materials might be brick, or even timber plastered over, if stone could not easily be procured: whatever they were, the fallacy would not be discernible; it is an object to be seen at a distance, rude, and large, and in character agreeable to a wild open view. But no building ought to be introduced, which may not in reality belong to such a situation: no Grecian tem-

**Buildings.** ples, no Turkish mosques, no Egyptian obelisks or pyramids; none imported from foreign countries, and unusual here. The apparent artifice would destroy an effect, which is so nice as to be weakened, if objects proper to produce it are displayed with too much ostentation; if they seem to be contrivances, not accidents; and the advantage of their position appear to be more laboured than natural.

But in a garden, where objects are intended only to adorn, every species of architecture may be admitted, from the Grecian down to the Chinese; and the choice is so free, that the mischief most to be apprehended is an abuse of this latitude in the multiplicity of buildings. Few scenes can bear more than two or three: in some, a single one has a greater effect than any number: and a careless glimpse, here and there, of such as belong immediately to different parts, frequently enliven the landscape with more spirit than those which are industriously shown. If the effect of a partial sight, or a distant view, were more attended to, many scenes might be filled, without being crowded; a greater number of buildings would be tolerated, when they seemed to be casual, not forced; and the animation, and the richness of the objects, might be had without pretence or display.

Too fond an ostentation of buildings, even of these which are principal, is a common error; and when all is done, they are not always shown to the greatest advantage. Though their symmetry and their beauties ought in general to be distinctly and fully seen, yet an oblique is sometimes better than a direct view: and they are often less agreeable objects when entire, than when a part is covered, or their extent is interrupted; when they are bosomed in wood, as well as backed by it; or appear between the stems of trees which rise before or above them: thus thrown into perspective, thus grouped and accompanied, they may be as important as if they were quite exposed, and are frequently more picturesque and beautiful.

But a still greater advantage arises from this management, in connecting them with the scene: they are considerable, and different from all around them; inclined therefore to separate from the rest; and yet they are sometimes still more detached by the pains taken to exhibit them: that very importance which is the cause of the distinction ought to be a reason for guarding against the independence to which it is naturally prone, and by which an object, which ought to be a part of the whole, is reduced to a mere individual. An elevated is generally a noble situation. When it is a point or a pinnacle, the structure may be a continuation of the ascent; and on many occasions, some parts of the building may descend lower than others, and multiply the appearances of connexion: but an edifice in the midst of an extended ridge, commonly seems naked alone, and imposed upon the brow, not joined to it. If wood, to accompany it, will not grow there, it had better be brought a little way down the declivity; and then all behind, above, and about it, are so many points of contact, by which it is incorporated into landscape.

Accompaniments are important to a building; but they lose much of their effect when they do not appear to be casual. A little mount just large enough for it; a small piece of water below, of no other use than

Buildings than to reflect it; and a plantation close behind, evidently placed there only to give it relief; are as artificial as the structure itself, and alienate it from the scene of nature into which it is introduced, and to which it ought to be reconciled. These appendages therefore should be so disposed, and so connected with the adjacent parts, as to answer other purposes, though applicable to this: that they may be bonds of union, not marks of difference; and that the situation may appear to have been chosen at the most, not made, for the building.

In the choice of a situation, that which shows the building best ought generally to be preferred: eminence, relief, and every other advantage which can be, ought to be given to an object of so much consideration: they are for the most part desirable; sometimes necessary; and exceptionable only when, instead of rising out of the scene, they are forced into it, and a contrivance to procure them at any rate is avowed without any disguise. There are, however, occasions, in which the most tempting advantages of situation must be waved; the general composition may forbid a building in one spot, or require it in another; at other times, the interest of the particular group it belongs to may exact a sacrifice of the opportunities to exhibit its beauties and importance; and at all times, the pretensions of every individual object must give way to the greater effect of the whole.

11  
Of those  
expressive  
of charac-  
ter.

2. The same structure which adorns as an object, may also be expressive as a *character*. Where the former is not wanted, the latter may be desirable: or it may be weak for one purpose, and strong for the other; it may be grave, or gay; magnificent, or simple: and according to its style, may or may not be agreeable to the place it is applied to. But mere consistency is not all the merit which buildings can claim: their characters are sometimes strong enough to *determine, improve, or correct*, that of the scene: and they are so conspicuous, and so distinguished, that whatever force they have is immediately and sensibly felt. They are fit therefore to make a first impression; and when a scene is but faintly characterized, they give at once a cast which spreads over the whole, and which the weaker parts concur to support, though perhaps they were not able to produce it.

Nor do they stop at fixing an uncertainty, or removing a doubt; they raise and enforce a character already marked: a temple adds dignity to the noblest, a cottage simplicity to the most rural, scenes; the lightness of a spire, the airiness of an open rotunda, the splendour of a continued colonnade, are less ornamental than expressive; others improve cheerfulness into gaiety, gloom into solemnity, and richness into profusion: a retired spot, which might have been passed unobserved, is noticed for its tranquillity, as soon as it is appropriated by some structure to retreat; and the most unfrequented place seems less solitary than one which appears to have been the haunt of a single individual, or even of a sequestered family, and is marked by a lonely dwelling, or the remains of a deserted habitation.

The means are the same, the application of them only is different, when buildings are used to correct the character of the scene; to enliven its dulness, mitigate its gloom, or to check its extravagance; and, on

Buildings. a variety of occasions, to soften, to aggravate, or to counteract, particular circumstances attending it. But care must be taken that they do not contradict too strongly the prevailing idea: they may lessen the clearness of a waste, but they cannot give it amenity; they may abate horrors, but they will never convert them into graces; they may make a tame scene agreeable, and even interesting, not romantic; or turn solemnity into cheerfulness, but not into gaiety. In these, and in many other instances, they correct the character, by giving it an inclination towards a better which is not very different; but they can hardly alter it entirely: when they are totally inconsistent with it, they are at the best nugatory.

The great effects which have been ascribed to buildings do not depend upon those trivial ornaments and appendages which are often too much relied on; such as the furniture of a hermitage, painted glass in a Gothic church, and sculpture about a Grecian temple; grotesque or bacchanalian figures to denote gaiety, and death's heads to signify melancholy. Such devices are only descriptive, not expressive, of character; and must not be substituted in the stead of those superior properties, the want of which they acknowledge, but do not supply. They besides often require time to trace their meaning, and to see their application; but the peculiar excellence of buildings is, that their effects are instantaneous, and therefore the impressions they make are forcible. In order to produce such effects, the general style of the structure, and its position, are the principal considerations: either of them will sometimes be strongly characteristic alone; united, their powers are very great; and both are so important, that if they do not concur, at least they must not contradict one another.

Every branch of architecture furnishes, on different occasions, objects proper for a garden; and there is no restraint on our selection, provided it be conformable to the style of the scene, proportioned to its extent, and agreeable to its character. 12  
Species and  
situations  
of build-  
ings.

The choice of situations is also very free. A hermitage, indeed, must not be close to a road; but whether it be exposed to view on the side of a mountain, or concealed in the depth of a wood, is almost a matter of indifference; that it is at a distance from public resort is sufficient. A castle must not be sunk in a bottom; but that it should stand on the utmost pinnacle of a hill, is not necessary: on a lower knoll, and backed by the rise, it may appear to greater advantage as an object, and be much more important to the general composition. Many buildings, which from their splendour best become an open exposure, will yet be sometimes not ill bestowed on a more sequestered spot, either to characterize or adorn it; and others, for which a solitary would in general be preferred to an eminent situation, may occasionally be objects in very conspicuous positions. A Grecian temple, from its peculiar taste and dignity, deserves every distinction; it may, however, in the depth of a wood, be so circumstanced, that the want of those advantages to which it seems entitled will not be regretted. A happier situation cannot be devised, than that of the temple of Pan on the south lodge on Enfield Chase. It is of the usual oblong form, encompassed by a colonnade; in dimensions, and in style, it is equal to a most extensive landscape: and yet by the antique

