Alchemiae Basica

An Alchemy Primer
for the
Ignorant
and
Historically Impaired

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THE PURPOSE OF ALCHEMY

Surely there is a vein for the silver, and a place for gold where they find it. Iron is taken out of the earth, and brass is molten out of the stone. He setteth an end to darkness, and searcheth out all perfection: the stones of darkness, and the shadow of death. (OldT:Job 28:1-3)

Alchemy is extremely complicated. It is based on the practical skills of early metal workers and craftsmen, on Greek philosophy, and on Eastern mystic cults that sprang up in the first centuries after Christ and influenced so much of magic and occult thought. ***It must be remembered that when alchemy flourished there was no dividing line between science and magic.*** Ideas such as the influence of the planets and the effect of certain numbers or letters on people's lives might today be regarded as superstitious. At that time they were perfectly acceptable to those who were making the kind of accurate observations about the material world that paved the way for modern science.

Long before the beginning of alchemy, **gold** was regarded as the most valuable metal. Its possession indicated wealth and power, and it was prized for its beauty. Known as the most perfect metal, it soon required symbolic meaning. It came to stand for excellence, wisdom, light, and perfection. For serious alchemists gold had both a real and a symbolic significance, which at first seems confusing. The reason is that alchemists embarked on two different and difficult quests at the same time, and success in one meant success in the other. The *first* aim is the one that most

people know about. **The alchemist was attemping to find a way of transmuting, or changing, ordinary metals into the most perfect metal, gold.** The *second* aim is less known but far more important. **The alchemist was trying to make the soul progress from its ordinary state to one of spiritual perfection.**

For many centuries Western alchemists ceaselessly searched for the Philosopher's Stone. What was this elusive object? It was not some giant boulder on which ancient sages sat and meditated. Nor was it a closely guarded tablet inscribed with words of wisdom. It was a substance that alchemists were convinced they could make, with divine assistance, by subjecting certain raw materials to complex and lengthy chemical processes. The problem was to find the right raw materials and the correct chemical processes. **It was a widely held belief that the Universe was permeated by a spirit that linked everything together. Alchemists thought that this spirit could somehow be reproduced and compressed into a magical substance which they named the Philosopher's Stone.** Once discovered, a small quantity of this magical substance added to ordinary metal would change it into gold. Taken as a medicine, the Stone would act as a miraculous cure. It was even believed by some to confer immortality, and was often called the Elixir of Life. All the patient experiments that the alchemists carried out in their laboratories over the centuries were motivated by one overwhelming desire--to produce the Philosopher's Stone. In the course of their painstaking and dedicated work they established many important chemical facts which, even if they did not lead to the Philosopher's Stone, helped to form the basis of chemistry as we know it today. The greatest alchemists were skilled in many fields. The scope of knowledge in those days was small enough that a person might hope to master all there was to know about subjects as diverse as medicine and religion, philosophy and alchemy, logic and magic. The seeker of knowledge would see nothing incompatible in the different fields of study. Knowledge was thought of as a unity, and all the different branches were different aspects of this unity. They all led toward a greater understanding of the Universe.

[From *Alchemy, the Ancient Science* by Neil Powell; pages 8 and 11. Boldface and italics added.]

THE ALCHEMIST'S LABORATORY

Make you perfect in every good work to do his will, working in you that which is wellpleasing in his sight, through Jesus Christ; to whom be glory for ever and ever. Amen. (NewT:Hebrews 13:21)

What would an alchemist's laboratory have looked? We can gain a good idea from the many 16th- and 17th-century engravings and paintings of the subject. The walls of the room would probably be covered with strange symbols and alchemical inscriptions in Latin, Greek, Hebrew, or Arabic. Animal skeletons and bunches of

medicinal herbs might hang from the ceiling. The tables would be piled high with books and parchments, jostling for space with retorts and crucibles and the odd human skull. There would be several furnaces to provide different heats, and a bellows to fan the flames. There would be a glass mask for protecting the face, and there would be shelves filled with numerous jars, stills, and tripods. **Of course, for the true alchemist, an alter for prayer and meditation was an essential feature.** The room would probably be tucked away somewhere in the cellar or the attic, where a gleam of light showing late at night would not attract too much attention. Alchemists were always anxious to preserve secrecy about their work. If too many people knew about their activities they might be persecuted by the Church for their strange beliefs, or hounded by greedy people hoping to amass a fortune.

[From *Alchemy, the Ancient Science* by Neil Powell; pages 17 and 19. Boldface added.]

Equipment

Alembic: the part of a still were liquid condenses.

Alundel: the part of a still which receives the distilled liquid.

Anthanor: a furnace rather like a modern chemist's sand bath, but using ashes instead.

Bain-Marie: an ancient water bath. Said to be the invention of Mary the Jewess, an early alchemist.

Calcinary Furnace: used for reducing metals and minerals into a fine powder.

Cucurbit: the part of the still where distillation occurs.

Cupel: a crucible made of bone ash.

Crucible: a small clay bowl, shaped so it could be supported on the rim of a furnace. Use for heating things at a high temperature.

Descensory: a funnel.

Descensory Furnace: a furnace with a funnel for pouring liquid down to a recepticle inside.

Dissolving Furnace: a small furnace supporting a pan of water with rings in the pan to hold glass containers. Resembles the modern water bath. See Bain-Marie.

Kerotakis: old name for a Soxhlet extractor.

Matrass: a simple flask. See Philosopher's Egg.

Pelican: a special distilling flask with two necks for continuous distillation.

Philosopher's Egg: a special type of retort in which the neck of the flask went straight up. The forerunner of the modern Florence flask.

Retort: a flask with a long curved neck which curved downward. Named after a type of wild goose.

Still: short for distilling. An apparatus which boils liquids and catches the condensation.

Tripod: older version of a ring stand.

Beakers, crystallization dishes, spatulas, cloth filters, mortars and pestles, and tongs were also used by the alchemist in much the same way they are used by chemists today.
[From *Alchemy, the Ancient Science* by Neil Powell]

THE EIGHT RULES OF ALBERTUS MAGNUS

Having therefore these promises, dearly beloved, let us cleanse ourselves from all filthiness of the flesh and spirit, perfecting holiness in the fear of God. (NewT:2 Corinthians 7:1)

Albertus was a renowned Dominican monk. Here's his advice to honest alchemists:

1) Be reserved and silent.
2) Work in a remote private home.
3) Choose your working hours prudently.
4) Be patient, watchfull, and tenacious.
5) Work on a fixed plan.
6) Use only glass or glazed earthenware crucibles.
7) You must be rich enough to pay for your experiments. *(Several centuries earlier, an alchemist named Zosimos the Wise suggested marrying a rich wife.)*
8) Have nothing to do with princes and nobles.
[From *The Goldmakers,* by K. K. Doberer; page 44.]

THE WISDOM OF ARISTOTLE

But the God of all grace, who hath called us unto his eternal glory by Christ Jesus, after that ye have suffered a while, make you perfect, stablish, strengthen, settle you. (NewT:1 Peter 5:10)

One of the most influential writers whose works were rediscovered in the library in Alexandria was Aristotle. His ideas had a particular influence on the development of alchemy. According to Aristotle, the basis of the entire material world was something he called ***prime*** or ***first matter***. This was not, as it may first sound, some gray sludge from which the world would gradually evolved. In fact, it was not a substance one could see or touch. It had no physical existence on its own account. However, it was the one unchangeable reality behind the ever-changing material world. To give this matter a physical identity and individual characteristics, various stages of form were needed.

The first stage of form, Aristotle believed, was found in the four elements of Earth, Air, Fire, and Water. The elements, while distinguished from each other, are also related by four qualities. These qualities are dry, moist, hot, and cold. Each element possesses two qualities, of which one predominates, and each element is linked to two other elements by the quality they possess in common. Here is how this system applies:

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Fire is hot and dry with heat predominating.
Air is hot and moist with moisture predominating.
Water is moist and cold with cold predominating.
Earth is cold and dry with dryness predominating.
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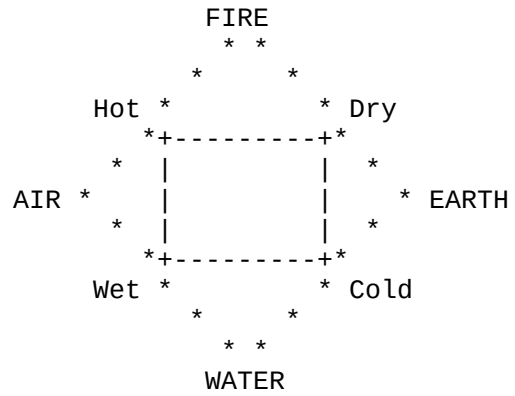

The diagram (above) shows complex interrelationship of these qualities more clearly.

The main interest of Aristotle's theory of the elements from the point of view of alchemy is the idea of change. **According to his theory each element can be transformed into another element through the quality they possess in common.** In this way Fire can become Air through the action of heat; Air can become Water through the action of moistness; Water can become Earth through the action of coldness; and Earth can become Fire through the action of dryness. It

is possible under this theory for an element gradually to complete the circle of change and go from Fire to Air, from Air to Water, from Water to Earth, and from Earth back to Fire, for example. It must be remembered that in all these changes the prime matter behind the form always remains the same.

The next stage of form in Aristotle's theory was that all physical manifestations in the world are composed of all four elements in different proportions. The varying amount of each element in the composition accounts for the infinite variety of things in the world. Because it was believed that elements could be transformed into other elements, it was only a small step to the assumption that all substances could be changed by altering the proportions of elements that constitute them. It is easy to see how alchemists took up on this idea. If as they believed, lead and gold consisted of different proportions of the same four elements, what was there to prevent the one being transformed into the other? Aristotle had another theory that influenced the ideas of alchemists. This was on the formation of metals and minerals. He believed that when the Sun's rays fell on water, they produced a vaporous exhalation that was moist and cold. This exhalation became imprisoned in the dry earth, was compressed, and finally was converted to metal. All metals that are fusible or malleable, such as iron, copper, or gold, were, according to Aristotle, formed in this way. The formation of minerals, on the other hand, occured when the Sun's rays fell on dry land. They produced a smoky exhalation that was hot and dry, and the action of the heat produced the minerals. In this category Aristotle included substances that cannot be melted, as well as substances such as sulfur.

[From *Alchemy, the Ancient Science* by Neil Powell; pages 26 to 30. Boldface added.]

THE ASTROLOGICAL CONNECTION

And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years:

And let them be for lights in the firmament of the heaven to give light upon the earth: and it was so.

And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also.

And God set them in the firmament of the heaven to give light upon the earth,

And to rule over the day and over the night, and to divide the light from the darkness: and God saw that it was good. (OldT:Genesis 1:14-18)

From the earliest times men have looked to the skies for explanations of their own lives, and the idea of the influence of the planets was widespread. Gradually, over centuries, in places such as Mesopotamia and Greece, a complex astrological system was built up. Its ideas permeated all aspects of daily life.

The basis of astrology can be summed up in the phrase so often quoted in occult literature, and in particular in alchemy: "as above, so below." This meant everything in the Universe, of Macrocosm, had its parallel in the earthly world, or Microcosm. **Everything worked in an ordered harmonious system, and everything was permeated by a Universal Spirit. It was this Spirit, which held the secret of the Universe, that the alchemists were trying to capture and compress into the Philosopher's Stone.**

The system of correspondences, or connections, between the seven planets known to the Ancient World and all aspects of life was also extremely important. Tangible objects such as metals, animals, and plants, concepts such as colors, and abstract ideas such as love and wisdom were accorded to different planets, among which the ancients included the Sun and Moon. For example, some of the correspondences of Venus were copper, the color green, the dove and the sparrow, and the power of love. Alchemists made great use of this system of correspondences. **Knowledge of the mysterious links between different things under the protection of the same planet was considered invaluable in many experiments.** It also provided a ready-made symbolism or code in which one name could be substituted for another. Alchemists delighted in shrouding their writings with mystery and obscurity because they were always afraid the information would fall into the hands of the wrong people. Perhaps they also enjoyed secrecy for its own sake.

[From *Alchemy, the Ancient Science* by Neil Powell; pages 30 and 33. Boldface added.]

Agrippa von Nettesheim, Occult Alchemist

In his occult work Agrippa writes that God created three worlds out of the void--the earthly kingdom of the elements, the heavenly kingdom of the constellations, and the spiritual kingdom of the angels. The composition of each of these kingdoms reflects that of all the others. And all is filled with the world- soul, the *Spiritus Mundi*.

This *Spiritus Mundi* is the reservoir of all power of souls, the essence of heavenly and supernatural forces. It is not apart of the four terrestrial elements, but a fifth outside them. As the foundation of all qualities it is above earthly forms of expression and alongside the earthly substances.

The removal of this quintessence from gold and its projection into baser metals was for Agrippa the theoretical method of making gold. He says that he was successful in doing it. But he was never able by this method to produce more than one ounce of gold from one ounce of gold. For, so his theory told him, in one ounce of gold there can only be so much quintessence as suffices for one ounce of gold.

His alchemical failures gave Agrippa von Netteheim no need to fear any temporal prince. Only the spiritual princes were constantly after him. So, to make himself

safe from them, he entered the army and went to war in northern Italy. There he lectured at the universities of the conquered Italian cities. At Pavia he interpreted the crucial work in alchemy, the *Tabula Smaragdina* of Hermes Trismegistos, before the University, and was admitted by the senate to the doctorates of Law and Medicine.
[From *The Goldmakers,* by K. K. Doberer; pages 87 to 89.]

THE BETTER KNOWN METHODS

And we know that all things work together for good to them that love God, to them who are the called according to his purpose. (NewT:Romans 8:28)

The Aristotle Method

1. Start with a piece of matter with no distinct tendencies. An alloy of lead, tin, copper, and iron is especially favored, since it is black and therefore devoid of all color.
2. Whiten the matter using quicksilver or mercury. *This produces a "silver" superior to common silver, because it is already yellow on the inside.*
3. Yellow the matter by adding a little gold (i.e. seeding the material) and any yellowing substance, such as sulfur. *This produces a "gold" superior to ordinary gold. This "gold" has enough yellow to change a few other substances, while normal gold only has enough yellow for itself.*
4. "Iosis" or the production of violet. Considered by some to be the purest tint of gold. Also considered to be the color of the Philosopher's Stone.

[Condensed from *Alchemy: Child of Greek Philosophy* by Arthur Hopkins.]

The "Red Lion" Process as interpreted by J.K.

1. Take 4 ounces calcined alum, 4 ounces calcined saltpter, and 2 ounces calcined sublimate, and sublimate [refine] in a proper subliming vessel.
2. Carefully take out the sublimate, and resublimate it with 10 ounce fresh salts. During this operation it will be wholesome, on the account of the poisonous fumes, to eat bread thickly spread with butter.
3. Put the sublimate in a glass retort, and cover it with alcohol, and distill it over in water bath until half the fluid remain as an oil behind.
4. The alcohol distilled over is poured back (cohobated) on the residue in the retort, until it is covered about the finger's breadth.
5. This distillation repeat three times, and the whole of the sublimate will pass over into the recipient. This is the Mercury of the Philosophers, the Mercurial Water, as it were "the Hellish fire in water." This Mercurial Water fumes away, and must be kept in a closed phial, or glass-stoppered bottle.

6. Take fine gold, in leaf or thin beaten, put it in a glass retort, justcover it with the Mercurial Water, and put the retort on gentle heat, when the Water will begin to act upon the gold, and dissolve it, but it will not be reduced to a liquid entirely, and only remain at the bottom like a greasy substance, then pour off the Mercurial Water, which can be used again.
7. The gold sediment divide into two parts. Take one half and pour thereon alcohol, and let the mixture putrefy on gentle heat fifteen days, and it will become blood red; this is the Lion's Blood.
8. This Lion's Blood pour into another glass retort, or phial, which seal hermetically, and give it the heat of the Dog Days, and it will at first turn black, then variegated, then light gray; when the heat is increased it will turn yellow and at last deep red. This is the first Tincture. (Provided it does not explode!)
9. The Red Tincture triturate (How will a fulminate triturate?) in a glass mortar. Take one grain thereof, wrap in paper project on it 1000 grains of gold in fusion. When it has remained in fusion for 3/4 hour, the gold will turn into the second Tincture.
10. Take one part of this Tincture, project it on one thousand parts fine silver, and it will transmute it into fine gold.
11. Project one part of the first Tincture, wrapped in paper, upon 1000 parts of pure quicksilver, which has been heated until the fumes arise, and the quicksilver will be changed into the third Tincture.
12. Take one part of this Tincture, wrapped in paper, project the same on 1000 parts heated quicksilver, and it will become fine gold.
13. Take one part of the second Tincture, and project it on copper in fusion, and it will be transmuted into gold of a very red color.
14. Project some of the second Tincture on red hot iron, insert the iron again into the blaze, and it will be transmuted into brittle gold.
15. Melt the gold that has been transmuted of the iron, with equal gold which has been transmuted from quicksilver, and it will become good malleable gold.
16. Dissolve some of the second Tincture in strong alcoholic wine, and take a spoonful in the morning. It will strengthen and renew your constitution. It rejuvenates the aged and makes women prolific.

[From *Alchemy, the Ancient Science* by Neil Powell; pages 65 and 67.]

THE ACCEPTANCE OF ALCHEMY

How long, ye simple ones, will ye love simplicity? and the scorners delight in their scorning, and fools hate knowledge? (OldT:Proverbs 1:22)

Alchemists were often ingored or tolerated and at times vilified or revered. Alchemy was a touchy subject at best. By reading K. K. Doberer's *The Goldmakers*, we find out that Pope Boniface VIII, himself, practised alchemy. Yet thirteen years after his papacy ended, Pope John XXII issued a stringent bull against alchemy during his first year in the chair (1316 AD). It seemed that after awhile, Pope John tried to find out for himself whether or not it was possible to make gold. A Latin treatise on alchemy, published in French in 1557, claims to have his method of transmutation. The large amount of gold found in his treasury after his death further the speculation of his alchemical successes.

As an epitaph to Pope John, K. K. Doberer wrote: "Pope John had had the determination and the intellectual independence to make these experiments in spite of his own Bull. He had anathematized and excommunicated emperor and princes, and shortly before his death he had been at issue with the theologians of the University of Paris, and had himself been threatened with impeachment for heresy." (pg 55) Luckily for many monks, only the German monasteries took the Bull very seriously.

As for royality, alchemists were elevated to court positions or hunted down depending on the mood of the ruler in charge. In 1404, Henry IV issued a stringent prohibition of alchemy. By 1440, his grandson, Henry VI began to issue special licences for those wishing to practise alchemy, and alchemy was again a noble pursuit.

Why the change? The following excerpt from *The Goldmakers* may explain it:

<u>Jaques le Cor: Minister of Finance and Alchemist</u>

About 1440 there lived in Bourges a merchant named Jaques le Cor. He had enriched himself by bold trading enterprises, and now had his own ships at sea. At this time, however, the city of Bourges was the place of residence of the King of France, Charles VII.

Nothing was more natural than that this monarch, hard pressed by the English armies, should begin to borrow money from the rich Jaques le Cor. And the only security the King could offer at the time was to appoint Le Cor as his Finance Minister. A useful Minister of Finance, with the task of making up the budget deficit from time to time out of his own pocket! It is not to be wondered at that in the end Le Cor considered what better ways there might be of filling the gap, what less burdensome method of feeding this unceasing trickle of gold coins.

The Minister of Finance of the King of England had much the same cares. So both set their minds hard at work, and it is simply impossible today for the historian to say which of the two first hit on the brilliant new idea. Both, in any case, turned it quickly to account.

In England a prescribed portion of all gold pieces was now coined from alchemical gold, and the alchemists were not pressed too hard if their gold did not stand all the usual commercial tests. All it needed was to have a good appearance for a while, for it was used for the payment of the troops on the Continent. In order to increase the confidence in them, the die of the reigning King Henry VI was not used, but that of the good old rose nobles of Edward III. No wonder that from then on Raimund Lullus was suspected of having coined all the nobles of Edward III alchemically, with varying success.

After a little experience with these inferior rose nobles, the English soldiers very naturally tried to exchange them at once for French gold coin. But the French troops had meanwhile been armed by Le Cor with similarly produced gold, and each side paid each other much the same coin.

Le Cor had the alchemical gold minted with the dies of the good and popular French crowns bearing the royal coats of arms. He certainly did his best to make these gold coins as good and genuine and lasting as he possibly could, for unlike the English he had to issue them in his own country. But it could only be expected of him that he should make the best use of his own alchemical knowledge and that of his contemporaries and should energenitically pursue alchemical research and experiment: it could not be expected that he should squander the rare and natural gold on these damned coat-of-arms crowns.

It is difficult to settle today which was of these counterfeit gold peices was worse, the French or the English. It was Le Cor, at all events, who in the end was left to "hold the baby." When under the enthusiasm aroused by Joan of Arc the English were driven back, they did not load themselves either with alchemical French coat-of-arms crowns or with their own dubious rose nobles, but took with them all the genuine gold to be had.

Thus in the end Jaques le Cor found himself in a France overflowing with counterfeit gold pieces. The coins, however, that bore the French arms had been minted under Le Cor's supervision, and there was nothing to prevent him from being arraigned for issuing false coin. All those who had been cheated with

counterfeit money, blind and intentionally blind to the fact that Le Cor had done his faithful duty to his king and was now merely being made a scopegoat, shouted for his execution.

When his trial started it was impossible, of course, for the king to intervene openly without implicating himself. And as those who had been cheated were determined that blood should run, the judges were afraid of incurring unpopularity if they showed any leniency. So the extreme penalty was pronounced. The king could easily have made the needs of the State an excuse for doing nothing. But he was a just man. Breasting the wave of popular fury, he pardoned Jaques le Cor. But in order to give a sop to the universal feeling he was obliged to banish him.

The king knew, however, that Le Cor had not only drawn upon his own fortune in the king's service, but had acted with true statemanship in paying artificial gold with like coin. So when, in 1453, Le Cor went into exile to Cyprus, the king permitted him to take to his new home the remainder of his fortune.
[From *The Goldmakers, by K. K. Doberer; pages 65 to 67.]*

THE MONASTERY LINK

Take heed therefore unto yourselves, and to all the flock, over the which the Holy Ghost hath made you overseers, to feed the church of God, which he hath purchased with his own blood. (NewT:Acts 20:28)

Perfecting the world and the soul was the true alchemist's mission. Even as early as 300 AD, we find this to be a driving force. Here is an excerpt from a letter Zosimos the Wise wrote his former sweetheart, Theosobeia of Constantinople:

"He who will devote himself to the great work must be free from selfishness and greed and filled with piety and goodwill. He must know the true times of the planets, the magic formulae and processes, and the magic substances. Fruitless are all efforts of the unlearned and the deceitful, who strive not after knowledge but after gold--after the curing of the incurable malady of poverty, a curing which they might have attained by other means, as by marrying a rich wife with a great dowry." (*The Goldmakers*, page 29.)

Is it any wonder then that many alchemists were monks? A true alchemist was working towards the salvation of the natural world. Many worked from scrolls captured during the Crusades. What better laboratory than a monastery, safe from the greedy intentions of profane? Though there were alchemists in almost every Holy Order, I (*Amanda Doerr*) will just deal with the two most influential, the Dominicans and Franciscans.

The Dominicans

It is said that amoung Europeans, Saint Dominic was the first to learn the secret of the philosopher's stone. And when he died in 1221 he is said to have left this knowledge to a young monk in his order, the twenty-eight-year-old Albertus.

This young Dominican was the Swabian Count von Bollstadt, who had studied at Padua, and had then entered the Dominican Order. Thus, if Saint Dominic had passed on the secret, he had not transmitted it into unworthy hands. The monk Albertus had command of physics, mechanics, and chemistry. His Order sent him into many countries to instruct the monks. He taught at the monasteries of Cologne, Hildesheim and Freiburg, and at Ratisbon, Strasbourg and Paris. The young man who had became a monk in his twenty-ninth year was called at forty, Doctor Universalis.

But his reputation continued still to grow. In 1260 he was made Bishop of Ratisbon. In three years he restored the impoverished and debased bishopric and liberated it from a burden of debt. That, it was whispered, was nothing wonderful for a man who possessed the secret of the philosopher's stone, and could make gold.

In his seventieth year he resigned his see, entered the Dominican monastery at Colonge, and once more devoted himself entirely to the sciences. After his death in 1280 he was called Albertus Magnus, Albert the Great. (*Side note: In 1932 AD, Albertus Magnus was canonized as a Catholic saint.*)

Albertus Magnus has often been represented as an opponent of alchemy, on the strength of short extracts torn from a passage in the second treatise of the third book of his *History of Metals*. Here, however is the full passage:

"Alchemy so proceeds that it breaks up a certain body, takes it out of its species, and clothes with the most essential of its components a body of another species. Consquently that alchemical process is the best, which proceeds from the selfsame means as nature herself. Namely from the purification of Sulfur by boiling and sublimation, the purification of Mercurius, and the good admixture of both with a metal basis. For those two cover every sort of metal."

"Those, however, who propose to whiten with white and to magenta with magenta, while the species of the coloured metal remains the same, are undoubtedly

decievers and do not make either true Gold or true Silver. And yet almost all take this course entirely or in part. I have subjected to test specimens of alchemical gold and silver that has been brought to me. They endure six or seven firings. But when the heat is applied to them still more often, their body is destoryed or burnt up."

It is particularly the added sentences against deceivers that are quoted as the whole judgment of Albertus Magnus on alchemy. But a single sentence from the next treatise in his book shows us how necessary it was that we should give the whole passage quoted. In the next treatise he says:

"Gold proceeds from Silver more easily than from any other metal. For it is only necessary to change its colour and weight, and this is done without trouble."
[From *The Goldmakers*, by K. K. Doberer; pages 42 to 43. Side note added.]

The Franciscans

If there is any of the contempories of Albertus Magnus who can be mentioned in the same breath with him, it is Roger Bacon, the learned English Franciscan monk. Of a prosperous family like Albert von Bollstadt, Roger Bacon was born in Somersetshire, 1214. He studied at Oxford and Paris, and, like Count Albert, became a monk and then a famous teacher of the sciences. His students in Paris called him Doctor Admirabilis.

But there soon came a deep divergence between the destinies of Brother Roger and Brother Albertus. Albertus was accorded honour and distinction by the superiors of his Order. Roger belonged to another Order, the Franciscan. His superiors regarded the scientific studies of the monk Roger with the deepest suspicion. Was he not an enthusiastic supporter of another suspect Franciscan monk, teaching in Paris--Peter Peregrine? Did not this Peregrinus, also known as de Maricourt, speak against "blind faith"? Did he not teach that experiment alone can bring us knowledge of all natural things in medicine and chemistry, yea, of all things in heaven and earth?

We need not wonder at finding Brother Roger Bacon soon back in Paris, from Oxford, summoned to appear before the judges of the Order, and then condemned to bread and water and solitary confinement. For ten years he was held thus in Paris by the General of the Franciscan Order, Giovanni di Fidanza, called Bonaventura.

Then, in 1265, Guy de Foulques, Papal Legate at the English Court, was elected Pope. He ascended the papal throne as Clement IV. Guy de Foulques had known in England of the scientific work of Roger Bacon. Now, as Pope Clement, he could

overrule the superiors of the Order and demand fresh scientific work from Roger Bacon.

For ten years Roger Bacon had been denied pen and ink. Now radiant with joy, he set to work again. In rapid sucession he wrote his *Opus Majus*, his *Opus Minus* and his *Opus Tertium*.

In his *Opus Majus* in addition to expounding the great basic ideas of the sciences, Roger Bacon carries on a courageous campaign for freedom of research. "More secrets of knowledge," he writes, "have always been discovered by plain and neglected men than by men of popular fame, because the latter are busy on popular matter." And he adds that he has learnt more useful and excellent things from people without fame than from well-known professors.

It is his *Opus Minus* that contains a detailed description of the philosophy and practice of alchemy. In practical work Roger Bacon had evidently continued the experiments of Peregrinus, the attainment of high temperatures by means of burning glasses, which were so useful to later alchemists and chemists . . . The chronicler, Peter von Trau, tells in 1385 of two such reflectors which Roger Bacon was said to have made at Oxford University. With one of these glasses . . . a candle could be lit at any hour of the day or night. In the other reflector men could see what was being done in any part of the world. The narrator adds to this naive remark that Oxford student had begun to waste far too much time on such experiments. They spent more time lighting candles, he says, than reading books.

Roger Bacon himself was not left too long to experiment by the superiors of his Order. In 1278 there came a new purge of troublesome philosophers in the Order of St. Francis, and Brother Roger was once more placed on bread and water in a solitary cell. This time he was in his cell for fourteen years. He spent only the last few years of his life in freedom at Oxford, in the little room in the squat tower of the gateway at Folly Bridge. And here is a simile concerning the uses of alchemy which Roger Bacon gives in his work *De Augmentia Scientiarium*:

"Alchemy may be compared to the man who told his sons that he had left them gold buried somewhere in his vineyard; where they, by digging found no gold, but by turning up the mould about the roots of the vines, procured a plentiful vintage. So the search and endeavours to make gold have brought many useful inventions and instructive experiments to light."
[From *The Goldmakers*, by K. K. Doberer; pages 43 to 46. Boldface added.]

Another Fransican monk, by the name of Bertholdus, tried to solidify quicksilver. Because of his penchant for dangerous experiments, he was soon given the nickname "Black Berthold". Unknown to Berthold, the substances he used in his quest to tame quicksilver produced what was later to be called gunpowder. Hermetically sealing his crucible to keep the hot and cold spirits in, it is no wonder his crucible exploded when he heated it. This didn't deter Black Berthold. He tried it again and used a bronze mortar with a brass plate wedged on top. When Berthold recovered from the blow, all he found was the empty mortar and a hole in the ceiling of his cell.

THE MOST FAMOUS ANCIENT ALCHEMIST

And for the precious fruits brought forth by the sun, and for the precious things put forth by the moon, (OldT:Deuteronomy 33:14)

When today we speak of something being hermetically sealed, we use the name of Hermes Trismegistos, who in a special process cemented and rendered airtight by sealing with clay the Philosopher's Egg, the vessel in which the transformation of gold was said to take place.

But it is not only such technical chemical terms, terms that have passed into everyday speach, that remind us of Hermes Trismegistos. A bit of his philosophy, a reference, some think, to his method of transformation of gold, has come down to us. It is the *Tabula Smaragdina*, the Emerald Table. There are said to have been engraved on a green table saying that have been preserved to this day in various versions. Here is one of the versions:
"It is true, without lying, certain, and veracious: That which is above is as that which is here below. It is as that which is there above, that tells us the wonder of one single thing."

"As all matters are of one single matter, through uniform observation, so all matters come from one matter through preparation."

"The father of this matter is the sun, the mother of this matter is the moon. The wind brought it in its belly. The nourisher and milk-giver of this matter is the earth. And this matter is the father of all perfection of this world. It power remains perfect when it is transformed into material."

"Separate the earthly from the fire. With wisdom and patience separate the vapourizing and the expiring from the tough and the coarse. From the earth it then rises to the height, and falls down again to the earth. It thus takes up the strength of

the matters that are above, and the strength of the matters that are below. So shalt thou receive the honour of the world and darkness shall move away from thee."

"This is the power and strength of all power and strength, because it will banish the spiritually hovering matters and will penetrate the solid matters."

"The world, too, was so created. And so proceed the wonderful processes of which this is one. I have been called Thrice Greatest Hermes because I possessed three parts of wisdom. And now is ended that which I have said of the preparation of gold."
[From *The Goldmakers*, by K. K. Doberer; pages 17 to 19.]

THE FEMALE ALCHEMIST

Nevertheless neither is the man without the woman, neither the woman without the man, in the Lord. For as the woman is of the man, even so is the man also by the woman; but all things of god. (NewT:1 Corinthians 11:11-12)

In the mists of the the early Middle Ages, a second alchemist, a woman, played a great part comparable to that of the alchemist Hermes Trismegistos. Her name was Maria. Many very early codices refer to the Jewess Maria. Quotations from her works are to be found in the earliest writers on alchemy. Her views are treated as expert and exemplary.

It is no less difficult to establish the epoch in which Maria the Jewess lived than that of Hermes Trismegistos. Some writers call her Miriam, the sister of Moses. Others regard her as a contemporary of the Jewish alchemist, Theophilus, who writes of the "beautiful stone, pleasing to God," the stone that leads to the solution of the great mystery. But the period of Theophilus is just as little known as that of Maria, so this is of no help. All we know of the teachings of Maria--some call her Maria Prophetissa--is that she had no knowledge of the philosophy of Democritus. She may have lived before his time, or some hundred of years later, at the time of Aristotle. His philosophical system--the formation of the world out of the four elements of fire, earth, air, and water--harmonize better with Maria's alchemistic ideas.

In these, old Chaldean learning is mixed with the ideas of Aristotle into a secret alchemistic doctrine confined to the Jewish sages and scholars. In her teachings, Miriam gives the instruction, "Thou shalt not touch the Stone of the Sages, for thou art not of the seed of Abraham."

The old Chaldean theory was that the metals were compuands of sulfur and quicksilver; it was based on the observation that sulfur was released in the treament of most ores. It was extended by the teaching of Aristotle, who had added to the four elements of Empedocles (fire, water, air and earth) a fifth, the eather (or ether), the spiritual quintessence.

Sulphur was regarded as an expression of the fiery element. Maria took it as the basis of her principal processes. This sulphur was referred to in a mysterious phrases, as a stone that is not a stone, a stone so common that everyone sees it but nobody notices it. And Maria the Jewess wrote that God had revealed to her the method of roasting copper with sulphur in order to produce gold. Sulphur was produced from realgar, disulphide of arsenic, which was found in the gold mines. It was considered only reasonable that the use of such initial products must have gold as the final product.

Maria amplified Aristotle's quintessence theory: she taught that every substance, every mineral, every ore had a body and a soul. Thus in the distillation of sulphur compounds the sulphur drawn off was called the "soul" and the blackish residue was called the "corpse." These conceptions persisted in alchemy for two thousand years.
[From *The Goldmakers*, by K. K. Doberer; pages 21 to 22.]
The *Goldmakers* speak of another female alchemist: "Two miles from Goslar, by the river Lamme, lies another Benedictine abbey that was famous among alchemists. Here one of the finest works in alchemistic literature is said to have been written, the work of the Lord of Lambspringk, with its finely-wrought verses and its allegorical pictures. No lords of Lambspringk, however, are known of, and it has therefore been reasonably concluded that the name was a pseudonym of a noble who had become a monk in this Lower Saxon monastery. But if we dip a little deeper into the old chronicles, we get another surprise. In the Benedictine Abbey of Lambspringk there were no monks, only nuns. Our Lord of Lambspringk, who sang so finely for us of "Alchemy," was not a man at all - he was a nun." (page 80.)

Some alchemist did their experiments with the help of their wives. It was thought that to achieve the proper balance between all the forces of nature that a woman was needed to balance out the maleness of the alchemist. The female was known as the *soror mystica*. Nicolas Flamel and his wife Perenelle sought out together the mysteries of alchemy. Though history suggests that Flamel married Perenelle because of her fortune, there is no denying that they enjoyed working together. A

would-be alchemist, Michael Sendivogius, married the widow of another alchemist in hopes of discovering his secrets.

THE MOST OUTSPOKEN ALCHEMIST

And I saw a strong angel proclaiming with a loud voice, Who is worthy to open the book, and to loose the seals thereof? (NewT:Revelation 5:2)

Wilhelm von Hohenheim came from the old Swabian noble family of the Bombaste of Hohenheim. But the little family castle in Pfannigen was in other hands. He himself had no possessions save a good education and a training as physician. He lived in great poverty on his small practise in Maria Einsiedeln in Switerland. He made no improvement in his financial situtation when in 1492 he married the equally poor matron of the infirmary at Maria Einsiedeln. The two had only a little house, not far from Eindiedeln, by the Devil's Bridge over the Siehl. There, at the foot of the Etzel, was born in 1493 their only child, Philipp Theophrastus. The boy grew up amid the pine cones on a frugal diet of cheese, milk, and oatcake. His small pleasures were those of the goatherd and cowherd boys. But his education was strict, careful, and precise. His father and his mother taught him reading, writing, arithmetic, and a little Latin and natural science.

When the mother died in 1502, Wilhelm von Hohenheim went with his little son to Villach in Carinthia, where he had been offered a post as physician to the miners and foundrymen. This move from the quiet Swiss village to the flourishing Carinthian mining basin was the deciding factor in the great career of the young Hohenheim. For both father and son it was a material advance, away from the cheese-milk-oats rations.

After the professional void of Maria Einsiedeln, there were here a hundred new problems for a physician. And the eager scholar in Wilhelm von Hohenheim now found opportunities of exchanging experiences with other educated men and of engaging in discussions. It had been a journey from a spiritual desert to a spiritual oasis.

Mines physician in these valleys abounding in metals--that was the profession for which the elder Hohenheim now trained his son. His son should be a better mines physician than he--a physician acquainted not only with the maladies of miners and smelters and with the poisonous vapours and saline waters, but with the diseases and virtues of metals.

So Wilhelm Hohenheim taught the bright fourteen-year-old not only the elements

of medicine but also those of metallurgy and chemistry. And all his father's scientist friends were delighted with the young lad and shared in the boy's education from their fund of knowledge. One of the first and the most influential of these men was Bishop Scheit of Seckau. He was a man of exceptional learning, and his Augustinian monastery in Upper Styria had a library of ten thousand volumes. After the early death of the bishop his library remained at the service of the studious Theophrastus.

Other friends were Bishop Matthaeus Schacht, Suffragen Phrysingen, the Deacon of Ybbs, and the Bishop of Lavant in Lower Carinthia. The bishop's see of Lavant then belong to the archbishopric of Bamberg, and it must have been particularly from that source that young Theophrastus gained his knowledge of the works of Abbot Johannes Trithemius and the monk Basil Valentine.

In this way the doctrines of medical he align and the alchemistic view of nature became inextricably associated in the youngman's mind. **The firm foundation was laid for the cosmology of the later Theophrastus Bombastus Paracelsus, who saw in the command of alchemy the source of the healing of all that was morbid, including, therefore, the sickness of man.**

The environment in which he grew up made certain that young Theophrastus von Hohenheim should not merely engage in hairsplitting among philosophical notions. To go among the foundries, with the motley radiance of their furnaces, to inhale poisonous fumes, and to see the glittering crystalline ore change into shining white metal, were the adventurous joys of his leisure. Foundrymasters and ore testers were always ready to show the eager, clever son of their mining physician things that they jealously withheld from every grown-up as mysteries of their craft.

It was not surprising that when his father sent young Theophrast to Basle University in 1509, the youth stood out among the young students. But Theophrast had already too sound a basis of naturalist knowledge to be able to rest content with the conventional arid type of medical science based entirely on Aristotle and Galen. He cut short his studies in Switzerland and returned to Carinthia.

Theophrast von Hohenheim seems now to have determined to learn from practical men the composition and sybthesis of metallic and other substances. He found that most of the professors at the Universities knew nothing about these things, and consequently did no more than repeat obsolete rubbish from well-thumbed volumes. And for a physician whose one concern was to heal, the true composition of things must be the all-important basis of all study.

"It is the giving of Health that makes the Physician, and their Works that make Masters and Doctors, not Emperor, not Pope, nor Faculty nor Privilegia nor any University."

So wrote Theophrast von Hohenheim, and he went into the metal-smelting laboratories in order to learn what the physicians of his time despised - chemistry. At that time the wealthy Fuggers of Augsburg owned the Schwatz silver mine, and the "Edel und Vest Siegmund Fueger" himself came to the laboratories to watch new processes in alchemy. This rich Fugger gave Theophrast many opportunities in his laboratories and the advice of his laboratory workers.

Armed with new practical knowledge, Theophrast von Hohenheim went once more to a University. This time it was Ferrara, and it is said that he there gained a doctorate.

Here in Northern Italy Theophrast von Hohenheim may also have come under the influence of the occult alchemist thought of Agrippa von Nettesheim, for Theophrast himself writes of the Green Table of Hermes Trismegistos:

"And thought nothing of this is mentioned by thine accredited Fathers and false Prophets, yet the ancient Smaragdine Table shows more of art and experience of Philosophy, of Alchemy, and of Magic, than can ever be conceived by thee and by the company."

But Theophrastus Paracelsus did not use this philosophy for a return to aesthetics. He did not build himself a golden castle in Spain. He wanted to help men, and he learned where the great Roger Bacon had also learnt. **The greatness of Theophrastus Bombastus Paracelsus lies there, in his open mindedness:**

"I have learnt from Barbers, Cuppers, old Women, Gypsies, Hangmen, and Knackers."

Not that such intercourse as this brought any better repute than in our day! In his independence of spirit Theophrastus arrived with his reputation just where Agrippa von Nettesheim was landed by his unwelcome philosophy. But the orthodox did not only whisper about Theophrastus Paracelsus, they published their opinion in word and in writing . . . But he also had better replies to make:

"He who is but a believer and no philosophus, is no sage in faith. It is best for the

believer to be a wise man and a man of ingenuity, that he may know what it is that he believes. A fool that believes is dead in his belief. That man is rich who knows God in His works and believes in him through them, not as a blind man believes in colour."

It is true that in his book *Paragranum* Theophrastus Paracelsus had hard words for those physicains who never dreamed of looking up from the pages of books to cast a single glance at the working and the composition of the substances in the world. Of these physicians he writes:

"They are despisers of philosophy, despisers of astronomy, despisers of alchemy, dispisers of virtue. How can they remain not despised of the sick?"

What he has learnt from such physicians, Paracelsus deems valueless:

"That which I have learnt from you, that has the drift snow consumed, and I have thrown into Saint John's Fire all books, in order that all ill-fortune may go into the winds with the smoke."

Paracelsus asks those physicians the secret of life and decay, and gives answer to them:

"What makes the pears ripen, and what brings forth the grapes? Nothing but the alchemy of Nature! What makes milk from grass? What makes wine from barren earth? It is the natural digestion. And as external nature pursues alchemy, so must the physician bring things to ripening."

In his book *Archidoxa*, later printed at Strasberg, Paracelsus carries his system of substances beyond the four elements and the quintessence. He adds to it a superstructure of the impalpable, the world of the Arcana. His system of the still incomprehensible is bound up with the similar alchemistic conceptions of the transmutation of base metals.

He regards the *Material Prima* as the first *Arcanum*. He explains it as a seed from which, like the plants of the field, new youth grows in men to a new summer and new years.

The Arcanum of the philosopher's stone also proceeds from the philosophy of the conversion of lead into gold. It agrees so well with what it was always possible to expect of the virtues of the philosopher's stone, that the arcanic philosopher's stone

of Theophrastus Paracelsus is in truth the eternal philosopher's stone of all alchemy:

"Lapis Philosphorum, which is the other Arcanum, has its effectin another form. Just as a fire cleans the solid and torn skin of the Salamander, and makes it pure and clean, as though it were new born, so does the Lapis Philosophorum purify the body, cleansing it of all filth, and giving it new young powers."

Living quicksilver, *Mercurius Vitae*, is the third *Arcanum* of Paracelsus, and the Tincture is his fourth. Just as the Tincture makes gold out of silver and other metals, so here it tinctures the body, takes away the bad qualities, dullness and courseness, and by purification makes it most noble and eternal.

Of all these Arcana it was the experiments with living quicksilver that made Paracelsus famous for all time. He suceeded in fighting the most dangerous disease of his day, regarded as incurable--syphilis.

In spite of all the opposition, Theophrast von Hohenheim did more for medicine than many a highly resepted physician, and did more practical work with metals in alchemy than many an alchemistic writer. It is in his book *Archidoxa* that Paracelsus claims, over and above his other achievements, to have found the true philosopher's stone, the converter of metals:

"For my treasure lies still at Weyden in Friauli, in the hospital. It is a jewel for which neither the Roman Leo nor the German Karl can pay. Though the name of the Signet Star was given among your secrets, it is recognized by none but the disciples of the divine Stagirite."
[From *The Goldmakers*, by K. K. Doberer; pages 92 to 100. Boldface added.]

THE FRAUDULENT PRACTITIONERS

They conceive mischief, and bring forth vanity, and their belly prepareth deceit. (OldT:Job 15:35)

A Very Elaborate Scheme

Duke Cosimo I was the victim of a swindle carefully prepared by a false alchemist who called himself Daniel von Siebenburgen.

This Daniel von Siebenburgen went to work on a long view, and himself sunk four thousand ducats in his fraudulent enterprise. Out of the four thousand ducats he had prepared a powder which nobody could easily recognize as gold and which he

called the Usufur powder.

With this he began the first preparatory part of his fraud. He had so to introduce and popularize the powder that every apothecary knew about it and regarded it as well-known and not excessively dear medicament.

To this end Daniel von Siebenburgen travelled through the Italian towns and sold Usufur with other preparations to the pharmacists, as a medicament. Then he set up as a physician, and made his patients themselves fetch Usufur from the pharmacists for him to incorporate in the medicines he prepared for them. In this way he got his gold back and at the same time quietly pushed his powder into notice.

In 1555, when he felt the time was ripe, Daniel went to Florence and secured an audience from Duke Cosimo. The alchemist showed plenty of self-assurance. He said he could offer a recipe for making gold that contained only a few simple chemicals and required no long period or difficult manipulations for production. The duke could himself have the materials brought from any apothecary in the city. The duke saw on the list a Usufur powder that was unfamiliar to him. But he found that the apothecaries all knew it. The first test went smoothly and with perfect success. The metal refiners declared the product to be pure gold. The duke himself made another test privily for his own satisfaction, with no worse result. No wonder Duke Cosimo hasten to purchase the recipe from the alchemist. A formal agreement was drawn up under which Daniel von Seibenburgen bound himself to make the new process known to no other person, and in return was to receive from the duke an indemnity of twenty thousand ducats.

So Daniel von Siebenburgen was relieved for the time from all anxiety as to his means of subsistence. But, as the duke could understand, the learned Daniel was a very busy man. Many people must need his scientific counsel in these matters. So it was not surprising that the great alchemist was soon summoned urgently to France for a consultation.

The Duke of Florence had no fear for his gold production. Without the alchemist having anything to do with the work, the duke had himself sent again and again to the apothecaries for the materials for the gold mixture, including the Usufur powder, and he had thus already made gold to the value of a couple of thousand ducats. But, quite apart from that, the duke had a great regard for the learned Daniel von Siebenburgen, and did not want to lose him from his court at Florence. So Daniel had to promise the duke that he would soon return. On the day of his departure a ducal barge conveyed him across the sea.

But Daniel did not return to Florence. Instead there came an impudent letter for the duke in which the alchemist mentioned the limited world stocks of Usufur and intimated that he was the only manufacturer of it.
[From *The Goldmakers*, by K. K. Doberer; pages 109 to 110.]
Other swindlers repeated Daniel von Siebenburgen's trick on a smaller scale. Some would sell an already well-known medication mixed with gold to the city's apothecaries. One man used gold mixed with charcoal in his experiment. Another man's recipe called for a special spice which was sold to the victim by an accomplice.

Some frauds were alloys of gold and some other metal, or bronze- and brass-like alloys. Sometimes the swindler would forge a nail with one half solid gold and the other half iron. Then they would paint the gold half black and then dip it in a liquid that would remove the paint. To the spectator, it would appear as if the nail was half transmuted into gold. If the nail was taken to a refiner for testing, the refiner would verify that the gold half was truly gold and the other half was definitely iron.

GLOSSARY

And he said unto them, Go ye into all the world, and preach the gospel to every creature. (NewT:Mark 16:15)

Alchemy: the art of perfecting metals and souls.

Calcination: the act of reducing metals and minerals to a fine powder.

Distillation: a liquid is first boiled to a vapor and then condensed back into a liquid by cooling.

Elements: the medieval elements were Fire, Air, Water, and Earth. Quintessence or Ether was later added.

Gold: the most perfect of metals. (Father of all metals)

Philosopher's Stone: a miraculous substance which could turn any metal into gold and cure any illness.

Prime Matter: true matter without physical representation;

Puffer: used to described one who is only searching for gold. (High heats where

thought to be a quicker way to obtain gold. Bellows were used to increase the heat.)

Putrefy: rot to a liquid state.

Quicksilver: the element mercury.

Quintessence: the fifth or heavenly element; often called Ether.

Refluxed: to redistill a liquid without collecting it.

Silver: second in perfection to gold. (Mother of all metals)

Sublimation: the act of heating a substance until it is vaporized.

Tincture: something that can tint (or change the color) of something else.

Transmuted: transformed or changed.

Let us hear the conclusion of the whole matter: Fear God, and keep his commandments: for this is the whole duty of man. For God shall bring every work into judgment, with every secret thing, whether it be good, or whether it be evil. (OldT:Ecclesiastes 12:13-14)