THE ENCYCLOPEDIA OF GAMBLING

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THE ENCYCLOPEDIA OF GAMBLING

The game, the odds, the techniques, the people and places the myths and history

PETER ARNOLD

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the techniques, the people and places
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CHARTWELL BOOKS INC.

To my wife

A QUARTO BOOK

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HASTINGS BRANCH

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PART ONE

The history, culture and psychology of gambling

To gamble is to risk anything of value on a game of chance or on the outcome of any event involving chance, in the hope of profit. All that can be said about the beginnings of gambling is that in all civilisations, records of games are among the earliest found.

A mural in the British Museum shows Ancient Egyptians playing atep, from which the modern game of spoof arose, and which required no equipment other than the normal number of fingers.

Over 4,000 years ago the Chinese were playing wei-ch'i, a game which is still played in the East, where a gamble is often taken on the outcome.

As gamblers are attempting to predict what the future holds, there is an obvious association with fortune telling. One of the earliest methods of fortune telling was pessomancy, the casting of pebbles at random and reading answers to questions in the scatter. Ancient Greeks also used bones, both the flat kind for yes-no answers and the ankle bones of cloven-footed animals like sheep which offered four distinct faces. These bones were called astragals and were widely used in Greece and India, thousands of years before the birth of Christ, for gambling. Astragals were cast from cups, and are the ancestors of today's dice, which, like dominoes, are frequently called bones. In Greek mythology, the universe was divided by casting an astragal: Zeus won the heavens, Hades the underworld and Poseidon the sea. Board games using a form of die are at least 5,000 years old. The earliest in existence are five found in the royal tombs at Ur in Mesopotamia. The dice used were of pyramid shape, and the game played on the boards used counters. It was probably a race game, but nobody knows how it was played. The first six-sided dice were used by the Etruscans and brought to Rome, where dice made about 900 B.C. have been found.

Gaming was popular in early times in Babylonia, China and India. Homer, in the *Iliad*, tells of a quarrel over a game of knucklebones. Cheating and the harmful effects of gambling are mentioned before the birth of Christ by Aristotle, who talks of loaded dice. Tacitus, in the first century A.D., talks of men staking their liberty on the throw of dice, and becoming slaves when they lost. The Old

The ancient Greeks thought that gambling was invented by the gods and was a pleasure for the socially privileged only. This illustration, incised on the inside of a mirror cover in the British Museum, dates from about 350 B.C., and shows the goddess of love, Aphrodite, playing knucklebones with the god Pan.

Many modern women have been introduced to the attractions or perils of gambling by the current craze for organised bingo, but the ladies on the terracotta figurine from Capua in the British Museum were enjoying playing knucklebones in the fifth century B.C.

The man shown on this Roman mosaic from the National Museum of Rome looks not unlike a modern jockey. A charioteer, he wears the colours of his sponsor and even a leather crash helmet as a protection against possible falls.

Testament frequently mentions the casting o lots among ancient Jews to ascertain the wi of God or to detect guilt among suspects.

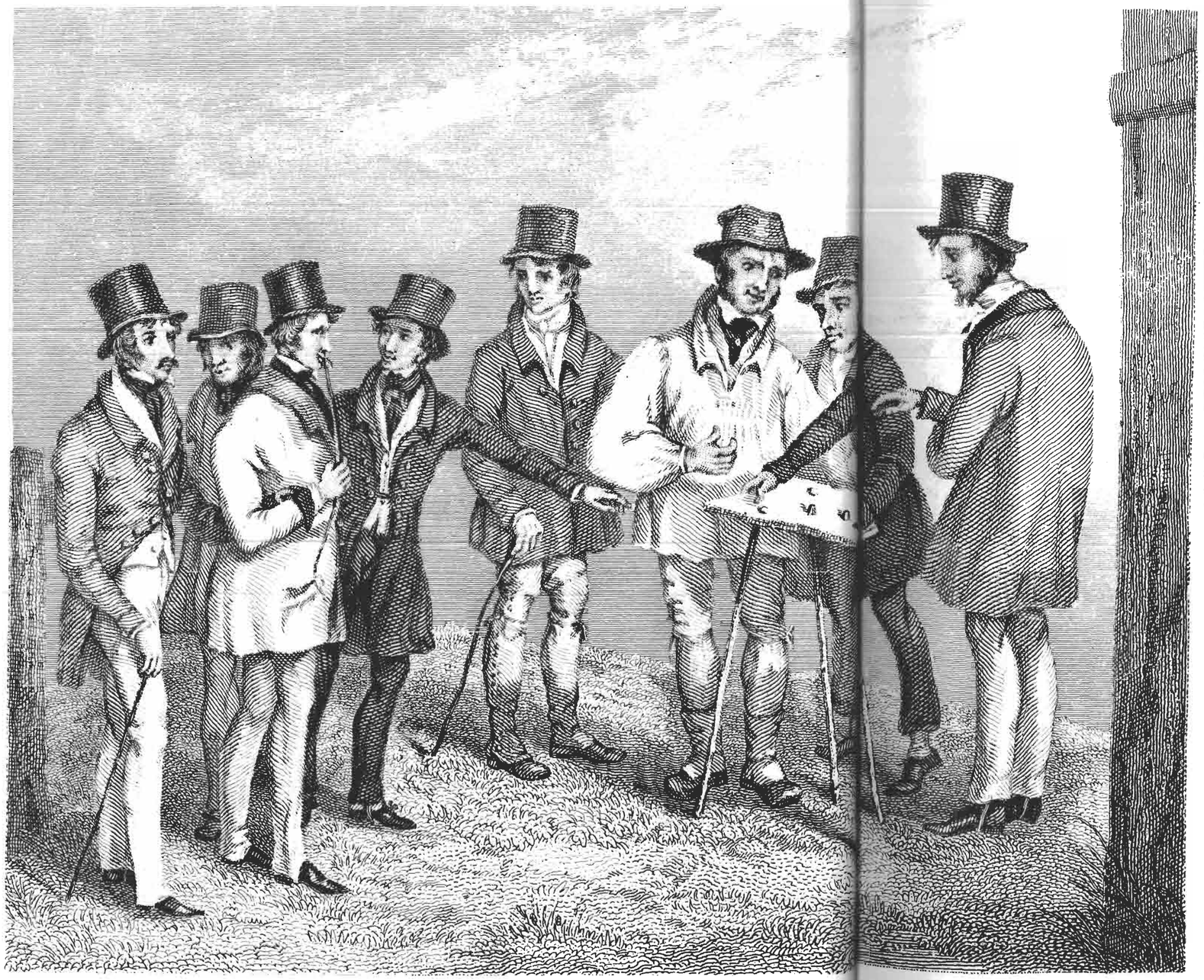
The views of early societies towards gam bling differed. Many regarded the drawing o lots as a suitable method of determining th guilt or otherwise of a suspected criminal, o the suitability of candidates for office, be only that of huntsman. But this was no looked upon as gambling, since it was believe that gods rather than chance were directin the results. The ancient Greeks saw gamblin for profit as a threat to the organization of th state, and punished those who practised i The Romans passed laws against gamblin but it nevertheless became a feature of th December festival of Saturn, encouraged b the rulers as part of the general merrymakin In both Greece and Rome gaming took plac in the taverns.

The invention of playing cards provided convenient means of gambling, more sophis cated than the casting of dice, the running o races, the tossing of coins, or race-games wi boards and counters. Nobody can say fo certain where playing cards were first use One theory is that they were first used i

Korea and that the marks on them corres ponded to arrows, which were used for divin ing. Another is that they derived from paper money used in China, another that they were first used in India. The Indian theory is based on the fact that Indian gods, particularly Hanuman, the monkey-god, are shown hold ing symbols not unlike those used in the suits of modern cards: Hanuman held a cup, a sword, a ring and a sceptre.

Certainly the rapid development of cards as the basis for a number of games occurred in Europe from the end of the fourteenth century. The first reference to playing cards is in a manuscript dated 1377 in the British Museum. The standard pack of 52 cards was used, and this was the only pack used for games in Britain, where cards were introduced in the first half of the fifteenth century. How ever, in Europe there was also the Tarot pack, used for both fortune telling and games. The earliest Tarot packs contained four suits cups, swords, money and batons) of 14 cards each (the numbers one to ten, plus kings, queens, knights and varlets) and 22 triumph, or trump, cards. There is dispute as to whether the Tarot pack was the first used, later slimmed

The busy craps tables of Las Vegas in the last thirty years have seen many women encouraging the dice with the command to 'buy baby a new bonnet'. That dice have been popular in mixed company for hundreds of years is shown by these two illustrations. The ladies in the Elizabethan brothel above are providing a client with the subsidiary pleasure of a dice-game, and in the lower picture it seems that baby himself is taking a special interest in his prospects of a new bonnet.



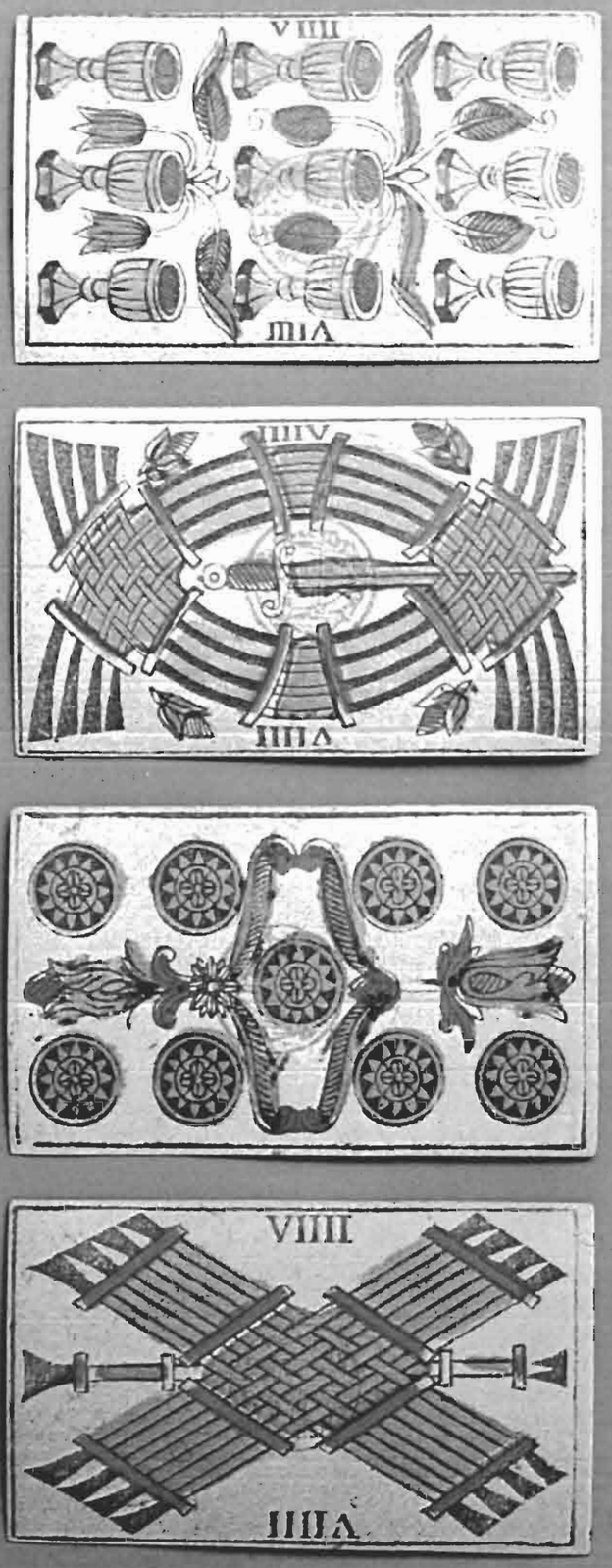
The game of find-the-lady, or the three-card trick, is not a game at all, but a swindle in which the manipulator encourages the victim to select which of three face-down cards is the queen, and by sleight-of-hand ensures that the choice is always wrong. It has a long history and descends from a similar trick in which the victim had to choose which of three cups or sea-shells hid a ball or a pea. The larger engraving, called 'The Light of Other Days', and dating from about 1840 shows a version in which thimbles were used. Its crookedness was acknowledged in its name, thimble-rigging. The glamorous props which often accompany simple gambling games are most evident in modern roulette, but the Araucanian Indians gambling in the smaller engraving used an elaborate cloth to bring aesthetic pleasure to their game.

down to today's standard pack, or the standard pack and the Tarot triumph cards evolved separately, were joined for a time, and later separated again.

The place of origin of the standard pack has its various claimants, the three strongest being Italy, where the four suits were cups, swords, money and clubs, Germany (hearts, acorns, bells and leaves) and France (hearts, pikes, tiles and trefoils). Nowadays, although the names for the suits vary, all countries use the standard symbols, known in English as hearts, spades, diamonds and clubs. Playing cards were introduced to America in 1492 with Columbus, when the modern pack (or 'deck' in America) had already established its dominance over others.

If the theory is accepted that cards evolved from Korean divining arrows, it is possible to trace the evolution of most games back to the times when men first decided to make decisions by appealing to an outside agency, which most of us now would call chance.

As soon as chance was called upon, gambling began, there were gambling addicts,



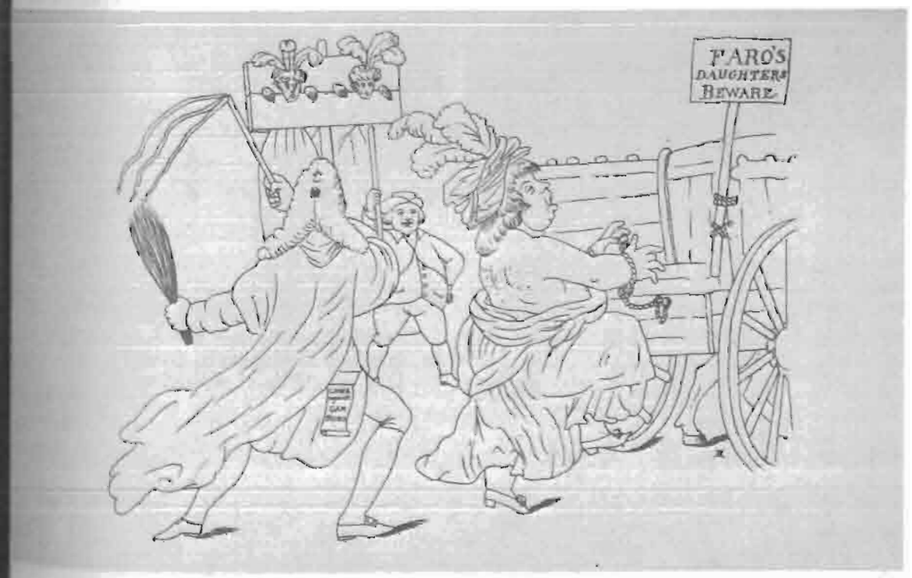
While gambling is thought by some to be a sordid pastime, many of its tools have been beautifully designed, such as these Italian tarot cards. Illustrated are the nines of the four suits: cups, swords, money and batons.

and there were those who objected to gambling.

Certainly since the Reformation most civilised countries have placed restrictions on gambling. In Britain, the first law against gambling was enacted in 1661, and several Acts passed during the next 300 years suppressed one or another form of gambling. In 1960 the trend was reversed and gambling became accessible to most. Nowadays one of the strongest objections to gambling is that it leads to the emasculation of the addict, with hardship to his dependents and inconvenience to the state. Religious objections, based on moral grounds, are more or less vehement in different parts of the world. The ease with which criminals can use gambling as a way to financial power is a comparatively modern objection. In old societies, based on privilege, opposition to gambling was based on the undesirability of the lower classes enjoying its pleasures, a view which seemed to influence British laws before 1960. Until then rich men would back horses easily by means of a legal credit account with a bookmaker, but poor men were forced to the inconvenience of making bets by post. Illegal street bookmakers defied the restrictions.

The 22 trump or triumph cards of the tarot pack are known as the major arcana. Numbered from 0 to 21, each contains an emblematic picture, and all have a title, except number 13, which represents death, and is often left untitled. From top left to bottom right, the cards illustrated represent death, the sun, the hanging man, the lovers, the moon, and the fool, which is sometimes numbered 0 and sometimes unnumbered.

Even today, after thousands of years of gaming, the attitudes towards it and its legality vary from country to country. There is no standard attitude in communist countries, where the Soviet Union and China do not possess casinos, at least in theory, but Czechoslovakia and Yugoslavia do. Many countries which otherwise frown on gambling allow lotteries to raise funds for the state; some, like



Lord Kenyon blamed gambling for many of society's ills and the 1797 illustration, with the warning 'Faro's daughters beware', shows his proposed punishment for excessive gaming.

the Scandinavian countries, allow football pools for the same purpose. Many countries permit horse-racing, but most restrict betting to a totalisator or pari-mutuel system, which pays a levy to the State. Some allow bookmakers to take bets on the course only.

Britain at present has the most enlightened attitude to gambling. Every citizen can conveniently bet on almost anything he wishes, although taxes are extremely punitive on football pools, for many the only regular betting activity. Also, the wish to allow the bookmakers and the tote to compete for the custom of horse-race bettors means that less money is skimmed off to improve the declining standard of British racing than would be the case if the tote had a monopoly.

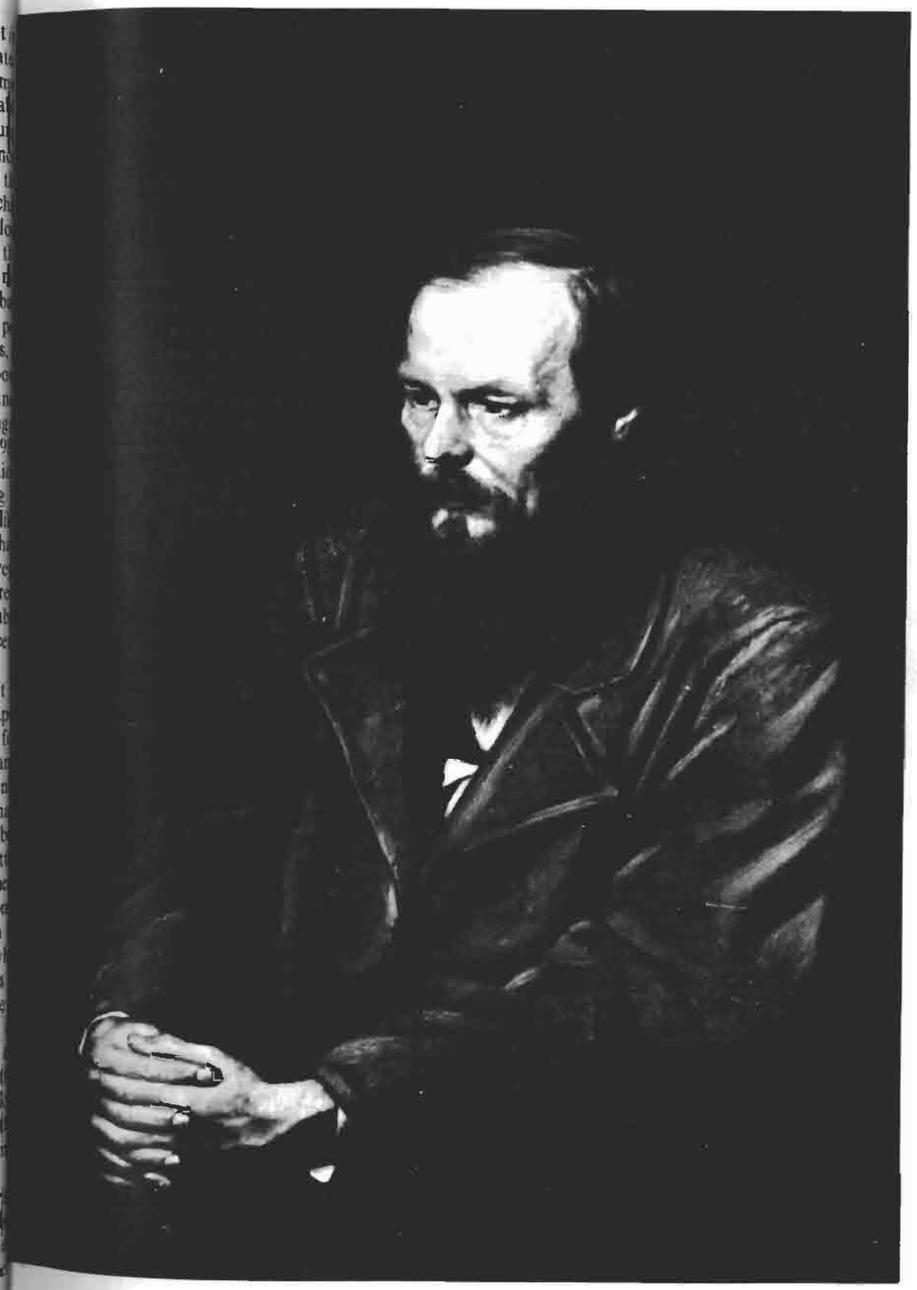
In America and Australia, opportunities for gambling vary from state to state. In America, legal casino gambling is permitted only in Nevada. Many states now run state lotteries. Not all states yet allow pari-mutuel betting at race-tracks, and betting on horse-racing away from the track is allowed only in Nevada, which permits gambling in general, and New York. A few states allow slot machines, but even bingo is allowed in only about half the states. All Australian states run state lotteries. The most popular betting is on horse-racing, through the tote and licensed on-course bookmakers.

Closed circuit television is a luxury not found in many British betting shops, where information on runners, prices and results, and commentaries, are usually relayed by radio. In the betting shop above six screens using videotape show runners and results from Ascot, Haydock Park and Ludlow race courses.

The size of the gambling industry is difficult to estimate, as much of it is necessarily illegal. In Britain, where figures are most available, the turnover is well over £3,000 million per year, or over £60 per head of the population. In America, where turnover is the biggest in the world, it has been variously estimated between about $300 per head and eight times this amount. But turnover is not a reliable guide to how much is spent. Gambling turnover is estimated in various ways. For instance, the turnover of a casino might be based on the amount of chips bought, although each chip might be used for several bets before it is lost or cashed in. The turnover also includes the money paid back to winners, so does not represent the amount lost. In British football pools, for instance, where only about 28 per cent of stakes are returned to the punters, a turnover of £218 million in 1975 meant about £157 million actually spent. On the other hand, about 80 per cent of money staked on racing is returned to the punter, so a turnover of £1,9[illegible] million represented less than £400 million spent. However it is looked at, gambling is big business, with a turnover in countries like America and Britain several times bigger than that of any of the largest companies. Surveys in these countries suggest that about three-quarters of the adult population gamble regularly; probably less than ten per cent never gamble at all.

Why should gambling be so popular? It is not a natural instinct, although the competitive instinct may be: babies compete for attention and love. Children play games, and it is natural to want to win. Adults not only want to win, many of them desire more than the winning as a reward for their skill. A bet adds significance to the win. Adults with little skill at games can share the glory of winners by betting on them. In this way they become winners themselves by displaying acumen in making the right choices. Even a person who bets on an event of pure chance displays the competitive spirit: he wants to show that he is favoured by luck. Gamblers rarely talk of losses, often of wins, even though a win on an event of pure chance reflects no credit on the winner. But it demonstrates that he is lucky, and a belief in luck is an instinct which all the rationality and science in the world seem unable to eradicate from man.

Most people who gamble would be unwilling to admit that they do so for any other reason than the enjoyment of pitting their skill against that of the bookmaker or the



Fyodor Dostoevsky was not only a pathological gambler, he was also a genius who in his short novel 'The Gambler' conveyed the excitement of the addict. He was 51 when the Russian artist V. G. Perov painted this portrait in 1872, and still a victim to the mania which caused trips to money-lenders and pawnbrokers between bouts of writing.

Most gamblers like to think of their wins as the due reward for skill and foresight, and their losses as the cruellest bad luck. Nevertheless many paradoxically follow lucky routines and keep lucky charms. Photographs of two Derby winners and two big football pools winners frame one of the most widespread lucky charms, a rabbit's foot.

The true gambling addict has a differe
set of reasons for gambling, or if some are t
same they undergo a qualitative change. W
the addict, gambling displaces all other int
ests. His mental energies are directed entir
on the game to the exclusion of everythi
else, even, ultimately, his family. The path
logical gambler cannot stop gambling. Losi
does not deter him. He always believes th
he will win eventually, and regards his she
persistence as a guarantee that he will. H
is deaf to all logical arguments, seeing t
irrationality of his behaviour as part of
charm and mystique. He sees himself as son
thing special, a man selected by fortune,
man to whom the normal laws of chance
not apply. Attempts to dissuade him from t
view merely strengthen his compulsion. Wh
the addict does win, he is incapable of stopp
with a profit. He must go on to win mo
He is confirmed in his belief that he is a winn
his optimism re-inforced, if re-inforceme
were necessary. He may have started with
system of betting, perhaps even based on
rational premise. But gradually his stakes w
increase beyond his means. At last a sort
fever will take over, not born of desperati
but of excitement, and he will gamble rec
lessly until his funds are exhausted and he mu
seek some more.

It is when he reaches this state, that t
pathological gambler differs most from th
casual gambler. For him, the prospect
winning or losing becomes of seconda
importance. He needs the tension of gamblin
He is like the drug addict who must shed t
mundane for a different, heightened awar
ness. The desperation of losing is as necessa
to him as the ecstasy of winning. The pl
becomes a sort of orgy.

The best study of a pathological gamb
is in Dostoevsky's novel *The Gambler*. I
describes the overwhelming craving for ri
of his hero, who having won a fortune in t
casino is impelled to risk it all on one hand
trente et quarante. It is making the bet th
brings the thrill. If he wins he must do it aga
and again until he loses, which is seen as
tragedy only because it ends his orgy. For so
years Dostoevsky himself was a gambli
addict, and reduced himself to begging
funds from other writers. It is something

fellow players. This is a valid reason, and no doubt many people who play games like bridge for small stakes get as much or more satisfaction from the exercise of their skill as from the material winnings. There are other less attractive motives. The desire for profit is an obvious one, particularly strong in low-income groups where gambling is seen as the only hope of acquiring some of the good things of life. Many football pool punters have no real interest in football, or knowledge of form, and complete their coupon at random, with the hope of a fortune for a small outlay.

Some people gamble as a social activity. Gambling provides an opportunity to meet and discuss matters of common interest, like race-horse form, with acquaintances. Gambling also buys an interest in the future: the dullness of an afternoon can be alleviated by anticipation of the racing results. Amongst richer folk, gambling might appeal for its glamorous connotations and the opportunities it gives to fantasise, as well as a means of bringing some spurious excitement to life.

HAT IS GAM-ANON?

Gam-Anon is a fellowship for the families of compulsive gamblers. It is founded on spiritual principals.

WHY DO WE HAVE GAM-ANON?

Families of compulsive gamblers have found living with the gambling problem to be a devastating experience. Every one of us have faced the same problem you are facing. In Gam-Anon, we learn to cope with our problems through the practice of spiritual principles as a Group.

WHAT DO WE ACCOMPLISH IN GAM-ANON?

We attempt to find the answers to such questions as:

1. What is my role as the wife of a compulsive gambler?
2. How can I be of the greatest help to the person who joins G.A.?
3. If my husband continues to gamble, how can I live with this problem?
4. How can I learn to accept and understand God's will for me.

IF YOU ARE INTERESTED IN FINDING THE ANSWER TO QUESTIONS SUCH AS THESE — GAM-ANON IS FOR YOU!

SUGGESTIONS FOR THE NEWCOMER

1. Accept and learn to live with the fact that compulsive gambling is an addiction.
2. To question or interrogate the gambler will serve no purpose. You are powerless over this situation. If he has something he wishes to hide, the truth cannot be forced from him. Why try?
3. To nag your husband about past losses or to talk of what might have been if he hadn't gambled will prove to be detrimental to his recovery as well as yours.
4. The past is gone and you will not find peace of mind until you can accept it without resentment.
5. The gambler, not his wife, should be responsible for calling his creditors to make restitution. Don't take this responsibility from him.
6. Experience has taught us that it is not helpful to borrow monies or co-sign notes to cover gambling debts, while the husband is gambling or when he comes into Gamblers Anonymous.
7. It is not recommended that the wife go to work specifically to cover gambling debts.
8. Commonsense tells us that compulsive gamblers are seldom able to handle family finances. Perhaps this condition will be altered as he progresses toward recovery.
9. Discourage friends and relatives from lending the gambler money.
10. Gamblers Anonymous is a program for the compulsive gambler. Wives should not interfere.
11. It may be well to encourage the gambler to go to the first few meetings, however after this, his G.A. activities must be left to him. To force the gambler to attend meetings is very apt to do more harm than good.
12. His gambling debts

ARE YOU LIVING WITH A COMPULSIVE GAMBLER ?

IF SO, YOU WILL BE ABLE TO ANSWER "YES" TO AT LEAST SIX OF THE FOLLOWING QUESTIONS.

1. Do you find yourself haunted by debt collectors ?
2. Is the person in question often away from home for long unexplained periods of time?
3. Do you feel that he cannot be trusted with money?
4. Does he promise faithfully that he will stop gambling, beg, plead for another chance, ye gamble again and again?
5. Does he borrow pay gambling d
6. Have you notic gambler as his
7. Have you come needed for livir and the rest of and clothing if
8. Do you search wallet when th otherwise che
9. Does he hide
10. Does he lie so discussion of realities of hi
11. Does he ofte his gambling
12. Do you fee nightmare?

GAMBLERS - ANONYMOUS

HAVE YOU A PROBLEM ARISING FROM EXCESSIVE GAMBLING IN YOUR LIFE

GAMBLERS ANONYMOUS & GAM - ANON

(THE FAMILY ORGANISATION)

ANSWER

INFORMATION

Questions and Answers about the problem of Compulsive Gambling and the G.A. Recovery Programme

Gamblers Anonymous is a movement which began in America in 1957 to help compulsive gamblers to overcome their addiction by means of group therapy, in which they give encouragement to each other. As the leaflets show, the organisation is also aware of the peculiar problems of the families of compulsive gamblers, and Gam-Anon is a fellowship designed to help gamblers' families in a similar way

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4. GIVE
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easier on
others will

Dawn at Monte Carlo, and the corpse is discovered of another unlucky gambler. Sarah Bernhardt was one of many who attempted suicide at Monte Carlo after a particularly bad run at the tables. The officer above might be establishing life or death, or he might be putting money into the deceased's pockets, which was done to prevent bad publicity for the casino.

which the rest of us can be thankful, as he wrote some of his novels in great haste to raise money for gambling. Dostoevsky has recorded that he experienced orgasm on losing a large bet at roulette.

While Dostoevsky's novel gives a powerful first-hand account of compulsion, and Dickens' description in *The Old Curiosity Shop* of Little Nell's grandfather losing her money at cards tells the other, sad side of the story, it is not necessary to look to fiction for examples of addiction. The case of the housewife who lost £25 per week, or half her husband's earnings, at bingo for weeks on end, is just one of several similar cases. She eventually stole from neighbours to satisfy her need for bingo. Whereas bingo often attracts players because it offers social contacts, socialising disappears with compulsion. The addict has no time for others: the play's the thing. A pathological gambler will sell all he possesses for a fraction of its worth to gamble. He will steal, he may even give away his money in a short-lived desire to starve and kill his craving, but he is likely to attempt to raise more as soon as his need returns.

The compulsive gambler is not as easily recognisable as the alcoholic, but alcoholics might outnumber gambling addicts by only two to one. A Gamblers Anonymous movement, working on similar lines to Alcoholics Anonymous, was founded in America in 1957 and spread to Britain seven years later. Compulsion cannot be cured, as compulsive gamblers are likely to relapse, but Gamblers Anonymous helps by allowing habitual gamblers to discuss their addictions and to help each other try to overcome them. Members of a group know each other only by their forenames, they confess their lapses to each other

and members who abstain from gambling for a period, say two years, receive presentation badges.

Objections to gambling are often based on the undesirability of the addict, but the addict is not an exaggerated version of the casual gambler, he is a different animal altogether. Where casual gambling is concerned, there are two main forms of argument that are put forward in attempts to outlaw it. One is empirical: that gambling is harmful to the structure and well-being of society. The other is based on ethical grounds.

It is true that a vast amount of time, effort and money is spent in countries like the United States, Britain and Australia on a pastime that is completely non-productive and contributes nothing to the general wealth of the community. But then any pastime which provides amusement is not expected to provide anything else. Smoking, drinking or eating cream buns do nobody any good, and in excess may do harm, but they are not banned. Gambling undoubtedly attracts the criminal classes, and this is the most powerful practical objection it must face. In America crooks like Al Capone, Arnold Rothstein and Dutch Schultz financed themselves partly from gambling, and the vast sums they made enabled them to buy up legitimate businesses. In 1962 Attorney General Robert Kennedy could say that corruption financed by gambling was weakening the whole nation. This, of course, could be used as an argument that gambling should be legalised. Nothing attracts the underworld more than a profitable illegal operation, as prohibition proved. The repeal of the Volstead Law removed an easy source of fortunes from a number of hoodlums and deprived certain policemen and officials of a steady income from bribery. Where casinos are strictly controlled by the state, as in France, not only is corruption much easier to control but the state can obtain revenue from gambling. A well-run gambling industry should cause as little concern as any other large industry.

The inconvenience caused by compulsive gamblers who lose all their possessions and become a burden on the state can be equalled by casual gamblers who have a big win. The resentment and upsetting effect poor people

Three American gangsters who organised gambling to increase their fortunes and extend their power. Lucky Luciano, left, controlled the Bugs and Meyer Mob, and helped Bugsy Siegel raise the capital to start the Las Vegas gambling boom. He is seen at the Italian Derby in Rome after his deportation from the States. Al Capone, top, went to the same school as Luciano, and regarded him as a second cousin. He was one of the most notorious gangsters and exercised control over many casinos and the main bookmakers' wire service. Dutch Schultz, born Arthur Flegenheimer, was the king of the numbers racket.

sometimes cause among their neighbours when they win a fortune on the football pools or a lottery, and do not act in a responsible manner, is a very minor inconvenience, but when the entire jackpot in a national lottery is won by the townspeople of one small town, as happened in Spain in 1976, the life-style of a region is changed. The winning town was Lugo, on the north-west coast, which shared about 3,000 million pesetas when the inhabitants won all 35 top prizes in 'El Gordo', the Christmas lottery which has become the biggest in the world. Patients, doctors and nurses at the local hospital shared over 450 million pesetas, soldiers at the barracks a similar sum, and players and supporters of the football club over 300 million. For those interested, the winning number was 49764. Lugo will never be the same again. Anti-gamblers who dislike this upheaval in the

The beast of gaming. This engraving from a French magazine of 1845 shows a father protecting his son from a dragon-like beast, representing gambling, who devours all the possessions of his victims.

natural order must admit that more distressing effects on regions can happen in other ways, as when chemicals leak from factories.

The ethical objections to gambling are usually founded on religious beliefs, but the attitudes of individual churchmen vary considerably. The Roman Catholic Church, in general, tolerates gambling as an established part of human life. Indeed, in some Catholic countries, national lottery tickets can be bought on Sunday mornings on the way to worship.

It is in the Protestant faith that Christian dislike of gambling is strongest. The church is concerned with the wellbeing of society, and many of the evils of gambling pointed out by Christians are the practical ones: the ruin of the personality of the addict, the reliance on hope rather than skill in business affairs, the dehumanising influence of gambling, the encouragement to believe in luck and superstition rather than work as a route to success.

The religious argument against gambling rests mainly on the element of chance. Christians deny that there is such a thing as chance. Even that which man cannot understand is said to be subject to God's law. According to Luke (xii, 6) 'Even the very hairs of your heads are all numbered'. Blind destiny does not exist: everything in the universe is within the rule of God. Some Christians would say that a belief in chance robs life of meaning, and is immoral because it is incompatible with a belief in God.

Christians further believe that all property is owned, ultimately, by God. Therefore to stake possessions temporarily owned in an appeal to chance, is not only to deny God by appealing to a concept which cannot exist if He does, but is to violate the trust which God places in an individual by bestowing stewardship of property.

If the soldiers at Christ's cross had not cast lots for His raiment, it might be that Christian attitudes to gaming would be less firm than they are. All Christians do not hold strong anti-gambling views. Raffles to raise money for Church funds are common, as are games of bingo and other forms of mild gambling for the same purpose. A poll in the United States suggested that more people had taken part in church raffles than any other form of gambling. The Bishop of Durham, Dr. John Habgood, who later was not amused when a punter placed a bet on him to become the new Archbishop of Canterbury, said in 1974 that it would be wrong and socially dangerous to try to remove the excitement which gambling brought into many otherwise dull lives. But he was not in favour of church-based gambling, believing that people should not allow the hope of gain to influence in the slightest their natural desire to give to God. He was thus expressing views contrary to the practice of many clergymen, and confirming that church opinion, while generally nearer the anti-gambling end of a scale than lay opinion, has almost as many facets.

Apart from cheats and hustlers, gamblers might be divided into five main classes: occasional gamblers, who might bet only on big horse races; regular gamblers, who enjoy a daily or weekly flutter, but who bet haphazardly; serious gamblers who follow a system; pathological gamblers, whose addiction is in the nature of an illness; and professional gamblers, most of whom are proprietors of casinos, bookmakers or gambling industry employees.

The professional who offers the odds is not afraid of gamblers from any of these classes. He will prefer the system gambler to the occasional gambler merely because he bets more often – both are facing the same house edge and the profits to the proprietor will accrue just as surely.

However, one type of gambler sometimes causes a stir and makes a good newspaper story: the man who dreams winners.

One of the best authenticated cases was in Britain. The gambler concerned was John Godley, later Lord Kilbracken, who was given a tipping job on the *Daily Mirror* on the strength of his success. John Godley was at Oxford University in 1946 when he dreamt he saw racing results in the following day's paper. He could remember two 'winners', and backed them for modest amounts: both won, at 9–2 and 10–1. A little later in Ireland, he dreamt another 'winner'. This time friends joined him in a nice win at 100–6. Back at Oxford he dreamt he was telephoning his bookmaker for the last race winner, and was told its name and price, 5–4. Although next day he found the last race field did not contain a horse with the name he remembered from his dream, there was one of a similar name. He backed it, phoned his bookmaker after the race from the same telephone box of his dream, and learned it had indeed won at 6–4.

In 1947, he dreamt he was at the races, and in recalling his dream remembered that Edgar Britt had won a race in the Gaekwar of Baroda's colours and that the crowd had shouted home a horse called The Bogey in a

The strange dreams of Mr. John Godley

By GEORGE McCARTHY

MR. JOHN GODLEY, twenty-six-year-old undergraduate of Balliol College, Oxford, sat on the towpath near the Balliol barge, smiled at me and said: "Now you probably will not believe a word of this story. But it is true and I can prove it."

A strange story it is. In the last fifteen months Mr. Godley has four times dreamed the results of horse races.

On each occasion the dream horse has won next day.

"It began in March, 1946," Mr. Godley said. "I dreamt that two horses would win next day. I told many friends about them.

"We backed the horses and they both won. Our joint winnings were about £40."

Mr. Godley thought this was a freak event. But a month later he dreamed that a horse Tubemoore had won next day at Aintree.

There was no Tubemoore—but there was a Tuberose. He backed it and it won at 100 to 6.

In July, 1946, Mr. Godley dreamed that he rang up his bookmaker and asked him to tell him the result of the last race.

"Certainly, Mr. Godley. It has just come through. Monumental has won at 5-4."

Next day Mr. Godley searched the race programme. "Mentores. That's it," he said. And he backed it.

Next evening he 'phoned his bookmaker for the result, and got the reply:

"Certainly, Mr. Godley. It has just come through. Mentores won at 6-4."

Then the dreams ended for a time. But last Friday Mr. Godley dreamed he was at Lingfield

Godley.

"I saw a horse ridden by the jockey Britt in the Gaekwar of Baroda's colours win a race," he said.

"Then I heard the bookies shouting for odds on a hot favourite for the next race, which I thought was called The Bogey. I saw it win easily."

On Saturday, Mr. Godley prepared a witnessed account of his dream, which was deposited in the safe of an Oxford postmaster at 2.30 p.m.

At 3.45 Mr. Godley telephoned this newspaper that Baroda Squadron would win the four o'clock race and that the favourite—The Brogue, not The Bogey—would win the 4.30.

Both horses won.

Yesterday I recovered Mr. Godley's written statement from the postmaster and confirmed his story.

Mr. Godley, who went to Oxford after serving as a lieutenant-commander in the Fleet Air Arm, reported his experiences to the Psychical Research Society, who suggest that Mr. Godley may, in his waking hours, subconsciously choose the winners he subsequently sees in his dreams.

The London 'Daily Mirror' story of 1947 which tells of the strange dreams which brought winners to John Godley. Although the story ends with a possible explanation of Mr Godley's 'supernatural' powers, the newspaper thought it worth offering him a job.

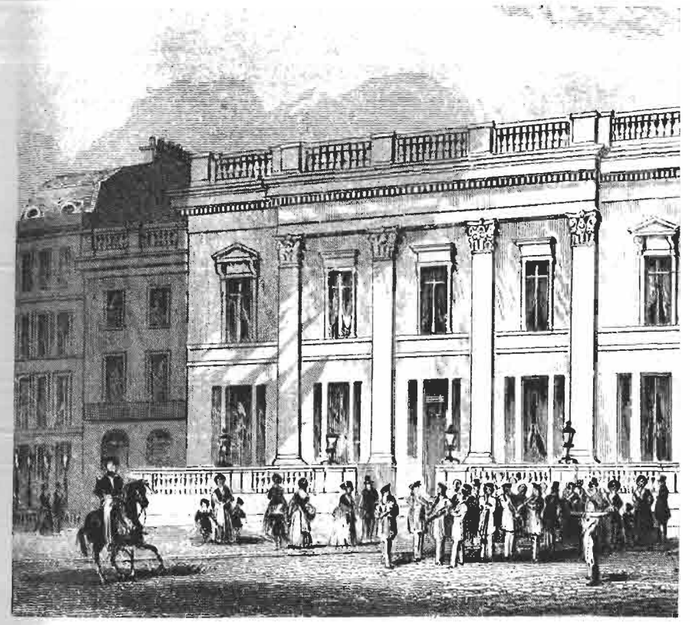
later race. Although next day there was not a horse called The Bogey running, Godley had no difficulty in deciding that the two horses he dreamt of were Baroda Squadron and The Brogue. He tried to get this dream verified, and as attempts to find a solicitor or to get the story date-stamped at a Post Office failed (it was Saturday), he decided to sell the story to a newspaper. He rang a New York paper, who declined to pay for the story, but was just in time before the first race in question to give the story to the *Sunday Pictorial*, who promised to use it if both horses won. They did, the *Pictorial* published, and Godley received a small fee and won another modest bet. However the small *Pictorial* story was taken up by its sister paper the *Daily Mirror*, who paid him 25 guineas and gave him a job.

John Godley had two more winning dreams, but also a few losers, and his gift appeared to have deserted him. It returned once more, in 1958, when he was in Monte Carlo. He dreamt that the Grand National was won by the third favourite, What Man. The National was a month or two off, and a study of the runners revealed no What Man, but a Mr What. Unfortunately, Mr What was not third favourite, but a 66–1 outsider, so Godley decided to do nothing. On the day of the race he was in Paris, bought an English paper, and finding that Mr What was now third favourite at 18–1, rang his bookmaker and placed £25 on the horse. In Paris, he could find no radio report on the race, as everybody was listening to a commentary on an international soccer match. But when he checked with his bookmaker, he discovered Mr What had won, and his £450 win was his biggest in a remarkable series.

Most stories like that of John Godley have less disinterested corroboration, and are regarded by most with scepticism. Professor J. B. Rhine and his colleagues at Duke University, at about the time that John Godley was dreaming of Mr. What, described experiments which suggested that some people, by mental effort, can affect physical happenings, i.e. they can will that a cast die will stop with a desired face uppermost. Other people can predict playing cards selected by a second person. Later Helmut Schmidt, an American psychologist, was invited to London by the

Society for Psychical Research to demonstrate that certain people can predict which of four light bulbs, lighting separately and at random, will shine next. In none of these experiments did the subjects have a 100 per cent record, but their success rate seemed to make nonsense of the laws of probability. Gamblers do not know what to make of these experiments. Although they cannot refute the conclusions of such eminent scientists, instinct and, in some cases, a lifetime of experience lead them to ignore them. Perhaps the opinions of the gambling fraternity are best shown by the fact that in casinos, players trying to effect certain results by concentration are tolerated with equanimity by the casino management.

Throughout the history of gambling there have been gamblers whose feats, winning or losing, have captured the admiration of their fellows. Casanova, whose name is now given to any man who enjoys spectacular amorous successes, earned his livelihood by gaming. 'Lucky at cards, unlucky in love' did not apply to Giovanni Jacopo Casanova, whose favourite card game was faro, and whose main



source of capital was his mistress of the moment. Casanova frequently lost all he had; although he claimed to win more than he lost, it is doubtful that he did. He certainly made a profit when he persuaded the King of France to organise a national lottery, and sold tickets himself.

The early eighteenth century was a notorious time for gambling in Britain, with big sums changing hands nightly in the London clubs, among them Brooks's, White's and the opulent Crockford's, which was founded in 1828 by William Crockford. Crockford began life as the son of a fishmonger, gambled thousands of pounds a year on dice, owned the best race-horses, and died a wealthy man. A leading light in White's was George Bryan Brummell, the dandy, better known as Beau Brummell. Brummell inherited £30,000 from his father and once won £20,000 in one evening. His favourite game was macao, which has similarities to blackjack and baccarat. One entry in White's betting book read: 'Lord Yarmouth gives Lord Glengall four guineas to receive 100 guineas if Mr Brummell returns to London before Napoleon returns to Paris'. Having eventually lost his fortune, Brummell had gone to France, immaculately dressed as ever, after a quarrel with the Prince Regent and mounting difficulties over his gaming debts. Before he died, penniless, in a madhouse, he claimed his bad luck came when he lost a coin with a hole in it – a good luck charm given him by an old woman when he was at school in Eton.

Another hot-bed of gambling was the fleet of steamboats operating on the Mississippi in the nineteenth century. Around 1850, about 500 boats were making journeys along the river, and about 1,000 gamblers, not all honest, were relieving the passengers of their money. Many of these gamblers were flashy dressers, and their style and the romantic setting of the palatial boats have given Hollywood films many a big scene.

Hollywood has also profited from the legend of the Wild West, and scenes of poker playing in saloons are almost obligatory to the Western. Wyatt Earp partly owned such a saloon and gambling den, and made more from his skill at cards and dice than from law enforcement. Doc Holliday, a card-sharp,

Beau Brummell, opposite, was a dandy who inherited a fortune and became a friend of the Prince Regent, yet he was forced to go abroad, and to die penniless in a madhouse, after losing his money gambling. William Crockford used gambling to climb society's ladder. The son of a fishmonger, he won enough to open one of London's most exclusive gambling clubs, Crockford's, in 1828 (left). Giovanni Casanova, above, used gambling wins to help conquer his mistresses, and the capital of his mistresses to help pay his losses.

The characters above formed the Dodge City Peace Commission of 1883, yet at least two of them were dealers in Wild West gambling hells. Wyatt Earp, second from left in the front row, and also pictured right, shared ownership of a saloon and regularly won at cards and dice. Luke Short, second from left in the back row, was a dandy and gunfighter as well as a professional gambler. George Devol, below, published in 1887 his reminiscences, 'Forty Years a Gambler on the Mississippi', which told of his successes on the famous riverboats.

made more killings at poker in Earp's saloon than he made with his guns. Wyatt Earp was the referee of a prizefight in San Francisco between Bob Fitzsimmons, later champion of the world, and Tom Sharkey, and had to use his revolver to discourage angry bettors when he disqualified the Englishman.

Tombstone and Dodge City, where Earp was marshal and dealt at faro, were famous as gambling hells, and Cincinnati was known as Pokerpolis. Poker was the favourite game, and Wild Bill Hickok, another marshal, made a poker hand famous at Deadwood in 1876. Wild Bill relaxed for once his rule of always sitting with his back to the wall and facing the door when playing poker. He had just drawn cards when another gambler, Jackie McCall, came through the door and shot Wild Bill in the back of the head. He had been hired to kill Hickok by other gamblers, who feared that Hickok would be made marshal of Deadwood and interfere with their game. Wild Bill's hand was examined after his assassination, and was found to contain the two black aces and two black eights. The fifth card is in dispute: it was either the queen or jack of diamonds. From that day, pairs of aces and eights have always been known as 'dead man's hand'.

The most famous gambler of all time is Charles Wells, whose name is less familiar than the song written about him, 'The Man Who Broke the Bank at Monte Carlo'. Wells was a tubby Cockney, who was a small-time confidence trickster. He arrived in Monte Carlo in July 1891 with 10,000 francs. He began playing roulette for small stakes, and appeared to be using a system, concentrating on backing the low numbers, particularly 1 and 2. He increased his stakes as he hit a fantastic run of luck, until he broke the bank at the table at which he was playing. In those days each table began with a bank of 100,000 francs. Wells moved to another table and broke the bank again. He played for 11 hours continuously, and next day reappeared and broke the bank again.

During his extraordinary run, there were frenzied scenes in the casino as other gamblers crowded round the table and attempted to make their fortunes by following his luck. Camille Blanc, the casino owner, played up to the excitement by draping a black cloth over the tables which Wells broke, to reopen them later with great ostentation, thus ensuring publicity for Wells' feats. After three days Wells left with a million francs. In November Wells returned for another three days, and incredibly won another million francs.

Wells was famous. He was a celebrity wherever he went, and when Charles Coborn sang the song about him that winter, it swept the world. Wells' third visit to Monte Carlo was made in 1892, when he arrived on a yacht, with a model for a girl-friend. This time the theory of probability cried enough. Wells lost his money, obtained more by trickery and lost that. He was arrested on board the yacht and sentenced to eight years in an English prison. On release he went to Paris, and after more shady fund-raising in France was arrested again, and finally died in poverty.

Although hundreds had studied his play in an attempt to discover his system, before he died Wells confessed that he had no system, but had been betting haphazardly. The Monte Carlo casino was the main beneficiary of his luck, becoming a household name.

The most successful gambler of all time was Nico Zographos, the youngest and most brilliant gambler of the Greek Syndicate, which from 1922 held the baccarat bank at some of Europe's biggest casinos. He played for unlimited stakes against the world's richest men. Zographos was born in Athens in 1886, and showed a mathematical aptitude as a boy. He was trained as an engineer, but decided that playing cards was his forte. He met Eli Eliopulo, the second member of the Greek Syndicate, in 1917, and married his niece. Zographos and Eliopulo played cards against the sons of Greek ship-owners, and won. After the First World War, they went to Paris where Zographos re-met Zaret Couyoumdjian, an Armenian whom he had known in Athens. Couyoumdjian had inherited a fortune but lost it in the war between Greece and Turkey, and was earning a living as a gambler. The three men found they usually held the bank at baccarat, and decided to form themselves into the Greek Syndicate. The fourth and last member of the Syndicate was Athanese Vagliano, an extremely wealthy ship-owner who loved playing cards and had shares in the Société des Bains de Mer et

Monte Carlo inspired marches and dances, as the above song sheet shows, but none achieved the fame of the song 'The Man That Broke the Bank at Monte Carlo', made world-famous by Charles Coborn. It told of the exploits in 1891 of Charles Wells, and helped establish Monte Carlo as the world's most famous gambling casino.

Cercle des Estrangers, which owned the Monte Carlo casino. Zographos invited Vagliano, who was not a good card player, to invest in the Syndicate, and he accepted.

With Vagliano's capital to back them, Zographos suggested to Francois André, who was running the casino at Deauville, that the Syndicate should permanently take the bank at baccarat. The bank till then went to the player prepared to put up the largest amount: Zographos suggested that the Syndicate would play without a limit. André, who later took a share in the Syndicate, saw the value of this suggestion and readily agreed. In 1922 Zographos took the bank at Deauville, announcing 'tout va', or 'everything goes', and began an era of some of the most spectacular gambling.

Zographos usually took the bank, with Couyoumdjian as second in command, and betting against him were men like the Aga Khan, James Hennessey, of the brandy company, André Citroen, the French car magnate, Gordon Selfridge, of the London store, and Baron Henri de Rothschild. The gaming was such that millions of francs changed hands every night.

André Citroen was eventually ruined by gambling. Whether he were winning or losing, Citroen believed his gambling, reported in Europe's newspapers, was good publicity for his company. In 1926, he continued playing baccarat while losing heavily to Zographos, not worrying that he lost 13 million francs in a single session. His wife gate-crashed the baccarat room, where women were not allowed, and not only tearfully persuaded Zographos to end the game, but effected a change in the rule, which thenceforward permitted women to enter. Citroen nearly lost his factory, but continued gambling. Several years later he lost several million francs in ten minutes at Deauville, and did lose his factory.

Gordon Selfridge was another whose love of gambling and his encounters with Zographos led to his ruin, although in his case they were helped by his generosity and his affection for Gaby Delys, an actress, and the two Dolly Sisters, who made up a cabaret act. He not only gave them gifts, but in the case of Jenny and Rosie Dolly allowed them limitless credit to gamble at Deauville and Le Touquet. Selfridge and the sisters stayed at his villa at Deauville and over a number of years won and lost millions of francs. When they were winning, the Dolly Sisters bought jewellery, a boutique in Paris, and villas; when they were losing they sold them all. Eventually Selfridge could help them no more, and Jenny, his favourite, was declared bankrupt. Selfridge himself, who was said to have spent £2 million in seven years, went bankrupt at 83, still owing money to Zographos.

Nico Zographos himself had his spectacular ups and downs, more than once almost being out of funds. His assets were a remarkable memory for the cards played (it was said that at the end of a shoe of six packs Zographos could state which cards were left unplayed), psychology and a knowledge of the players against him. Once, on a losing streak, he instructed that lower value chips should be used, on the grounds that his opponents would be reluctant to stake a large pile and the bets would be smaller. There are numerous stories about him. He was challenged by an American gambler to bet a million francs on one hand of baccarat. Zographos agreed to cover the stake, provided the bet could be on the best of three hands. He then lost the first hand and won the following two.

In 1928, after a series of unlucky shoes, the Syndicate was down to its last million francs. The players and watchers knew it, and the whole amount was at stake on a single coup. Both opponents were happy with their cards: Zographos turned up a king and queen, worth nothing. He took a third card. It was the best possible, a nine – to be precise the nine of diamonds. Zographos was never in trouble again, and the nine of diamonds became his personal emblem, appearing on his yacht pennant, his china, his cuff-links. When he died in 1953, he was a multi-millionaire in any currency. The Greek Syndicate continued without him, and went on winning, some of its members being relatives of the originals.

There is a tradition that Greeks are keen card-players and excellent gamblers, and over the years names like 'Nick the Greek' or 'Jimmy the Greek' have been applied to outstanding gamblers. The most famous of these was Nicholas Dandolos. The two Nicks, Zographos and Dandolos, were both professional gamblers, but whereas Zographos was playing for the casino, Dandolos played for himself. He was born in Crete in 1893, educated in Greece, and sent to Chicago by his father, a rug merchant, when he was 18 years old. He moved to Montreal, quickly won half a million dollars at horse-racing, and returned to Chicago to play cards, and dice, at which he lost all his previous winnings. He studied gambling, and decided that stud poker was the game at which he could win, although he also enjoyed craps and faro, because of the low house edge against him. Dandolos quickly began to win, and as he bet in huge amounts, he attracted crowds wherever he played and became known everywhere as Nick the Greek. He had the true gambling addict's trait of not caring about the amounts he won or lost: for him the game was the important thing. However, he did not bet haphazardly. He bet according to carefully calculated chances. He was an intellectual, with a degree in philosophy, and was something of a mystery to his fellow-players. Therefore many of the stories about him are speculation, such as that he lost $100,000 in a single session.

Nick the Greek often played in the casinos of Las Vegas and more than once was asked by proprietors if he would care to play for the casino. He preferred being a free-lance. His success came from his skill at calculating chances and he always played honestly, although he himself was once cheated of $500,000 in a private game played by the side of a casino swimming pool. When he died in

Gordon Selfridge, in the picture left, is being pulled both ways by the actresses Julia Faye and Bebe Daniels. Later in life his generosity to beautiful women and his love of gambling helped pull him into bankruptcy. The gambling losses of André Citroen, above, more than once threatened the ownership of his famous car-manufacturing company.

Sean Connery in 1963 proved himself a lucky gambler in private life with a big win at the casino in Estoril. No wonder he looks at home at the craps table playing James Bond in the 1971 film 'Diamonds Are Forever.'

his early eighties, it was estimated that he had won and lost several fortunes, and that over $500 million had passed through his hands at the tables.

An American whose gambling feats earned him fame and a nickname was John Warne Gates, known as 'Bet-a-Million' Gates. Gates was born in 1855 and began earning his living as a barbed wire salesman in Texas. He eventually owned America's largest barbed wire companies, expanded into other industries and speculated successfully on the stock market. He became immensely wealthy and indulged his liking for making huge bets on practically anything. A rotund, heavy man, Gates did not bet only for the excitement it gave him. He was a shrewd calculator who always sought the advantage of the odds. Although he bet large sums on raindrops sliding down window panes and on the tossing of coins, he was aware that his huge fortune gave him an advantage in such bets. In a game of faro at which he was losing several thousand dollars, he kept asking for the limits to be raised: when his luck changed he quickly retrieved his losses and won $150,000. Gates enjoyed playing poker, and used his capital to raise heavily to frighten less wealthy opponents out of the game. He loved racing and was said to have lost $375,000 in one afternoon. He was also said on another occasion to have won $600,000 in bets on one of his own horses. A possible explanation of his nickname lies in his being asked at one race-track to limit his bets to $10,000. Affronted, he immediately offered to bet a million dollars on a horse. There were no takers, but his fame was assured.

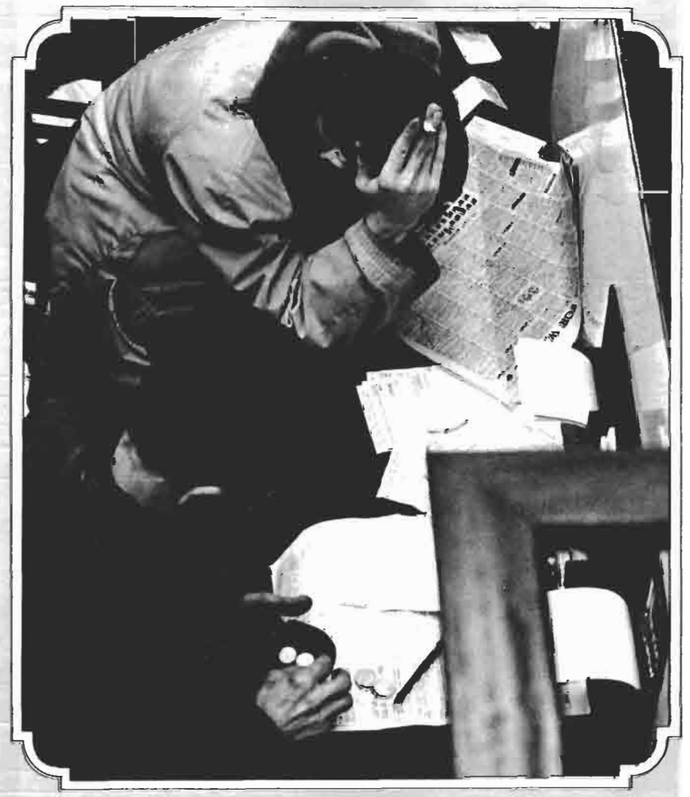
John 'Bet-a-Million' Gates did not have a true gambling addiction. He was too shrewd to allow his betting to get out of control, and unlike Citroen and Selfridge, did not come near to risking his entire fortune. Eventually he lost interest in using his money to steamroller lesser gamblers and in 1909 he warned a church conference against the evils of gambling and renounced it himself.

An Italian duchess asked French casinos to ban her for five years in 1972 after an extraordinary run of losses at Divonne-les-Bains. The limit on the trente et quarante table was raised to allow the duchess to bet up to 400,000 francs at a time. She asked for the ban when her losses passed 10 million francs.

Ex-King Farouk of Egypt, in his later years a very fat man, was a regular large-stake gambler. While still on the throne he was a familiar figure at Monte Carlo, where he once lost $300,000 to Jack Warner, the Hollywood film producer. Farouk was nevertheless a good gambler, who frequently opposed the Greek Syndicate and won 30 million francs from them. He liked dealing the cards himself and enjoyed poker, and holding the bank at baccarat and chemin de fer. He always appeared with a large number of bodyguards and attendants, and was at times an angry loser, once breaking a chemmy table. But while the game was in progress he was impassive, even when an opponent died of a heart attack when he'd been dealt a winning hand in a big-stake game. Farouk was a commanding figure in the casinos of Monte Carlo and France during the 1950s.

The lazy good-living Farouk satisfied one popular image of a gambler. Other gamblers mentioned here, such as Wells and Gates, have been over-large tycoon-like figures. What of the other image, made popular by numerous films, of the handsome, James Bond type of gambler, who displays nerves of steel at the table, unerringly makes the right decisions and rakes in the winnings without a flicker of surprise or triumph? Who could satisfy this image better than Sean Connery, the best actor to have played James Bond? At the roulette table in the St. Vincent casino in Italy, one day in 1963, Connery backed number 17 three times running. The odds against three consecutive wins are 50,652–1, but Connery pulled it off and won over £10,000.

PART TWO



The mathematics and science of gambling

Blaise Pascal was of poor health, and throughout his life his work was interrupted by illness. He eventually retired to an abbey to meditate, but not before he had ensured his fame by discoveries in the field of probability. He had a long correspondence in the 1650s with Pierre de Fermat, with whom he is linked as the founder of the theory of probability.

The basis of gambling is uncertainty. Nobody wins money by betting on an outcome which is certain to occur, unless the other party to the wager is stupid or misinformed. When A bets B at level stakes that event E will occur, he is backing his judgment that E is more likely to occur than not. He may base his opinion on knowledge or guesswork. The wager is only possible because B, having also based his opinion on knowledge or guesswork, has come to an opposite conclusion.

A bettor on a horse race might be backing his knowledge of the form and peculiarities of the horses and jockeys engaged in the race. A man who wants to gamble for the sake of it might bet, for example, that the next throw of a true die will result in a 6 being thrown. His opinion is based only on guesswork, since there are no grounds for believing that a 6 is more or less likely to be thrown than any other number.

Whatever his method, each of the bettors will have either a good or a bad bet. The first man will have a good bet if he accepts odds of 20–1 about a well-fancied horse in a field of eight, or a bad bet if he accepts 2–1 in an open handicap with a large field. The second man will have a good bet if he accepts odds of more than 5–1 and a bad bet if he accepts less. His chances can be precisely calculated.

The ability to calculate chances is of prime importance to the gambler. It might be thought that, since the outcome of a chance event by definition cannot be predicted, it must occur in a sense accidentally, and can obey no laws. However, the theory of probability and the law of large numbers give indications of the outcome of chance events. They should not be underrated as they are the necessary foundations for much of the most advanced theories of science. The theory of probability was first studied and defined by mathematicians in connection with problems of gaming. It is now the basis of commercial businesses like insurance, and essential to all branches of physics, chemistry, astronomy and the exploration of space.

Games upon which money is wagered fall into three categories: games of skill, games of chance and games where both skill and chance play a part. Games of skill are not necessarily more complex than games of chance. The child's card game called snap is a game of pure skill, as a player has nothing but his own ability to help him win. Noughts and crosses is also a game of skill. Two good players will draw every game they play. Bridge and poker are card games in which both skill and chance play a part. Poker players assert that poker is the more skilful game as the best players win more consistently. Most casino games are games of chance.

Theory of probability

Although casino games are in general simple, an even simpler way to begin considering the theory of probability is to study the tossing of coins.

If a double-headed coin is tossed, it is certain (barring the almost impossible eventuality of it landing on its edge) that it will land head uppermost. The chance of tossing a head is 100 per cent, of tossing a tail 0 per cent. A true coin might be defined as one which when tossed is as likely to fall head uppermost as tail uppermost. In this case the chance of tossing a head would be 50 per cent and a tail 50 per cent.

It is usually more convenient, as it helps in the calculation of more complex questions of chance, to call the 50 per cent chance of a head a probability of $\frac{1}{2}$. There are two possible results with a true coin, a head or a tail, each with a probability of $\frac{1}{2}$. The probability of one result or the other is $\frac{1}{2}+\frac{1}{2}$, or 1. Since the result has to be a head or a tail, a probability of 1 represents a certainty.

If two coins are tossed there are four possible outcomes. If we abbreviate heads to H and tails to T, the four outcomes are HH, HT, TH, TT. They are equally probable, so the probability of each is $\frac{1}{4}$. The third outcome is merely a reversal of the second. Each is of one head and one tail, so the probability of a head and a tail appearing is $\frac{1}{4}+\frac{1}{4}=\frac{1}{2}$. If it is not necessary to differentiate between the coins, it might be said that there are three outcomes to the tossing of two coins, as follows:

Two heads (HH): probability $\frac{1}{4}$
One head, one tail (HT, TH): probability $\frac{1}{2}$
Two tails (TT): probability $\frac{1}{4}$

To refer to the chance of tossing two tails with two coins as a probability is to give the word a different meaning to its everyday one.

To describe an event as probable in ordinary usage is to say that it is more likely to happen than not. To toss two consecutive tails is by this definition an improbability. But in probability theory both the likelihood or the unlikelihood of an event is expressed as a probability, ranging from 0 (an impossibility) to 1 (a certainty).

The theory of probability states that:
The probability of an outcome to an event (provided that all outcomes are equally likely) is the number of cases favourable to that out-

Table 2:1 Odds converted to Percentages

Odds	Percentage Probability	Odds	Percentage Probability	Odds	Percentage Probability
1–100	99·0099	4–5	55·5556	6–1	14·2857
1–50	98·0392	5–6	54·5455	13–2	13·3333
1–40	97·5610	10–11	52·3810	7–1	12·5000
1–33	97·0588	20–21	51·2195	15–2	11·7647
1–25	96·1538	evens	50·0000	8–1	11·1111
1–20	95·2381	21–20	48·7805	17–2	10·5263
1–10	90·9091	11–10	47·6190	9–1	10·0000
1–8	88·8889	6–5	45·4545	10–1	9·0909
1–7	87·5000	5–4	44·4444	11–1	8·3333
1–6	85·7143	11–8	42·1053	12–1	7·6923
1–5	83·3333	6–4	40·0000	13–1	7·1428
2–9	81·8182	13–8	38·0952	14–1	6·6667
1–4	80·0000	7–4	36·3636	15–1	6·2500
2–7	77·7778	15–8	74·7826	16–1	5·8824
30–100	76·9231	2–1	33·3333	18–1	5·2632
1–3	75·0000	9–4	30·7692	20–1	4·7619
4–11	73·3333	5–2	28·5714	22–1	4·3478
2–5	71·4286	11–4	26·6667	25–1	3·8462
4–9	69·2308	3–1	25·0000	28–1	3·4483
1–2	66·6667	7–2	22·2222	33–1	2·9412
4–7	63·6364	4–1	20·0000	40–1	2·4390
8–13	61·9048	9–2	18·1818	50–1	1·9608
4–6	60·0000	5–1	16·6667	66–1	1·4925
8–11	57·8947	11–2	15·3846	100–1	0·9901

Table 2:1 shows the odds quoted by bookmakers converted to percentage probabilities. If odds of 6–4, 2–1 and 11–4 are offered in a three-horse race, the percentage probabilities relative to these odds add up to 100 per cent, showing that the odds are fair.

come divided by the total number of cases possible.

This law can be expressed by the formula

$$P = \frac{n}{N}$$

Where P is the Probability, n the favourable outcomes and N the total outcomes.

It is essential to note the phrase 'provided all outcomes are equally likely'. If told that five women and three men were to compete in a race, it would not be correct to say that there is a probability of $\frac{5}{8}$ that a woman will win, as we cannot say all outcomes are equally likely.

As was mentioned earlier, probability need not be expressed as a fraction. A probability of $\frac{1}{4}$ might be expressed as 0·25 or 25 per cent. Bookmakers invite bets by offering odds, which is another way of representing a probability. If an outcome has a probability of $\frac{1}{4}$ there are three chances of it not occurring to one chance that it will. The odds in favour of the outcome are 1 to 3, or, conversely, the odds against the outcome are 3 to 1 (usually written 3–1). For those who like formulae, the odds O against a favourable outcome of an event are the unfavourable outcomes $N-n$ to the favourable outcomes n. Thus $O = (N-n)$ to n. Table 2:1 converts various odds to percentages.

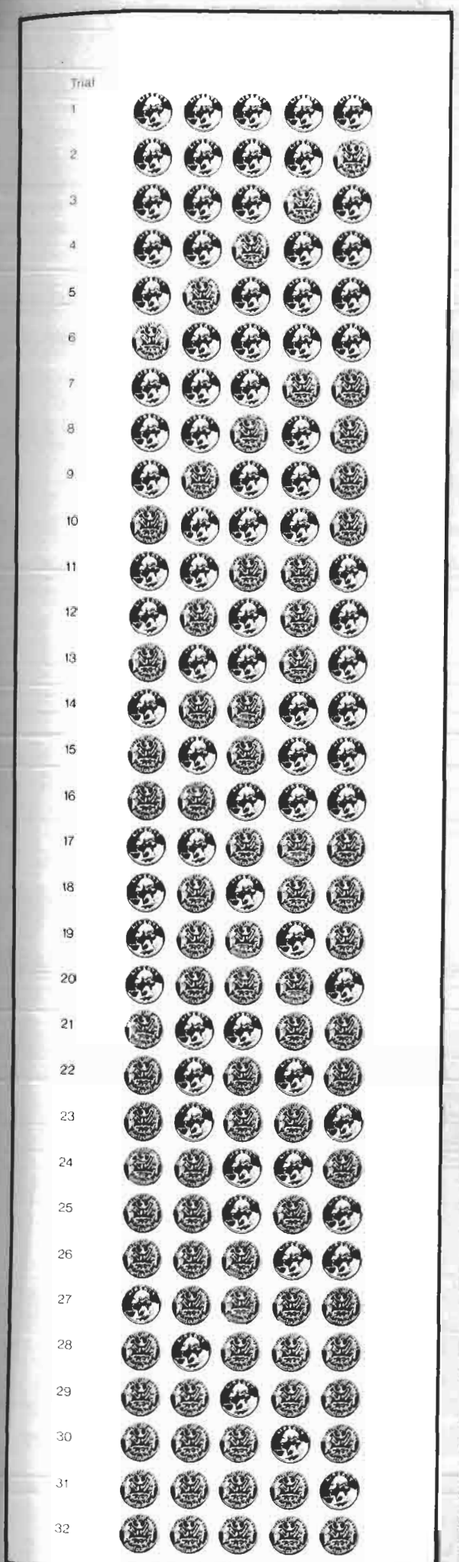
To continue the analysis of the results of tossing coins, we will imagine a coin tossed five times and list all the possible outcomes. Table 2:2 gives all the possible results.

The 32 results in Table 2:2 can be summarised as follows:
5T occurs once: probability $\frac{1}{32}$, or 0·03125, or 3·125 per cent. Odds against 31–1.
4T, 1H occurs 5 times: probability $\frac{5}{32}$, or 0·15625, or 15·625 per cent. Odds against 27–5.
3T, 2H occurs 10 times: probability $\frac{5}{16}$, or 0·3125, or 31·25 per cent. Odds against 11–5.
2T, 3H occurs 10 times: probability $\frac{5}{16}$, or 0·3125, or 31·25 per cent. Odds against 11–5.
1T, 4H occurs 5 times: probability $\frac{5}{32}$, or 0·15625, or 15·625 per cent. Odds against 27–5.
5H occurs once: probability $\frac{1}{32}$, or 0·03125, or 3·125 per cent. Odds against 31–1.

It will be seen that the bottom half of the summary repeats the top half: the probability of 2T, 3H is the same as 3T, 2H.

When tossing a coin, there are two possible outcomes; when throwing a die, there are six. If the die is true, the probability of throwing any of the numbers 1 to 6 is equal to the probability of any other. If we want to throw a 1, there are six equally likely outcomes, of which one is favourable. Therefore, the probability of throwing 1 is $\frac{1}{6}$, and the odds against 5–1.

If we throw two dice, there are six possible outcomes of throwing the first die, and six possible outcomes of the second die, so the possible outcomes are 36. Figure 2:1 shows these 36 possible outcomes. In Figure 2:1, the two dice are shown in different colours to emphasize the fact that there *are* 36 possibilities. It is very easy, particularly with more complex and less familiar examples, to overlook some of the possibilities. For example, although there are 36 ways in which the dice may fall, there are only 11 possible totals, all those from 2 to 12. If the dice were identical it could be said that there are only 21 outcomes since, for instance, 4:3 is indistinguishable from 3:4. The 4 could be thrown with either of the two dice. This is obvious if the dice are different colours; when the dice are identical the distinction is easily overlooked.



The probabilities can be summarised as follows:
Total 2 occurs once: probability $\frac{1}{36}$, or 0·0278, or 2·7778 per cent. Odds against 35–1.
Total 3 occurs twice: probability $\frac{1}{18}$, or 0·0556, or 5·5556 per cent. Odds against 17–1.
Total 4 occurs 3 times: probability $\frac{1}{12}$, or 0·0833, or 8·3333 per cent. Odds against 11–1.
Total 5 occurs 4 times: probability $\frac{1}{9}$, or 0·1111, or 11·1111 per cent. Odds against 8–1.
Ttotal 6 occurs 5 times: probability $\frac{5}{36}$, or 0·1389, or 13·8889 per cent. Odds against 31–5.

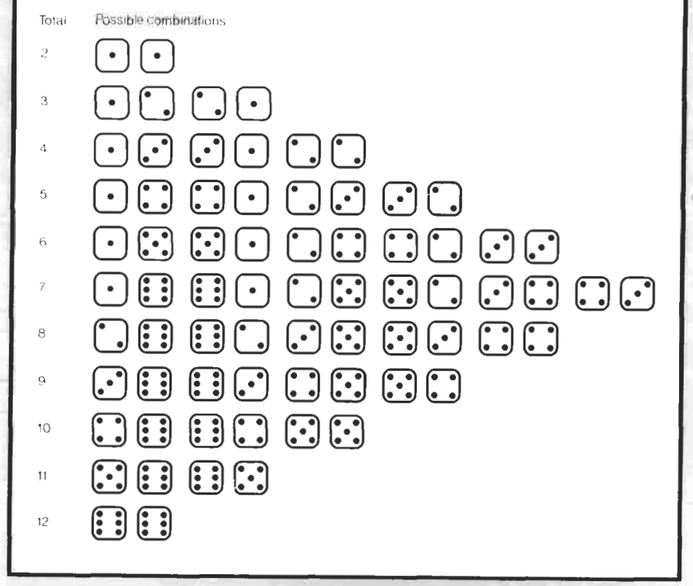


Table 2:2 (left) shows the 32 possible results of tossing a coin five times, from five heads to five tails, and the possible combinations of heads and tails between. Figure 2:1 (above) shows the 36 possible outcomes of throwing two dice, indicating that 7 is the likeliest total, and 2 and 12 the unlikeliest.

Total 7 occurs 6 times: probability $\frac{1}{6}$, or 0·1667, or 16·6667 per cent. Odds against 5–1.
Total 8 occurs 5 times: probability $\frac{5}{36}$, or 0·1389, or 13·8889 per cent. Odds against 31–5.
Total 9 occurs 4 times: probability $\frac{1}{9}$, or 0·1111, or 11·1111 per cent. Odds against 8–1.
Total 10 occurs 3 times: probability $\frac{1}{12}$, or 0·0833, or 8·3333 per cent. Odds against 11–1.
Total 11 occurs twice: probability $\frac{1}{18}$, or 0·0556, or 5·5556 per cent. Odds against 17–1.
Total 12 occurs once: probability $\frac{1}{36}$, or 0·2778, or 2·7778 per cent. Odds against 35–1.

The decimal and percentage probabilities are to four places of decimals. It can be seen that in each case a recurring decimal is involved. It is interesting to note that the probability of throwing 7 with two dice is the same as throwing any number with one die.

Galileo was one of the first mathematicians to work out a problem concerning chance, when he was asked to explain why a total of 10 was more likely when throwing three dice than a total of 9. It is a simple problem nowadays, and can be worked out by drawing a figure similar to Figure 2:1. It will be a laborious task, as there are $6 \times 6 \times 6 = 216$ possible

outcomes with three dice. It will be found that there are 25 ways to achieve a total of 9, the probability being $\frac{25}{216}$, or 11·5741 per cent. There are 27 ways to throw 10, probability $\frac{27}{216}$, or 12·5000 per cent. Early gamblers might have been misled by the fact that there are six ways of throwing both 9 (1:2:6, 1:3:5, 1:4:4, 2:2:5, 2:3:4, 3:3:3) and 10 (1:3:6, 1:4:5, 2:2:6, 2:3:5, 2:4:4, 3:3:4). Different coloured dice would have shown that some of these combinations are more probable than others, although it must be said that gamblers, even

Early in the seventeenth century Galileo wrote down some thoughts about dice games, in which he explained why a total of 10 is more likely when throwing three dice than a total of 9, a question asked him by a gambler, possibly his employer, the Grand Duke of Tuscany.

before the theory of probability was formulated, were astute enough to realise that 10 was more probable than 9 even though the difference was less than 1 per cent.

Independent or mutually exclusive events

When considering the probability of two or more events occurring, we must decide whether they are *independent* or *mutually exclusive*. For example the probability of throwing a double 1 with two dice is the product of throwing 1 with the first die and 1 with the second die, i.e. $\frac{1}{6}\times\frac{1}{6}=\frac{1}{36}$. The two events are independent, since whatever happens to the first die cannot affect the throw of the second. If we want to throw 1 and 6, in that order, the probabilities are still multiplied, and remain $\frac{1}{36}$. But suppose we want to throw 1 and 6 in any order? We do not mind if the first die is either 1 or 6, as we will still be in with a chance. But with the first die, if 1 falls uppermost, clearly it rules out the possibility of 6 being uppermost, so the two outcomes, 1 and 6, are mutually exclusive. In this case, the probability of throwing 1 or 6 with the first die is the sum of the two probabilities, $\frac{1}{6}+\frac{1}{6}=\frac{1}{3}$. The probability of the second die being favourable is still $\frac{1}{6}$, as the second die can only be one specific number, a 6 if the first die is 1, and *vice versa*. Therefore the probability of throwing 1 and 6 in any order with two dice is $\frac{1}{3}\times\frac{1}{6}=\frac{1}{18}$.

If we draw a card from a standard pack of playing cards, the probability of drawing an Ace is $\frac{4}{52}$ or $\frac{1}{13}$, since there are four favourable outcomes (four Aces) and 52 equally possible outcomes (52 cards). The probability of drawing two Aces successively, if the first Ace is returned to the pack, which is then shuffled, is $\frac{1}{13}\times\frac{1}{13}=\frac{1}{169}$. But if we draw two cards, hoping for two Aces, the probability is $\frac{1}{13}$ for the first Ace, but only $\frac{3}{51}$ or $\frac{1}{17}$ for the second Ace, since there remain in the pack three Aces among 51 cards. So the probability of the double event is $\frac{1}{13}\times\frac{1}{17}=\frac{1}{221}$. In this case, the two draws of the card are not mutually exclusive, since drawing the first Ace does not exclude the possibility of drawing the second Ace. The two events are independent, but removing the first Ace from the pack has altered the probability of drawing the second. The probability of drawing any pair of cards is $\frac{1}{17}$, as whatever card is drawn first, there will remain in the reduced pack of 51 cards three to match it.

Converse probabilities

Sometimes it is necessary when working out the probability of an outcome involving more than one event to use the *converse* probability, which is the probability of the outcome not occurring. For example, the probability of throwing a 6 on a die is $\frac{1}{6}$, therefore the probability of a 'non-6' is $1-\frac{1}{6}=\frac{5}{6}$.

Converse probabilities are used to work out such problems as: what is the probability of throwing exactly one 6 with three separate dice? We must imagine the dice to be separate colours, say red, white and blue. The chance of the red die being 6 is $\frac{1}{6}$, when we would require the white and blue dice to be 'non-6s'. Each has a probability of $\frac{5}{6}$ of being 'non-6'. Therefore the probability of the red die only being 6 is $\frac{1}{6}\times\frac{5}{6}\times\frac{5}{6}$, or $\frac{25}{216}$. The probabilities of only the white die or only the blue die being 6 are the same. So the probability of one die only being 6 is $\frac{25}{216}+\frac{25}{216}+\frac{25}{216}=\frac{75}{216}$ or 34·7222 per cent. Notice that these three probabilities are added, since the outcomes are mutually exclusive: i.e. the first term $\frac{25}{216}$ contains all the chances of the red die being 6 and the others 'non-6', which excludes all the chances in the second term $\frac{25}{216}$, in which the white die shows the 6.

Converse probabilities are used to work out the well-known birthday problem. Many people find the answer surprising. The problem is: how many people must be gathered in a room together before it is likely that two of them share the same birthday? We will ignore the complication of leap years in working this out. When the first person announces his birthday, the probability of the second person sharing the same birthday is $\frac{1}{365}$. Conversely, the probability of the second birthday being different is $\frac{364}{365}$. When two birthdays are known, the probability of the third being different is $\frac{363}{365}$, as there are now two 'favourable' outcomes among 365. The compound probability of birthday 2 being different from birthday 1, and of birthday 3 being different from the other two, these being independent outcomes, is

$$\frac{365\times364\times363}{365\times365\times365}$$

where $\frac{365}{365}$ has been added to the fraction merely for the convenience of keeping the number of terms in the fraction equal to the number of birthdays announced. All that is necessary now is to continue adding terms to the fraction until it equals less than $\frac{1}{2}$, since as soon as the probability is less than $\frac{1}{2}$ that all birthdays are different, the probability is clearly more than $\frac{1}{2}$ that any two are the same. The fraction drops to less than $\frac{1}{2}$ with 23 terms, so it is more likely than not that in any gathering of 23 or more persons, two of them will share a birthday. Any directory of the 'Who's Who' type will verify this fact. Only 40 people need be present for the 'coincidence' of two of them having the same birthday to become an 8–1 on chance. In a company of 100 employees the odds are more than three million to one on that two share a birthday.

The birthdays proposition is one where a gambler who can estimate probabilities can make money from unsuspecting punters. The three bags problem is one where even those who are practised in calculating odds can go wrong, and it shows the necessity when dealing with probabilities of taking care to count the 'equally probable outcomes'. One bag contains two red balls, another a red ball and a white ball, and the third two white balls. Suppose you draw a ball from a bag chosen at random and it is red. What is the probability of the other ball in the bag being red? Clearly the bag chosen was not that with two white balls, so it must be either the bag with two red balls, in which case the remaining ball is red, or the bag with one ball of each colour, in which case the remaining ball is white. So the probability of the remaining ball being red is $\frac{1}{2}$, or it is an even chance that it is red or white. That sounds logical but it is quite wrong. When making the original choice, you have three chances of picking a red ball, all equally likely. Two of those red balls are in the first bag, in which case, the other ball is also red. Only one red ball has a white ball as its companion. Therefore you have two chances of finding another red ball in the bag, and only one chance of a white ball, and the correct probability of the ball left in the bag being red is $\frac{2}{3}$. In other words it is twice as likely that the ball you have drawn is from the bag with two reds than from the bag with a red and white. The fallacy in the earlier reasoning lay in the assumption that it was equally likely that the ball drawn came from either one of the two possible bags. This example shows that taking short cuts when working out probabilities can lead to disaster. It is usually best to begin at the beginning.

Periodic events

So far we have discussed probabilities in terms of outcomes either occurring or not occurring, but sometimes the gambler will wish to know the probability of an outcome occurring within a given time or during a given sequence of events. If a given event *must* occur exactly twice in 2 years, then if one year is chosen as a unit of time, and the occurrences of the event are called E_1 and E_2, there are four possibilities:

	Year A	*Year B*
1.	E_1, E_2	—
2.	E_1	E_2
3.	E_2	E_1
4.	—	E_1, E_2

Note that these possibilities are similar to the tossing of two coins, and that care has been taken not to reduce the possibilities to three by combining 2 and 3 as one possibility. It follows that if an event must occur twice only in two years, the probability of it occurring at least once in either year is $\frac{3}{4}$. Only in possibility 4 does the event not occur in year A. There is a formula to work out these probabilities.

If an event must occur exactly x times in a period divided equally into N smaller periods, then the probability of the event occurring at least once in any small period is

$$\frac{N^x-(N-1)^x}{N^x}$$

Thus, if an event must occur four times in ten years, the probability of it occurring in the first two years is

$$\frac{5^4-(5-1)^4}{5^4}=\frac{625-256}{625}=\frac{369}{625}\quad\text{or}\quad 0{\cdot}5904$$

or much better than 50 per cent.

The Chevalier de Méré, a rich Frenchman

who liked gambling, was responsible for inviting the philosopher and mathematician Blaise Pascal to carry out some of the earliest work on probability theory. De Méré played a gambling game in which he bet that he could throw a 6 in four throws of a die. De Méré progressed from this game to betting that with two dice he could throw a double-6 in 24 throws. It was known that the odds were in his favour with the first game, and gamblers of the time reckoned that as four is to six (the number of ways a die can fall) as 24 is to 36

Pascal, right, was asked by Antoine Gombaud, le Chevalier de Méré, to work out how many times he must throw two dice to give himself at least an even chance of throwing two 6s, and is generally credited with discovering the answer, although his correspondence with Fermat suggests that Fermat might have provided the key.

(the ways two dice can fall), the second game should be as favourable. The Chevalier de Méré was not satisfied with this assumption (legend has it he began to lose money), and asked Pascal to work out the true probabilities.

To work out these two problems it is necessary to work out converse probabilities. The probability of *not* throwing a 6 in four throws is

$$\frac{5}{6}\times\frac{5}{6}\times\frac{5}{6}\times\frac{5}{6}=\left(\frac{5}{6}\right)^4=\frac{625}{1296}$$

Therefore the probability of throwing at least one 6 is

$$1-\frac{625}{1296}=\frac{671}{1296}\text{ or }0{\cdot}5177$$

As an even-money proposition, therefore, a bet to throw a 6 in four throws of a die is slightly in favour of the thrower. The probability of *not* throwing a double-6 in 24 throws is

$$\left(\frac{35}{36}\right)^{24}$$

This is clearly a mammoth calculation with both numerator and denominator containing 38 digits. The answer is approximately 0·5087, making the probability of throwing a double-6 in 24 throws 0·4913. As an even-money proposition, therefore, a bet to throw a double-6 in 24 throws of two dice is slightly against the thrower.

Various formulae have been put forward to determine the number of throws necessary to make the throwing of a double-6 a better than even chance. The old gamblers' rule in operation in de Méré's time relied on knowing the answer to the lowest number of throws necessary to give a probability of throwing 6 with a single die of more than $\frac{1}{2}$. As has been said, this was known to be 4, which might be called the break-even number. According to the rule the break-even number for the double event (n_2) is the probability of success on the single event (P_1), known to be $\frac{1}{6}$ (the probability of a 6 with one die), divided by the probability of success on the double event (P_2), known to be $\frac{1}{36}$ (the probability of a double-6 with two dice), multiplied by the break-even number of the single event (n_1), known to be 4. Thus

$$n_2=\frac{P_1}{P_2}\times n_1$$

by substitution

$$n_2=\left(\frac{1}{6}\div\frac{1}{36}\right)\times 4,\text{ or }n_2=\frac{36}{6}\times 4$$

In this equation $n_2 = 24$, guessed correctly by the Chevalier de Méré to be wrong. Abraham de Moivre, in a book *The Doctrine of Chances*, published in 1716, set out a formula for discovering the approximate break-even point (n) as

$$n=\frac{0{\cdot}6931}{P}$$

For those interested, 0·6931 is the napierian or 'natural' logarithm of 2. The probability P of a double-6 with two dice is $\frac{1}{36}$, so de Moivre's formula gives the answer as 0·6931 × 36 = 24·9516. This gives an effective break-even number of 25, which is correct, although de Moivre's formula gives too high a number, which is only slightly too high when the probability is small, but may be critically too high when the probability is larger. For example, de Moivre's formula for the break-even number for throwing a 6 with one die gives $n = 0{\cdot}6931\times 6 = 4{\cdot}1586$, which gives an effective break-even number of 5, which is too high, 4 being correct, as we have found.

It is interesting that John Scarne, in his famous book *Scarne's Complete Guide to Gambling*, published in 1961, states that the *odds to one* should be multiplied by 0·6931. Thus his approximate answer to de Méré's problem is $n = 0{\cdot}6931\times 35 = 24{\cdot}2585$. This answer is too low, although it gives the correct effective break-even number as 25. Scarne's formula applied to throwing a 6 with a single die gives the answer $n = 0{\cdot}6931\times 5 = 3{\cdot}4655$, again slightly low, but giving the correct break-even number of 4. The third formula to find the break-even number is as follows. If the probability of the outcome is $\frac{1}{a}$, then

$$n=\frac{\log 2}{\log a-\log(a-1)}$$

In this case, the logarithms are the ordinary logarithms, to base 10.

The break-even number for throwing a double-6 thus becomes

$$n=\frac{\log 2}{\log 36-\log 35}$$

which, with the use of four figure log tables, gives n a value of 24·6721, thus giving 25 as the effective break-even number. For throwing a 6 with one die, $n = 3{\cdot}8005$, confirming 4 as the effective number.

When the Chevalier de Méré asked Pascal to help with this problem Pascal provided him with his answer, and began a correspondence about probabilities with Pierre de Fermat, another French mathematician, which established probability theory as a new branch of mathematics.

The law of large numbers

The theory of probability becomes of enhanced value to gamblers when it is used with the law of large numbers. The law of large numbers states that:

If the probability of a given outcome to an event is P and the event is repeated N times, then the larger N becomes, so the likelihood increases that the closer, in proportion, will be the occurrence of the given outcome to NP.

For example, if the probability of throwing a double-6 with two dice is $\frac{1}{36}$, then the more times we throw the dice, the closer, in proportion, will be the number of double-6s thrown to $\frac{1}{36}$ of the total number of throws. This is, of course, what in everyday language is known as the law of averages. The overlooking of the vital words 'in proportion' in the above definition leads to much misunderstanding among gamblers. The 'gambler's fallacy' lies in the idea that 'in the long run chances will even out.' Thus if a coin has been spun 100 times, and has landed 60 times head uppermost and 40 times tails, many gamblers will state that tails are now due for a run to get even. There are fancy names for this belief. The theory is called the maturity of chances, and the expected run of tails is known as a 'corrective', which will bring the total of tails eventually equal to the total of heads. The belief is that the 'law' of averages really is a law which states that in the longest of long runs the totals of both heads and tails will eventually become equal.

In fact, the opposite is really the case. As the number of tosses gets larger, the probability is that the percentage of heads or tails thrown gets nearer to 50 per cent, but that the difference between the actual *number* of heads or tails thrown and the number representing 50 per cent gets larger. Let us return to our example of 60 heads and 40 tails in 100 spins, and imagine that the next 100 spins result in 56 heads and 44 tails. The 'corrective' has set in, as the percentage of heads has now dropped from 60 per cent to 58 per cent. But there are now 32 more heads than tails, where there were only 20 before. The 'law of averages' follower who backed tails is 12 more tosses to the bad. If the third hundred tosses result in 50 heads and 50 tails, the 'corrective' is still proceeding, as there are now 166 heads in 300 tosses, down to 55·33 per cent, but the tails backer is still 32 tosses behind.

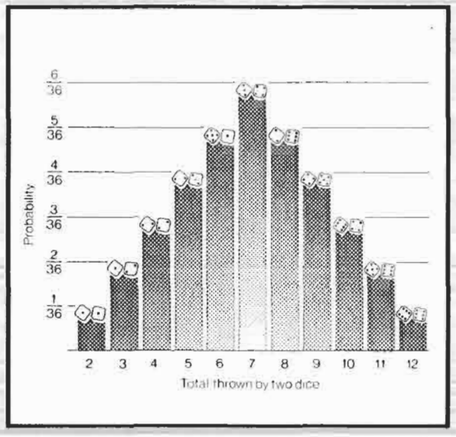
Put another way, we would not be too surprised if after 100 tosses there were 60 per cent heads. We would be astonished if after a million tosses there were still 60 per cent heads, as we would expect the deviation from 50 per cent to be much *smaller*. Similarly, after 100 tosses, we are not too surprised that the difference between heads and tails is 20. After a million tosses we would be very surprised to find that the difference was not very much *larger* than 20.

A chance event is uninfluenced by the events which have gone before. If a true die has not shown 6 for 30 throws, the probability of a 6 is still $\frac{1}{6}$ on the 31st throw. One wonders if this simple idea offends some human instinct, because it is not difficult to find gambling experts who will agree with all the above remarks, and will express them themselves in books and articles, only to advocate elsewhere the principle of 'stepping in when a corrective is due'.

An understanding of the law of the large numbers leads to a realisation that what appear to be fantastic improbabilities are not remarkable at all, but merely to be expected.

The chance of being dealt 13 spades in a bridge hand is one in 635,013,559,600. A man dealt such a hand would be staggered, and anybody seeing the hand dealt would immediately expect (probably correctly) some sort of trickery. Yet when we consider that the number of bridge hands dealt since the game was invented is doubtless many times the large number quoted, it would be surprising if a hand of 13 spades had never been dealt legitimately.

It is frequently stated in books and articles on probability that if a succession of monkeys were set before a typewriter with limitless paper, eventually the complete works of Shakespeare would be repeated by chance. If there are 50 keys on the typewriter, the probability of the monkey getting Shakespeare correct is $\frac{1}{50}$ raised to the power of the number of characters (letters and spaces) in Shakespeare plus the adjustments of the typewriter needed for capitals and punctuation. On this basis the chance of the monkey typing the word 'Hamlet' correctly is one in 15,625,000,000, so to quote the probability of him typing the complete works involves a large number indeed.



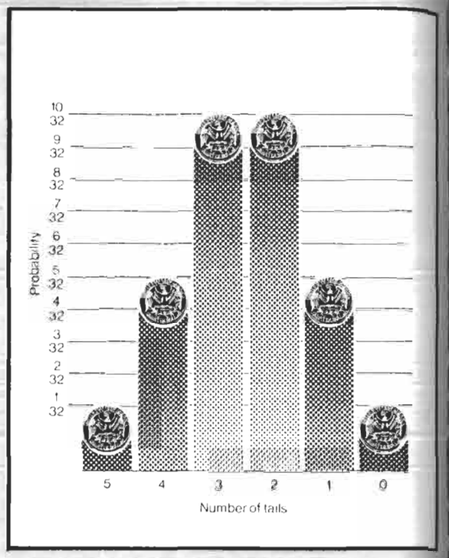


Figure 2:3 (right) converts the probabilities of obtaining any total with two dice into graph form and Figure 2:2 (far right) converts the probabilities of obtaining any number of tails when tossing a coin five times into graph form. Note the regular nature of both of the graphs.

Probability curves

If we look back to Table 2:2 we see that the probabilities of throwing various numbers of tails in five spins of a coin can be expressed as a graph, as in Figure 2:2.

This graph is regular, and always will be when probabilities of equally likely outcomes are considered. A graph showing the probabilities of the results of throwing two dice is shown in Figure 2:3. The regular nature of these graphs can be shown by a practical experiment. Imagine a set-up like a pin table, and drop 64 balls into it as shown in Figure 2:4. The pins are arranged so that each time a ball hits one the probability that it will go right is $\frac{1}{2}$ and that it will go left is $\frac{1}{2}$. Imagine the balls to behave perfectly and that of each pair of balls to hit a pin one will go left and one right. The figure shows the distribution of the 64 balls at the end of the experiment, and the paths they have taken. There are seven compartments at the foot of the pin table arrangement and the numbers of balls in each compartment from the left are 1, 6, 15, 20, 15, 61, 1.

Pascal's Triangle

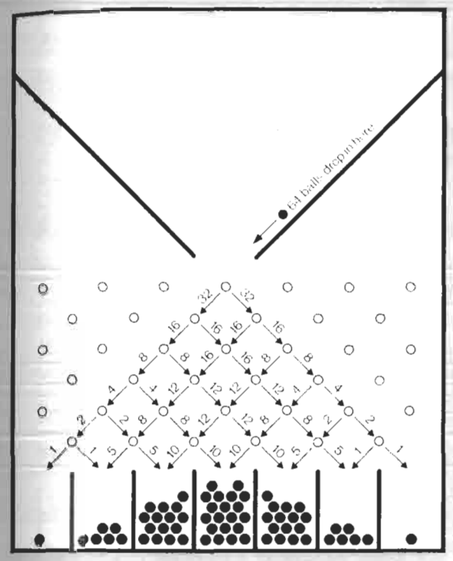
In 1665, three years after his death, Pascal's famous arithmetical triangle was published. The first ten lines of Pascal's Triangle are shown in Figure 2:5.

The triangle is easily compiled. Each line is formed by adding together each pair of adjacent numbers in the line above. The first thing to notice about the triangle is how neatly line 5 summarises the five tosses of a coin shown in Table 2:2 (there are a total of 32 possible results of which one contains no heads, five contain 1 head, ten contain 2 heads, ten contain 3 heads, five contain 4 heads and one contains 5 heads). Line 6 shows the numbers of balls in each compartment in Figure 2:5. The Triangle is of great interest to gamblers, and provides the answer to questions relating to equipartition and combinations.

Combinations and permutations

A practical problem for gamblers is the calculation of combinations and permutations. A gambler frequently wants to know how many different ways a smaller number of items can be taken from a larger. This occurs in horse racing, where the number of four-horse accumulators which can be taken from a total of eight selections might be required, or in selecting draws for a treble-chance football pool, where perhaps the number of combinations of eight draws from ten selections might be needed. Each of these problems is an exercise in calculating combinations, although British football pools companies and pools journalists always refer to the second example, wrongly, as a permutation.

The answer to both problems is contained in Pascal's Triangle. The question of how many four-horse combinations are possible from eight horses is the same question as how many ways can four heads appear in eight tosses of a coin. In each case you are taking all combinations of four from a total of eight.



A glance along line 8 of Pascal's triangle shows that there is one combination of eight heads (or one eight-horse accumulator), 8 combinations with seven heads (or 8 seven-horse accumulators), 28 combinations of six heads (or 28 six-horse accumulators), 56 combinations of five heads (or 56 five-horse accumulators) and, the answer required, 70 combinations of four heads (or 70 four-horse accumulators).

A similar glance along line 10 of Pascal's Triangle shows that there are 45 combinations of eight draws from ten selections. It is not necessary, however, to have Pascal's Triangle to calculate combinations. There is a simple formula.

The number of combinations of a articles from a total of n articles is usually written ${}^{n}C_{a}$. The number of combinations of four articles from 20 is written ${}^{20}C_{4}$. To find the combinations of four from 20, multiply four (the number in the combination) by every number smaller than itself: $4 \times 3 \times 2 \times 1$. This becomes the denominator of a fraction, the numerator being 20 (the total number of articles) multiplied by each number smaller than itself until there are an equal number of terms (four) in both the numerator and denominator. Thus

$$ {}^{20}C_{4} = \frac{20 \times 19 \times 18 \times 17}{4 \times 3 \times 2 \times 1} = 4{,}845 $$

The number 4,845 appears in Pascal's Triangle on the twentieth line.

Earlier in this chapter it was said that the probability of receiving 13 spades in a bridge hand is one divided by 635,013,559,600. There is only one hand possible of containing all 13 spades, so the large number is the total possible number of bridge hands, i.e. ${}^{52}C_{13}$.

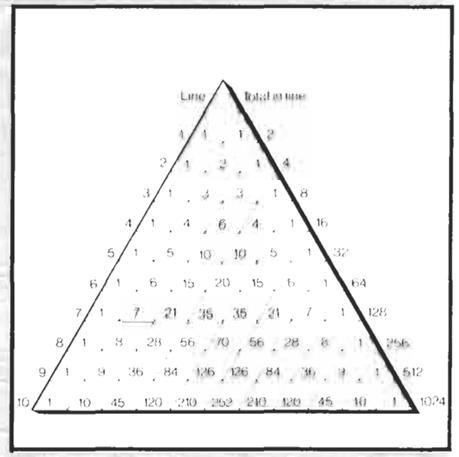


Figure 2:4 (far left) shows the perfect result of the pin table experiment described in the text. Figure 2:5 (left) shows the first ten lines of Pascal's Triangle. Notice that line 6, which deals with 64 items, corresponds to the final distribution of the balls in Figure 2:4.

The fraction is

$$ {}^{52}C_{13} = \frac{52 \times 51 \times 50 \times 49 \times 48 \times 47 \times 46 \times 45 \times 44 \times 43 \times 42 \times 41 \times 40}{13 \times 12 \times 11 \times 10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1} $$

The number 13 multiplied by all the numbers smaller than itself is known as factorial 13 and is usually written 13! If the top line of the equation were multiplied by 39! i.e. all the numbers from 39 downwards multiplied together, the top line of the fraction would be 52! If both numerator and denominator of the fraction were multiplied by 39! the fraction would read

$$ \frac{52!}{13!\,39!} $$

This can be easily solved by a table of logarithms of factorials, although the accuracy of the answer will depend upon the tables used. Four-figure logarithm tables give an answer beginning 634, 800 . . ., which is about 0·03 per cent inaccurate. Table 2·3 gives the number of combinations up to eight from a total number of up to 20.

A combination is concerned only with the make-up of the group in question, for example, if we want to know how many combinations of two trap numbers are possible from a six-trap greyhound race, there are

$$ \frac{6 \times 5}{2 \times 1} = 15. $$

We are not concerned with the *order* of the

traps in each combination. But if we wanted to forecast the first two dogs home in the correct order, we need to calculate a permutation. In this case, there are six dogs, each of whom could finish first, so there are six alternative trap numbers to supply the winner. For each of these, there are five alternative trap numbers to supply the second dog. So there are 6×5 ways, or 30, of forecasting the first and second dog in a six-dog race in the correct order. This can be verified from the calculation of combinations. There were 15 combinations, each of which could be reversed, as the combination of say, Trap 3 and Trap 4 has two orders, 3:4 and 4:3. Therefore there must be 15×2 permutations of the first two dogs home.

Table 2:3 shows the number of combinations of any number of articles from any greater number of articles. It shows, for instance, that there are 252 different ways that any five articles can be taken from ten.

Table 2:3 Combinations: values for ^nC_a

Total number of articles	number in combinations (a)						
n	2	3	4	5	6	7	8
1							
2	1						
3	3	1					
4	6	4	1				
5	10	10	5	1			
6	15	20	15	6	1		
7	21	35	35	21	7	1	
8	28	56	70	56	28	8	1
9	36	84	126	126	84	36	9
10	45	120	210	252	210	120	45
11	55	165	330	462	462	330	165
12	66	220	495	792	924	792	495
13	78	286	715	1287	1716	1716	1287
14	91	364	1001	2002	3003	3432	3003
15	105	455	1365	3003	5005	6435	6435
16	120	560	1820	4368	8008	11440	12870
17	136	680	2380	6188	12376	19448	24310
18	153	816	3060	8568	18564	31824	43758
19	171	969	3876	11628	27132	50388	75582
20	190	1140	4845	15504	38760	77520	125970

Advertisers sometimes run competions in which the competitor is asked to place, say, eight items in order of merit. The number of ways this can be done is a permutation of eight articles. All eight could be first, the remaining seven second, etc., so the number of ways is

$$8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

which is 8! and equals 40,320. If the advertiser expects 400,000 entries in his competition, he can expect, by using the law of large numbers, that at random (i.e. discounting selection techniques) about ten competitors will give the answer corresponding to the judge's selection. Hence the necessity of asking for a slogan as a tie-breaker.

Earlier the number of possible 13-card hands from a pack of 52 playing cards was given. This was a combination, since we were unconcerned in which order the cards were dealt. Were we concerned with the order, i.e. suppose we wanted to know how many different ways a pack of 52 cards could be dealt, the question would be one of permutations. It is like taking a pack of cards, shuffling them, and trying to guess the order of all 52 cards. The number of possible orders is 52!, which is a number running to 68 digits. The size of this number can be grasped by imagining everybody in the world being given limitless packs of cards and each person arranging each pack in a different order, to a preconceived plan. If each person were immortal, and arranged a pack of cards a second, the number of years needed to put the packs in all possible orders would still contain over 50 digits. And this inconceivable number can be written with three characters: 52!

Equipartition

Another glance at Pascal's Triangle will answer the following question. When tossing a coin, what is the probability that after *n* events, the number of heads will equal the number of tails? Clearly this can happen only with an even number of events. Those who believe the 'law of averages' fallacy maintain that the probability of equipartition, as it is called, increases with the number of events. Pascal's Triangle proves the opposite. Line 4 shows that if we toss four times, there are 16 possible outcomes, of which six contain two heads and two tails. The probability of equipartition is $\frac{6}{16}$. Line 6 shows that with six tosses, the probability of equipartion is $\frac{20}{64}$. Line 10 shows that with ten tosses, equipartition is a $\frac{252}{1024}$ chance. The probabilities are becoming smaller as the tosses increase.

The formula to discover the probability of equipartition in *n* events is to divide the number of combinations which give equipartition (in the case of coin-tossing $^nC_{\frac{n}{2}}$) by the number of possible outcomes (2^n).

What is the probability, when tossing six dice, of throwing each number once i.e. achieving equipartition? The total number of ways equipartition can occur is 6! The first die can clearly be any of the six numbers, the second die one of the five remaining, and so on, giving a total number of ways of $6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$. The number of possible outcomes is 6^6, since there are six ways each of the six dice can fall. So the probability of equipartition is

$$\frac{720}{46{,}656}, \text{ or } 0{\cdot}0154, \text{ or } 1{\cdot}5432 \text{ per cent.}$$

Most people would be surprised to discover that if you threw six dice, on about 98½ per cent of occasions at least one number will appear more than once.

If there are seven children in a family, what is the probability that they were born on different days of the week? This is a question of equipartition, the answer being 7! divided by 7^7. The answer is 0·6120 per cent.

Some gamblers might be tempted to base staking plants on the theory that in any series of even-money events there must come a time sooner or later when the outcomes reach equipartition. This theory is not true, and if a gambler backs black at roulette, for example, and the first winner is a red, there is a calculable chance that black will never catch up.

Table 2:4 lists the 16 possible results of four spins of a roulette wheel in terms of red and black, ignoring zero. In six cases there is equipartition at the end of the series of spins. It can be seen that in three cases black has led throughout, and in three cases red has led throughout. In other words, the number of series in which equipartition has never been reached equals the number of series in which equipartition is the state at the end.

This equality holds true for any number of spins. After 20 spins, the probability of equipartition is 0·1762, which is the probability of black *or* red having been ahead throughout. If we specify a colour, say black, the probability is $0{\cdot}1762 \times 0{\cdot}5 = 0{\cdot}0881$ that black has been constantly ahead (or behind).

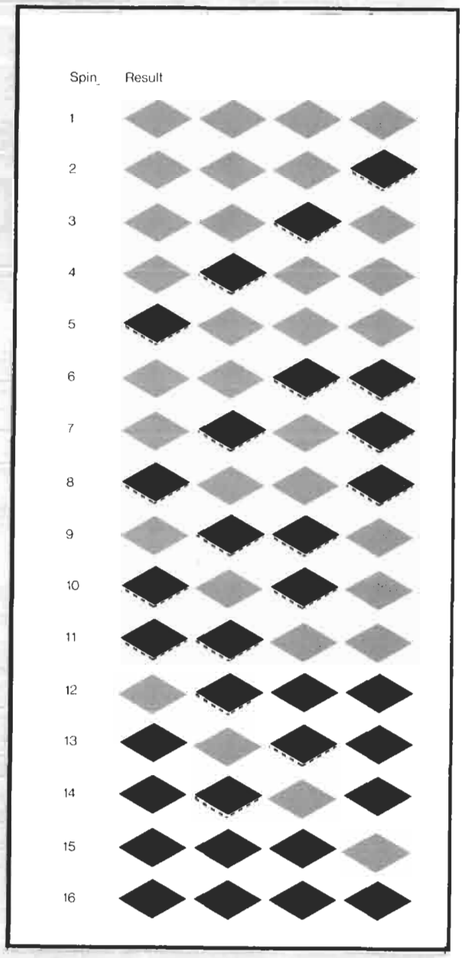
Thus a gambler backing black, who needs equipartition or better before 20 spins have elapsed to save his stakes, faces a probability of 0·0881 that he will lose. Even after 1,000 spins there is a probability of 0·0126 that he is still behind. So even if his staking plan were so good that he could stand being behind for 999 spins, there is still a 1¼ per cent probability that he will lose.

Fair or unfair games

One of the most valuable uses to which a gambler can put his knowledge of probabilities is to decide whether a game or proposition is fair, or equitable. To do this a gambler must calculate his 'expectation'. A gambler's expectation is the amount he stands to win multiplied by the probability of his winning it. A game is a fair game if the gambler's expectation equals his stake.

If a gambler is offered 10 units each time he tosses a head with a true coin, and pays 5 units for each toss is this a fair game? The gambler's expectation is 10 units multiplied by the probability of throwing a head, which is ½. His expectation is 10 units $\times \frac{1}{2} = 5$ units, which is what he stakes on the game, so the game is fair.

Table 2:4 shows the possible results, in terms of black/red and ignoring zero, from four spins of a roulette wheel.



Suppose a gambler stakes 2 units on the throw of a die. On throws of 1, 2, 3 and 6 he is paid the number of units shown on the die. If he throws 4 or 5 he loses. Is this fair? This can be calculated as above. The probability of throwing any number is $\frac{1}{6}$, so his expectation is $\frac{2}{6}$ on number 6, $\frac{3}{6}$ on number 3, $\frac{2}{6}$ on number 2 and $\frac{1}{6}$ on number 1. His total expec-

tation per throw is therefore $\frac{6}{6}+\frac{3}{6}+\frac{2}{6}+\frac{1}{6}$, which equals 2, the stake for a throw, so the game is fair.

It is usually easier in cases like this to use the law of large numbers to work out the gambler's expectation. Over a series of tosses he 'expects' each number to appear an equal number of times. There are six possible equally likely results from throwing a die. He assumes a series of six throws in which each number appears once. His expectation is six (for throwing 6) plus three (for 3) plus two (for 2) plus one (for 1), total 12 units. His stake for the six games is 12, so the game is fair.

Most games played in a casino are unfair, otherwise the casino would not pay for its upkeep or make a profit. Casinos do not intend (at least, not often) to mislead, so it is perhaps better to call the games inequitable rather than unfair. In these cases the gambler does not work out if the game is fair, but rather how large is the inequitability.

The inequitability of various casino games and other gambles will be dealt with when the games are discussed in their respective chapters.

Suppose, as a last example, a gambler were asked to draw a card from a standard pack and is paid 10 units when he draws an Ace. But if he does draw an Ace, he is to put it to one side and is to draw another card. If this is an Ace he is paid a further 40 units. Each draw costs him one unit, except the draw for a second Ace, which is free. Is this a fair game?

The probability of his drawing the first Ace is $\frac{4}{52}$, and he is paid 10 units, so his expectation is $\frac{4}{52} \times 10 = 0{\cdot}7692$ units. The probability of drawing two Aces is $\frac{4}{52} \times \frac{3}{51} = \frac{1}{221}$, and he is paid 40 units, so his expectation is 0·1810. His total expectation is 0·9502 units. As his stake is one unit, the game is unfair.

Worked out by the other method, the gambler can expect to draw on average the two Aces once in 221 attempts. In these attempts, he will draw the first Ace 17 times (as the probability is $\frac{4}{52}$ or $\frac{1}{13}$). On these 17 occasions he will draw the second Ace once (probability $\frac{3}{51}$ or $\frac{1}{17}$). His expectation on 221 attempts is therefore 17×10 plus $1 \times 40 = 170+40 = 210$. He will have paid 221 units to receive 210, so his expectation is 0·9502, which tallies with the previous result. In other words, he will receive 95·0226 per cent of his stakes back, an advantage to the 'bank' of nearly 5 per cent.

Five per cent is quite a large percentage to fight against. If the above game were played in a casino, the five per cent would be referred to as the 'house edge'. The law of large numbers states that the more the gambler plays this game, the closer will be his losses to 5 per cent of his stakes. If he plays the game 1,000 times during a year, his losses will be around 50 units. If a casino played the game a million times during a year against various gamblers, it could look forward to the game producing a profit of 50,000 units on the year.

Prospects of ruination

When we talk of fair games, there is another aspect to the question which experienced gamblers know about, and which all gamblers must remember. If a game is fair by the above criterion, it nevertheless is still true that if it is played until one player loses all his money, then the player who started with most money has the better chance of winning. The richer man's advantage can be calculated.

The mathematics required to arrive at the formula are complex, but it can be shown that if one player's capital is c and another player's is C, then the probability that the player who began with c is ruined in a fair game played to a conclusion is $\frac{C}{C+c}$, and the probability that he will ruin his opponent is $\frac{c}{C+c}$.

Suppose player X, with 10 units, plays another player, Y, with 1,000 units. A coin is tossed and for each head player X pays player Y one unit, and for each tail player Y pays player X one unit. The probability of player X ruining player Y is $\frac{10}{1000+10}$ or $\frac{1}{101}$. Player Y has a probability of $\frac{100}{101}$ of ruining his opponent, an advantage of over 99 per cent.

This overwhelming advantage to the player with the larger capital is based on a fair game. When a player tries to break the bank at a casino, he is fighting the house edge as well as an opponent with much larger resources. Even a small percentage in favour of the casino reduces the probability of the player ruining the casino to such an extent that his chance is infinitesimal.

Gambling organisation's advantage

When a professional gambling organisation like a casino, a bookmaker or a totalisator or pari-mutuel company offers bets to the public there must be a percentage in its favour to make it as near-certain as possible that it will win over a period of time. The three main ways this is achieved are as follows.

Pari-mutuel or totalisator system

This system cannot lose, since it operates on the same principle as a lottery, returning to winners a proportion of the total stakes. It is the system used to bet on horse races in most parts of the world. It was invented in Paris in 1865 by Pierre Oller. In France it is called the pari-mutuel, in English-speaking countries usually the tote, short for totalisator, the equipment used to register and indicate the total bets and dividends.

In different countries, there are different pools to accommodate daily doubles or trebles and to accommodate betting on horses to win, or to finish second or third. The percentage taken from the pool for running expenses, profit and state taxes varies from country to country. Examples provide the best explanation of how the tote works.

In Britain, the tote percentage was taken from the win pool in the 1970s as follows. The win pool is the stakes placed on particular horses to win only. If the winning stakes were more than 50 per cent of the total pool, no

deduction was made. If the winning stakes were between 7 per cent and 49·99 per cent, then the deduction was 30·9 per cent of what remains after twice the value of the winning stakes had been subtracted from the total pool. The deduction from the total pool when the winning stakes represented less than 7 per cent of the pool was based on a sliding scale ranging from 38 per cent when winning stakes were less than 3 per cent of the pool to 27 per cent when the winning stakes were between 6 and 7 per cent.

For instance, if the total pool were £5,000 and the winning stakes were £1,200, the winning stakes represented 24 per cent of the pool, and the deduction was 30·9 per cent of £5,000 less twice £1,200. The deduction was therefor £803. Thus £4,197 was paid out to winners, a dividend of 25p to 10p staked.

In New York, the deduction is 15 per cent of the total win pool, rounded down to the nearest 5 cents in the dollar. Let us assume a total pool of $50,000 and winning stakes of $12,000, to keep the proportion the same as in the British example. The deduction would be 15 per cent of $50,000, or $7,500. If $42,500 were to be shared by the holders of the winning tickets, the dividend per dollar would be $3·54. This would be rounded down to the nearest 5 cents, which would give $3·50 to $1, and the declared dividend would be $7 for a $2 win ticket. In this instance, therefore, the New York bettor gets exactly the same return as his London counterpart.

A British football pool works on a similar basis to the above, but with government tax on the total pool of 40 per cent and the pools company taking a further commission to cover expenses and profits of around 30 per cent, the share-out for winners is only about 30 per cent of the total pool, probably the worst deal offered to any punters – yet well over £1 million is staked weekly.

Bookmakers

The art of making a book is to 'balance' it so that a profit is made no matter what the outcome. If betting on an event where there are only two outcomes, such as the Oxford and Cambridge boat race, the bookmaker might open his book by offering odds of 2–1 *on*

Two methods of backing on the course. Far left, some of the totalisator windows at Cheltenham, the main meeting of the British National Hunt Season. Left, bookmakers at the Werribee race course, 25 miles west of Melbourne in Victoria, Australia. There are some significant differences in the odds offered about some horses on the boards.

Cambridge and 6–4 against Oxford. By using Table 2:1 we can see that 2–1 on represents a probability of 66·67 per cent, and 6–4 against represents 40 per cent. The probabilities add up to 106·67. The excess of 6·67 over 100 per cent is known as the 'over-round'. The bookmaker, if he can take bets in the proportion of the probabilities, say £66.67 on Cambridge and £40 on Oxford, will pay out £100 whichever wins on £106.67 taken, a percentage profit to him of 6·25 per cent. In practice, of course, the bookmaker will need to adjust his odds in accordance with supply and demand. More money for Oxford than the estimated probability indicates will cause him to shorten the odds against Oxford and lengthen those for Cambridge.

His final book might look like this:

For Cambridge	*For Oxford*
£50 at 2–1 on	£40 at 6–4
£42 at 4–6 on	£32 at 5–4
£50 at 4–5 on	£30 at evens

In this example, he began by seriously under-estimating the fancy for Oxford, and has been forced to reduce his odds from 6–4 to evens, at the same time offering better odds for Cambridge. Before adjusting his odds he stood to pay out £100 on Oxford, having taken only £90 in stakes.

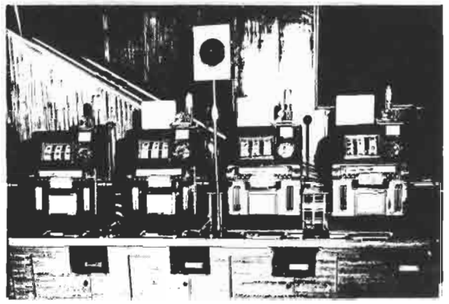
The odds offered on a horse race with many runners are calculated and adjusted in the same way. The over-round usually increases with the size of the field. Typical odds on a 16-horse race might be as follows:

7–4 Blue Lamp; 5–1 Soldier; 6–1 Turkish Delight, Ocean Breeze; 8–1 Red Scholar; 10–1 Charley's Aunt; 14–1 Archie, Rhino; 20–1 Deb's Fancy; 25–1 Horace, Flying Free; 33–1 any of five others.

If the odds were converted to percentage probabilities, the total would be just over 142 per cent, an over-round of 42·3 per cent, a percentage advantage to the bookmaker of 29·7 per cent.

Casinos

A casino makes a profit on games like craps and roulette on the assumption that the probability of success of every bet can be calculated, and the punter's reward for a winning bet is always less than it would be were the game fair.



A bank of unattractive and purely functional slot machines at Las Vegas, designed to collect the loose change of the passers-by.

For instance, in roulette with a single zero, the gambler will be paid even money if he backs red, whereas his probability of winning is $\frac{73}{148}$, a casino advantage, or house edge, of just over 1·35 per cent. In the long run, the casino can expect to win 1·35 per cent of all stakes bet on red. This is a very small percentage compared to those mentioned in connection with the bookmaker or the tote. But few go into a casino to back red once. A man entering a casino with £10 might have 100 bets at £1 a time with it, in which case he can 'expect' to lose £1.35 or 13·5 per cent of his original £10.

Systems

So much study has gone into the mathematics connected with probability and chance, and some of the results of that study, like Pascal's Triangle, seem so magical, that it is not surprising that thousands of gamblers have imagined that they could so manipulate numbers as to discover a system of betting that would guarantee winning. Could a formula be arrived at that would defeat chance, or transform the house edge into an edge for the gambler? None has yet been found, but there have been interesting and ingenious attempts.

Martingale system

Perhaps the best known system is the doubling-up system, known as martingale. It is used on even-money bets, such as even at roulette, or passing at craps. The gambler bets one unit, on, say, even at roulette. If it wins he is one unit up and begins a new series. If it loses he doubles his stake on the next spin to two units. If it wins, he is again one unit up on the series of bets. If it loses, his next stake is four units. Whenever he wins, he always wins one unit more than his previous losses. Whichever win he decides to stop at, he is always winning. There are two drawbacks. The gambler must have enough money to cover a long losing run. If 20 consecutive spins result in a win for odd, the gambler is losing 1,048,575 units and his 21st bet must be this amount plus one. The second drawback is that even if the gambler were rich enough to go on, the casino limit would prevent him. In Nevada casinos, the minimum bet might be $5 and the maximum $300. The gambler can only double up five times. After six losers he is $315 down and his next bet must be $320. He cannot make it. And he can expect to lose six consecutive times once in 64 spins on fair even-money chances, once in 47 spins on an American roulette wheel with two zeros.

To increase the speed of the profits, a refinement of the martingale system, sometimes called the great martingale, is to double the stake and add one unit for each loser. The stakes progression is therefore 1, 3, 7, 15, 31, etc. The wins are larger, but the house limit is reached after fewer losers.

An increasing stake system which keeps the increase within bounds is one which requires the gambler to begin staking one unit, and to increase to two after, say, four losses. The gambler keeps a record sheet on which he writes a figure 1 for each losing bet, crossing out a figure for each win, so that when he has a row of four uncancelled 1s, he is four units down. He now increases his stake to two units. If he loses, he begins a new row of figure 2s. If he wins, he crosses out two of the figure 1s and when the 1s are all cancelled, he begins crossing out the 2s for each winner. Should the second row reach four uncancelled 2s, the next stake is three, and a third row is begun, and so on. A win with a stake of three requires a 1 and a 2 to be cancelled: should the 1 row be cancelled, then two 2s are crossed out and a 1 added. Whenever a series is cancelled altogether, the series has recouped its losses, and the stake becomes one unit again. A series is only begun with a loser, the profit coming with the winning stakes between each series.

If we consider the following results, we can see how the system works:

WW*LLWLLWLLLLWWLLLWWWLWW*
LLLLLLLWLLLWLLLWWLWWWLWW
W*WW*LLWW

The asterisks indicate where losing series begin or end.

The record sheet, which would begin with the third trial, the first two winners having produced two units profit, would look like Figure 2:6.

Three times, a series has been started and eventually cancelled. On the first two occasions, the series showed a profit of one unit when cancelled, which when added to the two units won at the start of the sequence, and the two units won with a similar winning run near the end, make a profit on the entire sequence of six units. As the sequence is a fairly ordinary one of 25 winners and 29 losers, the value of the system is demonstrated. The seven successive losers in the middle of the sequence which would have raised the stake with the martingale system to 128 units, and with the great martingale to 255 units, has been negotiated without the stake rising above four units. The danger of the system is again the long losing sequence which requires a bank out of proportion to the eventual profits, but a gambler content with small profits in relation to his capital will accumulate them if he is prepared to risk the 'impossible' sequence which will ultimately occur.

D'Alembert system

The system called the d'Alembert, also used on even-money chances, merely requires the gambler to add one point to his stake after a loss and deduct one after a win. It is simple to operate, and is likely to give the gambler a long run for his money, since wins and losses will accrue slowly. It is partly based, fallaciously, on the 'law of averages', since it presumes that after a loss a win is more likely than another loss. It also contains something of the martingale principle, since after a sequence of losers, the bet which wins will be larger than any one of the losing bets. In a sequence of alternate wins and losses, the winning bets will each be one stake larger than the losing bets. On an unexceptional series of spins, where the even chances win equally, a small profit should accrue over small periods. It will, however, lose over the long run, as the house edge will gradually raise the stakes as more losers than winners appear.

A system which combines principles of the martingale and the d'Alembert involves a first stake of one unit, followed by successive stakes while losing of 2, 3, 4 . . ., etc., reverting to a stake of one unit after a winner. If the winner comes at the start of the series, the series shows a profit of one unit. The series shows a profit of one unit when the win is the second bet of the series. If the win is the third bet, the series finishes level. Thereafter, the series is a loser, by two units on the fourth bet, and then mounting rapidly, by five units on the fifth bet, nine of the sixth bet and fourteen on the seventh. Many gamblers set a limit to their stakes by stopping after a given number of losers, say seven, when they are 28 points down on the series.

If the gambler is backing on true even-money chances, each bet has an expectation equal to his stake, i.e. no matter what his stake his return if he wins is twice his stake and his probability of winning is $\frac{1}{2}$. If his stake is A, his expectation is $\frac{1}{2} \times 2A = A$. His expectation is the same no matter what his limit. For example, if he stops at seven losers, he will lose his maximum, on average, once in 128 (i.e. 2^7) trials. Each 128 trials, he will lose 28 units once, 14 units once, nine units twice, five units four times and two units eight times. On 16 trials he will finish level. On 32 occasions he will win one unit by succeeding on the second trial, and on 64 occasions he will win one unit by succeeding on the first trial. Overall, he will be level. But of course in a casino each bet will be facing the house edge, and

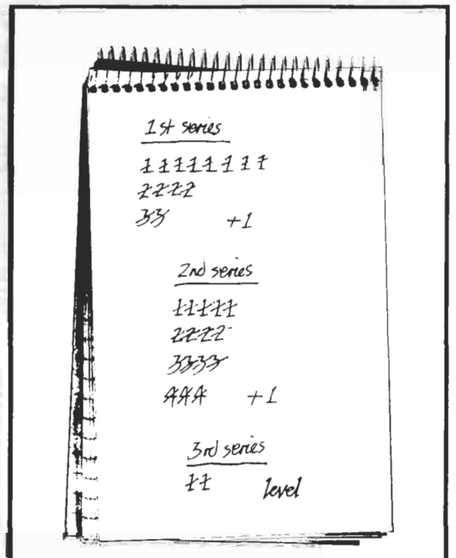


Figure 2:6 shows the record sheet of the increasing stake system applying to the sequence of results included in the description of the system in the text.

over a long run the system like all others must eventually lose.

Cancellation system

The cancellation system, called the Labouchère, is one of the most interesting. A series of numbers is written down, say 1, 2, 2, 3. It can be any series, of any length. The system operates best on even-money chances. The first stake is the sum of the two numbers at opposite ends of the series, in this case 1 + 3 = 4. If the bet wins, the two numbers are crossed out and the next stake is the sum of the numbers remaining at each end of the series, in this case again four. If the bet wins, the two numbers are crossed out, in this case again four. If the bet wins, these two numbers are crossed out, the series is cancelled entirely, the gambler is eight points in profit and begins again. Had the second bet lost, the losing stake is added to the series of numbers which becomes 2, 2, 4. The next stake is therefore six units. The beauty of the system is that as two numbers are deleted from the series after a win, while only one is added after a loss, the series will eventually be crossed out altogether, and when it is the profit will equal the sum of the series.

A sample series, say 1, 3, 3, 3, might go as follows:

Series	*Bet*	*Result*	*Running Profit/Loss*
1, 3, 3, 3	4	Loss	−4
1, 3, 3, 3, 4	5	Loss	−9
1, 3, 3, 3, 4, 5	6	Win	−3
3, 3, 3, 4	7	Loss	−10
3, 3, 3, 4, 7	10	Win	Level
3, 3, 4	7	Loss	−7
3, 3, 4, 7	10	Win	+3
3, 4	7	Loss	−4
3, 4, 7	10	Loss	−14
3, 4, 7, 10	13	Win	−1
4, 7	11	Loss	−12
4, 7, 11	15	Win	+3
7	7	Loss	−4
7, 7	14	Win	+10

After a sequence of 14 bets, of which six have won and eight lost, the series is cancelled for a profit of ten points, the sum of 1+3+3+3.

If there are n numbers in the series written down, the series will be crossed out whenever

$$W = \frac{n+L}{2}$$

W being the number of winners and L the number of losers. In other words, if there are four numbers written down, the sequence wins whenever the number of winners equals or exceeds half the losers plus 2. Four winners and six losers will win, or ten winners and sixteen losers. The only danger is a long sequence which never satisfies the equation. With, say, 20 winners and 38 losers, the stake is likely to have risen to a very high sum. A very long losing sequence is unlikely, but must come sooner or later, when it is possible that it will break the gambler's bank or exceed the casino limit. The most units the gambler needed in the sequence above was 27 twice, and if a gambler wishes to win ten units only and can risk 50 units, the chances are that he will win, although if the gambler had not won the last bet in the example, but had had two more losers instead, he would have been 43 units down, with his next stake being 32 units.

Cancellation system backwards

The system can be played backwards, by adding to the series the stakes won, and crossing out the stakes lost. In this case it is necessary for the gambler to decide the limit of his losses and to set a target for winnings. If the gambler can afford to lose 21 points, he might write down a series 1, 2, 3, 4, 5, 6. His first bet is seven units. If it wins he adds seven to his series, making his next stake eight units. If he begins with three consecutive losers, he will lose his 21 points, but he knows he can lose no more. On the sequence of results above, he would have lost his 21 points after six spins. Let us suppose he is lucky, and the sequence goes as follows:

Series	*Bet*	*Result*	*Running Profit/Loss*
1, 2, 3, 4, 5, 6	7	Win	+7
1, 2, 3, 4, 5, 6, 7	8	Loss	−1
2, 3, 4, 5, 6	8	Win	+7
2, 3, 4, 5, 6, 8	10	Loss	−3
3, 4, 5, 6	9	Win	+6
3, 4, 5, 6, 9	12	Win	+18
3, 4, 5, 6, 9, 12	15	Win	+33
3, 4, 5, 6, 9, 12, 15	18	Loss	+15
4, 5, 6, 9, 12	16	Loss	−1
5, 6, 9	14	Win	+13
5, 6, 9, 14	19	Win	+32
5, 6, 9, 14, 19	23	Win	+55
5, 6, 9, 14, 19, 23	28	Win	+83
5, 6, 9, 14, 19, 23, 28	33	Loss	+50
6, 9, 14, 19, 23	29	Loss	+21
9, 14, 19	28	Win	+49
9, 14, 19, 28	37	Win	+86
9, 14, 19, 28, 37	46	Win	+132

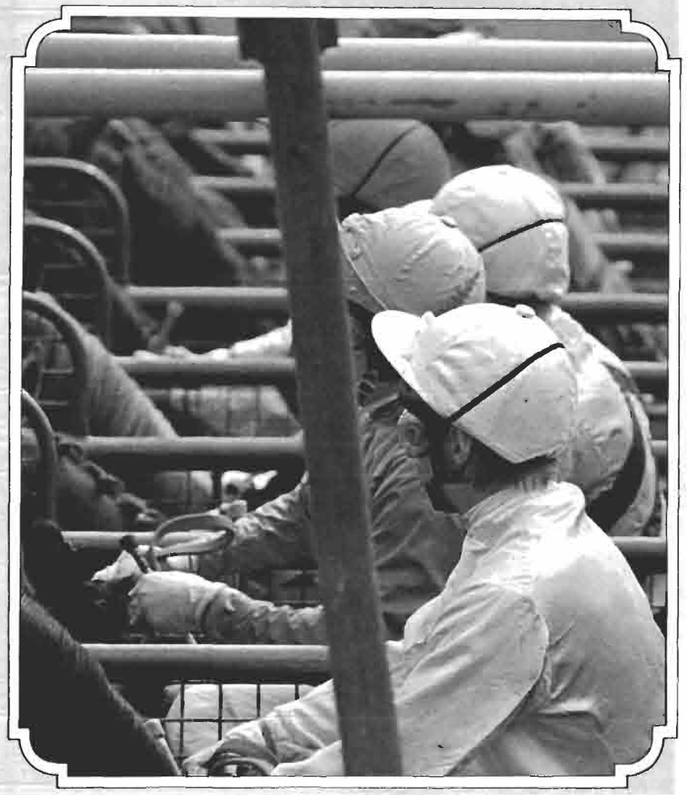
Had the gambler set himself a target of 100 points, he could stop now 132 points in profit.

Psychology

The most fruitful research a gambler can carry out in an effort to gain an advantage is in the sphere of psychology. It is known that if a large group of people were asked to choose a number at random between 1 and 10, seven would probably be chosen more often than any other number. When asked to choose between heads and tails, more people choose heads than tails. More people back red at roulette than black. At craps, more people back the dice to pass than to lose, despite the house edge being slightly larger for pass bettors. When picking draws on a football treble-chance pool, most people start at the top, and never reach the bottom of the list.

Can these facts be of help to the gambler? Clearly if a football pool bettor picks his draws from the bottom (assuming draws are equally likely in all parts of the coupon, which might not be the case) he will expect a better dividend when successful than if his selections had been nearer the top. When betting on a horse race, a gambler who backs a horse ridden by an unknown apprentice might get better odds relative to its actual chance than if he'd backed the mount of the public's favourite jockey, say Lester Piggott in England. In 1948 a horse called My Love won the Epsom Derby, allegedly carrying the money of half the female population of England, who liked its name. Did it thereby start at false odds? Would a horse called Toothache, or Grey Rat, or Housefly, for opposite reasons start at a price longer than its ability merits? This seems a more profitable field for study than the effort to beat a house edge, or a bookmaker's percentage, by juggling numbers

PART THREE



Sports on which gambling takes place

Primitive man no doubt began betting on sports by backing competitors in races and fights. Modern man still bets on such events, although he has trained the faithful horse to do much of his racing for him. He has also invented numerous other sports as outlets for his physical and emotional exuberance, and it is safe to say that betting takes place on them all. A prize fighter thumping his fists into his opponent's face in a sweaty, smoky arena and a tennis champion retrieving the lobs in the sunshine of a strawberries-and-cream fortnight at Wimbledon are both likely to be helping to transfer funds from one group of pockets to another.

Horse Racing

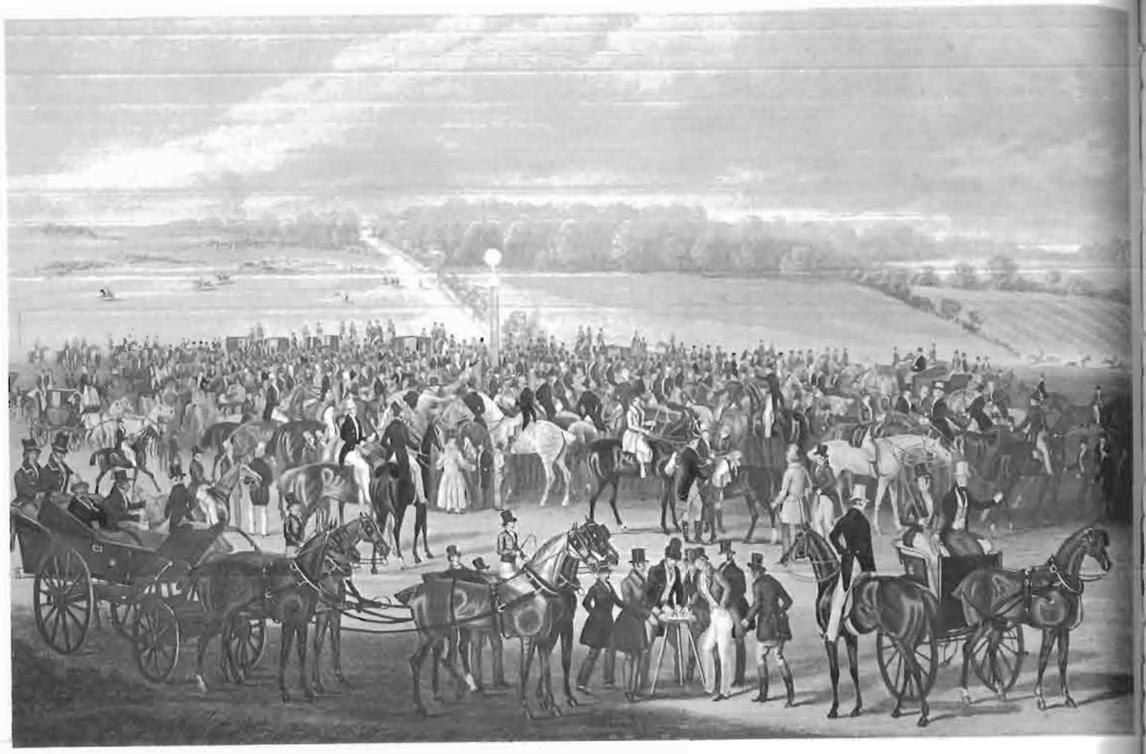
The sporting activity with by far the largest gambling turnover is horse racing, whose very existence on an organised scale depends on gambling. Chariot races preceded races in which contestants were mounted on the backs of horses, and horse-drawn chariots were known to be used around 4000 B.C. Arabs bet on thirsty horses that were let loose to run to water, a form of persuasion not unlike the electric hare used nowadays to get greyhounds to race. A statuette of a mounted race horse made in Egypt has been dated at 2000 B.C. which suggests that racing not unlike to-day's took place four thousand years ago.

Homer describes a chariot race as part of the games for the funeral of Patroclus under the walls of Troy. He also describes an argument between Idomeneus and Aias about who was leading, which resulted in a bet. In the 25th Olympic games of 680 B.C. the first Olympic chariot race was run, and 32 years later came the first mounted race.

In more modern times, in 1511, it was decided to race for a Silver Bell on the Roodeye at the Roman town of Chester, England. Racing still takes place on the Roodeye, and on the strength of this some writers claim that the Chester Cup is the oldest horse race in the world. It is generally conceded that America's first race track was built at Long Island in 1665. The first official Australian race meeting was held in Sydney in 1810.

All the world's racehorses are thoroughbred descendants of three stallions, the Byerley Turk, captured at Buda in 1688, the Darley

Chariots were usually drawn by two or four horses, and occasionally by six, in the races held in the stadia of Rome. The chariots turned left round turning posts as shown in this terracotta in the British Museum. At some stadia, canals separated the spectators from the course in case chariots failed to turn properly. Each horse's reins were joined into a single rein, so that the charioteer illustrated holds four reins which are also wrapped round his waist.



It was not until the early nineteenth century that the general public in Britain began to bet on the big horse races, the biggest of which was the Derby at Epsom. James Pollard's painting, above, shows the betting post at Epsom in 1830. In the foreground, the public are being induced to part with even more money by a thimble-rigger. Cecil Aldin's painting, is of the Grand National of 1923, won by the oldest horse ever to win, Sergeant Murphy, a 13-year-old.

Arabian, bought in Aleppo in 1704, who is the ancestor of most of today's thoroughbreds, and whose son, Bulle Rock, was the first thoroughbred to go to America, and the Godolphin Arabian, foaled in the Yemen in 1724.

The world's most famous horse race, the Derby, was first run at Epsom in 1780. It was the idea of the 12th Lord Derby and Sir Charles Bunbury, who decided its name by tossing a coin. Lord Derby won, and if he hadn't one of the results might have been that America's greatest race, run on the Churchill Downs near Louisville ever since 1875, would be called the Kentucky Bunbury.

The organisation of racing varies in countries with the most flourishing industries, particularly from the point of view of gambling, as various laws have restricted one form or another of betting.

Horse racing in Britain

In Britain, the main forms of racing are flat racing, which takes place from March till November, and National Hunt racing, which consists of races over obstacles, either steeplechasing, in which the horses jump fences, or hurdling, in which the horses jump less severe barriers called hurdles. The National Hunt season takes place in the winter, but considerably overlaps the flat season. There is a third popular form of racing on which betting takes place, called point-to-point racing. This is under the jurisdiction of the Jockey Club, the rulers of racing, but it is an amateur sport, meetings being social occasions for local Hunts. It therefore does not command the newspaper space or the attention of the ordinary gambler as flat or National Hunt racing does.

The highlights of the flat racing season are the five Classic races for three-year-olds, of which the Derby, run over $1\frac{1}{2}$ miles at Epsom, is the most important. The other Classics are the One Thousand and Two Thousand Guineas, run over a mile at Newmarket, the former for fillies only; the Oaks, run over the Derby course at the Derby meeting, but also restricted to fillies; and the St. Leger, the oldest, run at Doncaster over $1\frac{3}{4}$ miles. The Two Thousand Guineas, Derby and St Leger, the Classics open to colts and fillies, comprise the Triple Crown, a much-esteemed objective for which there is no actual prize. Several famous horses have won the Triple Crown, although there were 35 years between the last winner, Nijinsky, in 1970, and the previous winner, Bahram. Other famous Classic winners of recent years have been Grundy, the Derby winner of 1976; Mill Reef, the 1971 Derby winner who also won the Prix de l'Arc de Triomphe; Sir Ivor, Guineas and Derby winner of 1968; Pinza, the mount of Gordon Richards when he won his only Derby in 1953, beating the Queen's horse in Coronation Year; Lord Rosebery's Blue Peter, who would have won the Triple Crown in 1939 had not the war intervened; and Hyperion, a small horse who won the Derby for Lord Derby in 1933 and who became one of the most successful stallions in the world. A Derby winner who must rank with the best is Sea Bird II, who came over from France to win easily in 1965. Fillies have the opportunity to win more Classics than colts, as they can race in all five, although few attempt the Derby and the Oaks, which are run at the same meeting, or both Guineas races. Two of the greatest of all fillies were the peerless Sceptre, who in 1902 won four Classics, being beaten only in the Derby, and Pretty Polly, who won the One Thousand Guineas, Oaks, and St. Leger of 1904. More recently, Meld in 1955 won the same three races as Pretty Polly, as did Sun Chariot, who won wartime substitute races in 1942. Fillies have managed to win the Derby and then the Oaks a couple of days later, the last, apart from Fifinella in a First World War substitute race, being Signorinetta, who won the Derby of 1908 at 100–1 and followed up with the Oaks at 3–1.

The Grand Nationals of 1973 (above) and 1974, were both won by Red Rum, the greatest of all horses over the Aintree fences. The thirty stiff fences spread over 4 miles 856 yards make the Grand National a law unto itself, and Red Rum could give weight and a beating over Aintree to horses who would beat him easily over park courses. Red Rum is the horse with the yellow diamond on his back just clearing the fence in the 1974 race picture (left).

The best meeting in Britain is the Royal Ascot meeting, in which every race is a 'big race', including the Gold Cup, the principal prize for stayers, and big handicaps like the Ascot Stakes and Royal Hunt Cup. Other famous meetings, where the best of British racing is staged, are at Goodwood, York and Chester.

The 'Ascot' of the National Hunt season is the Cheltenham meeting which includes the Gold Cup, for steeplechasers, and the Champion Hurdle. The winners of these two races

Arkle, number 6 in the picture above, is generally acknowledged to be the greatest steeplechaser of all time. He is seen taking a fence in the 1965 Gold Cup, which he won by 20 lengths from Mill House, seen jumping with him. Mill House was considered one of the greatest of all steeplechasers until Arkle arrived to establish complete dominance over him. Many good judges rate Sea Bird II the best flat race horse seen in Europe for many years. He is shown, right, just after passing the post to win the Epsom Derby of 1965.

Lester Piggott's record in big races all over the world suggests that there has never been a finer jockey for the big occasion. He rates Nijinsky as the best horse he has ridden. The combination is seen before the Prix de l'Arc de Triomphe in 1970, a race which Nijinsky lost by a head, after winning the Triple Crown in England.

are acknowledged to be the champions for the year. Few would argue that the greatest steeplechaser of all time is Arkle, winner of the Gold Cup three times in succession from 1964 to 1966. There have been several good champion hurdlers of recent years, among them **Bula and Persian War. The biggest** betting medium of all is the world's most spectacular race, the Grand National, run at Aintree, Liverpool, in March, over nearly $4\frac{1}{2}$ miles, during which the horses must jump 30 fences, some with world-famous names, like Becher's Brook. Some fences have drops of nearly nine feet, and usually fewer than half the runners complete the course. The greatest Aintree specialist of all is Red Rum, who in 1977 became not only the first horse to win the race three times, but who also twice finished second in his five attempts. And no mention of great steeplechasers would be complete without mentioning Golden Miller, the Gold Cup winner five consecutive times in the 1930s, with a Grand National thrown in for good measure.

Betting on the course in Britain is through either course bookmakers or the tote. Bookmakers begin by chalking on their boards the odds they are offering about each horse, and punters can back a horse at the price shown, the bookmaker issuing a numbered ticket and his clerk entering the transaction in a ledger. As the demand for each horse varies during the betting, the bookmaker adjusts his odds accordingly. The bookmaker pays out at the odds obtaining when the bet was struck, but deducts tax, which in 1977 was four per cent of the payout, i.e. returned stake plus winnings.

A bet on the tote is made at one of the many windows at the tote building. A tote bet is made by announcing the race-card number of the selected horse. Separate tickets are issued for win bets and place bets. A place bet is a bet on a horse to finish in the first three, where there are eight or more runners, but in the first two where there are five to seven runners. A tote indicator board shows how much has been bet on each horse, and the punter can compare the current tote odds with the price offered by the bookmaker, but must bear in mind that the tote odds fluctuate as betting progresses. The dividends paid by the tote are based on sharing the pool of stakes by the number of winning tickets less tax and expenses. The average deduction has been calculated at 18 per cent.

There are a number of tote offices in the larger towns of Britain, but off-course betting is more likely to be either by telephone with a bookmaker with whom the punter has a credit account, or in a betting shop, many of which are owned by the big bookmaking chains. Betting shops broadcast a commentary from the course, which includes a frequent run down of the current prices for each horse, which will be displayed on a board. Most betting shops will accept bets at the odds displayed, but usually bets will be struck at the starting price. The starting price is determined on the course by a small group of journalists, who are representatives of the leading sporting papers, and who take the average of the prices being offered by the course bookmakers at the 'off'. The starting prices of the winning and placed horses are broadcast in the betting shops within a minute or so of the finish.

In the betting shop bets are written out on slips of paper provided, and handed with the stake over the counter, in exchange for a time-stamped receipt which becomes the ticket by which winnings are claimed. In 1977, the tax deducted by off-course bookmakers was $8\frac{1}{2}$ per cent of the payout, which includes the returned stake.

Bookmakers on the course will not accommodate cumulative bets like doubles, trebles, yankees, etc. The tote, however, runs a daily tote double, usually on the third and fifth races. The punter buys a ticket on a horse in the third race, tickets being in 50p multiples. If the horse wins, the punter, before the fifth race, exchanges his ticket for a horse in the fifth race, and if he is lucky again he collects the declared dividend. The tote also runs a treble, usually on the second, fourth and sixth races, which operates in the same way, but to 25p tickets. On selected main meetings, the tote also operates a jackpot pool, in which punters need to find the winners of six races. This can provide some large wins. If the jackpot is not won, consolation prizes are paid to punters who find the first five winners, and the remainder of the pool is carried over to the next jackpot meeting. This convention could provide punters with a house edge in favour of themselves, as the share-out is greater than the pool, which is augmented by the residue of the previous pool. In practice, this is well realised, and the jackpot betting increases considerably when a pool has been carried over.

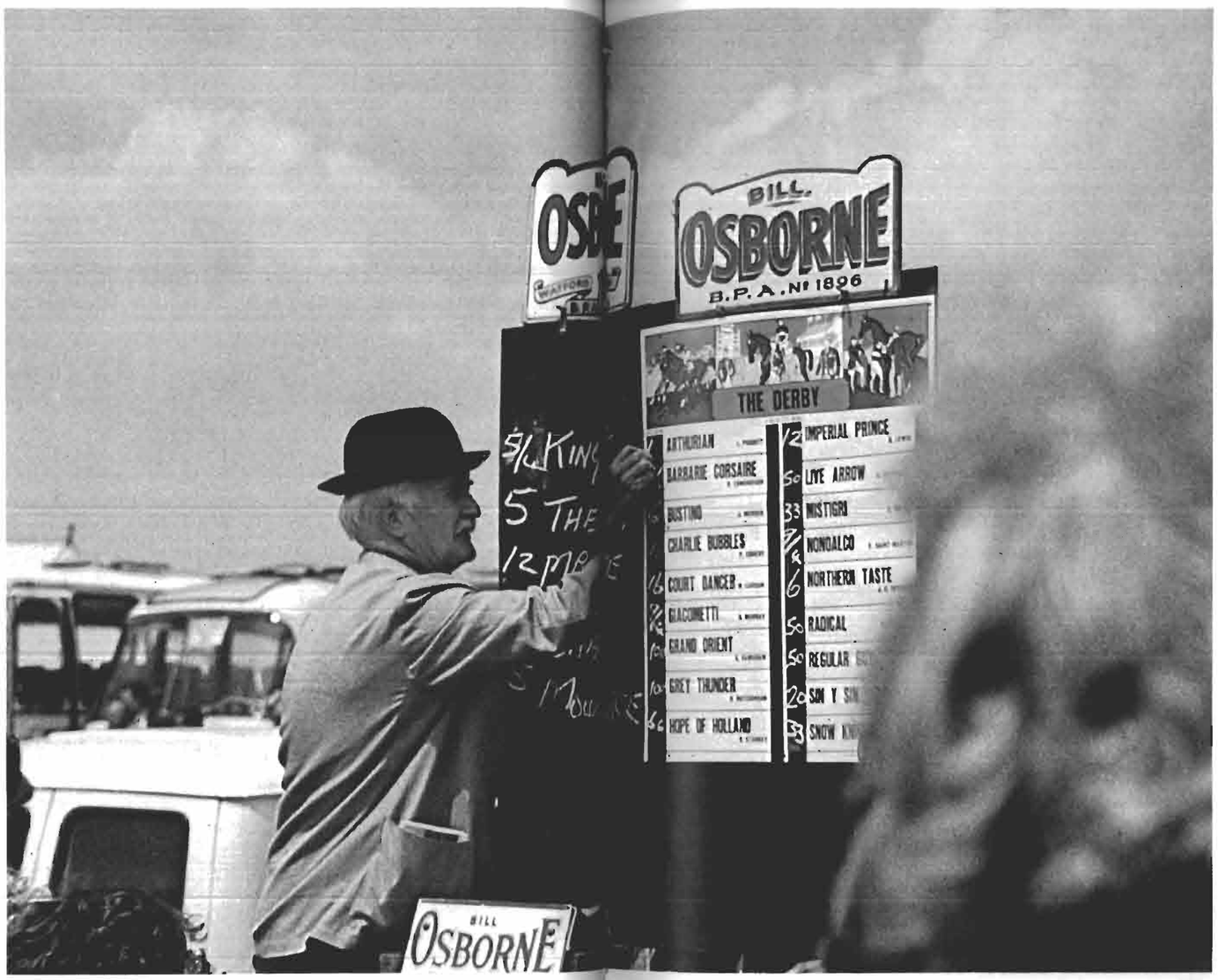
The tote also operates a forecast pool on each race. With from three to six runners, the punter must forecast the first and second horses to finish in the correct order. With seven or more runners the forecast is known

as a dual forecast, and the punter is required only to name the first two horses to finish, the order not being required.

In off-course betting with bookmakers, several multiple bets are popular, and some have been given names which most betting shop employees will recognise. The simplest is the each-way bet, which is really two bets, one on the horse to win, and the other on the horse to be placed. A horse is placed, for purposes of betting, if the horse finishes in the first two of a field of five to seven runners, or in the first three of eight or more. When there is a large field, bookmakers will also pay out on the fourth horse. The definition of a large field varies from time to time, and from shop to shop. It might require at least 17, 21 or 22 runners. The odds paid for a place are a fifth of the win odds. Thus if £1 each way is bet on a 10–1 winner (£2 staked) the payout will be £10 plus £1 returned for the win, £2 plus £1 returned for the place, total £14, less £1.19 tax (at 8½ per cent), which is £12.81. Sometimes, in big races with big fields, like the Grand National, bookmakers will pay a quarter of the odds for a place.

A double is merely two horses in separate races coupled in one bet. If the first wins, all the return is at stake on the second. Tax is deducted only on the final payout; it is not deducted at both stages. Each-way doubles are also accepted. A treble is a three-horse multiple bet on the same lines, and a multiple bet on four or more horses is known as an accumulator. An 'any-to-come' bet is where a second bet depends on the return from a first. If the first loses, the second bet isn't made. For example: £1 to win Tinker – any to come £1 to win Tailor. If Tinker loses, there is no bet on Tailor. An 'up and down' bet is when two horses are backed singly, with an additional any-to-come bet on each should the other win. A 'round-the-clock' bet is more than two horses backed on the up-and-down principle, where each horse is bet singly with additional any-to-come bets going on to the others.

A yankee, the most popular multiple bet, is a bet on four horses backed in six doubles, four trebles and an accumulator, requiring a stake of 11 units. Similar bets are the patent, which is a seven-unit bet on three horses –



singles, doubles and treble; the Canadian, which is five horses backed in doubles, trebles, four-horse accumulators and a five-horse accumulator, requiring a stake of 26 units; and the Heinz, which is six horses treated similarly, so called because it requires 57 bets, the number of the famous varieties of tinned food.

A punter can invent his own exotic bets, coupling selections in any way he likes, provided that the instructions are clear and acceptable to the bookmaker.

Multiple bets are calculated at full multiplied odds. If a 50p treble wins at odds of 9–4, 3–1 and 11–2, the punter can calculate the return which 50p earns at 9–4, and imagine the total (£1.62½) going on to the next winner at 3–1 and so on. But a simple calculation makes that work unnecessary. If we consider the odds of 9–4, and add the 9 and the 4 together, the answer of 13 is the return we get for a stake of 4 (9 won plus the original 4 staked), so we can convert 9–4 to 13–4 and say that the new odds represent our return including stake. If that principle is understood, all becomes easy, because we can convert all three sets of odds similarly (to get 13–4, 4–1 and 13–2) and merely multiply them together, with the stake, thus:

$$\frac{13}{4} \times 4 \times \frac{13}{2} \times 50\text{p}$$

Cancellation makes the calculation easy: we can quickly see the answer is 4225p, so £42.25 less tax is our return.

Off-course bets at starting price carry the safeguard that if a horse is withdrawn, and

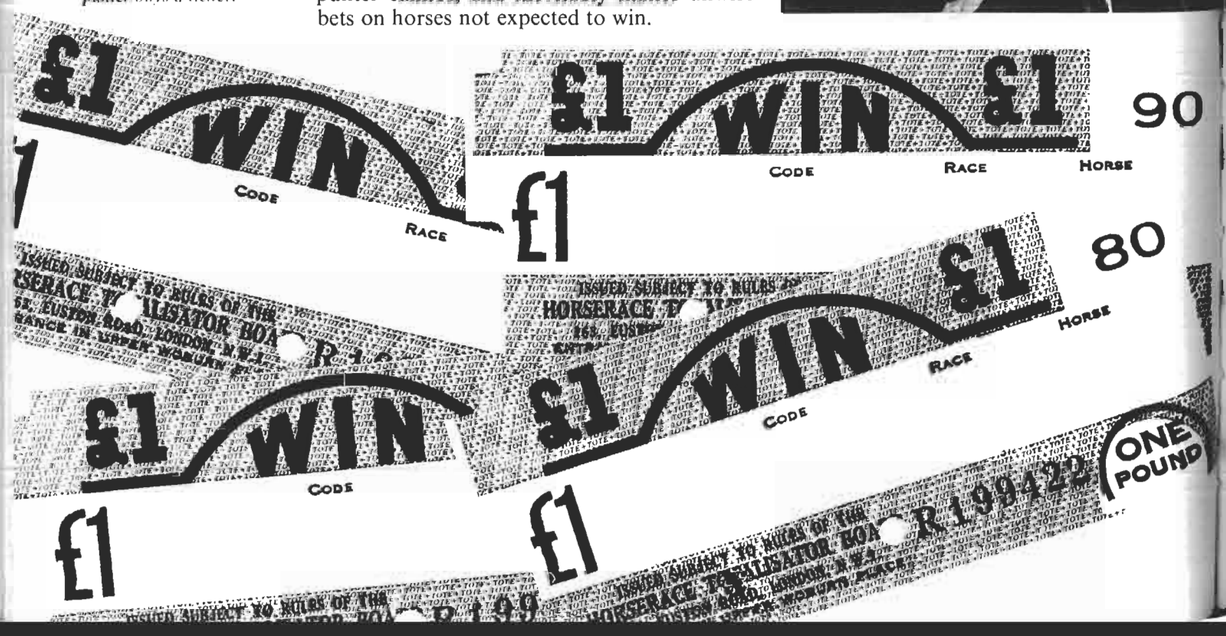
There are less restrictions on bookmakers in Britain than anywhere else in the world. Bookmaking is legal both on and off the course, but many people would prefer a tote monopoly with profits being ploughed back into racing. The main arguments for bookmakers are that they provide a choice of betting methods and that their presence brings colour and life to British courses. The illustrations show bookmakers at the Epsom Derby and at Goodwood, and a selection of tickets issued to punters as receipts for their bets.

The workings of a British betting shop. On the right a chalker in a large shop is entering the results as they are received. The punters opposite are sitting before a board which advertises the odds paid for a forecast (i.e. the naming of first and second). Some punters prefer to accept fixed odds than tote odds, and some bookmakers will only accept fixed odds for greyhound forecasts. The odds of the winner are on the left, and of the second above. A 4 1 winner with a 12 1 second pays 33–1. The William Hill book-making organization runs a training school for book-makers, shown opposite below, through which new personnel must pass.

British £1 win tote tickets. A code, and the numbers of the race and the horse, are punched in holes in the appropriate places when a punter buys a ticket.

doesn't come under starter's orders, the bet is void. On big races, bookmakers will publish lists of prices, called ante-post prices, days or weeks in advance of the race. In the case of the Derby, it is not difficult to make a bet on a horse a whole season before the race. Ante-post bets are made on the 'all in run or not' principle, and no stakes are returned. Many bets are therefore lost before the race, as horses are scratched or suffer training set-backs, but because of the uncertainty, the prices are suitably generous. Nothing is more satisfying than backing a horse at, say, 40–1, well before the race, to find on the day that it is among the favourites. This is naturally a popular method of betting for those with knowledge of stable plans.

The ordinary punter has little to guide him to successful betting on horse races. The national press provides a wealth of information, but this is available to all, and a punter should not expect to beat the bookmaker's edge unless he has private knowledge, such as that a horse is fit and well and is fancied by his connections. Frequently horses run when they are not at their peak, or when the going doesn't suit them. Racing people can recognise these occasions, but the stay-at-home punter cannot, and inevitably makes unwise bets on horses not expected to win.



A few guide-lines can cut down the losses. When relying on form, it is safe to assume that in the big championship races all horses are likely to be fit and trained to the minute, which might not be the case in minor handicaps. Two-year-olds, perhaps because they haven't learned not to give their best, are known to be more reliable than older, wiser horses. Handicaps are notoriously tricky. Occasionally the handicapper appears to make a mistake in allotting weights, or a horse makes a dramatic improvement, so that he appears to be 'thrown in' with too little weight. Such a horse is recognised as a 'handicap snip', and the public plunge heavily, but all too often the good thing comes unstuck to save the handicapper's reputation. It should also be recognised that a horse carrying nine stone of jockey is less handicapped than one carrying eight stone of jockey and one stone of lead weight. A heavy weight is harder to carry in mud than on good going, and for many other reasons a sudden change in the going can turn the form upside down.

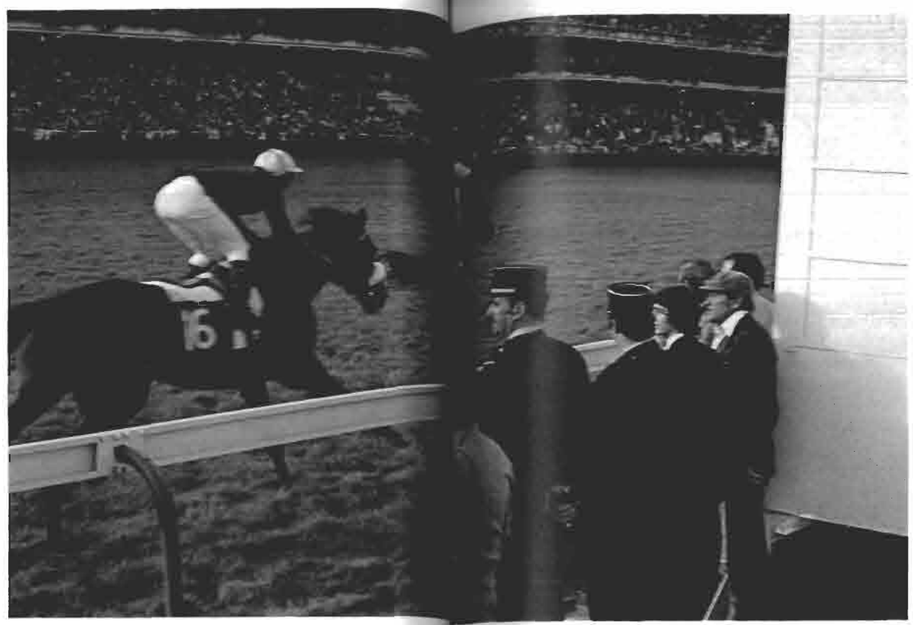
With the way the tax is calculated in Britain, it is pointless to back horses at long odds on. A winner at 3–1 on will pay £4 for £3, less tax of 34p, so the actual win is only 66p for £3, the odds altering from 3–1 on to about 9–2 on.

One decision the punter must make is whether to back a horse on the tote or the book. Most betting shops will accept bets made at tote odds. Generally the tote returns slightly more money to the punter than the bookmaker. Usually the tote return will compare very favourably with the starting price on outsiders and in big fields, with the advantage diminishing as the prices and fields get smaller. The tote returns are usually better on horses and jockeys which are unfashionable. If Lester Piggott is on a favourite, he is likely to be heavily supported on the tote, and the win dividend might be less than the starting price, but if an apprentice wins on an outsider in a big field, the tote dividend is almost sure to be better than the S.P.

Horse-racing in France

Racing in France is possibly the best in the world. Where the British pattern is to have meetings of three or four days before the action moves on to the next course, the French

Betting in France. A pari mutuel agency which accepts off-course bets up to 1 o'clock on the day's racing. Far right, the greatest of French races, the Prix de l'Arc de Triomphe, being won in 1976 by Invanjica from Crow. Invanjica also won the Washington International.



preference is for longer meetings. During the holiday period around August, French racing concentrates on Deauville, where the summer season lasts for six weeks and consists of both flat and jumping races. The course, with the nearby sandy beaches, not to mention the casino, attracts thousands of visitors annually. The racing is part of the holiday setting, and the lushness of the grass, the spacious paddocks and the flowers add to the festival atmosphere.

Although racing takes place all over France, the biggest meetings and the best courses are within reach of Paris. Longchamp is as beautiful as Deauville, with immaculately kept paddocks, lawns, gardens and trees. The new grandstands are equipped with lifts and there is no shortage of bars and restaurants to help make a day at the races a real day out. Chantilly is 30 miles from Paris and, with an expanse of first-class training gallops situated near the course, is the home of some of the best stables.

French racing is so good because all the betting in France is through the pari mutuel, the amount skimmed from the pool as profit being divided between the state and the course. About 8 per cent of the money staked on horse-racing finds its way back to the course authorities. This makes a sum several times greater than that which British courses, for example, receive from gambling profits and it is no wonder that Deauville and Longchamp can offer higher prize money and provide better facilities for race-goers.

The most important race in France, and probably the world, is the Prix de l'Arc de Triomphe, run at Longchamp over 2,400 metres (1½ miles) for 3-year-olds and upwards. Some of the greatest French horses have won the Arc, among them Tantieme, which won it twice in the 1950s, Exbury, Vaguely Noble and the great Sea Bird II, which also won the English Derby. Invaders which have taken the Arc include Mill Reef, the Derby winner which restored English pride, and Ribot, the brilliant Italian horse, which won in 1955 and 1956. The Grand Criterium, France's top two-year-old race, over 1,600 metres, is also run at Longchamp, as is the three-year-old race of 3,200 metres (nearly two miles), the Grand Prix de Paris. The Grand Criterium was won in 1976 by the outstanding Blushing Groom, which also won the Prix Morny, the most important race at Deauville, and the Prix Robert Papin, the big race at Maisons-Lafitte. The equivalent of the English Derby and Oaks are run at Chantilly, the Prix du Jockey Club and the Prix de Diane respectively. The Prix de Diane was won in the 1970s by two of the most delightful fillies which have graced French racing recently, Allez France and Pawneese. The most important steeple chasing course is Auteuil, which stages the nearest equivalent to the Grand National in the 25-jump 4-mile race, the Grand Steeplechase de Paris.

Off-course betting in France is conducted up to 1 o'clock in agencies of the pari mutuel all over France. Cafes serve as agencies for a very small commission, and the stakes taken get back to the course to be amalgamated with the bets made on the course. The off-course betting is published on a board at the course before each race and serves as the first indication of the approximate odds. As betting takes place on the course, the latest odds are circulated on tickets.

Horses can be backed to win or be placed. Horses in the same ownership are bracketed together for purposes of betting. Similar bets to the British tote forecast bets can be made, called couplés. Two horses are selected. A win couplé requires that the two finish first and second, in either order: a place couplé wins if they are both placed in the first three. The couplé is an off-course bet, as is the biggest French bet of all, the weekly pari tiercé.

The tiercé is based on a selected Sunday afternoon race, and for French gamblers represents what the football pools represent in Britain: a once-a-week shot at a fortune for a small stake. Instead of filling in a coupon in mid-week, the Frenchman strolls round to the pari mutuel agency on a Sunday morning and attempts to name in the correct order the first three to finish in the big race. The social aspect and convenience of this visit to the cafe probably accounts for the fact that the tiercé turnover is greater than British pools turnover.

Minor dividends are paid to punters who forecast the first three in the incorrect order, and it is clear that the Frenchman has as much, or more, scope for the skilful use of permutations as his British counterpart.

Racing in America

Racing in America is flourishing, with many new tracks having been built in the last 20 years and the overall racing attendance having increased considerably. There are now about 30 major tracks in the United States and over 100 smaller tracks, many staging harness racing which is extremely popular.

Most American tracks are oval dirt tracks around which the horses run anti-clockwise. The organisation and facilities for the punter are excellent. Meetings last for several weeks, during which time the racing 'circus' of

American race tracks do not provide the variety of racing which courses in most other countries of the world afford. Most tracks are standard oval left-hand dirt tracks, although there are a few turf courses. The Hialeah track in Miami, Florida, was opened in 1925. The tote indicator board states the turf is firm, which looks an understatement.

The elegant device above was used on a poster advertising the fall meeting of the Brooklyn Jockey Club race course of 1886. The field for a Kentucky Derby of the 1890s is seen, above right, passing the grandstand. The race began with the opening of the track in 1875. The picture below right shows one of the best of recent American horses, Secretariat, winning the Belmont Stakes in 1973 to become the first horse since Citation in 1948 to win the Triple Crown.

trainers, jockeys and horses take up residence.

Some of the best tracks are operated by the New York Racing Association, including Belmont Park, the home of the oldest three-year-old classic race, the Belmont Stakes, run in June over $1\frac{1}{2}$ miles. There are three classic races for colts, the first, run on the First Saturday of May, being the Kentucky Derby. This famous race is run on the Churchill Downs, near Louisville, over $1\frac{1}{4}$ miles. The course is a completely flat, dirt oval, set in the middle of the blue grass country. The Preakness Stakes, which follows the Kentucky Derby in mid-May, is run over $9\frac{1}{2}$ furlongs at Pimlico, in Baltimore, Maryland.

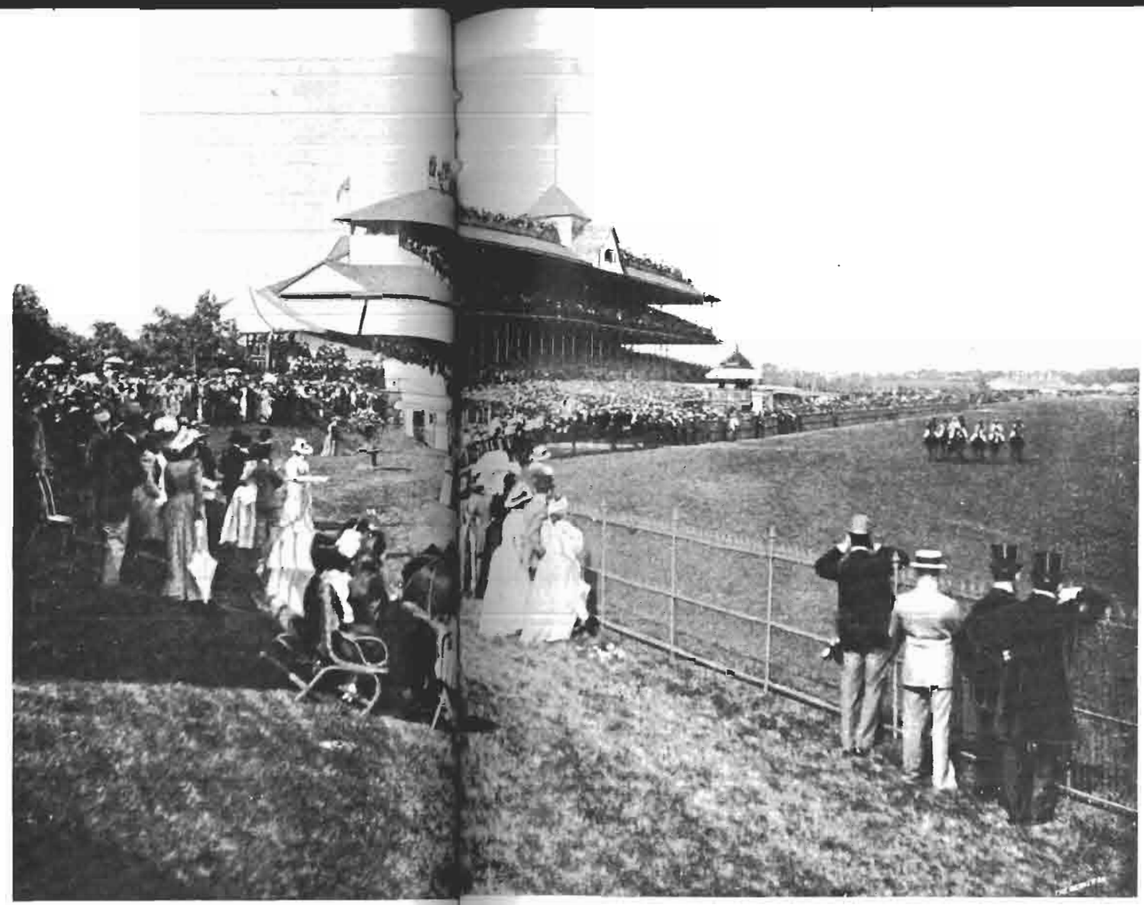
The principal grass track in the United States is Laurel Park, part of the Eastern American racing circuit. During November Laurel stages the Washington International invitation race, to which are invited leading racehorses from all over the world. English, French, Australian and Irish invaders have lifted the race, and Russian and Japanese horses have made the attempt.

Man O'War was the first American racehorse to become a national hero. Winner of the Belmont and Preakness in 1920, he was beaten only once on the track. There have been many idols in recent years, perhaps none more esteemed than the Triple Crown winners Citation and the tragic Secretariat. Seattle Slew was still unbeaten when he won the Triple Crown in 1977.

Betting in the United States is by the pari mutuel system at the track. Off-track bookmaking is illegal except in Nevada, which strangely does not have a major track. Off-track pari mutuel betting was allowed from 1970 in New York, which soon had its first 100 offices operating under the control of the Off-Track Betting Corporation, which divides its revenue between the track, state and city. Otherwise legal betting must take place in those states (about 30) which allow racing and pari mutuel betting.

Each race has three pools: win, place and show. Tickets are sold at the pari mutuel windows in various denominations, the lowest being $2. If a horse is backed win, place and show, all three bets win if the horse finishes first, the place and show bets win if it finishes second, the show bet wins if it finishes third. All tickets are sold independently. A bet on win place and show is a combination or across the board ticket (although a combination on some tracks is win and place only).

There is also a daily double pool, almost always run on the first two races. Other bets which might be available at some tracks (but not all) are the quiniela, which requires the



Kelso was one of the best loved of recent American winners. He is shown, garlanded, after winning the 13th Washington International at Laurel Park, Maryland, in 1964. The race is one in which some of the world's best horses take part.

Three photographs which illustrate some of the more picturesque aspects of American race tracks. Above, palm trees at Gulfstream Park, Hallandale, Florida. Right, sunshine, colourful sunshades and beautiful thoroughbreds on their way to the paddock at Hialeah Park, Miami, Florida. Far right, racing at Churchill Downs, Kentucky, Louisville. In all three scenes, the approximate tote odds indicator board is shown.

punter to pick the first two to finish, in any order; the exacta, usually operated when there are less than eight runners, which requires the first two to be picked in the correct order; and the triple, a pool for long-shot punters, which requires the first three to be named in the correct order.

American tote boards are limited to twelve horses, so when fields are larger than twelve, the outsiders are grouped together to form 'the field' for the twelfth space. Also, horses trained at the same stable are coupled together for betting purposes, and represent one 'horse' for pari mutuel betting.

Although they might be illegal, it is not difficult to find an off-course bookmaker in the United States who will take bets on the horses. He will pay out at the official odds declared by the pari mutuel. However, the pari mutuel cannot lose, the bookmaker can, so he will limit his liability by imposing a maximum payout. For example, his maximum payout might be 30, 10 and 5, which means that 30-1 is the maximum odds he will pay on a win, 10–1 on a place, and 5–1 on a show.

The bookmaker is not limited to the bets which the totalisator machinery can handle.

A parlay is a single bet that two or more horses in separate races will win. Place parlays can also be made. A win parlay on, say, three horses requires all three to win before the bet is a winner. To calculate the winnings on a parlay, the pari mutuel payoffs for the horses should be multiplied together, and divided by two for a two-horse parlay, four for a three-horse parlay, eight for a four-horse parlay and so on. This is because payoffs are declared to $2 stakes. However a limit will come into force which will make ambitious betting a waste of time. Bookmakers might not pay more than 50–1 for a parlay.

Other bets possible with the bookmaker are round robin bets, which involve making a number of selections and backing them in all possible two-horse parlays, and 'if money' bets, which are bets that are conditional on money being available from a previous bet.

Racing in Australia

Australians are great horse bettors, with more courses in relation to the population than any other country. Racing is organised on a state by state basis, with each state having a number of major courses. Naturally the most populous cities of Melbourne and Sydney have the most racing. Because money is ploughed back from betting, some of the best courses in the world are in Australia: Flemington, Caulfield and Randwick among others. The most famous race is the Melbourne Cup, run over two miles at Flemington. The Caulfield Cup, and the

Flemington race course, Melbourne, Victoria, on Melbourne Cup day, 1961. On this day, 82,000 people saw Australia's major race. The river in the foreground is the Maribyrnong River. The paddock is on the left.

Sydney Cup and the Doncaster Handicap at the Randwick Easter Carnival are other big races. All are handicaps, the most popular form of racing. There is little racing over fences.

An Australian racehorse won the affection of the whole nation in the 1930s. Phar Lap won the Melbourne Cup in 1930 and went on to win several other big races before being shipped to America to take on the best there. After winning his first race in record time, he was mysteriously found dead in his box, and all Australia mourned.

Betting in Australia is through the Totalisator Agency Boards (TAB), both on and off the course. Australians bet through the TAB offices either on win or place for each race, on the daily double (two races selected by the TAB), on the quadrella (four races selected by the TAB) and on the quinella (picking the first two to finish in either order, on the last race of the day). The quadrella is the big bet of the day. The TAB restricts the choices in each of the four races by bracketing horses together so that there are no more than nine 'runners' in each. The quadrella still pays huge dividends when outsiders win.

At the race course, additional bets are offered by the TAB, such as duos (backing two horses to be first and second, in the selected order) and triellas (backing three horses in the same way).

Computer Automated Real-time Betting Information Network (CARBINE). In 1967 the Totalisator Agency Board of Australia completely computerized the processing of bets. The picture shows the main control panel. The supervisor can tell instantly from the two television screens which function the computer is performing.

Most greyhound races in Britain concern six dogs. The dogs run often at the same track, and are graded according to their ability, so that all races are as evenly contested as possible. Regulars get to know the habits of the dogs, such as whether they are fast or slow from the traps and whether they prefer to stay near the rails or to run wide. A part of successful betting is to calculate which dogs are likely to avoid bumping as they round the bends.

Bookmakers on the course compete with the TAB by offering odds about each horse. The advantage that betting with the book has over betting with the TAB is that once a bet is struck the odds are determined. TAB odds, like all pari mutuel odds, fluctuate right up to the off.

The English gambler Robert Sievier did much to promote bookmaking in Australia. He appeared at Flemington in 1882 with a big black bag and a great deal of show, and won the confidence of the punters and a lot of money. On his return to England he won and lost fortunes and court cases, once being banned from the turf, once being cheered after winning a case against a prominent owner. He himself owned the peerless Sceptre, winner of four classics in 1901. He died in 1939, having made his mark on the Turf at opposite ends of the world.

Other racing

Greyhound racing is a modern adaption of coursing, which is at least 2,500 years old. About 50 years ago the perfection and use of an electric hare, which greyhounds chase round an oval track, brought a boom to racing dogs. Tracks were built, mostly in Britain, and betting on 'the dogs' became a big industry. Several European countries have dog racing, though none on the scale of Britain, and in America it is restricted to nine

New Year athletics at the Meadowbank Stadium in Scotland, in which one of the main attractions on the board below is seen taking place in the picture right – a girl sprinter racing against men in the 'famous Skol Sprint'. The Powderhall Sprint, a handicap named after the Scottish village in which it was originally run, began a tradition of betting on athletics in Scotland, particularly on New Year's Day.

or ten states, with about a third of the business being done in Florida.

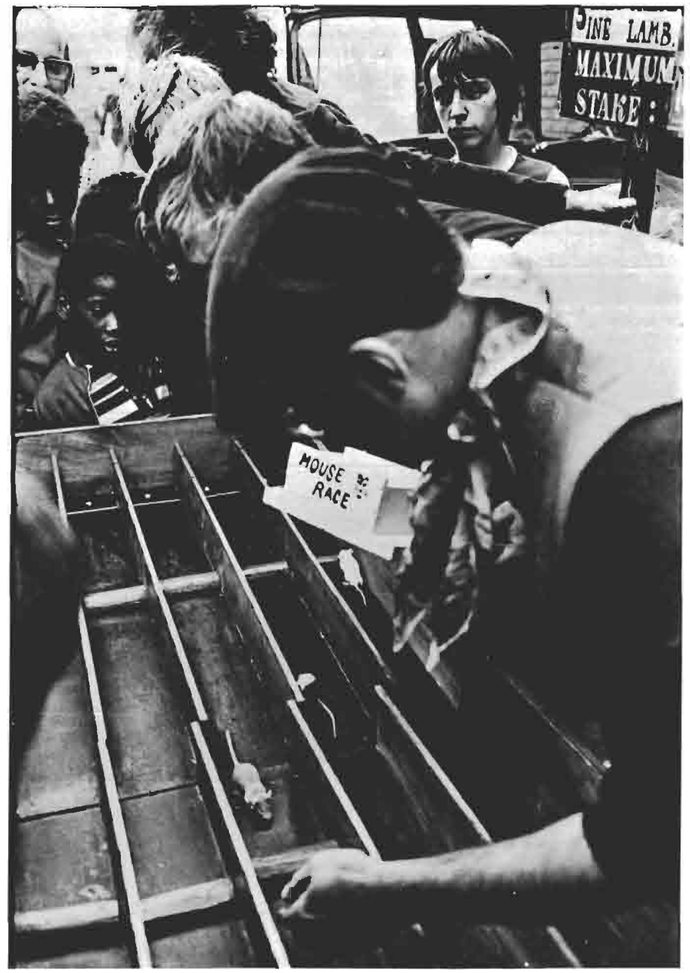
In Britain, races are flat or over hurdles, the usual pattern being to have eight races to a meeting with six dogs in each race. Meetings are usually held in the evenings. Dogs start from traps, and wear coloured vests for identification. Betting is through the tote or the bookmaker. Bookmakers usually restrict betting to straight bets for a win, but the tote allows win and place bets (a place is second) and operates combination bets which vary from track to track. A popular bet is the forecast, which requires the first two dogs to be named, in correct order.

In America, there are usually twelve races per evening. All betting is with the pari mutuel, which provides win and place betting, daily doubles and quinielas.

Coursing is still found in America, Britain and Australia. Hares are let loose to run across a field and two dogs are awarded points by judges as they chase the hare. The Waterloo Cup at Altcar is the British classic, and persistent, if not large gambling takes place.

Men do not have to rely on animals to do their racing for them. Betting shops will quote odds about the winners of gold medals at the Olympic Games, although bookmakers will not be allowed at the games themselves. However one annual meeting at which bookmakers flourish is the Powderhall Sprint Handicap in Scotland. A champion sprinter emerges after winning through to the final from several heats, all of which are bet on as if they were horse races. The runners are handicapped to give all, in theory, an equal chance. Another resemblance to horse racing is that competitors train secretly and keep their form dark. Unlike horses, though, the runners bet on themselves.

Men have backed themselves racing in yachts, cars and aeroplanes. Bicycle racing is a popular activity in Europe, and the world's



Part of the large field, above left, in the 1974 Tour de France. Cycle racing is one of the most followed sports on the Continent. The best known riders are national heroes. That gamblers are prepared to bet on anything is shown by the mouse race over hurdles on an improvised track at a street party in Brixton, South London.

greatest race, the Tour de France, is gambled upon by the French. But Japan has the biggest bicycle racing betting. There are tracks all over Japan, with programmes of races almost daily, and spectators bet enormous sums on the outcomes. The local government issues the betting tickets and some of the profits go to financing the tracks.

Fighting

After contests of speed, contests of strength are suitably easy for betting on. Where animals naturally fight, there will be bets on the outcome. Fighting fish are bet on by the Siamese. Cock-fighting has been popular over most of the world, and even now, although illegal in most places, is still very widespread. Bookmakers and bettors stand round the pit striking bets on the spurred birds who fight to the death.

Few sports have generated so much argument as bull-fighting. Aficionados revere it as a sort of art-form, but the less-committed frequently place bets with programme or drinks-sellers who act as runners for the local bookmakers. Betting is on which of the six bulls is killed with the most elan, according to a previously appointed judge.

Another sport which usually ends in a death is bull-fighting, performed in Spain and Mexico. A corrida consists of six fights at each of which the matador puts the bull to death. Spectators bet heavily on which of the matadors will kill the bull with most grace and panache. Official judges are appointed.

When Greek met Greek in ancient wrestling matches there were side bets. Nowadays formal arts are practised in the East with great ceremony but little of the betting that once characterised them. The big money is now bet on prize-fights, particularly on the heavyweight championship of the world.

Cock-fighting is a gory sport in which spurred cocks fight to the death. It is illegal in most countries, and although it excites and satisfies an aggressive instinct in many spectators, it would probably die without its accompanying betting. The fight shown is from the film 'The Cincinnati Kid.'

Boxing has notoriously attracted big betting. When Dempsey, on the left, fought Willard for the heavyweight championship of the world in 1919, it was said that he bet his purse at 10–1 that he would knock out Willard in the first round. Dempsey thought he had won when Willard was down and helpless at the bell, but had to resume and won his fight, but lost his bet, in the third.

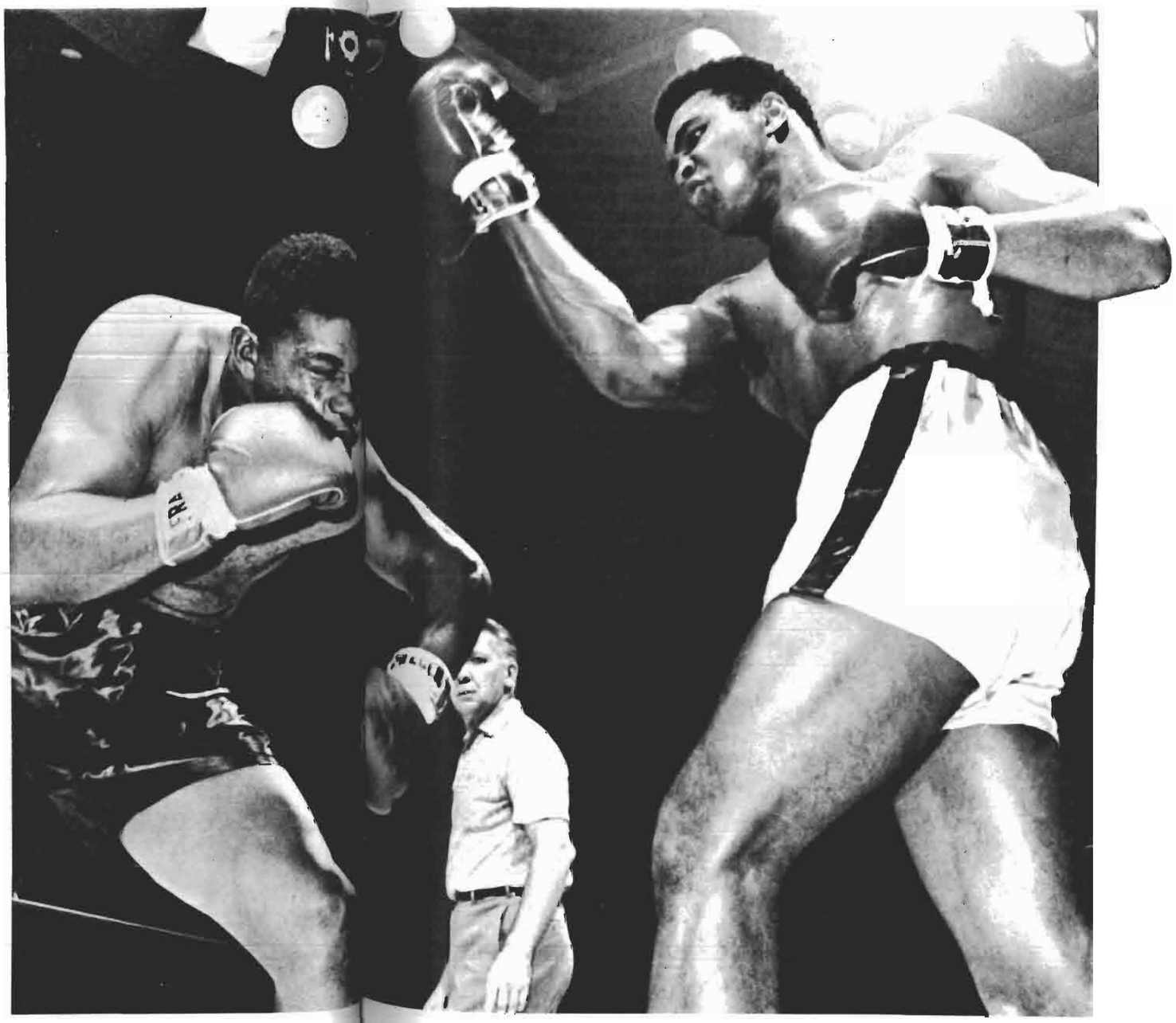
Jack Dempsey is said to have bet his whole purse, when he challenged for the title, that he would knock out Jess Willard in the first round. Willard was down seven times but was saved by the bell. When Ali fought Frazier in 1971 about $100,000 was wagered on the result. So much money has been bet on boxing that inevitably gangsters have tried to influence results, and a present slump might be due to the wariness of both bookie and bettor.

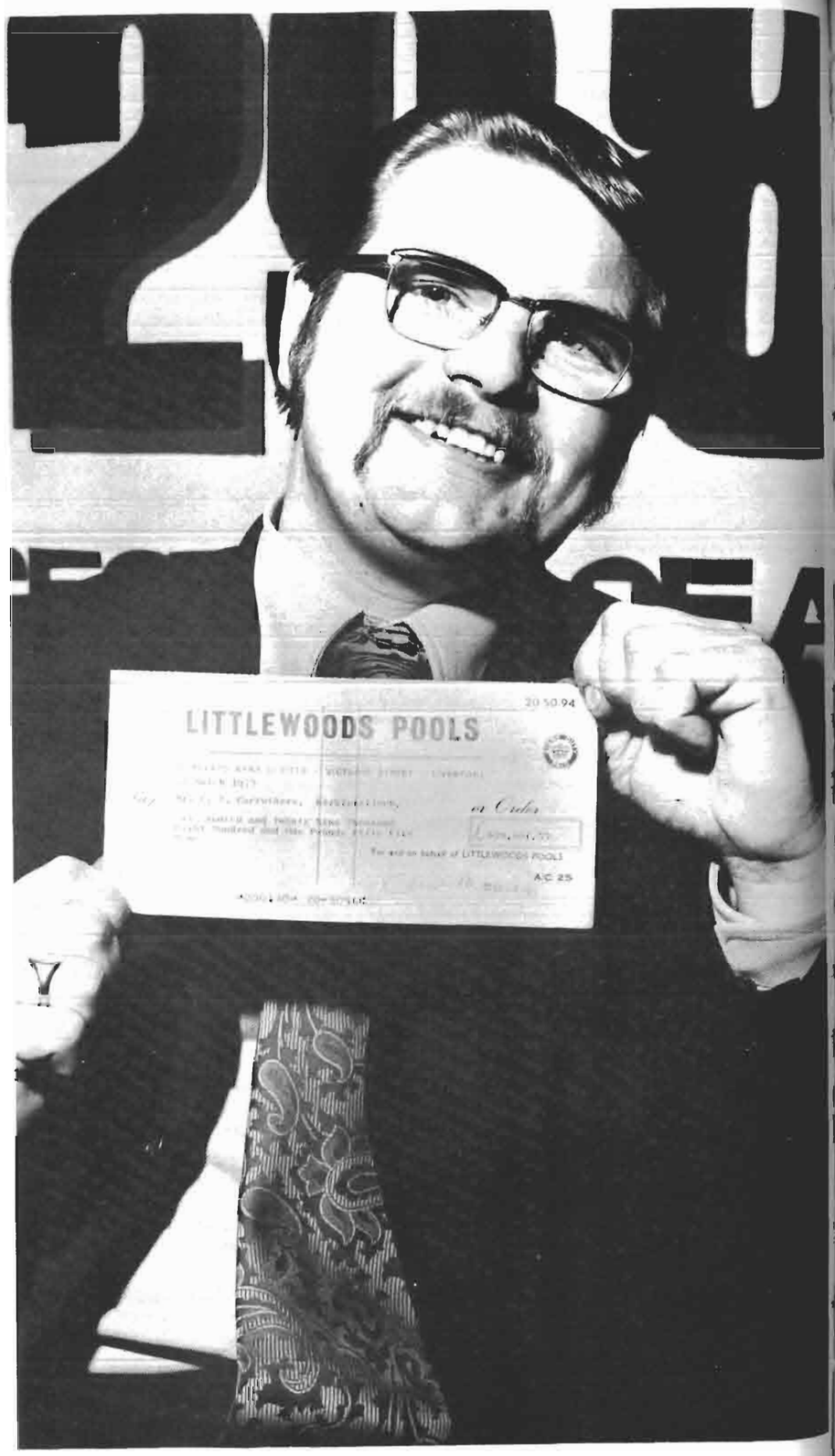
Soccer

Soccer provides betting in many ways, the most popular of which is the football pool.

The meeting in 1971 of champion Joe Frazier (left) and ex-champion Muhammad Ali, who lost his title outside the ring when he refused to join the Army, inspired great public interest and betting.

Boxing is a modern refined version of gladiatorial combat. The head to head contests of strength and courage in the raw lead to more betting among onlookers than more sedate sports. As with cock fighting, the aggression and blood in the ring seem to encourage an aggression in the spectators which increases the desire to bet. The game Floyd Patterson (left) took a terrific beating from Muhammad Ali before the referee stopped their 1965 fight in the twelfth round.





This is the moment millions of British football pools bettors dream of. Mr Colin Carruthers with his cheque for £629,801·55, a world record, won on the Treble Chance in 1973. Partly because of government tax, the 'house edge' on British football pools make them one of the poorest of popular betting propositions, but the hope of a win like this for a few pence make 'doing the pools' a weekly event in millions of homes.

When John Moores began his football pools operation in 1923, and took stakes totalling £4 7s. 6d. on 35 coupons sold to punters at Manchester United's football ground, he could hardly have visualised a headquarters like this and an annual turnover of over £100,000,000.

Betting with bookmakers was popular in Britain until the 1950s when heavy taxation forced the promotors to abandon it; it is now returning with coupons offering odds on each match of a full Saturday programme. Both teams are given a price for a win, and there is a price for the draw. Backers can make any number of selections and back them in trebles and accumulators.

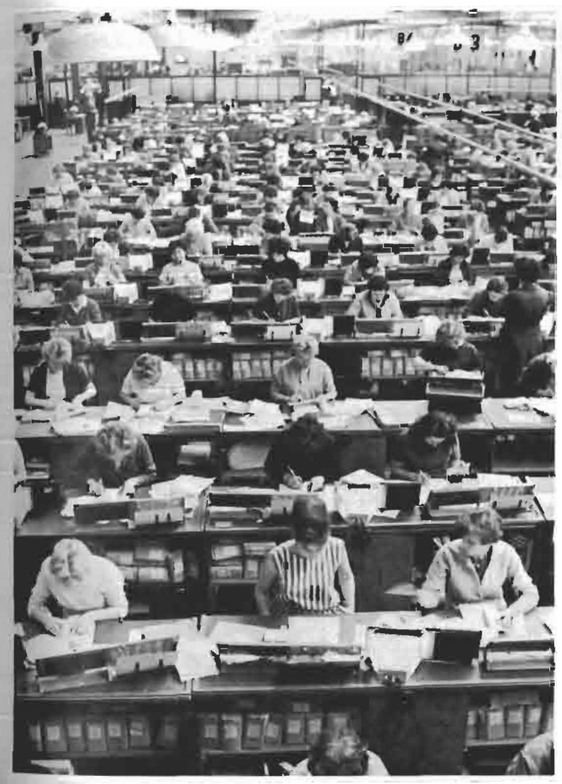
The football pools work on the pari mutuel system, where stakes are divided among winners after deductions. Since the 1920s football pools have been part of the British way of life. They are popular now on the continent of Europe and in Australia, several countries using the British league fixtures as a basis for the pools.

In Britain, coupons are delivered to the homes of 50 per cent of the adult population each week, mostly by pools company collectors, but sometimes by post. Collectors will take the completed coupon relating to the following Saturday's games, and leave the coupon for the week after. There are four major pools companies, whose coupons each include around five pools and who offer a slight variety of bet. But each of them includes a Treble Chance pool, the pool which offers the jackpot return, and which accounts for 90 per cent of the money staked on the pools. From a list of about 55 matches, the punter must select eight which he thinks will end in a draw. For each draw correctly forecast he is allowed three points (except for 0-0 draws, for which he is allowed two points), for each match won by the away team $1\frac{1}{2}$ points, and for each match won by the home team, one point. The maximum score is thus 24 points, which wins a top dividend. Three to five minor dividends are paid, according to which pool is chosen.

Because of the heavy government tax, and the percentage taken by the pools company for commission and expenses, the punter receives only about 28–30% of the total stake money back as dividends. The largest company, Littlewoods, takes about £3 million per week in stakes, paying out about £1 million to punters. Of this 60% or £600,000, is paid to Treble Chance first dividend winners. There is a limit of £500,000 on the first dividend (tax free).

The main difference between the various companies' Treble Chance pools is in the minimum stake per column, which varies

Littlewoods is one of the four main pools companies which supply coupons to the homes of 50% of the adult population of Britain each week.



Computers, electronic reading and sorting machines, the recording of completed coupons on microfilm, are some of the equipment and processes necessary to a company like Littlewoods Pools, which distributes, receives and settles 12 million coupons weekly during the football season. That it cannot be done without personnel, too, is shown by the general view of checkers on the pools floor and the girls operating a coupon marking machine.

from ½p to $\frac{1}{25}$p. Most people choose a combination entry (popularly called a perm), the simplest being a selection of 10 or 11 matches and a 'full perm' of all combinations of eight matches from the number chosen: 45 lines is required for any eight from 10, and 165 lines for any eight from 11.

There are, however, various more complicated permutations which will be accepted by the pools companies. Sometimes they issue the permutation themselves, with checking charts, sometimes the plans are devised by newspaper columnists. In these cases the punter needs to enter only the appropriate number of selections, together with the Plan number. But, if he prefers, the punter can invent his own elaborate permutations: all that is needed is that the pools company experts can understand his intentions.

The minor pools included on each company's coupon are for selecting items like 10 results (usually home wins), three draws, or four aways.

When the millions of pools coupons reach the companies each weekend, sophisticated machinery times their arrival and records them on microfilm. Electronic reading and sorting machines help thousands of employees to process and check the coupons. All is done and dividends are published in the press by Wednesday morning.

In Australia, football pools were launched in 1974 by a subsidiary of one of the British companies and were immediately successful. Although using the same 55 British matches, and the same form of pool as the treble chance, the coupon was quite different to the British coupon. It was collected in a pools shop. The coupon did not contain the names of the teams, merely a box of numbers, the punter

being asked to cross out the numbers relating to the matches of his choice. All he needed to do then was to complete the investment amount and pass the coupon with stake over the counter.

In summer, during the soccer close-season, British pools operate on Australian matches.

Other games

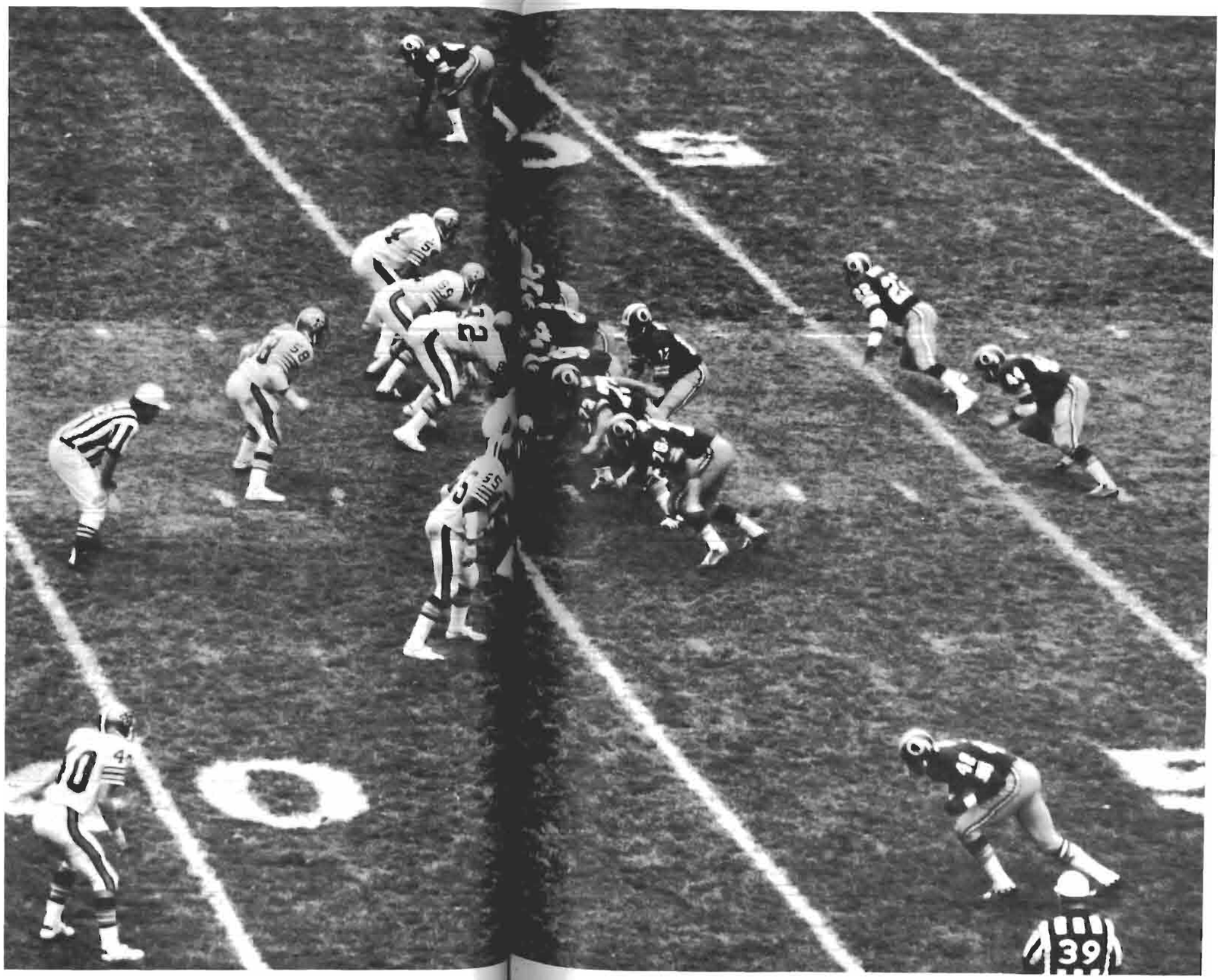
A game which originated in Spain and now is played in Latin American countries and all over the United States is jai alai, a form of pelota which found its way to Cuba in 1900 and thence to America. It is played with legal pari mutuel betting in Florida where the season lasts for months. Crowds of three or four thousand watch each evening and there are a variety of bets that the pari mutuel will take.

Betting on the popular American team games of baseball, basketball and American football takes the same form. The bookmaker, on enquiry, will quote a price for each of the two teams in a match. There are four different price lines and which is dealt depends on the clientele. The 40-cent line is for the poor bookie and the mug punter: the 20-cent line is for the larger bookie and more experienced bettor; the 10-cent, or dime, line is for big bookies with big-money clients; the 5-cent, or nickel, line is for big bookies attracting layoff bets from other bookies.

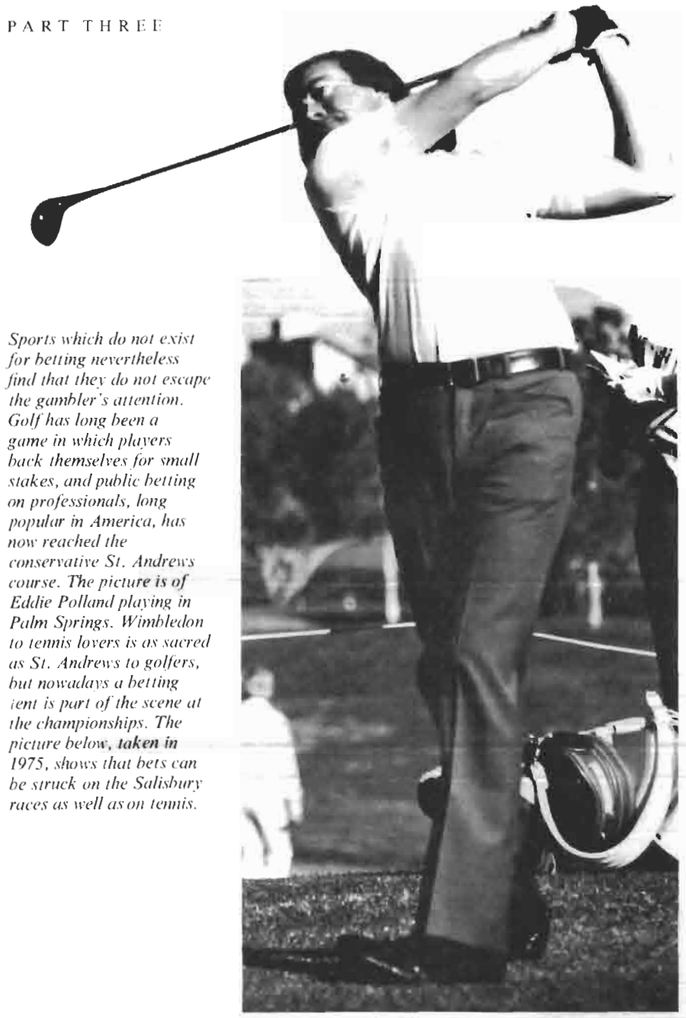
A 40-cent line has a differential of two points between the bookie's lay and take odds. For example, if Yankees are favoured in a baseball game, the bookie might quote '7–9 Yankee favourites', i.e. a two-point spread. This means bettors on Yankees are offered 9–5 on, and bettors on their opponents 7–5 against, all prices being quoted to five. The 20-cent line, for which a bet of around $50 may be required, has a one-point differential, e.g. '7–8 Yankees favourites'. Yankees' opponents are still 7–5 against, but Yankees only 8–5 on.

Gamblers on these sports can back in parlays, round robins and all the usual combination bets.

American football attracts more betting than the other sports, and bookmakers use a handicap system to bring the teams level. If Princeton are expected to beat Yale by 9 points, they will be handicapped by $9\frac{1}{2}$ points,



Pools betting is not organized on American football like it is on British football, but more money is staked on professional football, shown here, and college football in America than any other sport. Sports services provide bookmakers with the latest information on injuries to leading players, so that the odds offered can be adjusted to take account of the latest chances.



Sports which do not exist for betting nevertheless find that they do not escape the gambler's attention. Golf has long been a game in which players back themselves for small stakes, and public betting on professionals, long popular in America, has now reached the conservative St. Andrews course. The picture is of Eddie Polland playing in Palm Springs. Wimbledon to tennis lovers is as sacred as St. Andrews to golfers, but nowadays a betting tent is part of the scene at the championships. The picture below, taken in 1975, shows that bets can be struck on the Salisbury races as well as on tennis.

and the bookie will announce 'Princeton 9½ points over Yale'. The gambler can now back either side at the same odds, backers of Princeton winning if Princeton actually win by 10 points or more, otherwise backers of Yale win. The odds might be 6–5 for both teams with the ordinary bookmaker, 11–10 for both teams with a big bookmaker. When identical odds are given against both teams, the line is known as the 'Pick em line': the bookmaker will offer 'Princeton-Yale, 6–5 pick 'em'. In all cases the punter lays the odds, staking 6 to win 5, or 11 to win 10.

Tennis is a game that has attracted much betting lately, with interesting personalities playing at top level and each having their supporters. Ladbrokes experimented with a tent at a tennis tournament in Britain in 1975, and the sporting papers carry odds on the contenders for Wimbledon titles before the championship fortnight begins.

Golf, too, an aristocratic game, has had trouble with gamblers. In America a widespread method of big-money gambling is the Calcutta pool system. Gamblers stage an auction in which they bid for each player in a tournament. It might be that to 'own' the favourite cost $2,000, whereas an outsider could be bought for $100. The pool is divided in agreed percentages among the holders of the first three or more golfers, according to prior agreement. The holder of the outright winner usually tips the golfer. In the 1927 British Open Championship at St. Andrews, bookies, dressed like race-course bookies and carrying large bags, attempted to do business by shouting the odds about the players. They were firmly sent on their way. However, in 1972 a betting tent appeared at St. Andrews, where bets could be placed on the John Player Classic, despite disapproval.

Even cricket, the game most jealous of its reputation for spurning the unseemly, is part of the gambler's empire. Indeed cricket has been 'gambled on' for at least 250 years. In 1774 the *Morning Chronicle* could expostulate

> 'This sport has too long been perverted from diversion and innocent pastime to excessive gaming and public dissipation.'

Well, Lord's still has its Tavern, it also now has a betting office. And where is the *Morning Chronicle*?

PART FOUR

Fixes and swindles

John Gully, opposite, and William Crockford, two rich, colourful bookmakers and gamblers of the nineteenth century who took delight in winning from each other. Their last clash was the Derby of 1844, which neither won. Crockford died just afterwards, and because there were gambling wins to collect which would be forfeited with his death, his body was propped in an armchair in his window until the gains were safely gathered in.

Crime and fraud are often associated with gambling. Marked cards, loaded dice, false deals, gaffed equipment, false postmarks, tapped telephones – all are frequently found, and their users prosecuted. Gambling attracts the petty crook, who finds large sums of money depending upon events which with a little skill and deceit he can manipulate. The activities of these men are simple and sordid, but occasionally gambling coups occur which are fascinating because of the scale of the swindle, the people involved or the ingenuity of the fraud. Sometimes a swindle can be so neat that a grudging admiration for its perpetrators seems the most natural response.

Such an operation was that in which a clever gang took a lot of money from the bookmakers of London over the Easter of 1880. It was discovered, too late, because of a newspaper misprint. The scheme depended on the fact that Easter is a very busy time for racing men and racing newspapers, with a large number of holiday meetings taking place all over England. It began when the editor of the racing paper *Bell's Life*, which has since been amalgamated with *The Sporting Life*, Britain's leading racing paper, received a letter purporting to come from the secretary of the Trodmore Hunt. It was a courteous letter, enclosing the runners and riders for the Trodmore Hunt race meeting of Easter Monday, and requesting the editor to publish it in his paper. The writer offered to send the results by telegram after the meeting for publication in the following day's paper. Glad of this relief for his overworked staff, the editor duly printed the day's racing programme, the results followed as promised, and were also published. Bookmakers in London found that a few punters had been extremely lucky with their Trodmore bets, and paid out several thousand pounds. A beautiful swindle was exposed because another paper had followed *Bell's Life* and printed the results, but a misprint occurred, one winner being given the price of 7–2 in one paper and 5–2 in the other. The Trodmore Hunt secretary had to be contacted to check the correct price. It proved very difficult, as enquiries showed that there was no such place in Britain as Trodmore.

An engineer called William Jaggers brought off a coup at Monte Carlo towards the end of the nineteenth century. He realised that it was very difficult to keep a roulette wheel in perfect balance, and with the help of assistants kept a record of the numbers which won on several wheels. An analysis of the results showed that on some wheels they were not following the pattern the law of large numbers suggested they should. Jaggers therefore backed the numbers which seemed to be favoured and won over a million francs in four days. The casino, of course, then discovered the method, switched wheels and instituted a system of regular examination and testing of roulette wheels, which has been followed by most casinos throughout the world. It did not prevent Albert Hibbs and Roy Walford, two American students, discovering a faulty wheel at the Palace Club in Reno in 1947 and running up a profit of a few thousand dollars before the wheel was changed. There is no suggestion of cheating, of course, in logging a roulette wheel. It would be difficult nowadays to profit from a faulty one, and the application of those who search for and find one can only be admired.

None of the instigators of the Running Rein scandal in the Derby of 1844 deserve admiration. It appears that lots of skulduggery took place in this particular race, and Running Rein interfered with a long-standing feud between two colourful British bookmakers and gamblers. One was William Crockford, who opened the original Crockford's Club in 1828. The other was John Gully, who early in life was bought out of Fleet Prison to fight for the championship of England, which he won, and later became Member of Parliament for Pontefract. Gully and Crockford had crossed swords over the Derby and St. Leger of 1819. Crockford owned Sultan, and backed it heavily for the Derby with Gully, who thought, correctly, that Tiresias would win. The narrow margin of half a neck did not help Crockford's ire. It increased when Gully heard that Crockford's horse Sultan had broken down before the St. Leger, and managed to take Crockford's bets before Crockford himself was aware of the break-down. In 1827 Gully secretly bought the Derby winner Marmeluke, and backed it for the St. Leger to win a huge sum from Crockford before announcing his ownership. Marmeluke, who was known to be a highly-strung horse, lost the race because there was so much trouble at the start that he got into a lather and was left. Even so, he lost by only a length. The starter was dismissed, and there were suggestions that the bother was not accidental.

This was the background of the dislike Crockford and Gully felt for each other before the Derby of 1844, when they owned the two most fancied horses, Ratan and The Ugly Buck. Each backed his own horse heavily, but neither won, due to the chicanery of one Goodman Levy. Levy owned two horses: Running Rein, and another a year older, Maccabeus. In the light of subsequent events it seems certain that by several changes of stable, he had managed to switch their identities. When Running Rein, really Maccabeus, won a 2-year-old race, heavily backed by Levy, there were suspicions that he was an older horse. Lord George Bentinck, a champion of the Turf, sought evidence to prove the point, but could not prevent Running Rein running in the Derby of 1844, which he won.

TWO COLTS MYSTERY

Both have disappeared

FOR 36 HOURS SCOTLAND YARD MEN AND POLICE OF TWO COUNTIES HAVE BEEN TRYING TO TRACK THE HORSE WHICH WAS CONCERNED IN THURSDAY'S BATH RACES BETTING SENSATION—THE CASE OF THE CUT PHONE CABLE.

A senior officer said last night that he believes that when the horse is found the whole riddle will be solved. He was convinced that the horse is still in this country.

Turf experts discussing the case are comparing the records of two horses.

Both came from France a week ago in the steamer Deal. Both are bay two-year-olds.

One, Francasal, was the 10-1 winner of the Bath race—a seller. The other, Santa Amaro, has not been heard of since he landed.

After his victory, Francasal was driven away from the Bath course, and he, too, vanished.

Mr. Percy Bailey, the Epsom trainer who saddled Francasal, was interviewed by the stewards of the Jockey Club after racing at Ascot yesterday.

He said afterwards: "I have to appear again before the stewards next week."

Bailey also said that the owner of the horse, Mr. M. Williams, and Mr. W. Rook, who bought the horse in, would be invited to attend.

Santa Amaro is entered in five selling races this week. He might turn up for one.

When they landed in England horse boxes collected the two colts, which are trained in France and owned by a Mr. Maurice Williams.

But only one—Francasal—was delivered to trainer Bailey, who was asked to engage a jockey for the Bath race.

The records of the two horses are certainly very different. Santa Amaro has never run. Francasal has run six times and been five times unplaced.

'A mistake'

On May 30 Francasal was "on offer" in France for a mere £500.

Where is Francasal now? Mr. Bailey says: "I don't know. I had a phone call from a man who said he was Mr. Maurice Williams.

"He asked me to look after the horse before it ran at Bath. I did so. After the race it was driven away from Bath by the driver of a horse-box."

According to "Sporting Life Guide," which lists Santa Amaro's engagements for next week, he is trained by a Mr. Edward Goddard.

"This is a mistake," Mr. Goddard's wife said. "We have never seen or heard of the horse, nor of Maurice Williams, the owner."

'Om BETTING 'C
ON GREYHOU
BOOKMAKERS STO
FORECAST PAY'

DAILY TELEGRAPH RE

AN attempt to bring off a be
up to £10 million was
greyhound racing track a
yesterday.

Leading bookmakers meetin
in a statement issued by Mr. P
payment would be made on
forecast bets on the race, the
4.05 p.m. Only one winning
totalisator forecast ticket was
bought.

The forecast dividend depen
on the number of winning tick
sharing the totalisator pool.
As there was only one wi
ticket in this case, a divide
£987 11s 9d for 2s. the equ
of 9870 to 1, was declare
coup was aimed at
bookmakers who pay th
sator odds.

BETTING MONOPO

60 men at windows

The race was wo
wheat, at 2-1, with H
9-2, second. The 6-4
Dancing Nell was u

The coup organisers h
60 men to monopolise the Totali
tor windows at the track during
the 10-minute pre-race betting
period. Simultaneously wagers
were laid at betting shops all over
England.

TELEPHONE MYSTERY

All lines dead

A spokesman for Dagenham Stadium said all the telephones connected to the switchboard went dead 10 minutes before the race.

Jack Swift estimated his firm stood to lose £100,000. Other estimates: £250,000; Joe Coral, £200,000; William Hill, £50,000.

Mr. R. Pollard, of Ladbrokes, said: "This makes the Great Robbery look like small [The train robbers stole £2½ million.]

HOM. GREYHOUND BETTING COUP FAILS

£987 FOR 2S. TOTE WITHHELD

An attempted betting coup at Dagenham Greyhound Stadium, Essex, yesterday afternoon could have involved bookmakers throughout the country in a loss of more than £10m., according to the estimate of one bookmaker. In the 4.5 p.m. race the totalisator forecast dividend was declared at £987 11s. 9d. for a 2s. bet. There was only one winning ticket, payment on which has been withheld.

A stadium official said that 10 minutes before the race was due to be run all the telephones on the stadium switchboard went dead, including the three press telephones. No incoming calls could be taken or outgoing calls made for half an hour.

The method used at Dagenham to back Buckwheat, a 2-1 chance with the bookmakers and Handsome Lass, a 9-2 chance, for the first two places, was to flood the tote windows with people backing unlikely combinations. In this way few outsiders could place bets.

ONE TICKET

As only one winning ticket was sold, the totalisator declared a disproportionately high dividend. But the combination of Buckwheat and Handsome Lass was backed in outside offices at tote odds. In all there were 11,757 forecast bets on the race placed on the course.

The winning forecast had been widely backed in betting shops throughout the country. Coral's say that most of their shops in the London area are affected.

Mr. Ron Pollard, general manager of Ladbroke's, said: "We alone stand to lose £250,000 on the race."

Mr. Mark Lane, biggest bookmaker in the Dagenham area, also took a certain

Levy had divested himself of ownership by giving the horse to Alexander Wood, a pawn in the game, and had backed Running Rein to win £50,000. The result caused a scandal, bookmakers refused to pay on the winner and the prize money was withheld. Wood was forced to go to law in an attempt to get his money, and after Lord George Bentinck's evidence of dye being sold to Levy, the judge asked for both Levy and the horse to attend. Both had disappeared, and the Jockey Club had no difficulty in awarding the race to Orlando, who had finished second. It later came to light that at least one other horse in the race had been over age.

As for Crockford, he discovered that his trainer's son had backed Gully's horse, and suspected his own horse, who finished seventh, of being doped. He claimed he was robbed, and died three days after the most famous case of a ringer in racing history.

A more recent ringer was Francascal in a race at Bath in 1953. Over £5,000 was bet on the horse with London bookmakers and it duly won comfortably at 10–1. The bookmakers were rather annoyed at their liabilities because they had been unable to transfer the bets via the blower service to the course. Had they been able to do so, the starting price would have been considerably shorter. Their annoyance turned to anger when it was discovered that the telephone lines to Bath had been cut, and that two men with a ladder had been seen acting suspiciously in a lane near the city. Police investigations discovered the men who had cut the wire and a complex plot was revealed. The horse which had run as Francascal was really a much better horse called Santa Amaro. The gang went to prison.

Another swindle of cut wires happened in Australia in 1939. Before the last race of a meeting at Ascot, Melbourne, crooks cut the cables of all the radio stations except one, which then proceeded to give a fake broadcast of the race a few minutes after it had been run. In the few minutes between the race and the fake broadcast, the name of the winner had been telephoned to accomplices who backed the horse with bookmakers waiting for the broadcast. The fake broadcaster was soon apprehended and sentenced, but many bookmakers paid out and lost money.

A casino gambling racket which swindled 20,000 Britons of over £100,000 began in 1962. Leaflets carrying the name of the Franco British Casino Syndicate, with a Mayfair, London, address and telephone number, were posted in empty shop windows and on telegraph poles in many large cities of England, inviting punters to invest in units of up to £100 in the Syndicate. The Syndicate promised dividends from its casino operations of at least £6 per week, tax free, on £100 invested. The dividends, according to the Syndicate literature, came from an infallible system at roulette. While the Syndicate was collecting money from investors, the promised dividends were paid, but one day the cheques stopped and enquiring investors found the offices deserted. The swindle was not very ingenious, but it was clever enough to catch thousands of suckers.

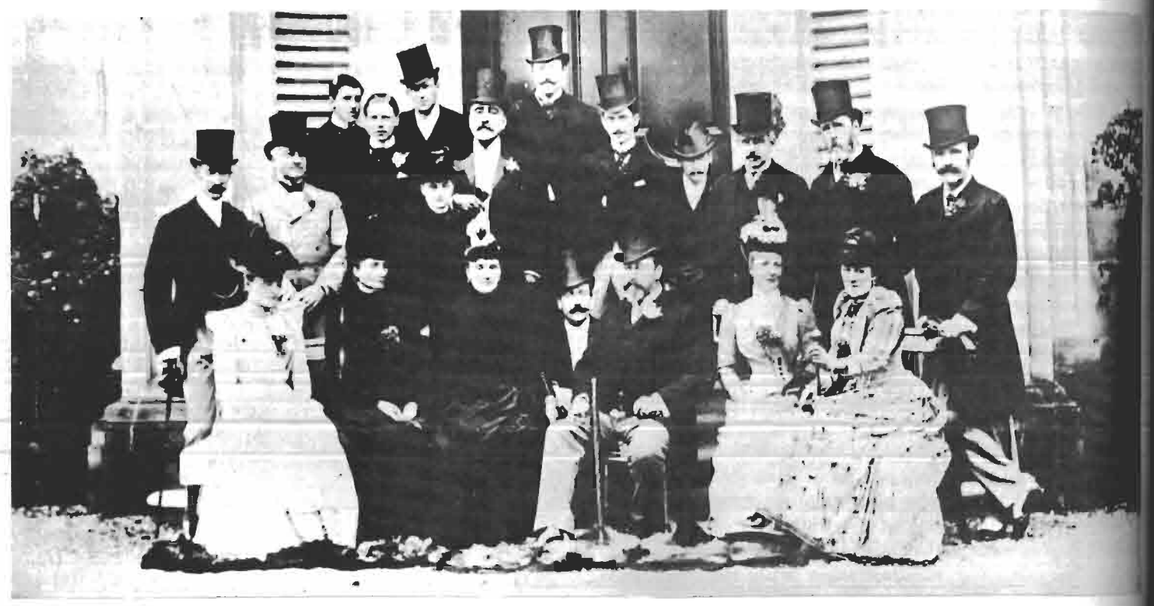
No ingenuity was needed to cover up a plot at the Dagenham greyhound racing track in 1964, because no attempt at concealment was made. It was not the first or last time that efforts have been made to tamper with the tote odds, but it was the most spectacular. When betting began on the 4·05 race one June afternoon a number of men with bags of silver coins began to bet at every one of the few tote windows taking forecast bets. They occupied the windows right up to the time of the race, buying a few hundred tickets on the forecast pool. An ordinary race-goer found he couldn't make a forecast bet. Remonstrances with any of the gang, for that is what they were, provoked the necessary amount of physical intimidation to persuade him to go away. When the race was run, it was found that only one ticket had been sold correctly forecasting the first and second dogs to finish. The dividend was a staggering £987 11s 6d for a 2s ticket. All over the country it was found that betting shops and bookmakers had taken bets on the winning forecast. The amount wagered was estimated to be about £1,000 and since the odds represented around 10,000 to 1, bookmakers were being asked to pay out about £10 million.

The swindle was so obvious and its scale so ludicrous that it is surprising that the gang could expect to get away with it. Bookmakers naturally withheld payment while enquiries were made, and finally declared the race void.

Edward VII when Prince of Wales loved gambling, and was frequently to be seen at Monte Carlo. He introduced baccarat to England and eventually was involved in a scandal when one of his fellow-players was accused of cheating.

Presumably the gang reckoned that it would be practically impossible to prove conspiracy, and decided that since it was too much to hope that the coup would be undetected, they might as well be in for a pound as a penny. They considerably overdid it and failed to collect the hoped for ill-gotten gains.

A scandal of a very different nature, since it involved the Prince of Wales and certainly did not amuse Queen Victoria, began during the Doncaster St. Leger meeting of 1890. The Prince, who was a member of a house party at Tranby Croft, was very fond of baccarat,



The famous house party at Tranby Croft on September 11, 1890. His Royal Highness the Prince of Wales is seated in the front row. On his right is Lieutenant Colonel Sir William Gordon-Cumming, who was accused of cheating at baccarat, and sued his accusers for slander, thus forcing the Prince to give evidence in court, causing a society scandal. General Williams and Lord Coventry are standing on the left.

which he introduced to England. Betting on cards was illegal, but the Prince had his own cards and counters, and he took them with him to Tranby Croft, where the game was played in the evenings. One of the players was the Prince of Wales' friend, the Scottish landowner Sir William Gordon-Cumming, a soldier, and a man for whom the phrase 'an officer and a gentleman' might have been invented.

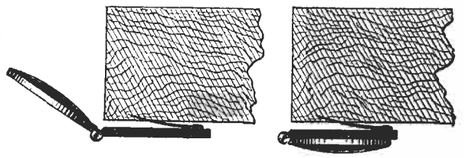
On the first night, the son of the house suspected Gordon-Cumming of cheating, by adding or subtracting from his stake according to whether or not he won, a manipulation known as la pousette. He conveyed his suspicions to others of the party, Gordon-Cumming was watched on the second night, and the others agreed that he appeared to cheat. When Lord Coventry and General Owen Williams were informed, they told the Prince of Wales and Gordon-Cumming was confronted with the accusation. He indignantly denied the charge, but because the Prince was involved he agreed to sign a paper that he would never play cards again. In return, the matter was to be hushed up so that no public scandal would attach to the Prince of Wales or Sir William Gordon-Cumming. However, scandal being what it is, the story got out and eventually reached Gordon-Cumming, who regretted signing the paper. He then re-affirmed his denials of guilt, and tried to get those who had accused him of cheating to withdraw the charge. Finally, in order to clear his name, he sued them for slander.

Although Gordon-Cumming cut an impressive figure in the witness box, he could not hope to win the case with five claiming to have seen him cheat. The Prince of Wales was forced to give evidence, and the disclosure of his private gambling upset the Queen and caused consternation in the country. Sir William Gordon-Cumming was banished from society and retired to his estates at Gordonstoun, where, ironically, the present Prince of Wales went to school.

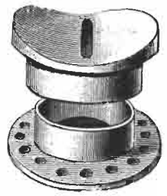
In Scott Fitzgerald's novel *The Great Gatsby*, the narrator asks Gatsby who another character called Meyer Wolfsheim is.

'Meyer Wolfsheim? He's a gambler.' Gatsby hesitated, then added coolly: 'He's the man who fixed the World Series in 1919.'

Finger Ring for pricking cards.



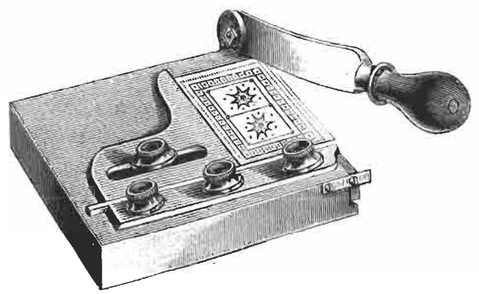
Reflector fixed underneath table for reflecting cards when dealing (open and shut).



Dye Box, sewn on to waistcoat, for staining the backs of cards.

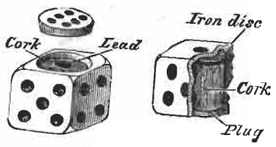
Ace. King. Queen. Knave. Ten.

Method of marking card-backs. The darkening of various parts of the figure indicates the value of the card.



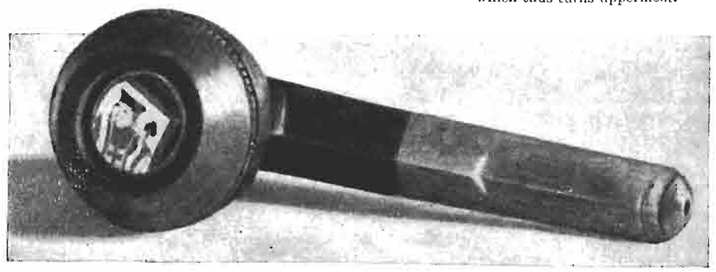
Apparatus for shaving off the edges of certain cards for purposes of dealing.

"Stripper-plate" for curving the edges of cards.



"Electric" Dice

Used in conjunction with a special table, through which an electric current is turned on and off at will. The current, when operating, attracts the side of the dice opposite the "six," which thus turns uppermost.



Mirror in pipe lying on card-table, reflecting cards when dealing.

Some devices for cheating at cards and dice. The ring is used to prick certain cards during a game so that they become recognisable later. The stripper plate can be used to trim high cards on the long side and low cards on the short side, enabling the cheat when cutting to cut to a low card or a high card depending upon whether he holds the cards by the long or short sides. These and other devices have been manufactured and sold in America.

Arnold Rothstein was a money-lender, rum runner and drug trafficker. He was suspected of organising the famous Liberty Bonds theft racket of 1918. He owned property and race horses. He was one of the most powerful of all American gangsters. Called 'The King of Gamblers', he is best known for the allegation that he fixed the World Series of 1919.

Later, Gatsby is asked why Wolfsheim isn't in jail.

'They can't get him, old sport. He's a smart man'.

Meyer Wolfsheim was based on a real character, Arnold Rothstein, and although he was declared innocent, it has not prevented writers suggesting that he really did fix the World Series. When it is realised that to millions of Americans the World Series was the sporting event of the year, if Rothstein did arrange the result it must rank as just about the biggest fix of all time.

What is not disputed in the story is that some of the Chicago White Sox baseball team, in order to avenge themselves on their employer who, they considered, underpaid them, and to earn some cash, decided to look for a gambler who would pay them $10,000 per man to lose the championship match with Cincinnati. Arnold Rothstein, an immensely rich and corrupt gambler, who at one time seemed to have judges, policemen and city officials in his employ, as well as crooks of all kinds, was approached to put up the money. The crack White Sox team, the 4–1 on favourites, lost the series, to the surprise of America, although some thought the mystery explained when eight of the players and Rothstein were brought to trial. Some of the team confessed to throwing the series, but Rothstein maintained that although he had been approached, he had declined to have anything to do with the plot. At the trial, it was not proved that a fix had taken place, and Rothstein was acquitted.

Despite this, it was shown that Rothstein and his friends had bet large sums of money on Cincinnati, and had won $350,000 on the series. There is no doubt that Rothstein had a very strong conviction that Chicago White Sox (after the trial popularly known as the Black Sox) would lose.

Arnold Rothstein escaped the punishment of the law on several occasions. More than once he won hundreds of thousands of dollars backing his own horses, and on more than one occasion their victories were not above suspicion. He was once charged with shooting at policemen raiding an illegal craps game. He was acquitted.

But although he was the most powerful of America's gangsters, known as 'The Brain' and 'The King of Gamblers', Rothstein could not defy underworld justice as easily as he seemed to defy the law. He finished a poker game in 1928 owing over a quarter of a million dollars to fellow crooks, and took too long to pay up. He suggested the game was rigged. On November 6, 1928, Rothstein should have won over half a million dollars on bets he had put on Herbert Hoover winning the Presidency and Franklin D. Roosevelt the governorship of New York, but on that day he died from a bullet wound. Two days earlier, the man of many nicknames, one of which was 'the man who dwells in doorways', had been found in the servants' entrance of New York's Park Central Hotel with a fellow-gambler's bullet in his stomach.

PART FIVE

Games of chance

Chance, according to Voltaire, is a word void of sense; nothing can exist without a cause. For the gambler, a chance event is one ungoverned by any influences, such as the tossing of a coin, where the result, heads or tails, appears to be accidental and unpredictable. Chance is said to be blind. A 'pure' gambler is one who puts his whole trust in chance, taking risks on events over which nothing and nobody, let alone he himself, can exercise any control. Games of chance are those in which skill cannot affect the result or outcome.

Raffles

At first thought, the buyer of a raffle ticket might not consider himself to be a gambler. Raffles are often seen simply as a way of raising money for a good cause, like a charity or a works sports club, or to finance local amenities, or even to repair the church roof. Nonetheless, to enter a raffle is to take part in a chance event. This is recognised in those parts of the world where raffles have to be registered, and in those North American states where raffles are illegal. Raffle prizes can be more expensive than an automobile . . . or less expensive than a bottle of whisky. The annual amount speculated in raffles is enormous, and few adults have not bought a raffle ticket at one time or another. That a ticket is bought as a donation to a good cause, and the prospect of winning not of importance to the buyer, cannot disguise the fact that gambling is taking place. The operation of a raffle is simple: the organizers merely have to ensure that the prizes offered cost them less than the ticket money collected minus their expenses. The difference is the profit.

Lotteries

Big raffle-type operations such as those run by the state in various parts of the world are usually described as lotteries. The top prizes are often large enough to change the whole way of life of the winners. The chances of winning are correspondingly small and, though lotteries are pure gambles, it is unlikely that they will cause serious addiction in participants.

The Puerto Rican lottery sells 135,000 tickets, in three series of 45,000 each. Each ticket costs $20, so the pool is $2,700,000.

Drawing by J.J Crew.

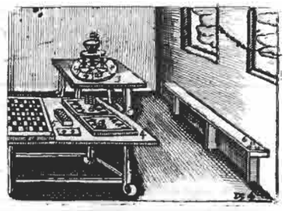
DRG A LOTTERY.
HALL LONDON, 1739.
ENGRAVING PRESERVED IN THE BRITISH MUSEUM.
FROM A RARE

When local authorities in Britain were allowed to run lotteries in 1977, after much opposition, they were restricted in the prize money and number of tickets sold. So many people wished to take part that it was reported that in Plymouth tickets were being exchanged on the black market at inflated prices. The engraving shows a scene at the drawing of a lottery in Guildhall, London, in 1739.

Dice play in literature and painting. In the seventeenth century book the text is in English and Latin and the numbers relate to the items of equipment in the drawing. Notice that dice were used in casting lots by throwing them through a casting box onto a numbered board. A backgammon board illustrated is called a pair of tables. The painting by Georges de la Tour is called The Dice Players. They are using three dice and may be playing a form of a game called huck dice, in which case the three 1s would be a winning throw.

CXXXIV.

Ludus Aleæ.

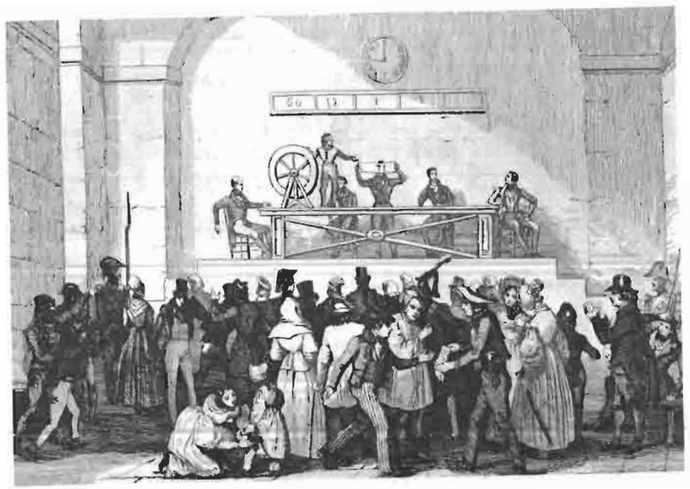


Dice-Play.

We

We play with Dice. either they that throw the most take up all; or we throw them throw a casting-Box upon a Board 3. marked with Figures; and this is Dice-players game at casting Lots.	*Tesseris (talis)* 1. ludimus, vel *Pistabolicedam*; vel imnittimus illas per *Fritillum* 2. in *Tabellam* 3. numeris notatam, idque est Ludus *Sortilegii Aleatorum.*
Men play by Luck and Skill at Tables in a pair of Tables, 4. and at Cards. 5.	*Sorte & Arte* luditur *Calculis* in *alveo aleatorio*, 4. & *Chartis luforiis*, 5.
We play at Chesse on a Chesse-board, 6. where only art beareth the sway.	*Abaculis* ludimus in *Abaco*, 6. ubi sola ars regnat.
The most ingentous Game, is the game at Chess, 7. wherein as it were two Armies fight together in Battel.	Ingeniosissimus ludus est, L. *Latrunculorum*, 7. quo veluti duo exercitus prælio confligunt.

T *Cursus*



National lotteries have been popular on the Continent for 400 years. The engraving shows a French National Lottery draw in 1835. Two soldiers keep guard while a blindfolded man draws five numbers from a barrel. The winning numbers on this occasion were 60, 12, 1, 2 and 71. The photograph shows tickets being sold in the weekly Italian State Lottery.

Each ticket is divided into eighty parts, so the cheapest stake in the lottery is one-eightieth of a ticket, costing 25 cents. A draw is made weekly, and thousands of prizes distributed. The top weekly prize is $100,000, won by three $20 tickets, one in each series. The second, third and fourth prizes are $36,000, $16,000 and $10,000, drawn separately. The smallest prizes, paid to one-tenth of all entrants, are of $20 (i.e. the winners get their money back) for tickets whose last digit corresponds with the last digit of the top prize-winning number. Twice a year, at Christmas and in mid-summer, there are bigger lotteries, in which the tickets cost four times as much, and the top prize, known as El Gordo, is $480,000. The payout on the top prize, therefore, equals 6,000 for one, tax free.

In 1970, the New Jersey State Lottery began operations. Prizes have varied, but the following shows how the lottery worked. There was a weekly draw, tickets costing 50 cents each. All tickets contained a number of six digits: when the number of tickets sold exceeded one million, the numbers were repeated. As in the Puerto Rican lottery, the top prize ($50,000) was won by the tickets showing the winning number, but minor prizes in this lottery were also based on the winning number. Tickets with the last five digits correct won second prize of $4,000. Third and fourth prizes, decided on the same principle, were $400 and $40. Tickets with the last two digits correct plus those with the first two digits correct were placed in a special draw which took place every few weeks, according to the number of tickets sold. A three-digit winning number decided this draw, the winners entering a third draw. Again there were consolation prizes of $100 for holders of tickets with the last two digits corresponding to the winning number. All tickets in the third draw won $500, the winner taking $1,000,000, with second and third prizes of $200,000 and $100,000. There were seven fourth prizes of $10,000.

Other American states run lotteries which operate on similar lines. About 40 per cent of the pool is returned to winners, the remainder going to the state funds after the deduction of expenses.

One of the oldest lotteries in the world is the Italian State Lottery, which began in Florence in the sixteenth century. The lottery is run by the Ministry of Finance, and tickets are sold by thousands of offices throughout Italy. Tickets are numbered from one to 90, and there are ten separate draws made each Saturday from ten wheels, each named after an Italian city. Five numbers are drawn from each wheel. The buyer of a ticket may back a single number to be drawn from a specific wheel, or he may back any selection of numbers up to five to be drawn from a specific wheel. Stakes can vary, and odds of a million for one are paid to any ticket holder who has specified all five numbers to be drawn from a wheel. The probability of picking all five numbers is one in the number of combinations of five from 90, ${}^{90}C_5$, which is 43,949,268. The Italian lottery is not strictly a lottery, as there is not a percentage take from an overall pool, and the payout varies with the number of winners.

In 1977, after much opposition, local authorities were allowed to run lotteries in Britain, although restrictions on the size of prizes and price of tickets caused few of them to enthuse over the legislation. However, there is a long history of lotteries in Britain, dating back to 1569, and since 1956 there has been a national lottery, the Premium Bonds scheme. Bonds can be bought at most Post Offices, banks and Trustee Savings Banks in units of £1, although two units is the minimum holding. The bond has two functions. The first is

Ticket sellers for the Greek National Lottery selling tickets on the street in Crete. The Irish Hospitals Sweepstake is based on a few of the years biggest horse races. Below is shown the cover used for the books of tickets for the 1977 Irish Sweeps Derby. The draw is made by Irish nurses, and all tickets drawing a horse win a prize. Each draw is a multi-million pound exercise, benefiting Irish hospitals by nearly €10 million per year.

to provide a method of saving, since bonds can be cashed at their face value at any time. However, no interest is paid, and it is the interest on the bond which goes into a pool to be shared by the winners. The winning numbers are generated by Electronic Random Number Indicator Equipment, known popularly as ERNIE. A top prize of £25,000 is paid weekly, with numerous smaller prizes ranging from £5,000 to £25, and there is a special monthly prize of £50,000. Several million pounds are currently invested in British premium bonds.

Sweepstakes

In a sweepstake, the winning numbers are not generated at random, but are based on the result of an event, usually a horse race. The best known example is the Irish Hospitals Sweepstake, set up in Dublin in 1930 to raise funds for hospitals. The Sweep was illegal outside Ireland, but it quickly gained popularity all over the world. It had to overcome, among other obstacles, the refusal of the British and U.S. Post Offices to handle its mail. A vast network of agents was quickly set up to distribute the illegal tickets. The Sweep is run three or four times a year, based on major horse races in Ireland and Britain. Some of these races are sponsored by the Sweep. The Irish Derby has been sponsored since 1962.

In the past, the lottery has been so large that it has been divided into units, or separate Sweeps. The draw for horses is made by Irish nurses, who draw a ticket stub from one drum, and the name of a horse in the race from another drum, until all horses are allocated to a ticket. If there are 20 units, each horse is allocated to 20 tickets. The draw is supervised by the Irish Police.

Every ticket which draws a horse wins a prize, and there are also consolation prizes. In the 1960s, the tickets stated that 25 per cent of money received from the sale of tickets would be paid to Irish hospitals. The 75 per cent left, minus expenses, would be divided into units of £120,000 for distribution to winners, any remainder being divided into 50 cash prizes of equal amount. Of each unit of £120,000, the holder of the winning horse received £50,000; the second £20,000 and the third £10,000. The drawers of also-rans shared

The numbers game began in Harlem in the early 1900s and by the 1920s had become big business, particularly among the Black population. When prohibition ended in the 1930s bootleggers turned to the numbers game for quick profits. Dutch Schultz, seen awaiting a 'not guilty' verdict in a tax evasion trial, became king of the numbers racket, making huge profits and not being particular about paying winners.

£30,000, the last £10,000 being shared out among consolation prize winners.

It is probable that at least half of the Irish Hospitals Sweepstakes tickets were sold in the United States until the early 1970s, when the legalization of State-run lotteries in various States caused a big drop in sales.

The numbers game

This gambling operation, sometimes called the policy game, has been operating in the United States for hundreds of years and became big business in the 1920s. Because it is illegal, the turnover is unknown, but it is likely that it is larger than that of any lottery in the world.

Tickets for the numbers game are sold by agents who might be cafe owners or newspaper sellers, or who might even run an office fronting as a legitimate business.

To place a bet the gambler selects a three-

Bingo is one of to-day's most widespread gambling pastimes, attracting players who gamble on nothing else. Bingo is believed to derive from the Italian game Lotto, which itself was inspired by the Italian National Lottery. The game in the engraving was being played in Trastevere, Rome, in 1875.

digit number from 000 to 999 and writes it on a pad with his stake, for instance 661–$1. The pad contains two carbons of the bet: the gambler is given the top sheet, one carbon is kept by the agent, and the other taken by a runner to the bank.

An example of one bet has been given. Some banks will allow bets of other than a three-digit number. Bets that a selected digit will appear in a specified place in the winning number might be allowed. Or bets might be accepted on the first two or last two digits. The winning number used to be based on the last three digits of the Federal Reserve Clearing House report, but nowadays the last three digits of the daily take at a racetrack are used.

The bank for a correct three-digit number might pay 500 for one or 400 for one. Of this, 10 per cent will be deducted as commission for the runner. At worst, therefore, the lucky gambler might get $360 instead of the $1,000 he deserves, a bank edge of 64 per cent. Single numbers might pay as little as six for one, an edge of 40 per cent.

The bank takes an even bigger advantage than this, because on certain numbers the bank will either refuse to accept bets or offer smaller odds. These numbers are known as cut numbers, and are the numbers on which the bank could otherwise expect more than normal business. There might be 100 or more such numbers: 777, for instance, or 123, or the numbers ending with two noughts such as 700.

There is little room for systems of betting on the numbers game. Most banks will accept a boxed number. If a box is drawn round the number 468, the gambler is backing all combinations of these numbers: 468, 486, 648, 684, 846, 864. This represents six bets, and at $1 a bet the total cost is $6.

Bingo

When bingo was legalized in Britain in 1960, the amount of business which took place surprised everybody. In no time, cinemas were ceasing to show films and beginning to hold bingo sessions. Conversely, in America, as many States have legalized bingo, the turnover has dropped because the prizes allowed by the State have been lower than the prizes which could be won in the illegal games. Big business has given the name bingo to a game which has been played for centuries under other names: lotto, housey-housey or tombola.

Basically, each player has a card containing certain numbers. Many current kits for children's recreational games contain 15 of the numbers between one and 90, which was the commonest form of card for many years. Most modern cards contain 24 of the numbers between one and 75, arranged in five rows of five numbers printed in columns below the letters of the word 'bingo'. The central space on the card is not given a number: it is a 'free' space, usually called a 'free play' or a 'free number'.

By a system of random selection, numbers between one and 75 are called by an operator, and as each number is called, holders of cards containing that number cover it on their cards. The holder of the first card to have all its numbers covered is the winner. He or she (usually she as the game is most popular with women) calls out 'bingo'.

There are, of course, variations. The most popular is to have a minor prize for the first player to cover one row of numbers. There are as many ways of deciding minor prizes as the promoters like to devise. A prize is sometimes paid to the first player to cover a line in any direction, or to cover the numbers in the four corners of the card. Some big games might pay three or four prizes per game.

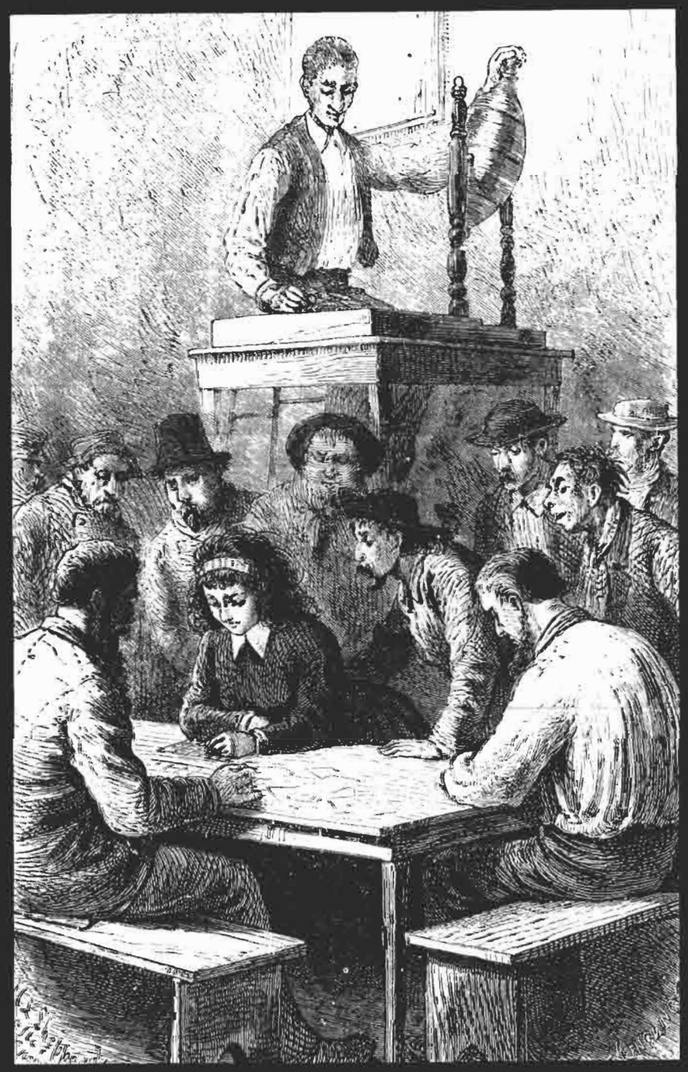
The numbers to be called are usually 'chosen' by a machine which is loaded with numbered balls. They are rather like table-tennis balls, and they are held in a wire or clear plastic cage, where they are agitated by mechanical means or by a jet of air. One ball at a time falls or is blown out of the cage into a pocket, when its number is called by the caller. Bingo is not a game of skill, though mental and manual dexterity is demonstrated by those participants who play several cards simultaneously. Sometimes, the players are given the help of an electric scoreboard which lights up the numbers which have been called.

Bingomania overtook British housewives in the 1960s, when many cinema owners found it more profitable to stop showing films and switch to bingo. The queue entering the Top Rank Bingo and Social Club at Peckham, London, for an afternoon session, are entering what was recently the Odeon Cinema.

Usually, bingo halls charge for admission to a session, and a fee is charged per card per game. This way of paying for the entertainment is obligatory in Britain, where the entrance fee is used for the operator's expenses and profits, while the fees paid for cards are used as prize money. In Britain, large prizes are sometimes generated by the linking of several simultaneous games under the same proprietorship but at different venues.

It has become clear that bingo can easily cause addiction. A typical bingo addict has been postulated: a bored housewife who attends a session, perhaps in the afternoon, finds friends and a social atmosphere, and gets so hooked on the game that more and more housekeeping money is spent on the diversion.

Keno is a form of bingo in which the players choose their own numbers. Modern keno, as played in most Las Vegas casinos, differs from the original version of the game played in New Orleans from the middle of the nineteenth century. This game more resembled modern bingo, as is shown by the engraving of a game in America in 1870.



The Gaming Board of Great Britain has expressed concern at the growth of a relatively harmless and cheap method of recreation into a large-scale gambling activity.

The assessment of chances does not normally enter into bingo, as each player, or rather each card, has an equal chance of winning. However, in America, where the popularity of bingo has forced some casinos in Las Vegas to operate games, large prizes are sometimes paid to winners who can cover a card in a certain time, say within the first 50 numbers called. It is possible to calculate the probability of covering a 24-number card in 50 random numbers. To do so, it is necessary to divide the number of combinations of 24 numbers in 50, ${}^{50}C_{24}$, with ${}^{75}C_{24}$, the number of combinations of 24 numbers in 75. This is a mammoth calculation, but by using logarithms of factorials it can be calculated as being about one in 212,000. So the chance of covering a card with 50 or less numbers called is very small.

German lotto

This is a national game which has more similarities to the Italian lottery than to bingo. Customers complete coupons in agents' offices, often shops as in the style of the American numbers game. They choose six numbers between one and 49. Each week six winning numbers plus a reserve number are drawn by the bingo method of numbered balls. The total pool, less the usual deductions, is distributed among the classes of winners. All six numbers right takes top prize, and five right plus the reserve takes second prize. There are also consolation prizes for those with three, four or five numbers correct of the winning six. The top prize is limited to $1\frac{1}{2}$ million DM, a little less than the limit placed on a British football pool first dividend. The chance of selecting the six winning numbers is one in ${}^{49}C_{6}$, or nearly 14 million to one, and of getting a prize at all nearly 700,000 to one.

Keno

This game, not unlike German lotto, is very popular in the casinos of Las Vegas. Electronic boards in various parts of the casino list the numbers from one to 80. Twenty winning numbers are selected in the manner described for bingo, and the winning numbers are lit on the boards. Gamblers can select any quantity of numbers from one to 15 to appear as winning numbers. They indicate their choice by crossing out their selections on standard keno tickets. Tickets are presented at the keno counter, with the total stakes, where a keno writer makes two copies by punching out the numbers on an 'inside' ticket. The keno writer gives one copy to the gambler, and keeps the other together with the gambler's original ticket. Tickets are marked with the number of the appropriate keno game. Games take place every few minutes. Keno runners carrying blank tickets and crayons enable gamblers not in the keno lounge to bet by taking tickets and stakes to the counter, and later delivering any winnings. There will be a minimum stake on a keno bet, usually 50 or 60 cents, and all stakes must be in multiples of it, although lower stakes might be accepted on way-tickets, to be explained later.

The ticket of a gambler who bets one number only to be in the winning 20 is known as a 1-spot ticket, and other tickets are known as 4-spot, 8-spot etc. A simple 8-spot ticket is shown in Figure 5:1. The figure 8 written on the right indicates an 8-spot ticket, the 60 in

16

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Figure 5:1, a simple keno 8-spot ticket. The player has marked eight numbers. The 8 indicates an 8-spot ticket. The 60 indicates a stake of 60 cents. The printed 16 is the number of the game.

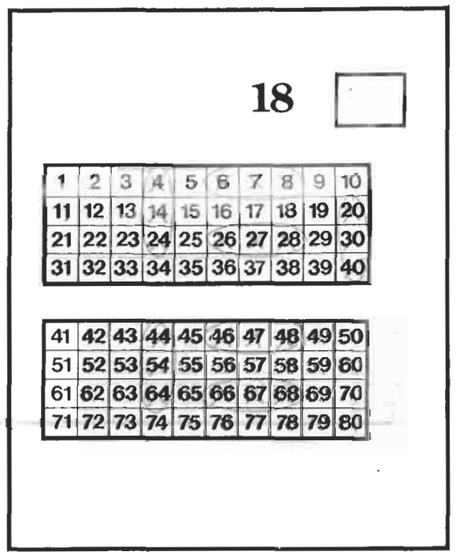


Figure 5:2, a keno way ticket. The instructions mean 21 6-spot bets at $1.20 each way, and 35 12-spot bets at 60 cents each way. The total sum bet is $46.20.

the box at the top indicates the stake of 60 cents. The signs for dollars and cents are never used. When the total stakes on a ticket exceed $1, the cents are written over a line, thus 1^{20} indicates stakes of one dollar 20 cents.

Where three or more numbers are selected, consolation prizes are paid. On a 4-spot ticket, a prize will be won if two, three, or four winning numbers are selected. A 10-spot ticket, the most popular, will win when five or more numbers selected are winners. This enables combinations to be backed. A combination ticket (or way-ticket) is shown in Figure 5:2. On this ticket seven groups of three numbers are selected. The gambler has taken each pair of groups to bet a 6-spot ticket 21 ways at $1.20 each way, and has taken each foursome to bet a 12-spot ticket 35 ways at 60 cents each, his total stake on the ticket being $46.20. On way-tickets a minimum stake of half the usual minimum is accepted in most casinos.

As an example of payouts, the most popular ticket, the 10-spot, might pay, per 60-cent stake: for 5 spots $1.20; six spots $12; seven spots $90; eight spots $660; nine spots $2,400; ten spots $12,500, but these payouts will vary from one casino to another.

High-low tickets are special tickets which carry special payoffs. With a high-low 12-spot ticket, three groups of four connecting numbers are circled as in Figure 5:3. A gambler getting five or more spots correct will win, but the win will vary according to how the winner's numbers fall within the three groups, e.g. six correct numbers, two from each group, will win less than six correct including one whole group of four. Payouts, which vary considerably between casinos, might be as follows on a 30-cent ticket:

5 spots:	2-2-1	pays $0.15
	3-1-1	pays $0.20
	3-2	pays $0.25
	4-1	pays $0.30
6 spots:	2-2-2	pays $1.30
	3-2-1	pays $1.65
	3-3	pays $2·05
	4-1-1	pays $2.05
	4-2	pays $2.25
7 spots:	3-2-2	pays $9.70
	3-3-1	pays $12.20
	4-2-1	pays $14.70
	4-3	pays $19.70
8 spots:	3-3-2	pays $65.60
	4-2-2	pays $75.20
	4-3-1	pays $84.75
	4-4	pays $113.40
9 spots:	3-3-3	pays $166.65
	4-3-2	pays $169.70
	4-4-1	pays $175.90
10 spots:	4-3-3	pays $370
	4-4-2	pays $385
11 spots:	4-4-3	pays $648
12 spots:	4-4-4	pays $1,110

The maximum payout in Las Vegas is $25,000 per game, and if the total winnings on a game exceed this amount, the winnings must be scaled down in proportion to each other so that the total is $25,000.

The house edge at keno varies slightly from the 1-spot to the 15-spot ticket. On a 1-spot ticket, the usual payout is $3.20 for a dollar stake. As the probability of a selected number from 80 being one of the 20 winners is $\frac{20}{80}$ or $\frac{1}{4}$, the payout, were the game fair, would be $4. The house edge on the 1-spot is therefore 20 per cent. The house edge on the other tickets is usually a little more than this. Keno is therefore a very unfair game for the gambler, particularly for gamblers looking for a big payout. The odds against winning the $12,500

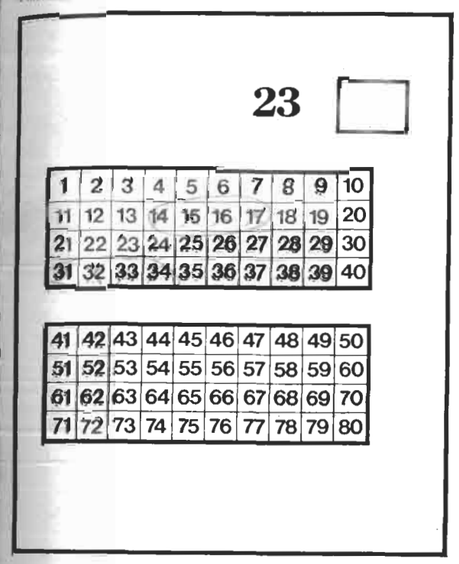


Figure 5:3, a 12-spot high-low ticket, indicated by the instructions HL.

for 60c mentioned above on a 10-spot ticket are nearly nine million to one.

Slot machines

Sometimes they are called fruit machines, because of the symbols which determine wins; sometimes one-armed bandits, because of the single handle to rob gamblers. Either way, they are forms of mechanical lotteries. They were invented by Charles Fey, an American mechanic, in the late nineteenth century. The first machine, Liberty Bell, used playing card suits, bells, stars and horseshoes as its symbols.

The basic slot machine, until refinements appeared after the Second World War, consisted of three reels each containing 20 symbols (not all different). When a coin is inserted in the machine, and a handle pulled, the reels spin, and when they stop a line of three symbols is shown through a window. Depending on the composition of the line of three symbols, the machine either pays out an amount of coins according to a schedule stated on the machine, or it does not pay at all. The payout is unfair, as it is less than it should be according to the laws of probability.

A hypothetical slot machine might contain the following symbols on its three reels:

	Drum 1	*Drum 2*	*Drum 3*
Bar	2	1	2
Bell	3	1	2
Horseshoe	1	3	3
Cherry	4	8	2
Orange	2	4	4
Plum	8	3	7

Suppose the payouts were (X means any symbol): three bars 20; three bells 20, three horseshoes 20; three oranges 10; three cherries 5; three plums 5; bar bar X 10; bell bell X 10; horseshoe horseshoe X 10; cherry cherry bar 5; orange orange bar 5; plum plum bar 5; plum cherry X 2.

The number of ways the reels can stop is $20^3 = 8{,}000$. The winning lines, on average, will pay out as follows each 8,000 spins:

	Number of ways	*Payout*	*Total*
Three bars	$2 \times 1 \times 2 =$ 4	20	80
Three bells	$3 \times 1 \times 2 =$ 6	20	120
Three horseshoes	$1 \times 3 \times 3 =$ 9	20	180
Three oranges	$2 \times 4 \times 4 =$ 32	10	320
Three cherries	$4 \times 8 \times 2 =$ 64	5	320
Three plums	$8 \times 3 \times 7 =$ 168	5	840
Bar bar X	$2 \times 1 \times 18 =$ 36	10	360
Bell bell X	$3 \times 1 \times 18 =$ 54	10	540
Horseshoe horseshoe X	$1 \times 3 \times 17 =$ 51	10	510
Cherry cherry bar	$4 \times 8 \times 2 =$ 64	5	320
Orange orange bar	$2 \times 4 \times 2 =$ 16	5	80
Plum plum bar	$8 \times 3 \times 2 =$ 48	5	240
Plum cherry X	$8 \times 8 \times 20 =$ 1,280	2	2,560
	1,832		6,470

The machine pays out on average once every 4·37 spins, and makes a profit of just under 20 per cent. Machines can be set to pay whatever percentage the operator requires. Many machines since the 1920s have incorporated a jackpot mechanism. The machine is geared to feed coins into the jackpot which opens when a certain combination shows (it might be three bars in the example above) and adds its coins to the normal payout.

In the 1950s, various innovations speeded up the slot machine action. Machines were made with four reels, with very large payouts for the jackpot lines. Then came the hold button, which allows a player to hold any symbols for a second spin of the reels. Later still came the three-line-pay machine. In most slot machines three lines are visible – the

The modern slot machine was invented by Charles Fey in San Francisco, and the first one was installed and collecting nickels from the customers in 1887. The number of slot machines in Nevada alone is now in the order of 50,000. Even a luxury casino might have 1,000 slot machines arranged in banks so that real addicts can play more than one at a time. The player in the picture appears to be pulling the handle of one machine while watching the results on a neighbouring machine.

Women find slot machines particularly attractive, and some become addicts. There is an obvious similarity to bingo, as it is easy to begin by spending the loose change from the house-keeping money and to remain to try to retrieve losses. It is not uncommon to see women in the Fremont Street casinos of Las Vegas wearing a glove to facilitate the operation of four machines at once.

winning line and those immediately above and below it. The player could put two coins in the slot, in which case the line above the winning line also became a winning line. Three coins would qualify all three lines as a possible winner. The latest machines in Nevada are multiple coin machines, in which gamblers can bet up to eight coins at a time. The extra coins increase the jackpot payoffs. A refinement of these are progressive jackpot machines which indicate the top jackpot payoff. This increases with the number of coins fed into the machine. The progressive jackpot can only be won by feeding the machine a stated number of coins.

Ingenious ways have been found to cheat slot machines in the past, with wire, spoons and even drills, and there was a much-advertised rhythm method. Slot machine manufacturers now seem to have cheats beaten, and for the honest player, the more the slot machines are played, the more certain it is that the large house edge will reduce his capital.

Craps

Of casino games of chance, craps probably has the biggest turnover. A fast moving game, it is the most popular casino game in Nevada, and has been introduced into Monte Carlo and other casinos round the world.

Craps is a simple game, but difficult for the beginner to grasp. There is no standardization in the layout of casino tables, which look complicated. Craps is extensively played as a private gamble in America, as in Damon Runyon's *Guys and Dolls*, where Nathan Detroit runs a floating crap game. The casino game in Nevada is more sophisticated, and the game allowed in Britain is different again.

The private game requires only two dice, preferably identical. Participants enclose the playing area, called the centre, which might be a carpet. The use of a soft surface will ensure that the dice are not damaged. Ideally, there should be a wall for the dice to hit and bounce back from, as this eliminates most suspicions of cheating. The first player to take the dice is the shooter, and he places a sum of money in front of him as his bet. He is betting he will win, and the other players are invited to fade his bet; in other words they collectively put up an equal amount as a bet that he will lose. The bets can be won or lost on the first roll. If the shooter throws 7 or 11 (i.e. the numbers shown on the top faces of the dice make either of these totals) he wins. Each of these numbers is known as a natural. If the shooter throws 2, 3 or 12, he loses, these numbers being known as craps. Any other number, i.e. 4, 5, 6, 8, 9 or 10, becomes the shooter's point. He continues to throw the dice until he throws either his point, i.e. the same number again, when he wins, or a 7, when he loses. Therefore a 7 is a winner for the shooter on his first roll, a loser thereafter. A throw of 7 settles all bets either way. When the shooter wins, it is said that he passes, and he retains the dice and is the shooter on the next roll. When he loses, it is said that he misses, and the dice pass in rotation clockwise, so that the player on his left becomes the shooter on the next game.

The tendency of slot machines to rob the customer when he pulls the arm led to them being called 'one-armed bandits'. Not slow to cash in on a gimmick, manufacturers began to make machines in the form of actual bandits. This player is trying to beat Davy Crockett.

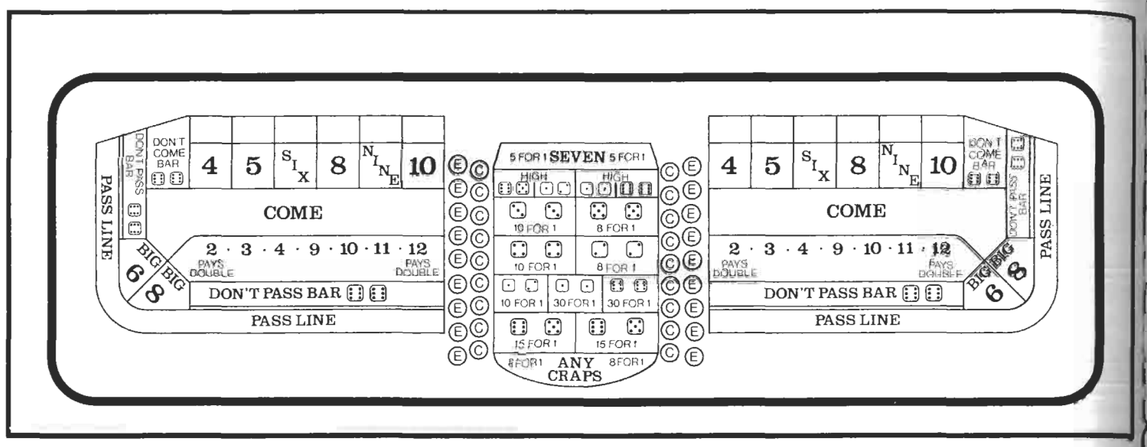


Figure 5:4, a Nevada-style craps layout. The text explains the various bets that can be made.

Players also bet amongst themselves. They might bet that the shooter passes or misses. A bet that the shooter will win is called a right bet, that he loses a wrong bet. At any stage in the shooter's series of rolls players may bet that the player comes or don't come (does not or doesn't come are terms never, it seems, used in craps). A come bet is a bet that the shooter wins, taking his next roll as if it were his first. The first roll is usually called the come-out roll. A don't come bet is one that the shooter loses. Again, the bet must be settled on the next 7 or earlier. Further side bets are made after the shooter has made his point, when players can bet either that he makes it or that he does not. If the point is 6 or 8, the odds are 6–5 against the shooter making it. If the point is 5 or 9, the odds are 3–2 against. If the point is 4 or 10, the odds are 2–1 against. Sometimes the true odds are offered and accepted, but sometimes incorrect odds are offered, such as even-money for 6 or 8, and these bets should be declined.

Many other side bets can be made, but the most popular are the hard-way bets. Points of 4, 6, 8 or 10 can be made with a double (i.e. double-2 makes 4). A bettor may bet that the shooter makes his point with a double, i.e. the hard way. The true odds are 8–1 against hard-way 4s and 10s and 10–1 against hard-way 6s and 8s. Clearly there is only one way to shoot 10 the hard way (5–5) where there are two other ways (4–6 and 6–4) to shoot 10, plus six ways to score 7. In private craps games, the wrong bettor has an advantage over the right bettor of 1·4141 per cent.

In a casino, all bets will be made against the bank. Craps layouts vary, but that in Figure 5:4 will serve to demonstrate the available bets. It is typical of Nevada.

Four operators look after the administration of the table: the boxman, the stickman and two dealers. The boxman directs the game and oversees all the action. The stickman handles the dice and looks after the bets in the centre of the table. The dealers settle the bets on their own side of the table. A player changes currency into chips by placing it in front of the dealer, who will pass it to the boxman for changing. A player's chips should be kept in the grooves directly in front of him in the table railing, not on the table itself.

As in the private game, the first roll of the shooter is the come-out roll, and all players may bet that the shooter passes or misses. When throwing, the shooter must throw hard enough for the dice to rebound from the opposite end of the table. If a dice bounces off the table, or lands on a pile of chips, the roll is void.

The shooter's probability of passing can be estimated by considering 1,980 rolls of the dice, and considering what would happen if all outcomes occurred in the proportions that the law of large numbers suggests they would approximate in the long run.

Table 5:1. Shooter's Probability of Passing

Come-out roll	*Number of times thrown*	*Number of winning coups*	*Number of losing coups*
2 crap	55	–	55
3 crap	110	–	110
4 point	165	55	110
5 point	220	88	132
6 point	275	125	150
7 natural	330	330	–
8 point	275	125	150
9 point	220	88	132
10 point	165	55	110
11 natural	110	110	–
12 crap	55	–	55
Totals	1,980	976	1,004

The table is worked out in the following manner. If the shooter throws 2, 3 or 12, he loses immediately. This occurs 55, 110 and 55 times respectively in 1,980 throws. A 7 or 11 wins immediately, on a total of 440 throws. If the shooter throws a point of 4, which occurs 165 times, on 55 occasions he will throw another 4 before a 7 and win, on 110 occasions he will throw 7 before 4 and lose. The shooter passes 976 times in 1,980, an advantage to the bank, since it pays out at even money, of 1·4141 per cent. A don't pass bet would enjoy the same advantage in the gambler's favour, but the bank adjusts the bet, as we shall see. The following bets are allowed:

Pass: This bet is also called the 'win', 'do', or 'front-line' bet, the last because the pass line is usually the front line on the craps table layout. Chips are placed on the pass line on the layout. If the shooter throws a point, a point marker is placed in the appropriate numbered box near the top of the layout. Once a point has been established, the casino has an advantage over the pass line bettor, as it is likely that a 7 will be thrown before the point, so a bet on the pass line cannot be removed once a shooter has made his point. As calculated above, the house edge on a pass line bet is 1·4141 per cent.

Don't Pass: This is a bet that the shooter will lose, and stakes are placed in the don't pass space on the layout. As this bet would favour the gambler, it must be adjusted, and the adjustment is shown on the layout, which states 'don't pass bar 6–6'. This means that if the come-out roll is double-6, which loses for the shooter, the bet on the don't pass line is a stand-off, and does not win. A gambler may remove his bet if 6–6 is thrown. Once a point is established, the don't pass bettor has an advantage over the casino, so the casino will allow him to remove his stake, but not add to it. It will be seen from Table 5:1 that if 6–6 is barred, the shooter has 949 ways to pass against 976 ways of not passing, so the bank has an advantage over the don't pass bettor of 1·4026 per cent, slightly less than on pass bets. Some casinos, particularly in Reno, bar 1–1 instead of 6–6, and the odds remain the same. There are a few casinos which bar crap 3, and this gives them a house edge of 4·3850 per cent.

Come: This bet is made after the shooter has established a point, and the stakes are placed in the come space on the layout. The shooter's next roll is regarded as his come-out roll for come bettors, and bettors win if the shooter throws a natural, and lose if he throws a crap. Otherwise the shooter will establish a new point for the come bettor. When this happens, the dealer moves the player's stake to the new point box, and the player wins if the new point appears before 7. The house edge on come bets is therefore the same as for pass bets, 1·4141 per cent. The come bettor and the shooter might therefore have different points, and will win on different throws, though both will lose if a 7 is thrown.

Don't come: This is the opposite of a come bet, and stakes are placed in the don't come space on the layout. Notice that this also bars 6–6, to adjust the odds in the casino's favour. The don't come bet wins if the shooter's next throw is crap 2 or 3, and loses if the next throw is a natural. If the shooter throws 6–6, the bet is a stand-off and may be removed or left for the next throw. If the shooter establishes a point for the don't come bettor, the dealer moves the stake into the empty box above the appropriate point number box. Thereafter the don't come bettor wins if a 7 is thrown and loses if his point is thrown. The house edge, as for don't pass bets, is 1·4026 per cent, but increases to 4·3850 per cent if crap 3 is barred instead of crap 12.

Field bet: The stakes for this bet are placed in the space above the don't pass line. Some layouts mark this 'the field', as well as marking the numbers which win (in this case 2, 3, 4, 9, 10, 11, 12). This is a bet that any of these numbers appear on the next roll. A glance at Figure 2:1 in Part Two shows that one of these numbers will appear only 16 times in 36 throws. However, as the layout shows, 2 and 12 are paid double, i.e. at odds of 2–1. The bettor can therefore expect a return of 34 chips for each 36 staked, a house edge of 5·5556 per cent. Some casinos include 5 instead of 4 in the field, but do not pay double on 2 or 12. The house edge remains the same.

Big Six and Big Eight: The stakes for these bets are placed in the spaces so marked in the lower corners of the table. A bet on big six is a bet that 6 will be thrown before 7. The house edge on this bet, and on big eight, is 9·0909 per cent. It is a bad bet, as a better way of backing 6 or 8 is available, as will be shown.

Hardway: The stakes for these bets are placed in the centre of the layout marked '3–3, 10 for 1' '5–5, 8 for 1' etc. They are bets that the appropriate point, 4, 6, 8 or 10, is made the hard way (i.e. by means of a double) before it is made the easy way or before a 7 is thrown. As, for example, 10 or 7 can be thrown nine ways, only one of which is 5–5, the correct odds against hardway 10 are 8–1. The bank pays 8 *for* 1, a house edge of 11·1111 per cent. The bank enjoys the same large advantage on hardway 4, and an advantage of 9·0909 per cent on hardway 6s and 8s.

Place number to win: This is a bet that a particular point number (4, 5, 6, 8, 9 or 10) will appear before a 7. The payoff on points 4 and 10 are 9–5, so bets must be made in units of five times the table minimum or multiples thereof. Points 5 and 9 pay 7–5, and points 6 and 8 pay 7–6, so bets on 6 and 8 must be made in multiples of six times the table minimum. The correct odds respectively are 8–4, 6–4 and 6–5. In effect, when betting five chips on 4, the gambler gets the true odds of 8–4 for four chips, and even money on the last. The same is true for the other bets, and is the reason why big six and big eight bets are misguided, as the gambler can accept 7–6 on place six and place eight against even money on big six and big eight.

A craps diversion tried in Harold's Club in Reno. Instead of the shooter rolling dice, the dealer releases a pair of white mice which run through numbered sections of a circle to determine the value of the 'throw'.

The stakes on place bets are placed on the line above and below the appropriate point box on the table layout. The house edge on 4 and 10 is 6·6667 per cent. On 5 and 9 it is 4·000 per cent. On 6 and 8 it is 1·5152 per cent.

Some casinos offer 11–10 instead of 7–6 on 6 and 8, when their edge becomes 4·5455 per cent. Others offer even money, when their edge becomes 9·0909 per cent, as for big six and big eight bets.

Place number to lose: This is the opposite bet to the previous one, where a player may bet that 7 is thrown before his choice of point number. The player must *lay* odds of 11–5 on 4 or 10, 8–5 on 5 or 9 and 5–4 on 6 or 8, so his stake must be in multiples of 11, eight and five of the table minimum respectively. These bets are not popular. The house edges on the three variations are 3·0303 per cent, 2·5000 per cent and 1·8182 per cent. Some casinos ask 7–5 to be laid on 6 or 8, their edge increasing to 6·4935 per cent.

Buy bet: A buy bet is similar to a place number to win. The player bets that a point number will appear before a 7. The difference is that instead of the casino's edge coming from odds offered, the casino pays at the correct odds but exacts a 5 per cent commission on the stake. The player sets his stake on the layout and announces the point he requires. The dealer takes the casino commission from the stake and places the stake in the appropriate point box, as for a come wager, but with a 'buy' button on the stake to indicate that it is to be paid at correct odds and not as a place bet. On points 4 or 10, the odds are 2–1, and the player must stake in multiples of 21 of the table minimum to get full value for his bet. For example, if the minimum stake is $1, the player must stake $21, to allow the dealer to take $1 as commission. If the player stakes only $11, the casino will still take $1 commission, and the player will thus pay 10 per cent commission on his stake. On points 5 or 9, the odds are 3–2, or 30–20. On points 6 or 8, the odds are 6–5, or 24–20. As the casino wins 1 unit in 21, the house edge is 4·7619 per cent.

A comparison with betting place numbers to win shows that the player does best to place points 5, 6, 8 and 9 and to buy 4 and 10.

Lay bet: A lay bet is the opposite to a buy

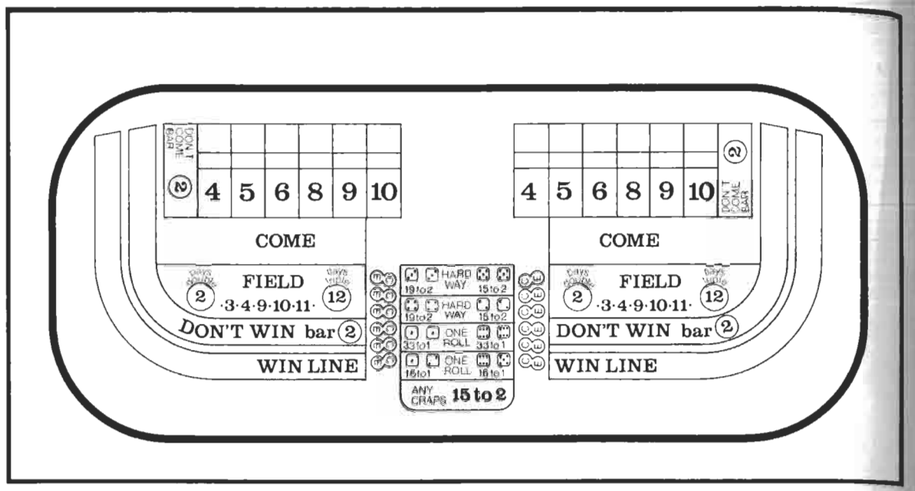


Figure 5:5, a craps layout as found in Great Britain. Notice the elimination of certain bets available on the Las Vegas layout and the adjustment to the odds on other bets.

bet. The player bets that 7 appears before his selected point. He is paid at the correct odds of 1–2 on points 4 or 10, 2–3 on points 5 or 9 and 5–6 on points 6 or 8. The commission of 5 per cent on the lay bet is deducted from the hypothetical winnings, not the stake. Thus to get the maximum value for his bet, the player must stake 40 units on 4 or 10, 30 on 5 or 9 and 24 on 6 or 8, plus one unit commission, since all of these bets will win 20 units, qualifying the dealer to deduct one unit as the casino commission. The player places his stake on the table and the dealer removes the commission and puts the stake in the don't box above the appropriate point, with a 'buy' button above it. As the commission is deducted on each bet, not just winners, the house edge is 2·439 per cent on 4 or 10, 3·2258 per cent on 5 or 9 and 4·000 per cent on 6 or 8.

Proposition bets: One-roll proposition bets are made on the centre layout of the table. The player places his stake on the table and calls his bet, and the stickman positions it on the table. From top to bottom of the centre layout, the player can back 7 to appear on the next roll (payout 5 for 1, house edge 16·6667 per cent); the high bet is a five unit bet, a single unit on three of the four numbers 11, 3, 2 and 12, and two units on the fourth. The payoff is at the odds of 15 for 1 on 11 and 3, 30 for 1 on 2 and 12, the three or four units on the numbers which do not appear being lost. The house edge is 16·6667 per cent. The four centre boxes are for hardway bets already discussed. The next five boxes are for bets on 3 or 11 (each 15 for 1) and 2 or 12 (each 30 for 1). The house edge is 16·6667 per cent. The bottom line, any craps, is a bet that any of 2, 3 and 12 will appear. The payoff is 8 for 1, and the house edge is 11·1111 per cent. A popular bet is on craps or 11, in which case the stickman might place the stakes between a pair of circles marked 'C' and 'E', choosing the pair pointing to the player's position round the table. It is also popular to make a four-unit bet, one unit on each of the craps 2, 3 and 12, and one unit on 11. This is known as the horn bet, and some casinos include a space for it on the layout marked horn bet. Three units must be losers, and if one is a winner the payoff is at the odds stated for the single bet, the house edge being 16·6667 per cent.

Odds or free bets: The odds bet is a bet allowed by the casino to encourage betting on the pass, come, don't pass and don't come bets. The casino does not take a commission, and the payoff is at true odds, but an odds bet can only be made on point rolls in conjunction with a pass, come, don't pass or don't come bet on which there is already a house edge.

For example, if a player places a bet of one unit on the pass line and the shooter establishes a point of 4, the casino will allow him to add an odds bet of one unit (in most casinos it must be equal to the original stake) to his stake. Should the shooter make his point, the pass line bet will be paid at 1–1 (usually called a flat bet), but his odds bet will be paid at 2–1, the true odds of a 4 appearing before a 7. A complication arises should the point be 6 or 8, where the true odds are 6–5. Since a casino will not pay out fractions of a chip, the stake for the odds bet must be five units. A pass line bettor will not be allowed an odds bet if his pass line bet is of one or two units, unless he increases the stake on the pass line. This would be bad business for the player, as he is taking bad odds if he increases his pass line stake once a point is established. However, if the pass line stake was three or four units, the player is allowed an odds bet of five units. A player wishing to get the maximum benefit

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Figure 5:8, the layout for beat the dealer. Players sit at the spaces round the table, placing their stakes in the boxes before them.

Under and over seven

Another dice game found in American casinos for which two dice are used, and the layout is shown in Figure 5:9. The player can bet that the total will be under 7, exactly 7 or over 7. The under and over bets pay even money and 7 pays 4 for 1. The correct odds are 21–15 and 5–1 respectively, and the house edge on all bets is 16·6667 per cent.

Figure 5:9, the layout for under and over seven. The player can choose from three possible bets, and one throw of two decides the outcome.

Baccarat

The game as played by the Greek Syndicate in Deauville and elsewhere between the wars is sometimes called baccarat à deux tableaux, though it is more often known simply as baccarat. A later version of the game is sometimes called baccarat à un tableau or baccarat-chemin de fer. This version is commonly known just as chemin de fer. A combination of the two games, popular in some British and American casinos, is most often known as punto banco, although in Nevada it is called baccarat-chemin de fer. Even in the basic game of baccarat, procedures vary.

In Britain, the bank is held by the casino, and does not have a limit, although minimum and maximum stakes will be imposed on the players. In France, the bank will have a minimum and maximum amount, and is in theory put up for auction among the players. The game is therefore known as baccarat banque limitée and the casino will deduct 2 per cent of the banker's winnings per coup as commission. In 1922 Nico Zographos took the bank at Deauville and made the famous announcement 'tout va', meaning everything goes: there was no limit to the stakes. This form of the game is known as baccarat banque ouverte.

The table for baccarat is shown in Figure 5:10. Twelve players can be seated at the spaces shown. The table is in two halves, the half to the right of the banker being tableau un, and that to the left tableau deux. The portions marked 1 and 2 in the centre of the table are the staking areas. A stake in the area marked 1 is a bet that tableau un will beat the banker, a stake in area 2 a bet that tableau deux will

The opulence of the Baden-Baden casino. The croupier is seated at a chemin de fer table and is practising handling the equipment, which includes six packs of cards, the sabot and the spatula. Most casinos provide comprehensive training for croupiers, who also practise between sessions.

beat the banker. A stake placed on the line between areas 1 and 2 is a bet à cheval that both sides of the table will beat the banker. This wins if both sides win and loses if both sides lose: if one side wins and the other loses, or if both sides tie, the bet is a stand-off and the stake removed.

In baccarat, all cards have their pip value, with court cards having a value of 10. All baccarat hands consist of two or three cards, and the point count of the hand is the sum of the cards held, except that only the last digit counts, for instance a 6 and a 5 equals 11, and the point count is 1, two court cards and a 4 has a point value of 4. The object of the game is to draw an initial two-card hand with a point value higher than that of the banker, with the option under certain circumstances of drawing a third card in an attempt to improve the hand.

Six packs of cards (sometimes three packs in France) are shuffled and cut and placed in a sabot or shoe, with an indicator between the tenth and eleventh cards, to mark the end of the shoe, the last few cards not being used. Players place their stakes on the table.

The banker then deals three hands of two cards, face down, one to each side of the table, and one to himself. The players immediately to the banker's right and left play the hands for their sides of the table until either loses a coup, when the player in the next seat plays the hand. Any player may decline to play.

When the cards are dealt the three hands are examined, and any with a point of 8 or 9 are exposed immediately face up on the table. The point of 9 is shown as le grand and 8 as le petit. A point of 8 or 9 wins immediately, unless both player and banker have 8 or 9, in which case a point of 9 beats a point of 8. If the hands are equal, the bet is a stand-off and the stake withdrawn.

The banker deals first with tableau un. If neither the player nor the banker has declared 8 or 9, the player must stand or draw a third card. As he is playing for all the players on his side, he has no choice but must obey the following rules, which are the optimum play, i.e. they give him the best chance. With a point of 0, 1, 2, 3 or 4 he must draw. With 6 or 7 he must stand. Only with 5 has he the option of either standing or drawing. If he draws, the third card is dealt to him face up. The banker then deals similarly with the player holding the cards for tableau deux.

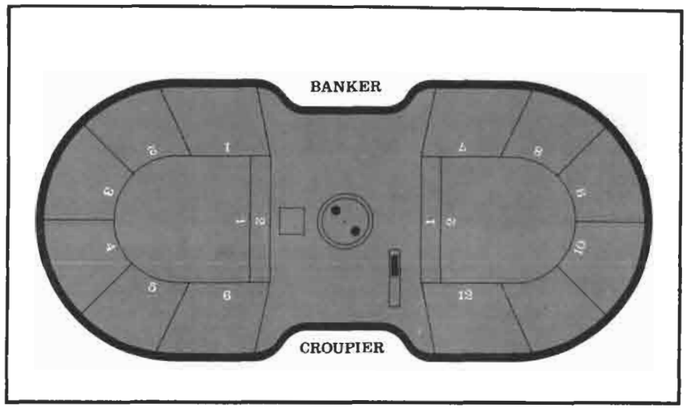


Figure 5:10, a baccarat table. This is for baccarat à deux tableaux, the game played by the Greek Syndicate at Deauville and elsewhere.

The rules for the player are called the Table of Play, and there is a Table for Play for the banker. It is advised that he should draw on 0, 1 or 2 and stand on 7. His play on 3, 4, 5 or 6 is listed in Table 5:2.

Table 5:2. Banker's Table of Play at Baccarat and Chemin de Fer

Banker's point	*Banker draws if player draws*	*Banker stands if player draws*	*Banker has option if player draws*
3	0, 1, 2, 3, 4, 5, 6, 7	8	9
4	2, 3, 4, 5, 6, 7	0, 1, 8, 9	—
5	5, 6, 7	0, 1, 2, 3, 8, 9	4
6	6, 7	0, 1, 2, 3, 4, 5, 8, 9	—

Note: If the player does not draw, the banker is advised to stand on 6 and draw on 3, 4 or 5.

As the banker is playing against both sides of the table, his situation *vis-a-vis* each will not always allow him to make the optimum play against both, so the Table of Play can only be advisory. The banker therefore may use his skill to decide whether or not to draw, and if the optimum play is different against both sides, will usually attempt to win against the tableau showing the higher stakes.

When players and banker have exposed 8 or 9, stood, or drawn, the hands are declared and the bets settled according to whether the players or the dealer have the higher point. Equal hands are stand-offs and bets void.

The player's only option is with a point of

Figure 5:11

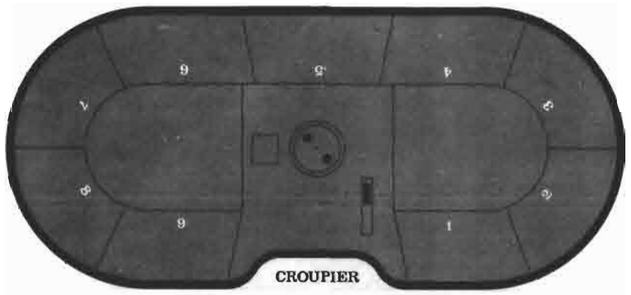


Figure 5:12

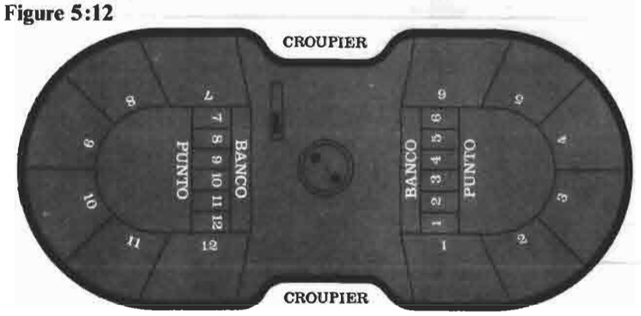


Figure 5:11, a chemin de fer table.
Figure 5:12, a punto banco table. Chemin de fer and punto banco are versions of baccarat, and both have become very popular in recent years. Both games give the player an opportunity to play the bank's hand. In chemin de fer, players hold the bank by rotation. In punto banco, although the player may play the bank's hand, there are no options.

5. It has been calculated that he has a slightly better chance of winning by standing than drawing. A player who always draws is known as a tireur, a player who never draws is a non-tireur and a player who varies his tactics is a douteur. The banker has an advantage if he knows the player is a tireur or non-tireur, so the best policy is to vary the play and keep the banker guessing. The option on 5, and the banker's privilege of using his discretion, make the house edge in baccarat very difficult to calculate, but it is generally accepted to be around 1 per cent.

Chemin der fer

'Shimmy' is played on a table as shown in Figure 5:11. The main difference with bacarrat is that the players hold the bank in rotation (the name derives from the sabot moving round the table like a railway train on rails). There are only two hands: the banker and the player. The first banker is decided by auction, and he holds the bank until he loses a coup, when it is offered to the player on his right. He need not accept it, but if he does he must put up a bank equal to its amount when passed. If no other player wishes to hold the bank, it is auctioned again.

Since the casino does not operate the bank, it exacts a commission. In France and Nevada it is likely to be 5 per cent of the banker's winnings per coup, in Great Britain it will be a charge per shoe, which will vary according to the size of the stakes.

The players put up their stakes, beginning with the player on the banker's right, until the bank is covered. If the bank is not covered, the excess is removed. A player can cover the whole bank by calling 'banco', in which case stakes already put up must be removed. Some casinos, however, will not allow a call of 'banco' if the bank has already been covered by preceding players. A player who calls banco and loses, is entitled to call 'banco suivi' on the following coup, this call having priority over all other calls and allowing the losing player to bet the total amount of the bank again.

The player holding the cards for the players is the player with the highest stake. While the banker retains the bank, he is not allowed to withdraw any of it unless its amount exceeds the casino limit. However he can pass the bank at any time and withdraw the bank plus winnings. Six packs of cards are used. They are shuffled and cut and placed in a shoe with a marker between the seventh and eighth last cards to indicate the end of the shoe.

Play begins with the banker who deals two cards face down to the active player and two face down to himself. The player and banker examine their cards and if either has a point of 8 or 9 he will expose them on the table. If neither has 8 or 9, the player must stand or draw. If he has 0, 1, 2, 3 or 4 he must draw, if he has 6 or 7 he must stand, and if he has 5 he has the option of drawing or standing. This is the same rule as in baccarat, and the banker's Table of Play is also the same, as set out in Table 5:2. In chemin de fer, the banker as well as the player must obey the Table of Play: the player has one legal option, and the banker two.

Some casinos in Britain will allow faux tirages, or false draws, where both player and banker can draw at their discretion, but this is allowed only when the player has called banco. He is not allowed to take risks with other players' stakes. Settlement of bets is as for baccarat. A point of 9 or 8, called in America a natural, wins against any three-card-hand, otherwise the point nearer 9 wins, with a tie a stand-off.

Punto banco

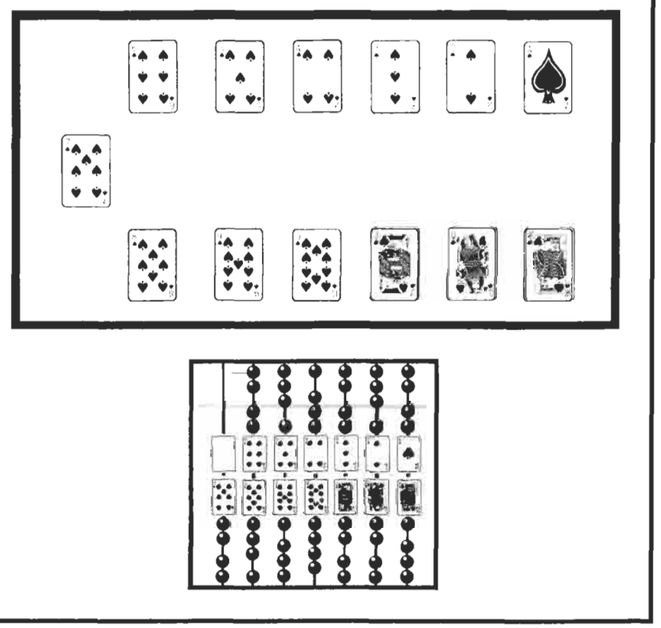
Known in Las Vegas as baccarat-chemin de fer, this game is a version of baccarat growing quickly in popularity on both sides of the Atlantic, and likely to relegate both baccarat and chemin de fer to minor positions in the casino. The punto banco layout is shown in Figure 5:12. In punto banco, as in chemin de fer, there are two hands, the players' and the bank's. All players are given the opportunity in rotation to play the bank's hand, while a croupier plays the players' hand, but in effect 'bank' and 'player' do not have the same significance as in the other baccarat games described, as all bets are made against the casino, and no player is required to put up a bank. Players may bet that 'bank' or 'players' wins. Stakes for bets that the players win are placed in the area marked punto (players on some tables), for bets that the bank wins in the small numbered boxes, each player placing his stake in the box relating to his position at the table. Two or three cards are dealt to each hand by the 'banker' from a shoe arranged as in chemin de fer, and the rules for determining the winning hand are the same as at baccarat and chemin de fer. However in punto banco, neither the player nor the bank has any options. The Tables of Play for both are set out in Table 5:3.

Table 5:3. Tables of Play for Player and Banker at Punto Banco

Player	*Point*		
	0, 1, 2, 3, 4, 5	draws	
	6, 7	stands	
	8, 9	exposes cards	
Banker	*Point*	*Draws if player draws*	*Stands if player draws*
	0, 1, 2	0, 1, 2, 3, 4, 5, 6, 7, 8, 9	
	3	0, 1, 2, 3, 4, 5, 6, 7, 9	8
	4	2, 3, 4, 5, 6, 7	0, 1, 8, 9
	5	4, 5, 6, 7	0, 1, 2, 3, 8, 9
	6	6, 7	0, 1, 2, 3, 4, 5, 8, 9
	7	Stands	
	8, 9	exposes cards	

Because there are no optional plays in the Table of Play, it is possible (it is a mammoth calculation) to calculate which side, players or bank, has the advantage. In fact, there is a slight advantage to the player who bets on the bank, which John Scarne, in his book *Scarne's New Complete Guide to Gambling*, has calculated at 1·3333 per cent. Therefore the casino pays out bets on the players at 1–1, taking a house edge of 1·3333 per cent from these bets. Unless the casino adjusted the odds for bettors on the bank, all astute gamblers would back the bank and enjoy an edge over the casino of 1·3333 per cent. The casino therefore pays out bettors on the bank at 19–20, in other words it deducts 5 per cent of what would be the winnings if it paid at 1–1. The casino therefore has a house edge over bank bettors of 1·2000 per cent, making the bank bet slightly the better of the two.

It has wrongly been calculated that the total casino edge in punto banco is the sum of the two house edges, or around $2\frac{1}{2}$ per cent, but in fact if the bets on the players and bank were equally distributed, the casino edge would be the average of the two edges, or 1·2667 per cent.



Faro was the most popular game in the American saloons of the second half of the nineteenth century. Figure 5:13 shows the staking table and the abacus-like device with which the case-keeper kept account of the cards played. The photograph shows cowboys playing faro in a saloon in Morenci, Arizona territory, in 1895. The nut-like discs on top of some piles of stakes mean that the bettor is betting a card to lose.

Faro

Although it is rarely played nowadays, a few games of faro might be found in Nevada. It was popular in Europe in the seventeenth century, and in the late nineteenth century was the most popular gambling game in America.

A green cloth table shows representations of each rank in a pack of playing cards, usually showing spades, although this has no significance. Figure 5:13 shows the layout. The other equipment is a dealing box, in which a standard pack of cards is placed face up after shuffling, and a counting device, like an abacus, with which a casekeeper keeps track of the cards played, for the benefit of the players.

Players can bet any rank of card to win, and any rank to lose. In each case the stake is placed on the appropriate card; if it is to lose a copper token is placed on the chips. When bets are placed, the first card is played from the box. It is called soda and has no effect on the game. The next card is dealt from the box and is a loser, the card exposed in the box being a winner. Stakes on the winning rank

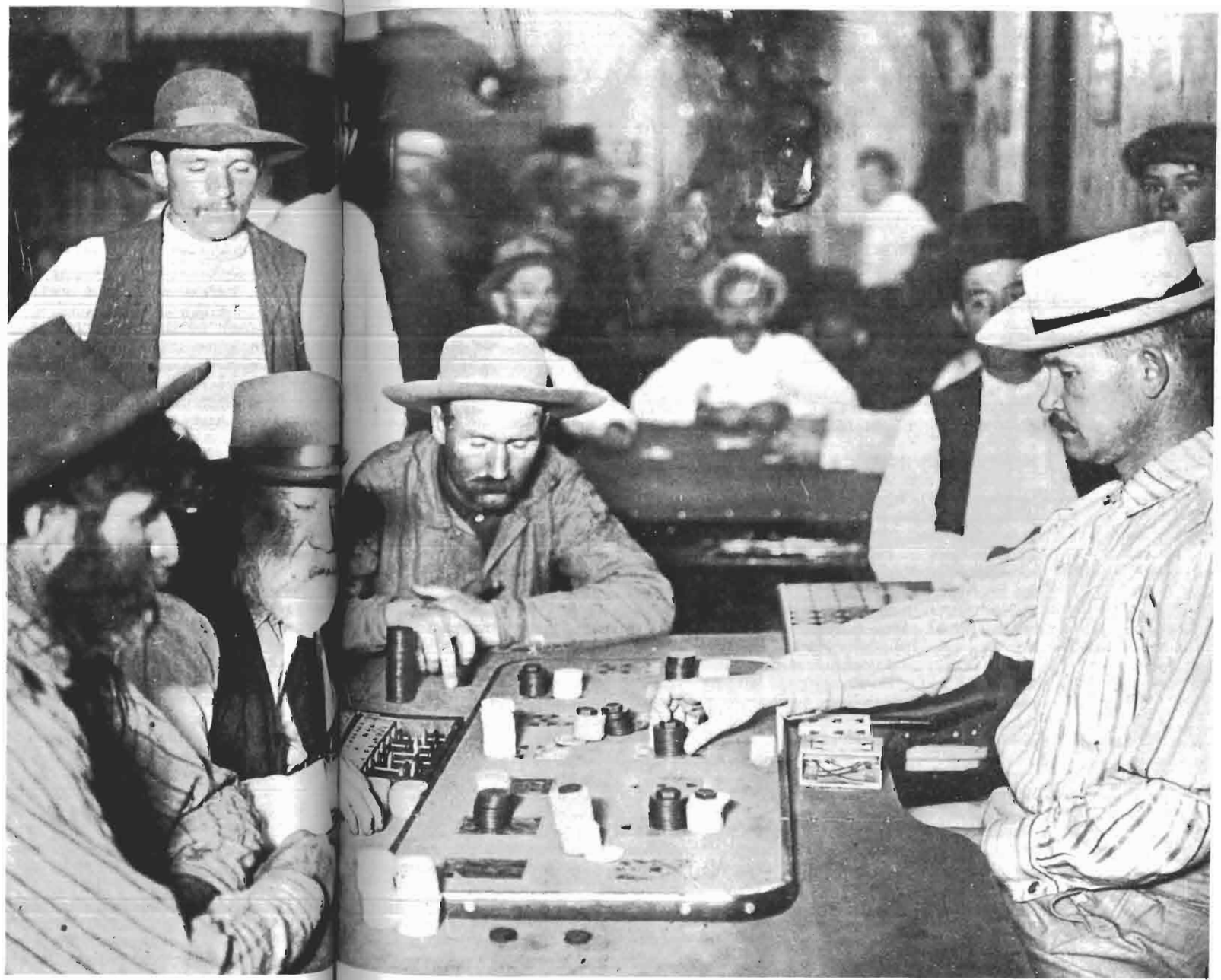


Figure 5:14

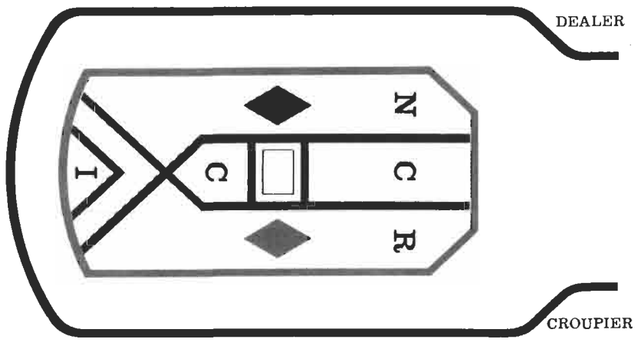


Figure 5:14, a trente et quarante table.
Figure 5:15 is an imaginary deal representing a win for rouge and inverse.

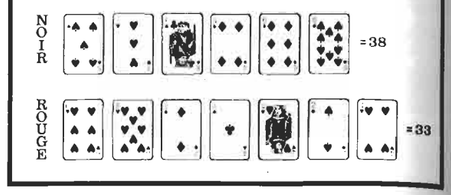
to win are paid off at 1–1, stakes on the losing rank to lose are also paid at 1–1. Stakes on the reverse bets are lost. Stakes not affected are left on the layout, and other bets can be made. The winning card is then taken from the box and begins a win pile. The next loser is then played from the box on to the losing pile, exposing the next winning card. More bets are then settled. When only three cards are left behind the 24th winning card in the box, players may bet on their order (the ranks of the three cards are known). If the three cards are different 4–1 is offered against naming the order (correct odds 5–1, house edge 16·6667 per cent). If there is a pair, 1–1 is offered (correct odds 2–1, house edge 33·3333 per cent). Players who eschew these bets would have no house edge to beat, were it not for the fact that when the losing and winning cards in a pair are of the same rank, the bank takes half of all stakes bet on that rank. This gives the house an edge of about $1\frac{1}{2}$ per cent.

Trente et quarante

Sometimes called rouge et noire, this is a popular casino game in France, but is rarely played elsewhere, and not at all in America. It is played with six packs of playing cards and a table as shown in Figure 5:14. There are four possible bets for the player: rouge, noir, couleur and inverse, and stakes are placed on the appropriate spaces on the layout.

A dealer, who does not use a shoe, deals a row of cards, representing noir, until the pip

Figure 5:15



count of the row equals or passes 31. Court cards count as ten. If the pip count reaches 26, and the next card is an eight, making 34, the dealer announces 'four' as the point representing 'noir'. As the total for any row must be between 31 and 40 (hence the name of the game), only the unit need be stated (except that 40 would be announced as 'ten'). The dealer then deals a second row below the first, again stopping when the pip count reaches or exceeds 31. This row represents rouge and the dealer again announces the point.

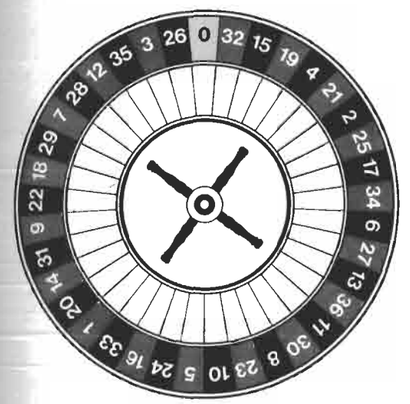
The winning row is the row with the lower point, i.e. the row with a total nearer to 31. A bet on rouge is a bet that this row (the second), wins. A bet on noir is a bet that the first row wins. A bet on couleur is a bet that the first card dealt is the colour of the eventual winning row. A bet on inverse is a bet that the first card dealt is the opposite colour to the winning row. All bets are paid at 1–1 or evens.

Suppose the two rows dealt were as in Figure 5:15.

The dealer would announce 'rouge and inverse' and bets would be settled.

Should the two rows be equal, the bets are void and the stakes retained. However, should both rows be equal at 31, known as refait, the casino claims half of all stakes. Half will be returned to the player, or, if he prefers, the whole stake may be left 'in prison' and staked on the next game, the player reclaiming all of it if he wins or losing all of it if he loses. This represents the house edge. It has been estimated that a refait occurs approximately once in 40 games, giving the casino an edge of 1·25 per cent. It has been calculated more precisely as 1·28 per cent. A player can insure against a refait by buying a special chip for one per cent of his stake on each game, and if he does this he reduces the house edge to 1 per cent, or more strictly 0·9901 per cent.

Figure 5:16



Roulette

The most alluring of casino games is roulette. The bright green baize cloth with its red, black and gold lines and lettering, the polished wood table, the wheel with its red and black numbered pockets, chrome fittings and ivory ball clicking round with each spin comprise a scene of subdued glamour. It is a simple game, and although the action is in reality fast, it appears relaxed in comparison with the frenetic activity of craps. It has been associated most with Monte Carlo, but is played in casinos all over the world, although it has never been very popular in America, probably because the odds offered to American gamblers are very much inferior to those available in Europe.

The French wheel and table layout are shown in Figures 5:16 and 5:17.

The table layout is repeated each side of a central wheel, and the game is administered by three croupiers, one, called le tourneur, to spin the wheel, the others to collect and pay bets at each end of the table. Stakes are placed on the layout before each spin, and the croupier spins the wheel and sets the ball rolling around the rim in the opposite direction. While the wheel is spinning he will call 'rien ne va plus' which means no more bets

Figure 5:17

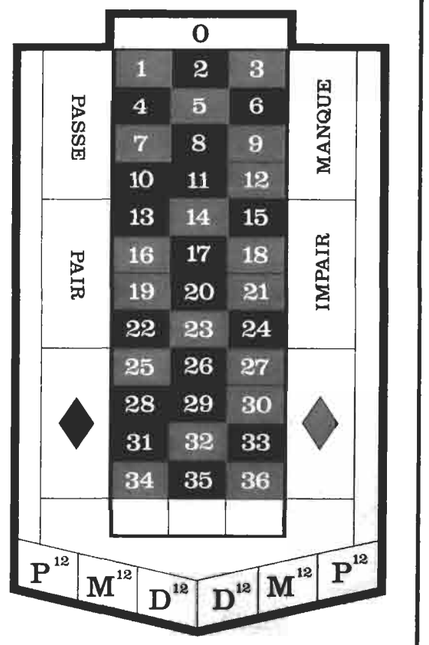


Figure 5:16, a French roulette wheel. Nearly all roulette wheels outside America are of the French pattern, with only one zero. Figure 5:17 is a French roulette table. The French table and the French language are not as often used outside France as the French wheel, and casinos in Britain, for instance, will use the French wheel and the American table.

may be placed. The ball eventually comes to rest in one of the numbered pockets, and according to the winning number all bets are settled. Settlement comes with each spin, and except for the 'in prison' rule, to be explained later, no bets are carried forward.

The bets at roulette fall into two categories, those offering even money, and those offering other odds. The even money bets are as follows:

Rouge: a bet that a red number will win.
Noir: a bet that a black number will win.
Pair: a bet that an even number will win.
Impair: a bet that an odd number will win.
Manque: a bet that a low number (1–18) will win.
Passe: a bet that a high number (19–36) will win.

The stake is placed on the appropriate space on the table layout, and if successful will be paid at odds of 1–1. With each of these bets

there are 18 winning numbers and 18 losers plus zero. It is when zero appears that the rule placing the stakes 'in prison' operates. Stakes are not immediately lost, but may remain on the table for another spin. If the bet wins on the next spin, the stakes are retained by the player, without winnings. If the bet loses, the stakes are lost. Alternatively, when zero appears, a player may retain half his stake and forfeit the other half, a convention known as le partage. The effect is the same. One even-money bets, the player will lose one bet in 74, a house edge of 1·3514 per cent.

The other bets are as follows:

En plein: Sometimes called a straight bet, this is a bet on a single number, and the stake is placed on the appropriate number on the lay-out. Zero can be backed. The odds paid are 35–1.

A cheval: Sometimes called a split, this is a bet that one of two adjacent numbers on the table will win, such as 28, 29. The stake is placed on the line between the two numbers. Zero can be combined with 1, 2 or 3. Odds paid are 17–1.

Transversale plein: Sometimes called a street, this is a bet on any three numbers in a row on the layout, such as 19, 20, 21. The stake is placed on the line at the edge of the row. Zero can be backed with any two numbers of 1, 2 or 3 by placing the stake on the corner common to the three numbers. Odds paid are 11–1.

En carré: Sometimes called a square, this is a bet on any four numbers forming a square on the table layout, such as 5, 6, 8, 9. Zero can be backed with 1, 2, 3 (sometimes called the quart premiers) by placing the stake on the outside corner common to the zero and the row. Odds paid are 8–1.

Transversale simple or sixain: Sometimes called a line bet, this is a bet on a group of six numbers forming two adjacent rows or streets, such as 1, 2, 3, 4, 5, 6. The stake is placed on the outside corner common to the two rows. Zero cannot be backed in a sixain. Odds paid are 5–1.

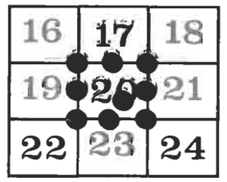
Colonne: Sometimes called a column bet, this is a bet that a number in one of the three columns will win, i.e. a bet might be placed on the centre column 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35. The stake is placed in the box which is unmarked at the foot of the column. The odds paid are 2–1.

Colonne a cheval: Sometimes called a split column, this is a bet on any two adjacent columns. The stake is placed on the line between the two unmarked boxes at the foot of each column. The odds paid are 2–1 on or 1–2.

Douzaine: Sometimes called a dozen, this is a bet on 12 numbers, the lowest (1-12), the middle (13-24) or the highest (25-36). The stake is placed in the boxes marked P^{12}, M^{12} or D^{12}, P (première) for 1-12, M (moyenne) for 13-24 or D (dernière) for 25-36. The odds paid are 2–1.

Douzaine à cheval: Sometimes called a split dozen. This is a bet on any two adjacent dozens, the stake being placed on the line between the appropriate two boxes on the table. Odds paid are 2–1 on, or 1–2.

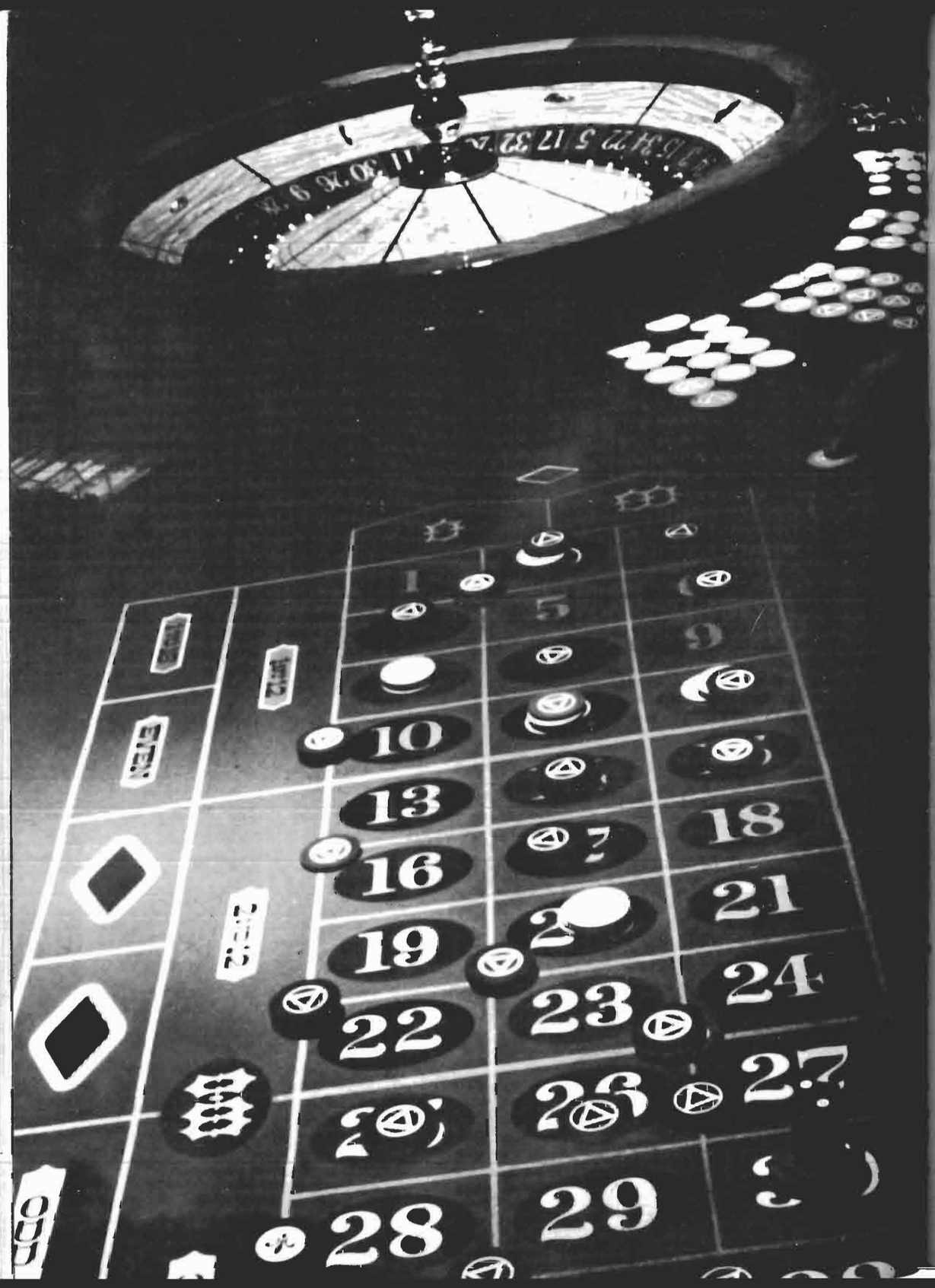
Combinations of these bets are allowed provided the intention is unambiguous. For instance, a popular bet is to back a number singly and in combinations with all eight numbers which surround it, called completing the number. Figure 5:18 shows such a bet on number 20. This is a single bet on 20, four split bets combining 20 with 17, 19, 21 and 23 and four squares. Should 20 win, the return is 144 chips, a profit of 135. If 17, 19, 21 or 23 win, one split and two squares win, returning 36 chips, a profit of 27. If 16, 18, 22 or 24 win, one square wins, returning 9 chips and no profit.



Opposite: The French roulette wheel and table at the Curzon House Club in London. Bets can be placed after the wheel is spun, but not after the croupier has called 'rien ne va plus'. Figure 5:18 shows the completion of the number 20 at roulette. The number 20 is backed singly, à cheval with 17, 19, 21 and 23, and en carré with each of the three numbers with which it forms a square.

The odds paid on all the bets listed above (i.e. all roulette bets except the even-money bets) would be the true odds were there 36 numbers on the wheel. As there are 37, including the zero, the casino will expect to win in the long run one unit in 37, a house edge of 2·7027 per cent. It is wrong to regard the zero as the 'bogy' number which makes the casino its profit. As stated, zero can be backed in many ways, as can any other number. The casino's profit comes from the fact that there are 37 numbers on the table, whereas the odds are geared to 36.

Roulette is the system player's delight. All the systems described in Part Two are applicable to the even money bets, and there are at least two other systems, based on fallacious premises, which can be seen in operation at roulette tables. One is called the Biarritz system, and involves keeping a check on



numbers which have not won for a given number of spins. Such numbers are called 'sleeping' numbers. As any number, including zero, can be expected to appear on average once in 37 spins, a Biarritz player might wait until a number has not appeared for 111 (3×37) spins, when he will consider it due. He will then back it until it wins. If it loses for a further 36 spins, he will be out of pocket when it eventually does win, unless he increases his stake, so after 36 losses he will increase his stake to two chips for the next 18 spins, and then three chips for 12 spins, four chips for nine spins, five chips for seven spins, six chips for six spins, seven chips for five spins, etc. This looks complicated, but it is easy to calculate. If he wants to be in profit or level when his win at last comes he must not lose more than 36 chips on any one stake. Eventually his stake will reach 18 chips which he can stake twice, when he will have to begin increasing his stake on every bet. On bets on single numbers, the player might be able to raise his stake to 40 times the minimum before exceeding the table maximum stake, but it is likely that he will lose his nerve before he gets to this stage. The fallacy in the system lies in the assumption that a sleeping number is more likely to win than the number which has won on the last spin. In fact the probability of either winning is $\frac{1}{37}$ on a true wheel.

Another popular system relies on the fact that the third column on the layout contains eight red numbers and only four black. Players like to back this column and hedge their bets by also backing black. The idea is that if their column bet loses, the stake will be saved more often than not because the other two columns contain 14 blacks to 10 reds. And, of course, if any of the four black numbers in the chosen column wins, then both bets win. In practice, the arithmetic of the house edge cannot be defied this way. The column bet will still lose 2·7027 chips in every hundred, the bet on black 1·3514 chips in every hundred, a house edge of 2·0270 per cent.

In practice, the big bettor at roulette will back the even-money chances to take advantage of le partage. The nine chips required to complete a number, as described above, will lose to the bank at the rate, on average, of 0·2430 chips per spin, whereas were they all placed on an even-money chance, they would disappear at only half this rate.

Study of the roulette wheel in Figure 5:16 shows that black and red alternate, and that although the zero prevents a perfect arrangement of the numbers, high/low and odd/even also alternate as far as possible. For the benefit of seekers of the infallible system, Figure 5:19 is the tableau des voisons, showing which four numbers appear each side of any particular number on the wheel. Some of the best

Opposite: the American roulette wheel and table, showing how it differs from the French arrangement on page 124. The language used by the croupiers will be English, and 'no more bets' will be called to end the staking on each spin. Above: French roulette at Crockford's Club, London.

Figure 5:19, the tableau des voisons. This is a chart showing, in the centre column, the 37 numbers on a French roulette wheel, and to either side of each number its neighbours on the wheel.
Figure 5:20 is an American roulette wheel, which has a different arrangement of numbers as well as the addition of a double-zero.
Figure 5:21 is the American roulette table. Opposite: a double-headed French roulette table in the most elegant casino in the world, Baden-Baden, is a glamorous sight, and it is easy to forget that the game itself is a simple game of chance.

Figure 5:19

12	35	3	26	0	32	15	19	4
5	24	16	33	1	20	14	31	9
15	19	4	21	2	25	17	34	6
7	28	12	35	3	26	0	32	15
0	32	15	19	4	21	2	25	17
30	8	23	10	5	24	16	33	1
2	25	17	34	6	27	13	36	11
9	22	18	29	7	28	12	35	3
13	36	11	30	8	23	10	5	24
1	20	14	31	9	22	18	29	7
11	30	8	23	10	5	24	16	33
6	27	13	36	11	30	8	23	10
18	29	7	28	12	35	3	26	0
17	34	6	27	13	36	11	30	8
16	33	1	20	14	31	9	22	18
3	26	0	32	15	19	4	21	2
23	10	5	24	16	33	1	20	14
4	21	2	25	17	34	6	27	13
14	31	9	22	18	29	7	28	12
26	0	32	15	19	4	21	2	25
24	16	33	1	20	14	31	9	22
32	15	19	4	21	2	25	17	34
20	14	31	9	22	18	29	7	28
36	11	30	8	23	10	5	24	16
8	23	10	5	24	16	33	1	20
19	4	21	2	25	17	34	6	27
28	12	35	3	26	0	32	15	19
25	17	34	6	27	13	36	11	30
22	18	29	7	28	12	35	3	26
31	9	22	18	29	7	28	12	35
27	13	36	11	30	8	23	10	5
33	1	20	14	31	9	22	18	29
35	3	26	0	32	15	19	4	21
10	5	24	16	33	1	20	14	31
21	2	25	17	34	6	27	13	36
29	7	28	12	35	3	26	0	32
34	6	27	13	36	11	30	8	23

Figure 5:21

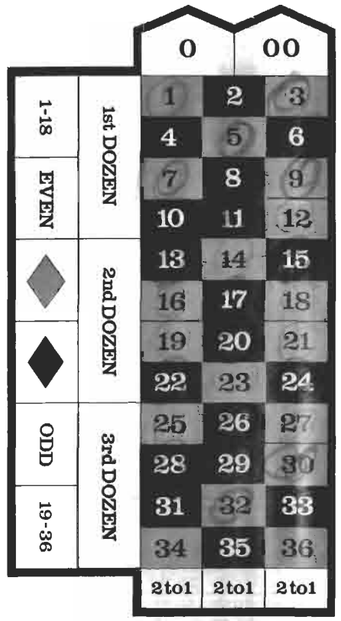
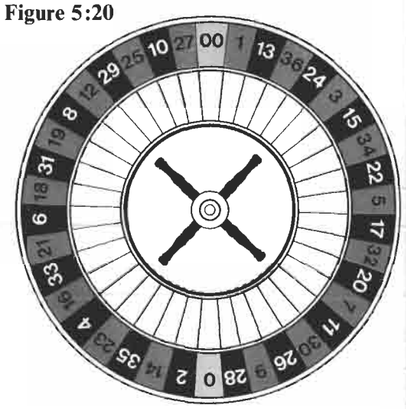


Figure 5:20



casinos will supply clients with a table of previous results on roulette tables which will enable a systemier to check his system against past results. Any reader who does find an infallible system is invited to share his good fortune with the author.

Roulette in America and many illegal casinos all over the world is likely to be played with a different wheel and table layout. These are shown in Figures 5:20 and 5:21.

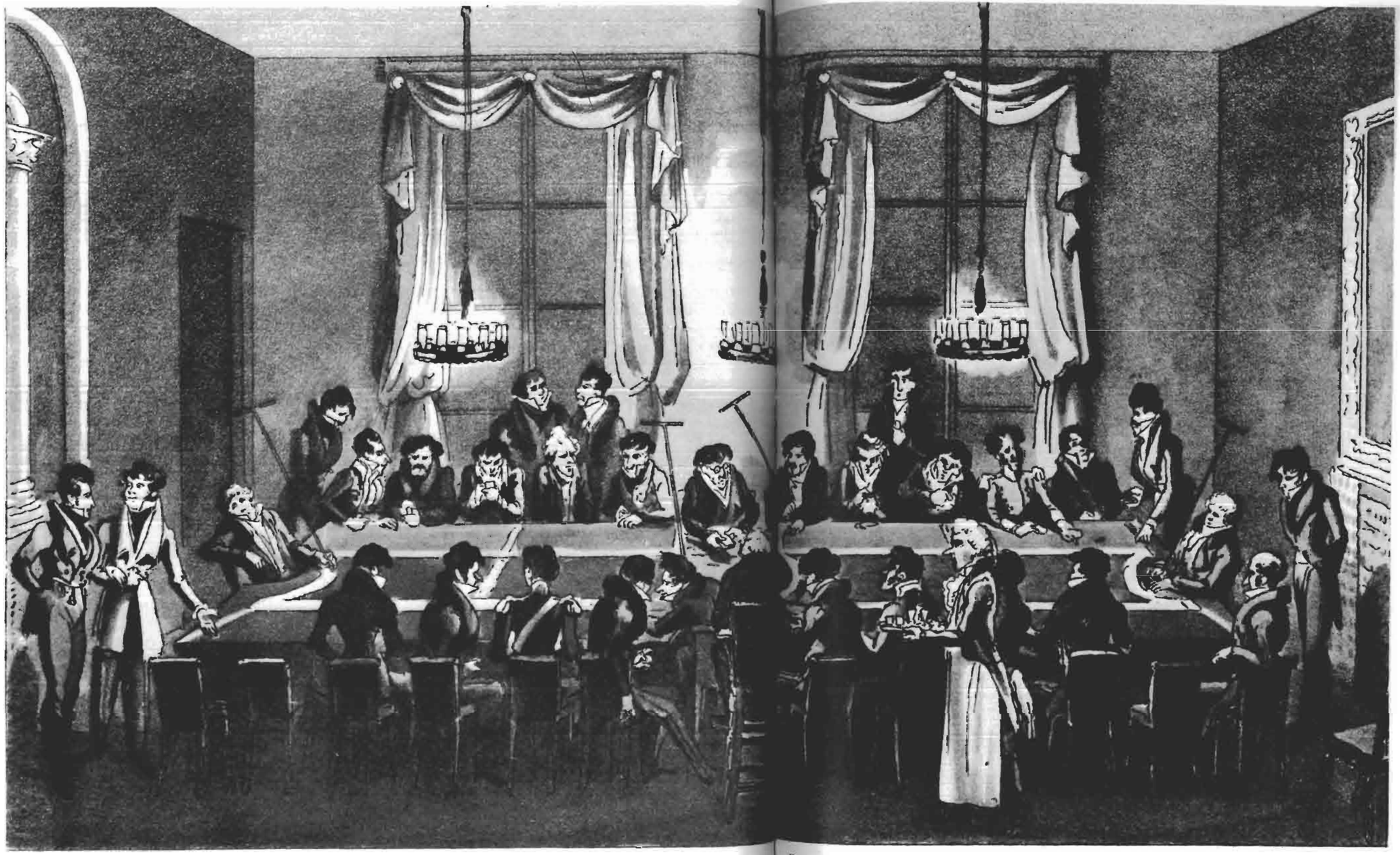
The main difference lies in the wheel having two zeros, a single zero and a double zero, although there is no difference in their functions. The wheel has a different arrangement of numbers, although those numbers which are red on the French wheel remain red.

The two casinos in the photographs on these pages are in the same ownership. Both are in the Curzon House Group. Crockford's, above, was opened in 1972. The players are playing roulette on a French table. The Palm Beach Club, opposite, has some of the elegance of the old French casinos, but the roulette table shown is of the American pattern. The table at Baden-Baden on the following pages illustrates why there is more gambling lore and romance associated with roulette than with any other game.

The bets are basically the same, and the odds paid are the same. A difference comes with the combinations allowed with the zeros. A bet on five numbers is allowed by combining both zeros with 1, 2 and 3. The odds paid are 6–1, and as the correct odds are 33–5, the house edge is 7·8947 per cent. American casinos do not recognise le partage, and all bets are lost when either zero appears (except those actually staked on zero). The effect is that on every bet, except the single bet on five numbers mentioned above, the casino has an edge of 5·2632 per cent.

The French language is dispensed with in American casinos, and the table reflects this. The table is rarely double-headed, and on the single layout the wheel is set at the end nearer to the zeros. The game is usually operated by two croupiers, one the wheel roller. It is customary when the American table is used for special roulette chips to be issued at the table. They are in differing colours, so that each player can use chips of a 'personal' colour,

PASSE
IMPAIR
MANQUE



The English artist George Cruickshank painted a series of pictures on life in Paris. This painting shows gambling at the Palais Royal, Paris, in 1822. The game is trente et quarante or rouge et noir.

thus obviating any disputes arising from two players claiming the same bet. The disadvantage, which is slight, is that chips are obtainable only in fixed denominations, and must be cashed at the table when the player wishes to leave – they cannot be used elsewhere in the casino.

In British casinos, the French wheel is used but the American table (without the double zero) is more popular. Casinos do not recognise le partage but return half the stake on even-money bets when zero appears, which in terms of the house edge amounts to the same thing. When the wheel indicates the winning number, the number will be called and a croupier will either point to it on the table or place a marker on the table until the bets are settled.

It is customary in roulette for the payoffs on the even money bets to be stacked by the original wager. On the bets on specific numbers the payoff will be placed in front of the player, but the original stake left on the table. Unless the player wants his stake to remain on the table for the next spin, he must remove it himself.

Forerunners of roulette

Two games played with a ball and a wheel with numbered pockets were popular gambling games in casinos before roulette was invented. In the early eighteenth century hoca was played in casinos in Europe. There were 40 numbered pockets around the edge of a circular table. From the centre of the table projected a spindle from which six spokes reached halfway from the centre to the rim. When the ball was placed between the spokes and the 'wheel' spun, the ball would shoot from the centre and speed round the rim of the table before settling into a stationary pocket. Three of the forty pockets were zeros, from which the casinos took their profit.

E.O. (which stands for even-odd) was popular around the same time, particularly in England, where it became fashionable at health resorts like Tunbridge Wells and Bath. The wheel was like a roulette wheel, with forty pockets alternately marked E and O. The perimeter of the circular table in which the wheel was set contained E and O divisions on which the stakes were placed. Odds paid were 1-1, and the operators had to devise

Roulette in Las Vegas. Roulette has never threatened the popularity of craps and blackjack in Nevada casinos, but this might be because American roulette, with its double zero, offers a comparatively poor return to the punter. On no bet does the house edge drop below five per cent.

their own methods of taking a profit: one way was to bar a pocket of each sort. If the ball came to rest in the barred E pocket, E bettors would retain their stake but O bettors lose. This gave the house an edge of 2·5 per cent. Two pockets of each sort barred would double the house edge.

Nineteenth century roulette wheels in France used the bar principle. Thirty-six pockets included two zeros, one red and one black. When the black zero appeared bets on red lost, but bets on black were returned. Bets on single numbers paid 34–1, so the house edge on all bets was 2·7778 per cent, slightly more than the edge on other than even bets today. American wheels of the same period, operating like a hoca wheel with a spoked spindle, contained 31 pockets, including a zero, a double-zero and an eagle, which could have been marked as a treble-zero. Bets could be made on single numbers, including the three zeros, and were paid at 27 *for* 1, American operators having early discovered this form of quoting odds to mislead the uninitiated. Any of four groups of seven numbers could be backed at 3 for 1, red or black at 2 for 1. The house edges on the three bets were 12·9032 per cent, 32·2581 per cent and 9·6774 per cent. No wonder roulette has never caught on in America.

Boule

The 'poor man's roulette' is boule, a game which dates from the eighteenth century, and is still very popular in French casinos. It is played in a separate room apart from the aristocratic roulette salon. The dish and table layout are shown in Figures 5:22 and 5:23.

The game has replaced a game called petits chevaux, which was played in casinos in France up to the twentieth century and can still be found in France and in Ireland. In petits chevaux the winning number was decided not by a ball, but by nine models of mounted horses, each with a number, racing on nine individual concentric circular tracks. When the horses stopped revolving that nearest a fixed winning post was the winner. Near dead-heats naturally caused a great deal of argument. The staking layout was the same as for boule, except that there were no bets on rouge, noir, passe or manque.

Figure 5:22, a boule dish, and Figure 5:23, a boule table. A rubber ball is used in boule, which is rolled round the dish and eventually drops into one of 36 pockets to decide the winning number. Bets can be made on single numbers, or on groups of four numbers. The number 5 acts like the zero in roulette.

Figure 5:23

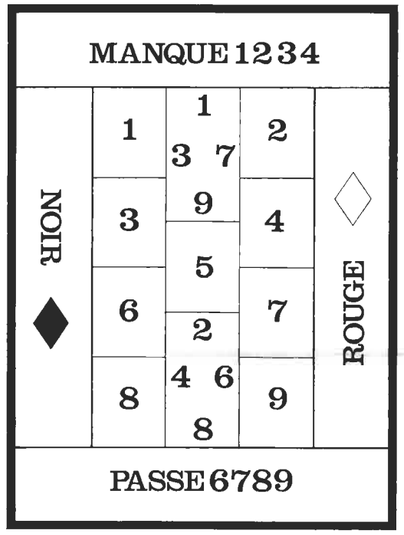
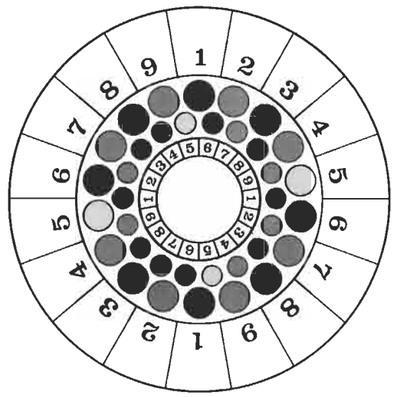


Figure 5:22



There are 36 cups in the boule dish, four for each number from 1 to 9. Numbers 2, 4, 7 and 9 are coloured red, numbers 1, 3, 6, 8 black. Number 5 is yellow and performs a similar function to the zero in roulette. The winning number is decided by the croupier spinning a rubber ball round the dish, which does not have a revolving wheel, the pocket into which the ball drops being the winner.

Bets can be made on any single number, including 5, by placing the stake on the number in the layout. Winners are paid at 7–1.

Even money bets can be made on noir, rouge, manque or passe on the spaces marked, and on even or odd by placing the stake on the diamond arrangement of odd or even numbers. These bets lose when 5 appears, and there is no le partage convention. The house edge on all bets at boule is 11·1111 per cent, making it a much less attractive game than roulette.

Vingt-trois

A new, more sophisticated version of boule to be found in some French casinos is vingt-trois. The differences are that the wheel contains 27 pockets and it spins, like a roulette wheel. It is enclosed in a plastic dome, and is spun by apparatus outside, so that neither wheel nor ball is touched by the croupier. The 27 pockets are numbered 1 to 14 as follows:

Numbers 1, 2, 3, 4 have one pocket each
Numbers 5, 6, 7, 8, 9, 10, 11 have two pockets each
Numbers 12, 13, 14 have three pockets each

The pockets numbered 13 are white, and perform the function of zero at roulette. The other pockets are alternately red and black, the only even-money bets allowed. These bets lose when 13 appears, there being no le partage.

For bets on any of the numbers with one pocket each, odds of 23–1 are paid.

For bets on any of the numbers with two pockets each, odds of 11–1 are paid.

For bets on any of the numbers with three pockets each, including 13, odds of 7–1 are paid.

The house edge on all bets on vingt-trois is the same as for boule, 11·1111 per cent. Clearly French roulette is the least disadvantageous of the wheel and ball type games from the player's point of view.

Hoggenheimer

A card game of pure chance, played privately and not in casinos, is hoggenheimer, which has been called English roulette. It is played with a standard pack of cards from which all cards of the ranks 2-6 are removed, and the joker added. If the pack is an old one, and the joker cleaner than the rest, one of the rejected cards must be used instead, as a joker recognisable from the back spoils the game.

The pack is shuffled and cut and the cards are dealt by the banker into four rows of eight cards each, the odd card being placed face down to one side. The top row is for spades, from ace to 7, the next for hearts, the third for diamonds, the fourth for clubs, all from the ace to the 7.

The players then place their bets on cards or groups of cards which they think will be face up when the game ends. When all bets are placed, the banker turns over the odd card, and places it in its position in the layout, taking the card which it replaces and placing that in its appropriate position, continuing thus until the joker appears. If the joker is the odd card, the dealer wins all bets.

Figure 5:24 shows a layout at the end of the game, the joker having just been exposed.

The bets possible are as follows, and the odds quoted are the true odds.

1. On a single card (stake 1 on the layout). Odds 1–1.
2. On any pair of adjacent cards (stakes 2 and 3 on the layout). Stake 2 is a bet that both ace of hearts and ace of spades will be exposed. It has won. Odds 2–1.
3. On four cards, either in a street (stake 4 on the four queens) or a square (stake on the red 8s and 7s). Odds 4–1.
4. On a suit (stake 6 on the spade suit). Odds 8–1.

The odds quoted give no advantage to either banker or player. It is best if the bank circulates, and if minimum and maximum bets are decided beforehand. The odds for this game are at first sight surprising. One might suppose that if ace and king of spades can each be backed at evens, a double on the two of them ought to be 3–1. However, when making this bet you are interested in the order of three cards only, the rest being immaterial. There are six orders in which the ace, king and joker can appear: AKJ, AJK, KAJ, KJA, JAK, JKA. Two win and four lose, making the probability of winning $\frac{1}{3}$, or odds of 2–1. The probability is 2! (there being two cards backed) divided by 3! (two cards plus the joker). Similarly, when backing a suit of eight cards, say the hearts, you are interested in the order of nine cards (eight hearts plus the joker). These cards can appear in 9! orders. You win only if the joker appears last, or ninth. Given the joker is ninth, the eight hearts can appear in 8! orders. Your chance of success is therefore $\frac{8!}{9!}$ or $\frac{1}{9}$. Odds are 8–1.

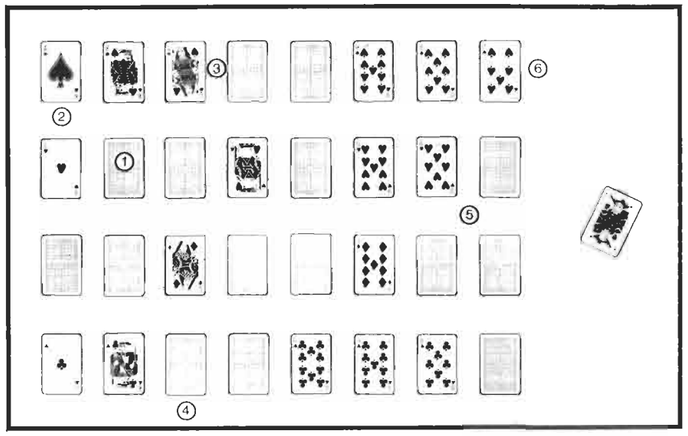


Figure 5:24, the end of a game of hoggenheimer. The joker has been exposed with 17 of the cards in the layout face up.

There are, of course, countless card games of pure chance on which money is gambled, the simplest being when two or more players cut the pack of cards, the player cutting the highest card taking all stakes. To describe them all, if such a task were possible, would require a book in itself. It is hoped that readers of Part Two will be able to calculate the chances and their expectation on all these games for themselves – if they cannot perhaps they should avoid playing these games.

Four-five-six

Just like card games, dice games of chance are innumerable. One popular in North America which leads to a lot of gambling is four-five-six. Three standard dice are the only equipment necessary. The game requires a banker, and as the banker has an advantage, the bank should pass among the players by rotation.

Once the banker has been decided, all the players put up their stakes, which should be between an agreed minimum and a maximum.

The banker then throws the three dice, and continues to throw until any of the following combinations appear:

a. 4-5-6 or any triplet, in which case the banker wins all bets
b. 1-2-3 in which case he loses all bets
c. Any pair and 6, in which case he wins all bets
d. Any pair and 1, in which case he loses all bets
e. Any pair and 2, 3, 4 or 5, in which case the number on the odd die establishes his point.

If the banker establishes a point, then the other players in turn from the left must throw the dice. The same combinations win and lose for the player as for the banker, i.e. if he throws the combinations in (a) and (c) he wins, those in (b) and (d) he loses. The other alternative for the player is (e), the establishment of a point, and he wins if his point is higher than the banker's, loses if the point is lower, and the bet is a stand-off if he ties.

As the combinations which win and lose for the banker and the player are the same, it is easy to assume that the game is fair. In fact, the banker has an advantage by throwing first. There are 216 ways (6^3) in which three dice may fall. Of these, six will be a triplet ($6 \times 1 \times 1$), six will be 4-5-6 ($3 \times 2 \times 1$), and 15 will be a pair and 6 (there are three dice which could be 6 with five possible pairs to accompany each). Therefore, on average, the banker wins immediately on 27 of 216 games.

There are 21 ways in which the banker can lose immediately (calculated the same way but minus the six triplets).

There are 60 ways in which the banker can establish a point (four points with five pairs three times).

It is interesting to note that there are 108 ways of making a significant throw, so exactly half of all throws are decisive.

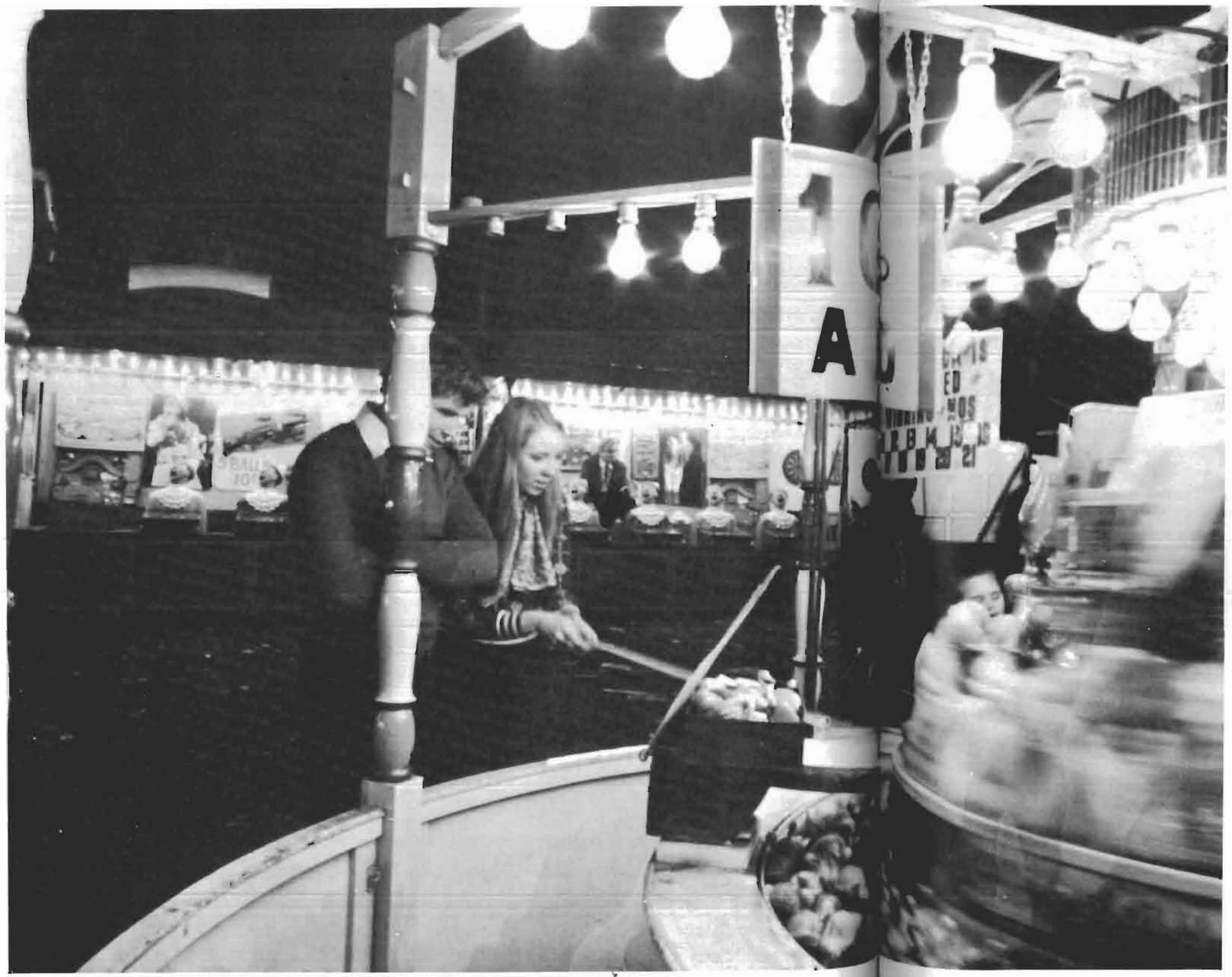
Converted to fractions, the banker wins $\frac{9}{36}$, loses $\frac{7}{36}$ and makes a point on $\frac{20}{36}$.

The player will be required to throw on $\frac{20}{36}$ of all games and will win $\frac{9}{36}$ of them and lose $\frac{7}{36}$ without establishing a point. Of his points, the player will win $\frac{3}{8}$, lose $\frac{3}{8}$ and $\frac{1}{4}$ will be stand-offs.

The expectation of the banker, therefore, is

$$2 \times \left| \frac{9}{36} + \left(\frac{20}{36} \times \frac{7}{36}\right) + \left(\frac{20}{36} \times \frac{20}{36} \times \frac{3}{8}\right) \right| + 1 \times \left(\frac{20}{36} \times \frac{20}{36} \times \frac{1}{4}\right)$$

A big six wheel in a Las Vegas casino. The 54 divisions round the wheel each contain three dice numbers. Each division is separated on the wheel's rim by a projecting pin. The wheel is spun, and when it stops a leather indicator between two of the pins gives the winning division. Players may back any number. If that number appears once in the winning division, they are paid evens, twice 2–1 and three times 3–1, as in chuck-a-luck. The game is even more disadvantageous than chuck-a-luck, as not all 216 combinations of three dice are on the wheel – there are usually only six with no pairs, 24 with a pair and 24 with triples. The net result is a house edge of 22.22 per cent.



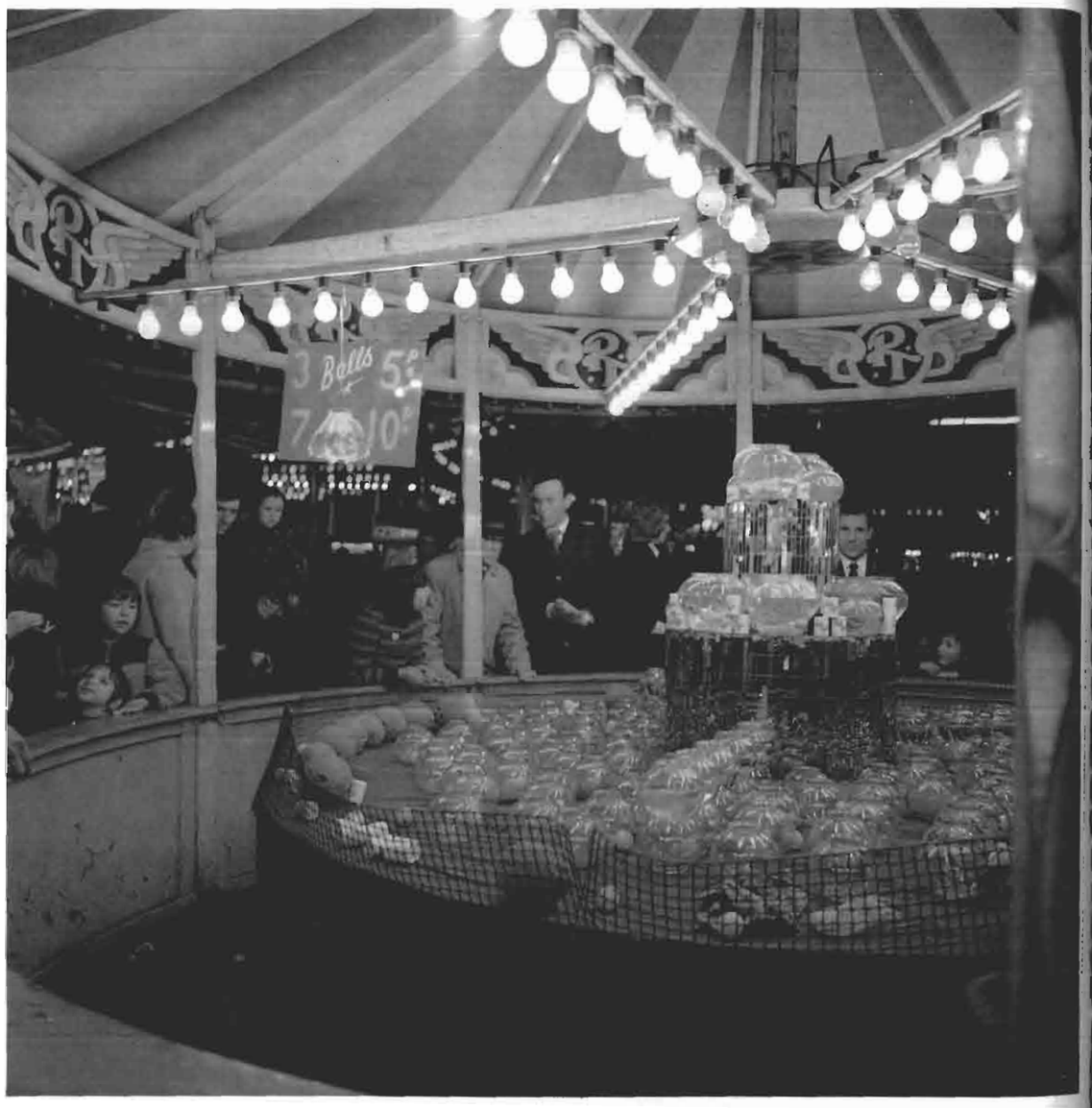
Fair grounds and carnivals are places where a good deal of gambling of a mild sort takes place, and it is likely that most of it is outrageously unfair to the customer. These shots of Hampstead Fair in London show two of the commonest types of game. In the larger picture ducks revolve round the stall, and the punters catch one with a stick. Each duck has a number on its base, and according to the number a prize is or is not won. Sometimes three ducks (or they may be fish) have to be caught, and the numbers are added together. In either case the numbers on the ducks are such that the stall will not go broke. On the other stall rings must be thrown over objects on blocks to win them. The rings must completely encircle the blocks to win, and although the rings are large enough to do this, it is so difficult to achieve when the rings are thrown from in front that there is little chance, even if the thrower leans over, that anything of value will be won.

This equals 1·0247, an advantage to the banker of 2·4691 per cent.

Four-five-six can be found in some American casinos, when, of course, the bank will not circulate but will provide the casino with its house edge.

Other games of chance

Vast sums are gambled on events of chance so simple, like the proverbial flies crawling up a wall, that they could never be called games. Some extremely simple propositions have from time to time captured the imagination of large numbers of people for no identifiable reason. Two-up is a gambling game which requires two coins to be placed on a flat piece of wood, like a child's ruler. A spinner then throws the coins in the air, and bets are struck that the coins will fall two heads or two tails uppermost. One head and one tail is a stand-off and nobody wins. The game is played in Australia, and has achieved such popularity there in the past that games were organised on waste ground with look-outs watching out for the police. Bets were enormous, and even the flat piece of wood had its name – the kip.



Another popular game on fair grounds requires the punter to throw a ping-pong ball into any one of an array of goldfish bowls. Usually the prizes are goldfish. This stall at Peterborough Fair allows seven balls for 10p. Prizes are frequently won, but if a goldfish is worth 5p to the stallholder, it is likely to cost on average 10p to win one.

Before the Second World War, there was a craze in Britain and America for a game called put-and-take, played with a metal octagonal top. Any number could play, and before the game started all contributed equally to a pool. By turns, the players would then spin the top, which would fall with one of eight sides uppermost. The sides were labelled P1, T1, P3, T3, P4, T4, P-all, T-all. P stood for put, and the player throwing it had to put into the pool the number of units stated. T stood for take, and the player throwing it took out of the pool. Whenever the pool disappeared, the players replenished it equally. Perhaps the ease with which gaffed tops were manufactured helped kill this craze.

Fan tan is an ancient Chinese game in which a random number of beans is placed under a decorative bowl. Gamblers place bets on one of four 'corners' numbered 1 to 4. The bowl is then lifted and beans are taken from the pile four at a time with a stick, so that they are not touched by hand and all can see fair play. Eventually one batch of four beans will be taken away to leave only one, two, three or four in the pile. The player who has bet on that number wins. The game has been played by Chinese for hundreds of years and is actually spreading to other parts of the world.

That such simple games, in which the player can exert no influence, can have commanded the attention of millions, indicates the strength of the appetite men have for any form of gambling.

PART SIX

Games of skill

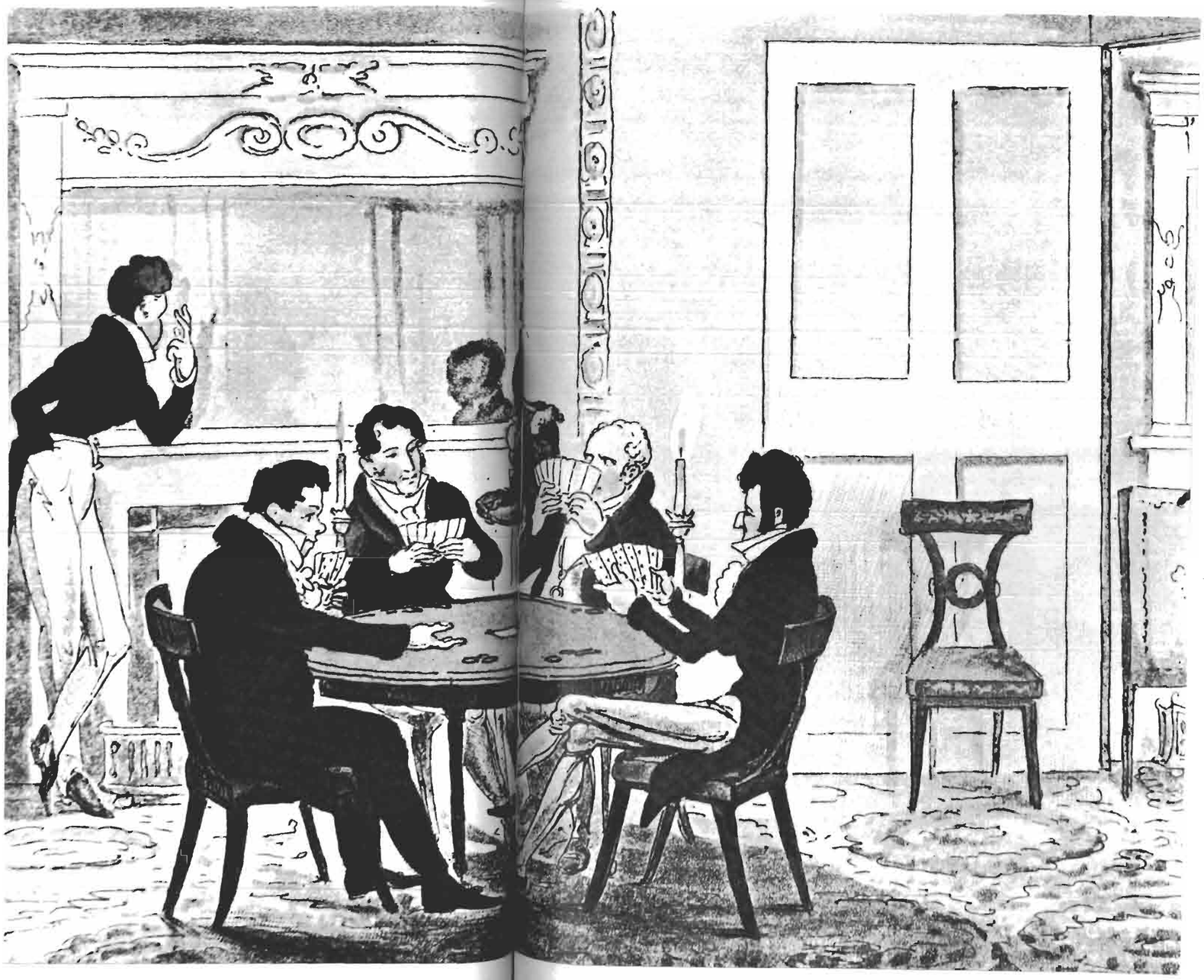
Any game of skill can be gambled upon. Games of skill have one great advantage over games of chance as betting propositions and one great disadvantage. The advantage is that players largely control their own destinies: the influence of Lady Luck is minimised. The disadvantage is the other side of the same coin: for players of unequal ability to bet fairly against each other, handicaps have to be devised, which can make the games less satisfactory and encourage the hustler. If a player's game improves dramatically when the big money is down, suspicion is aroused that he has deliberately falsified his form. Whether the suspicion is well-founded or not, the game is spoiled.

In this part of the book are examined games of skill in which gambling is a necessary part, such as poker, and games in which gambling, while not being necessary, is more or less customary, such as gin rummy and backgammon.

Blackjack

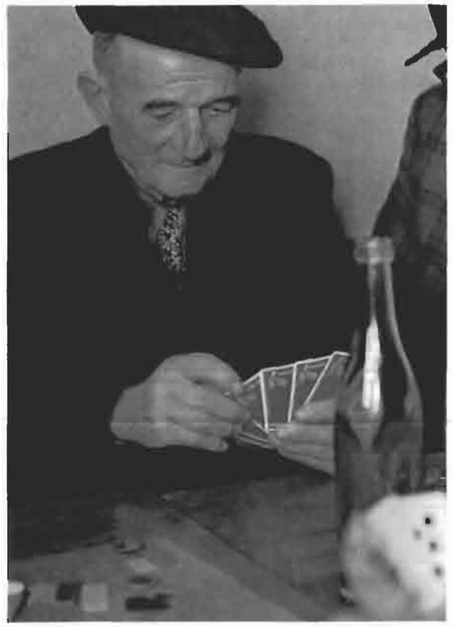
Chance plays a large part in blackjack (otherwise it would not be found in casinos) but the skilful player still enjoys a big advantage over the novice. Certain players have been banned from blackjack in casinos, which is proof that they have, however temporarily, been able to transfer the hypothetical house edge from the bank to themselves. Blackjack is the most popular card game in Las Vegas casinos and is becoming more popular elsewhere. It is a fast, calculating game which appeals to those for whom the high stakes and limited action of baccarat and chemin de fer are intimidating, or frustrating.

The origins of blackjack are unknown, except that its immediate predecessor was the French game vingt-et-un and the game was called vingt-un or twenty-one in its early days in America. Vingt-et-un, became van john in Britain, a name which gave way to pontoon, which might itself be a corruption of vingt-et-un, or merely a corruption of punting. The name blackjack arose when an American casino, to popularise the game, paid a bonus to any player holding the ace of spades and either the jack of clubs or jack of spades; the hand, and later the game, took the name blackjack.



George Cruickshank's painting of life in London shows whist players in 1820. Whist has been played in England since around 1500, and became a fashionable game with the publication of one of the most famous books in history, 'A Short Treatise on Whist' by Edmond Hoyle. Whist remains popular to this day, and 'according to Hoyle' has become a description for the correct procedures in all games.

'Ay, rail at gaming – 'tis a rich topic, and affords noble declamation. Go, preach against it in the city – you'll find a congregation in every tavern'. So said Edward Moore, in his eighteenth century play The Gamester. ***The ancient Greeks gambled in saloons, and the cowboys of the Wild West in the bars of Tombstone and Dodge City. Cards and dominoes can be seen in the traditional British pub. The game being played in the Northamptonshire pub in the large picture is shut the box, a dice game played on a tray on which there are*** *nine boxes numbered 1–9 with lids. A player throws two dice and can shut whatever boxes he likes which add up exactly to his score. He continues to throw until no more boxes can be shut, and the total of the boxes still open is his score. The other players have their turns, and the lowest score wins the stakes.*



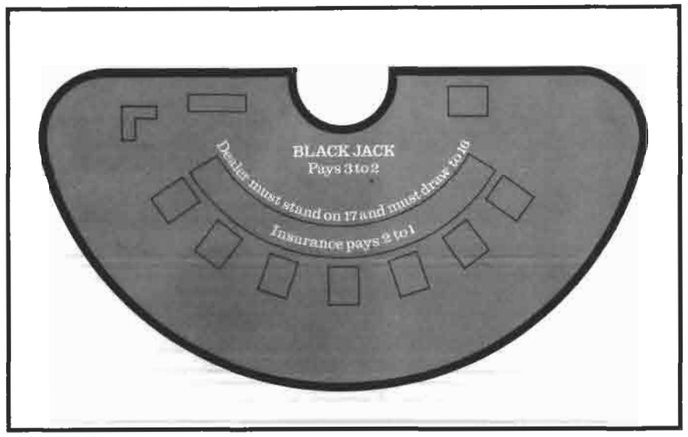


Figure 6:1, a blackjack table. Blackjack is a casino game in which the skilful player can reduce the house edge, and even, in the opinion of some players, enjoy an advantage.

Only comparatively recently have rules become standardized, and even now conventions differ in various casinos. The following description is of a version to be found in many American casinos. It is played on the table shown in Figure 6:1.

Four packs are used, shuffled by the dealer and cut by a player (by means of an indicator card). A second indicator is placed some fifty cards from the bottom of the combined pack to indicate the end of the shoe, and the cards are placed in a dealing shoe face down.

The players (up to seven) sit at the spaces at the table.

All cards have their face value, with court cards counting as ten, except the ace, which when held by the player has a value of one or 11, at his discretion. When the dealer holds an ace, it might also have a value of one or 11, but its value is governed by the casino rules, as will be seen.

The object of the game from the player's point of view is to obtain a total card count, with two or more cards, higher than that of the dealer, but without exceeding a maximum of 21. Should the player's count exceed 21 he is said to have busted, and loses his stake. Minimum and maximum stakes are imposed: in a large American casino they might be $1 and $500.

Before the deal, each player puts up a stake in the betting space before him. A player may play at more than one space, but must play the hands independently from his right to left.

The first card dealt is burnt, i.e. it is left face down on the table and not used. The dealer then deals a card to each player in turn, beginning on his left, and finally one to himself, all face up. He then deals a second face-up card to each player, and a second card, face down, to himself.

If the dealer's face-up card is an ace or a ten count, he must look at his other card (if it is an ace he must first ask players if they wish to insure, as is explained later). If he has a total of 21, he faces it and announces twenty-one or blackjack. A two-card total of 21 is known as a natural or blackjack. A natural 21 is the highest hand, and the dealer wins all stakes, unless a player also has a natural, in which case his bet is a stand-off.

When the dealer does not have a natural, he deals with each player in turn, beginning with the player on his left. If the player has a natural, he wins, and is paid at odds of 3–2, as the table states. All other bets are paid at 1–1.

Otherwise he may stand or draw a further card or cards. He will stand if he is satisfied with his count, or if he judges a further card might bust him. If he wishes to draw he will beckon for another card, or, as is common in America, say 'hit me', when the dealer will give him another card face up. The player may continue to draw cards until he is satisfied with his count. If in drawing he busts, he must announce it, and the dealer collects the stake and burns the cards, i.e. adds them to the discard pile.

A third option is open to the player if the two cards dealt him are of the same rank. Any two cards of a ten count are regarded as being of the same rank. This option is called splitting pairs. The player may treat each card as the first card of separate hands, putting his original stake on one and a stake equal to it on the other. The dealer then deals him a separate face-up card to each hand, whereupon the player plays each hand separately, beginning with that on the right. Should the second card in a split hand again form a pair, the hand may be split further.

If a player splits a pair of aces, he may not draw a third card to either hand: the second card dealt to each hand completes the hands. If a split hand results in a natural, the player is paid at 1–1 and not at the 3–2 odds.

A fourth option open to the player after receiving his first two cards is to double down. This allows him to double his stake, and receive a third card face down. This card remains face down, and the player may not look at it, until the dealer faces it when settling. Therefore a player doubling down receives one additional card only.

The last option open to the player is open to him whenever the dealer's face-up card is an ace. He may insure against the dealer having a natural by putting up half his stake as insurance. If the dealer has a natural, this stake wins at odds of 2–1. Before looking at his face-down card, the dealer asks if any player wants insurance. When those that wish have insured, the dealer looks at his face-down card. If he has a natural, he pays the insurance bettors and collects the other stakes. Otherwise, he collects the insurance bets and proceeds as before.

The dealer treats each player in turn as stated above. He collects and discards the cards of all those who bust as he proceeds, and if any hands remain he then plays his own cards.

He begins by facing his second card, so that his hand is exposed. The dealer has no options in playing his hand. If his count is 16 or less, he must draw and continue to draw until his total becomes 17, 18, 19, 20 or 21. When his total reaches any of these numbers, he must stand. It is important to note here that while an ace may count as one or 11 for the dealer, if by counting it as 11 his total reaches one of the numbers on which he must stand, he must count it as 11. Thus if his hand is 6-ace, he must stand on 17, and not draw to 7. This is known as a 'soft' 17. If the dealer busts, he pays all players still in the game. When he stands, he plays all players with a higher point count and collects the stakes of those with a lower. When the dealer's and a player's point count is the same, the bet is a stand-off.

Variations

The commonest variations to the above description are:

a a dealer will draw with soft 17. It is not an option, and the rule may be printed on the table.
b some casinos do not allow insurance.
c in some casinos the players' initial two cards are dealt face down. As the dealer has no option in his play, it makes no difference whether or not he knows the players' hands.
d some casinos restrict doubling down to hands of 9, 10 or 11, 10 or 11, or 11 only.

In Great Britain, the Gaming Board have introduced restrictions designed to reduce the house edge against poor players, but it is not certain that this aim has been achieved. The variations on the game described above to be found in Great Britain are:

a the dealer deals one card only to himself in the initial round. The players play out their hands, standing, drawing, doubling down etc., before the dealer gives himself a second card.
b splitting is not allowed on pairs of 4, 5 or 10.
c doubling down is allowed only on 9, 10 or 11.
d insurance is allowed only when the player himself holds blackjack.

It is the first variation, known elsewhere as the 'London deal', which causes controversy. The aim is to prevent the dealer cheating in collusion with a player by indicating to him the value of his face-down, or hole card. This is a simple method of cheating the casino which has been practised throughout the history of blackjack. Unfortunately the British rule leads the player to increase his stake by means of doubling down or splitting pairs when the dealer might ultimately declare a natural for himself. In Nevada, the dealer announces blackjack before the players commit themselves to increased stakes. In London, when the dealer's face-up card is an ace or a 10-count, it is advisable to split only aces and not to double down at all.

Strategy at Blackjack

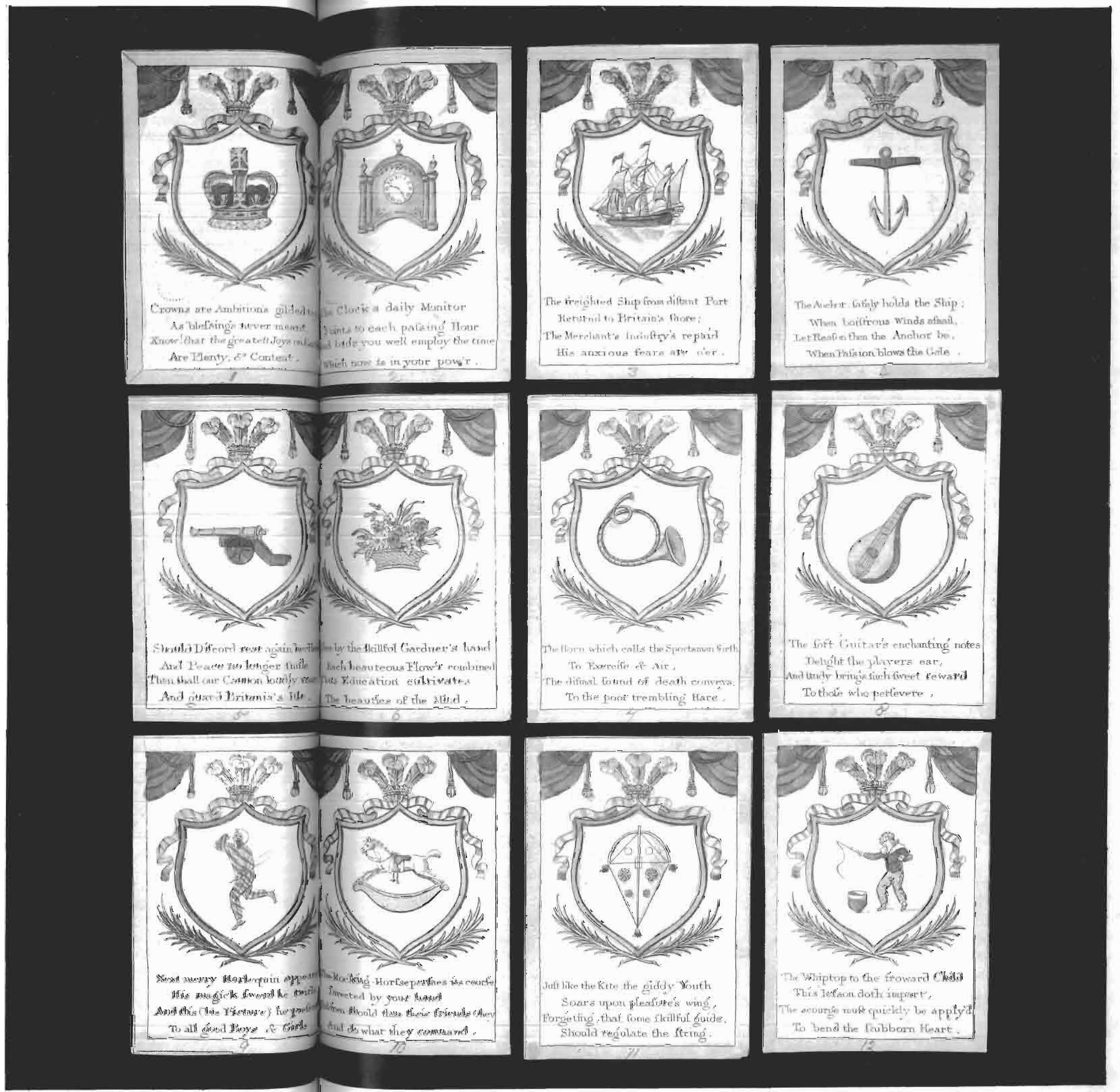
To calculate the house edge in blackjack exactly requires a computer. The player has advantages in that he has many options, whereas the dealer has none. Also, he can insure against a natural for the dealer. The dealer has one advantage, the biggest. That is that the player plays first. The player always loses when he busts, whereas the dealer may bust having already won the majority of the hands at the table. To say that a tie is a stand-

An English Pope Joan board, with counters and cards, of the nineteenth century. Similar games to Pope Joan are the British game newmarket and the American game michigan. The board is dressed by the dealer, before each hand, placing counters into the eight compartments, one each in the compartments representing Ace, King, Jack and Game, two each in matrimony and intrigue, and six in Pope Joan. The player who manages to play the Ace, King, Queen or Jack of the trump suit collects the counter in the appropriate box. If the same player plays both King and Queen of the trump suit, he also collects the counters in matrimony: Queen and Jack wins Intrigue. The first player to play all his cards wins the counter for game, and the player to play the nine of diamonds (Pope Joan) collects those counters. The large illustration shows British hand-tinted moralistic playing cards, c1788.

off is therefore not strictly true, as it doesn't apply when both player and dealer bust.

Some players, notably Edward O. Thorp, a professor of mathematics, in a famous book published in 1962 entitled *Beat the Dealer*, have suggested that card-counting techniques, combined with the optimum play, could give players an edge over the bank. Thorp has blackjack winnings to prove it. The edge he enjoyed was a small one, and could still be obtained at casinos where cards are dealt by hand from one pack (provided they are dealt fairly) but the use of four packs, with up to 50 cards not used, destroys his edge. In any case, the complicated calculations needed are beyond the scope of the average player.

All methods of giving the player an advantage rely on casing the pack, or counting the cards. The simplest is merely to count the 10-value cards, which constitute nearly a third of the pack. If the unplayed part of the pack is rich in cards of value 10, and the dealer's faced card is below 7, he must draw and has a good chance of busting. The player might decide to stand on a low count of 12 or 13, knowing that he has a better than even chance of winning. More complicated counting requires the player to calculate how many cards remain of various groups: aces, 10-counts, medium cards (6-9) and low cards (2-5) and vary his strategy accordingly. This is very hard work, and in most cases the order



Playing cards is a harmless enough popular pastime for travellers on long sea voyages, but cheats used to take trips in order to fleece the rich passengers on the luxury liners. The players, on deck in this photograph are enjoying a game of the whist family.

of the cards played will be unexceptional and result in no significant advantage in counting them.

It is more profitable to look at the best plays assuming a normal proportion of each rank of cards in the shoe.

Table 6:1 gives the best play in these circumstances. There is still argument among experts about some of these plays. The table in these cases takes the side of caution, advising to double down only when most experts agree it is best.

Table 6:1 Player's optimum play at blackjack in Nevada

	Player holds	*Dealer's face-up card* 2	3	4	5	6	7	8	9	10	A
	17	S	S	S	S	S	S	S	S	S	S
	16	S	S	S	S	S	H	H	H	S	S
	15	S	S	S	S	S	H	H	H	H	H
Hard	14	S	S	S	S	S	H	H	H	H	H
2-card	13	S	S	S	S	S	H	H	H	H	H
Total	12	H	H	S	S	S	H	H	H	H	H
	11	D	D	D	D	D	D	D	D	D	D
	10	D	D	D	D	D	D	D	D	H	H
	9	D	D	D	D	D	H	H	H	H	H
	19	S	S	S	S	S	S	S	S	S	S
	18	S	S	S	S	S	S	H	H	H	H
Soft	17	D	D	D	D	D	H	H	H	H	H
2-card	16	H	H	H	H	D	H	H	H	H	H
Total	15	H	H	H	H	D	H	H	H	H	H
	14	H	H	H	H	D	H	H	H	H	H
	13	H	H	H	H	D	H	H	H	H	H

Note: Always stand on hard hands of 17 or more and soft hands of 19 and 20.
S = stand, H = hit, D = double down.

The table does not apply to games (i.e. all those in Britain) where the dealer does not declare blackjack before the players play out their hands. Most disagreement among experts occurs with the best play when holding 16 against a dealer's up-card of ace or 10-count, when some advise hitting, and with the play on soft hands, when some advise always hitting with totals of 17 or less, and others advise doubling down with a count of 13 to 17 whenever the dealer's up-card is 4, 5 or 6.

Splitting

There is almost as much difference among

This showcard was for display in the foyers of cinemas showing 'The Cincinnati Kid'. Steve McQueen, in the title role, tries to beat 'The Man', Edward G. Robinson, at stud poker. Much of the film consists of their long-drawn-out game, and this still shows the final hand, in which Edward G. finally beats his opponent with a straight flush to a full house. Although the denouement is quite unbelievable, gamblers remember the film with pleasure as the best to have portrayed the psychology of the gambler and the tension of the big game.

experts on the question of splitting, as on the other plays. All agree that aces should always be split, and that 2s and 3s should be split unless the dealer's up-card is 8, 9, 10 or ace. All agree that 5s should never be split and most that 4s should never be split.

Table 6:2 shows a consensus of expert opinion on the advisability of splitting.

Table 6:2 Advisability of splitting pairs at Nevada blackjack

Player's pair	*Dealer's face-up card* 2	3	4	5	6	7	8	9	10	A
A	S	S	S	S	S	S	S	S	S	S
10	X	X	X	X	X	X	X	X	X	X
9	S	S	S	S	S	X	X	X	X	X
8	S	S	S	S	S	S	S	X	X	S
7	S	S	S	S	S	S	X	X	X	X
6	S	S	S	S	S	X	X	X	X	X
5	X	X	X	X	X	X	X	X	X	X
4	X	X	X	X	X	X	X	X	X	X
3	S	S	S	S	S	S	X	X	X	X
2	S	S	S	S	S	S	X	X	X	X

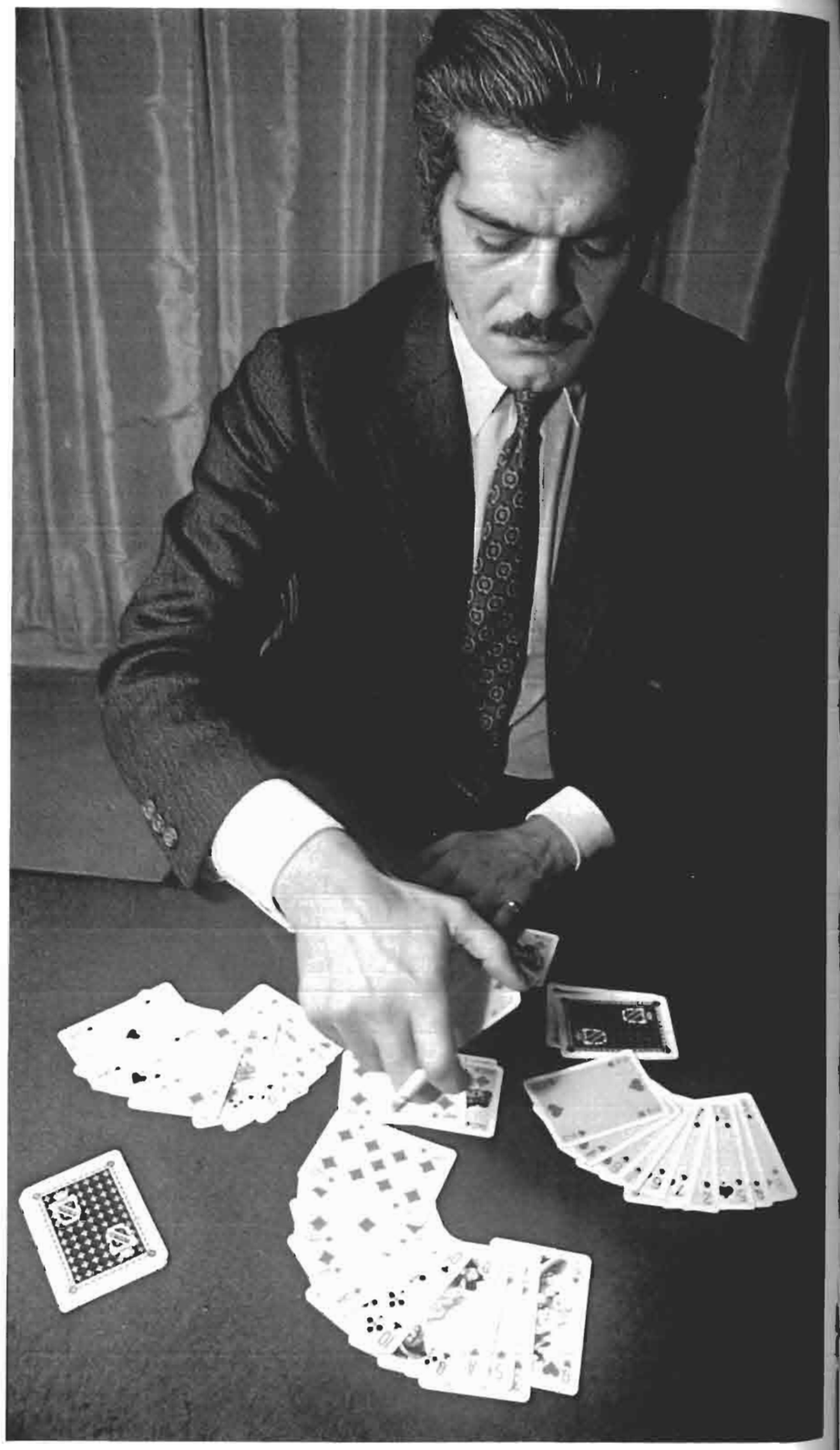
S = split, X = do not split

Insurance

The term insurance is deceptive. A stake on insurance is best regarded as a side bet. It is a bet that can profitably be made by a card counter, as whether or not it is a good bet depends entirely on the proportion of 10-count cards against non-10s remaining in the shoe. Were the cards in their original proportions, there would be 16 10-counts in the pack to every 35 non-10s. The probability of the dealer having a blackjack is $\frac{16}{51}$, and as the odds paid are 2 1 there is a house edge of 5·8824 per cent.

In Britain, players may only insure whenever they hold blackjack themselves, and many do so on the grounds that they must win one unit whether the dealer holds blackjack or not, i.e. if he does, the original bet is a stand-off, and the player wins one unit insurance; if he does not, the player loses $\frac{1}{2}$ unit insurance but wins $1\frac{1}{2}$ units on blackjack. When the player insures, the dealer will usually pass over one chip immediately. However, British players insuring, and players elsewhere insuring when they hold blackjack, are accepting odds of 2 1 about a 34 15 chance, a house edge of 8·1633

Three shots of Paul Newman playing poker in 'The Sting'. Poker is thought by the uninitiated to be a game of bluff, but the expert knows that it is primarily a game of rapid calculation of chances. The best players calculate the odds of improving their hand and compare them with the stakes in the pot. They also estimate their opponents' chances by the number of cards drawn. It is necessary not to give away information by inadvertent mannerisms, but a 'poker face' is not essential. Paul Newman shows (not necessarily genuine) doubt, confidence and triumph.



Omar Sharif does not like his name to be associated with gambling, so perhaps an apology is due for including his picture in this book. Bridge is the best of all card games, and the best players get more pleasure from the intellectual exercise than from the incidental stakes won. Omar Sharif is a very fine player indeed.

per cent. A player accepting bad odds to 'insure' his bet when he is in a strong position to win should not be playing at all, and insurance betting is not recommended except for card-casers.

Pontoon

Blackjack can be played privately, and indeed in many parts of the world is the most popular private gambling game. In Britain and Australia the game is known as pontoon; elsewhere it might be called twenty-one, vingt-et-un or blackjack. The rules vary considerably from region to region, and next-door neighbours might be found with different rules. The following is a version the author has found widespread in Britain. Naturally, all rules should be agreed by the players before play starts.

The dealer has an advantage, and the first dealer is found by shuffling the pack and dealing the cards face-up round the table until a player is dealt a jack. He becomes first dealer until a player beats him with a natural, called pontoon, when the bank passes to the pontoon holder.

The dealer deals a card face down to all players including himself beginning with the player to his left. The first player looks at his card, and puts up a stake between an agreed minimum and maximum. The first player then plays out his hand. Cards have values as in blackjack, with ace counting one or 11 at the discretion of both player and dealer, and the object is to get nearer than the dealer to 21. After staking, the player is given a second face-down card, and then has four options.

1. If he holds a pair of aces, he may split them. Only aces are allowed to be split. A stake equal to the first is put on the second ace, and the two hands are played in turn.

2. He may buy a further card for a stake not exceeding his original stake, and after receiving this card might buy another and after this a fifth, although each card must be bought for a stake not higher than the previous stake. The object of holding five cards is that in pontoon a five-card hand beats any other except a natural. Bought cards are dealt face down. A player may not buy a fifth card if his four-card total is 11 or below, because he cannot bust. He must 'twist' his fifth card.

3. At any stage he may stand, by announcing 'stand' or 'stick' although he must have a hand valued between 16 and 21 to stick.

4. Should he not wish to buy a card, but is not satisfied with his total, he may receive a further card or cards by announcing 'twist', when the dealer will give him a card face up. A player with a count of 14 might twist, as he has a bad hand and does not want to buy. If he is twisted an ace, he must twist again, as he does not hold the necessary 16 to stick. A player who twists may not subsequently buy.

If a player busts, he must announce it, when the dealer collects his stake and adds his cards to the bottom of the pack. The cards are shuffled only when the bank passes.

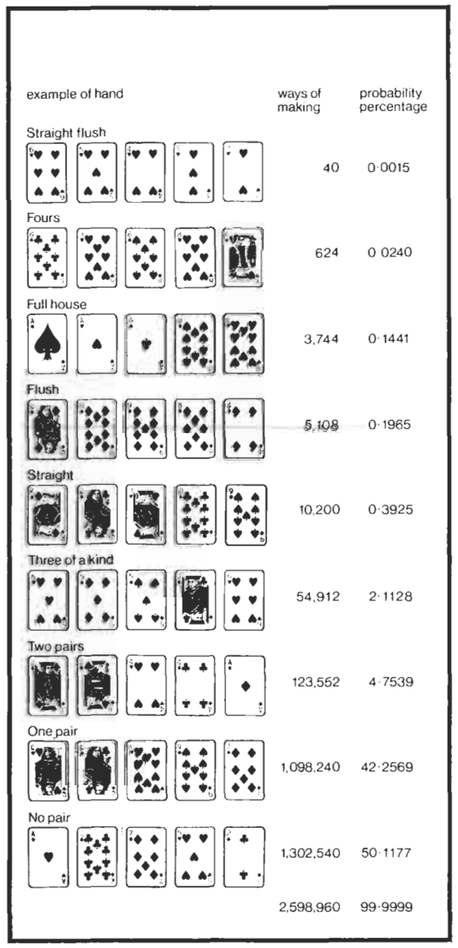
When a player sticks, he places his stake on the face-down hand, and the dealer proceeds to the next player. When a player has a natural, he announces it immediately by turning his hand face up and putting his stake on top.

When all players are satisfied, the dealer gives himself a second card and plays his own hand. If he has a natural he collects from all players, as ties are won by the dealer. Otherwise he may continue dealing cards to himself until he wishes to stick. Unless he has a five-card hand himself, he can stick only with a hand of between 16 and 21. Since the dealer wins all ties, if his total is 17 he will announce 'pay 18s' and all players with 18 or more will expose their hands and be paid. If he has 21, he will announce 'pontoons and five-card hands only'. Settlement is then made at even money. A player dealt a natural takes the bank (he would be silly to refuse it) unless the dealer has a natural on the same hand. The bank cannot be taken on a split hand.

The commonest variations found are that some schools pay double for a natural, and treble for a hand made up of 7-7-7. Some schools allow any pair, not only aces, to be split. Some schools prefer that the bank passes from player to player in a clockwise direction every five deals, naturals not taking the bank.

Strategy depends very much on the cards recently played, but a player staking the maximum on aces and 10-counts, and the minimum on other cards, will not go far wrong, although this mechanical approach will deprive him of the pleasure of exercising his judgment.

Figure 6:2, classes of poker hand. The highest is at the top, and the lowest at the bottom. The number of ways each class of hand can be made is in the second column, and the probability of being dealt the class of hand is in the third column. That the probabilities do not make 100 per cent is due to the percentages being given to four decimal places only.



Poker

The most popular card game in America is poker, and its following has spread throughout the world. There are many versions, and each version is likely to have local rules. Two versions are described here: draw poker and stud poker. Before play, all players should agree on the rules and minimum and maximum stakes.

A poker hand consists of five cards. There are nine classes of hand, shown with their probabilities in Figure 6:2. These probabilities relate to being dealt the cards; in draw poker there are chances to improve the initial deal. A normal 52-card pack is used, but if there are more than six players, two packs must be used. Ace counts high, but may also count low in straights. Thus A-2-3-4-5 is regarded as a straight, the lowest, whereas A-K-Q-J-10 is the highest straight. Straights cannot be 'round-the-corner', thus 3-2-A-K-Q is not a straight.

Straight draw poker

The object of the game is to hold the highest ranking hand at the showdown. The hands are ranked in the order shown in Figure 6:2. Where two or more hands are of the same class, the winner is decided as follows; *straight flush* by the highest card held. A-K-Q-J-10 is the highest, known as a royal flush. *Fours* by the highest foursome held. *Full house* by the highest threesome or prial held. *Flush* by the highest card held. If equal, by the second highest and so on. *Straight* by the highest card held at the top of the straight. *Threes* by the highest threesome or prial held. *Two pairs* by the highest pair held. If two high pairs are equal, by the higher second pair. If both pairs are equal, by the higher odd card. *Pair* by the highest pair held. If two pairs are equal, by the higher odd card, then the next, and so on. *No pair* by the highest card held. If equal by the second highest, etc.

The deal passes in rotation clockwise round the table. Before the deal, each player puts an ante into the pot, perhaps a quarter of the minimum stake. The dealer distributes the cards, one at a time, beginning with the player on his left, till each player, including himself, has five cards.

The first player to the dealer's left then has the opportunity of staking or throwing in his hand. In some games, a player may start by putting in either the minimum stake or double it. If he throws in his hand, he takes no further part in the deal and he passes his cards face down to the dealer who puts them to one side.

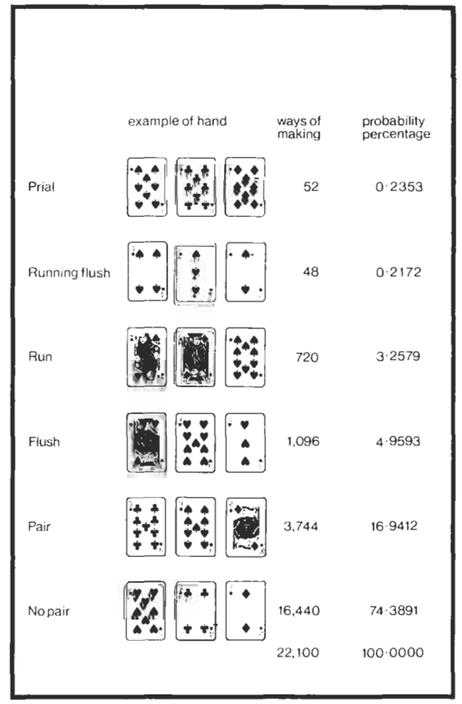
If he bets one unit, the next player has the option of throwing in, staking one unit to stay in the game, called calling, or raising the stake to two units, which he signifies by saying 'raise to two'. If he raises to two, then subsequent players must stake two units to stay in, or may raise further. Suppose when it is the dealer's turn to play, he raises to three units. Play is now back to the first player again, who, if he staked only one unit, must now stake two more to stay in the game or throw in. He may increase further to four units. Staking continues until no player left in raises, when all players will have an equal stake in the pot or have thrown in. A player throwing in who has bet before does not recover his stake or his ante.

When staking has finished, all players left in may exchange any number of cards in their hand, although it would be rare for a player to want to exchange more than three, since a pair is usually regarded as the minimum requirement to stay in. Frequently 'pot' deals are played, which usually start at jack-pots and progress to ace-pots. A jack-pot means that a player needs a hand of two jacks or better to open the staking. Before the staking begins a player with less than two jacks need not throw in; he may 'check' and put up the necessary stake on the next round. A player who opens must be able to show, after the showdown, that he held the requisite hand.

Players exchange cards by asking the dealer for the number of cards they want, and passing him the discards, face down, which he places on the discard pack. The replacement cards are dealt face down. When all players, including himself, if he remains in, have exchanged cards, the dealer sets the unused part of the pack to one side, as it will not be required again in the deal.

All players still in the game now have their completed five-card hands, and a second betting interval takes place, beginning with the player who first staked. He may raise the stake again, or he may 'check', which he does by announcing the word 'check'. This means that he remains in the game without increasing his stake. However, as soon as one player, in his turn, raises, all other players, on their turn, must call, i.e. put in stakes equal to the raise, or raise further. A player who has checked may subsequently call but not raise. Betting continues as before until no player raises or until a maximum stake agreed beforehand has been reached. If all players except one throw in, then the remaining player may take the pot without showing his hand.

Figure 6:3, the classes of brag hand, with the number of ways each class can be made and its probability. This is a modern version of the game. Brag as described in many books of card games does not recognise running flushes, runs or flushes, and wild cards, called braggers, are used.



No player need show his hand at any time except for the showdown, except the player who opens on a pot-deal, who need show only those cards necessary to establish that he had a required minimum. On the showdown, the player who made the last raise shows his cards (the player calling might say 'see' or 'see you' when calling the bet). The other player or players may then concede without showing their hands. The principle is that no player need show his hand unless claiming the pot.

Once the pot has been taken, the players ante again, and the player on the dealer's left, after the cards are shuffled and cut, deals the next hands.

Strategy

Although poker is often said to be a game of bluffing, good play is more a question of knowing the probabilities of improving a hand, assessing whether the stake required to stay in the game is worth risking in relation

A famous poker story told by John Lillard has an out-of-town chump losing a pot to a local who displays a worthless hand called, he claims, a lollapalooza, which according to house rules beats everything. When the chump has one he is denied the pot on the house rule: only one lollapalooza a night.

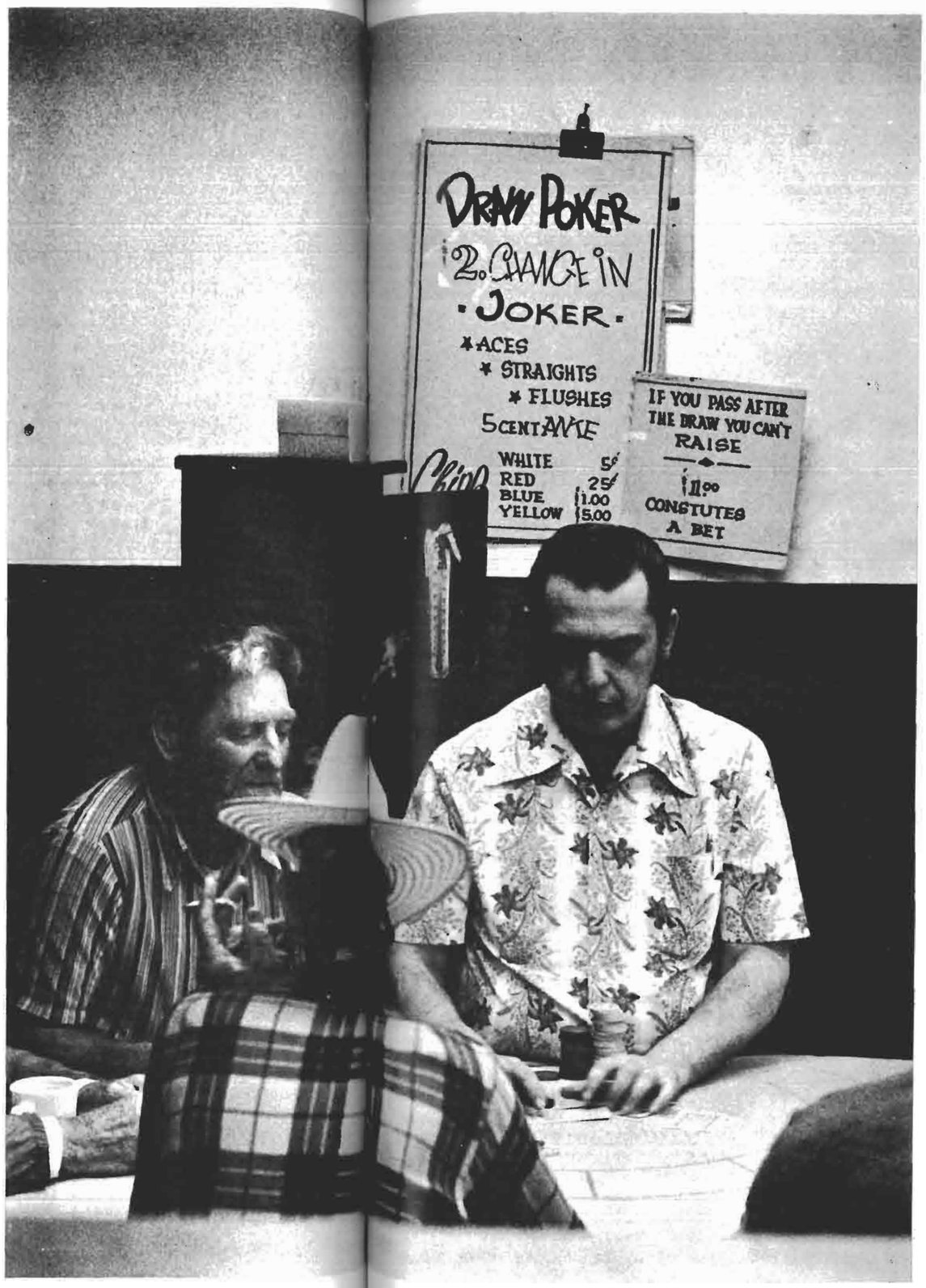
to the pot and the probability of winning it, and assessing the possible value of the opposing hands by the play of the other players. So far as the last is concerned, a good player will try to work out the habits of the other players at the table. The probabilities of improving a hand are shown in Table 6:3.

In the first betting interval, if it requires 3 units to stay in, and the pot is worth 15 units, or odds of 5–1, it would be pointless to stay in

Table 6:3 Odds against improving at draw poker

Holding before draw	*Number of cards drawn*	*Improvement to*	*Odds against drawing*	*Odds against any improvement*
One pair	3	Two pairs	5–1	5–2
		Three of a kind	8–1	
		Full house	97–1	
		Four of a kind	359–1	
One pair and a kicker	2	Two pairs	5–1	3–1
		Three of a kind	12–1	
		Full house	119–1	
		Four of a kind	1,080–1	
Two pairs	1	Full house	11–1	11–1
Three of a kind	2	Full house	$15\frac{1}{2}$–1	$8\frac{1}{2}$–1
		Four of a kind	$22\frac{1}{2}$–1	
Three of a kind and a kicker	1	Full house	15–1	11–1
		Four of a kind	46–1	
Open-ended four straight	1	Straight	5–1	5–1*
One-sided or inside straight	1	Straight	11–1	11–1*
Open-ended straight flush	1	Straight flush	$22\frac{1}{2}$–1	$22\frac{1}{2}$–1*
One-sided or inside straight flush	1	Straight flush	46–1	46–1*
Four flush	1	Flush	$4\frac{1}{4}$–1	$4\frac{1}{4}$–1*
Three flush	2	Flush	23–1	23–1*

* *The odds against improving to a pair, or in the case of a three flush to threes or two pairs are not considered.*



with an inside straight (i.e. a straight missing one of the inside cards, such as 3-4-6-7), since the probability of filling the straight is 11–1 (to be precise $10\frac{3}{4}$–1). With a four flush, it is not worth staying in unless the pot is four times the stake required.

When drawing, the table shows that it is not profitable to hold a kicker (i.e. an odd card, usually an ace or other high card) when drawing to a pair or three of a kind. Many players do this automatically; good players do it occasionally to keep the opposition guessing. When one card is drawn, most opponents will assume that two pairs are held, and holding a low prial or two pairs aces high themselves might bet heavily, only to be beaten by a high prial.

Most good players would agree that the following principles are sound.

1. With a poor hand, throw in. Do not hold on in the hope of improving because you want some of the action. Be patient until you have a good hand.

2. Remember there is no payout for second best hand. Do not keep betting on three of a kind, merely because it's the best hand you've held all night, if you believe another player has filled a flush or straight. When beaten, throw in.

3. Don't throw good money after bad. Treat each round as if it were the first. Do not feel obliged to stay in because you have already contributed heavily to the pot. Once you think you're beaten, cut your losses and throw in. Similarly, if you are down on previous deals, do not bet heavily on poor hands in a frenzied effort to get it back.

4. When you have a good hand, do not get excited and rush – it won't fade away. Don't frighten off the others; raise on the last round, try coolly to get the other players to call, and maximize your winnings.

5. Learn the probabilities in Table 6:3. They are a better guide than hunches.

6. Do not overdo the bluffing. Good players will not be bluffed too often into throwing in winning hands. Bluff if you think your opponent might be bluffing, and that you have a good chance of winning, but do not bluff on the principle that you must keep the opponents guessing or in order to give them a false sense of security for future hands.

Stud poker

This is one of the most exciting poker variations, as all but one card of each hand is exposed on the table throughout the game. It is the game played by Steve McQueen and Edward G. Robinson in *The Cincinatti Kid*.

The classes and ranks of hand are as in draw poker, and the object is to win the pot. Stud poker is not usually played with an ante, but some players prefer to do so, as it helps the pot when many players drop out first time. As there is no draw in stud poker, up to nine players can play with a single pack: five to eight is best.

The dealer deals one card face down to each player, including himself, followed by one card face up. The down card is known as the hole card, and a player sees only his own.

When all players have one face-up card, the player with the highest card showing (ace is high) begins the betting. If two or more cards of equal rank are showing, the player nearest the dealer's left begins. This player must stake – on the first round he cannot throw in or check. It is usual to have a minimum and maximum stake and raise.

As in draw poker, once the betting has begun, all players must in turn either throw in, pass, or raise. When the betting reaches the last player to raise, i.e. no other player has subsequently raised, then each player still in has put an equal stake in the pot, and the round of betting ends. Thrown-in hands are collected by the dealer and discarded face down. Hole cards of players throwing in should never be shown to the other players.

The dealer then deals a third card to each player, face up, so that each player now has two cards showing. There is now a second round of betting, begun by the player with the highest hand showing, which cannot be higher than a pair, and might depend on the highest card. In no betting round does a part flush or part straight have any significance: a pair of 2s on the last round ranks higher than A-K-Q-J of a single suit.

Players are dealt a fourth and fifth card, with further betting taking place after each card. After the last betting round, comes the showdown, when the last player to raise shows his hole card and the remaining players concede or show a better hand.

Strategy

The principles given for good play at draw poker apply equally to stud poker. A particular fault is to stay in too long with a straight or a flush. Even if you hold a four-card flush, reference to Table 6:3 shows that the chances of the fifth card completing the flush are $4\frac{1}{4}$–1 (to be precise 38–9). If another player has two aces showing he is $4\frac{1}{4}$–1 on to beat you.

The most important decision in stud poker is made after the first up-card is dealt. With six players in, the odds that at least one has a pair are only about 2–1. If your hole card is queen and your second card is 8, you would do well to throw in if an ace and a king are already showing and another player raises as if he held two 9s.

On the next round, if a pair is showing, do not stay in without a pair. Do not bet on a hand which you know is not the best in the hope of improving. If after the last card is dealt you are sure you hold the best hand, raise. Make your opponents pay to see your hole card.

Finally, to return to *The Cincinatti Kid*. When Steve McQueen held a full house, aces high, in the final hand, he could fully expect to win. Edward G. Robinson's hole card proved to be the jack of diamonds, filling a straight flush. Apart from the astounding improbability of two hands being dealt together, neither smaller than a full house, aces high (about one chance in 10 million), why was Edward G. Robinson staying in so long with such high stakes, and with a very small chance of winning?

Brag

An ancestor of poker, brag was the most popular card game of England in the sixteenth century, and is still very popular today. It is very similar to poker, played with a normal pack. The deal passes in rotation, each player including the dealer receiving three cards face down. The dealer places a stake up to an agreed limit in the pot, and the player on his left has the first option of throwing in, calling (i.e. equalling the dealer's stake) or raising. When the stake is raised, each player in turn must raise his stake to the new level to stay in, as in poker. When all bets are equal, there is showdown. There is no draw for fresh cards. The classes of hands are shown in Figure 6:3.

These players are playing michigan, a variation of Pope Joan, the board for which is illustrated on page 152. A simple version of the game is often played without a board by using cards from another pack, say an Ace, King, Queen and Jack from different suits, as the winning cards on which stakes are placed.

In brag, a run, or straight, ranks higher than a flush. The probability of obtaining a flush with three cards is greater than that of obtaining a run, although with five cards, as in poker, the straight is more likely. A prial in brag ranks higher than a running flush, although its probability is slightly higher.

When two hands are equal, the winning hand is determined on the same principle as in poker. There are two exceptions. The highest hand is a prial of 3s, ranking above aces, and the highest run is A-2-3, ranking above A-K-Q. These rules must be understood and agreed by all players before play begins.

Strictly, runs and flushes are not recognised in brag, the classes of hand traditionally being prial (or pair-royal), pair, or no-pair (highest card wins). More action is generated by three cards, known as braggers, being wild, the ace and 9 of diamonds and jack of clubs. A natural hand ranks higher than a hand of the same class with a bragger. Modern players prefer to play the game as described above, although some impatient players like to speed it up further with the use of black 2s as wild.

A popular version of brag is seven-card brag, which can be played by up to seven players. Each player is dealt seven cards, discards one, and makes the two best brag hands he can with the remaining six. Each player puts an agreed stake into the pot before each deal. There is no betting, and a player must win both hands before he takes the pot. If the pot is not won, it remains for the next deal, when it is added to. Each successive deal in which the pot is not won makes the pot more worth winning.

Little strategy can be practised in brag, as there is no draw and no indication of the opposing strength. Players must know the probabilities in Figure 6:3 and the betting habits of their opponents. It is worth noting that with four players, a hand of ace high will be enough to win about half the deals, and a pair of aces over two-thirds of them.

Gin rummy

A game of recent invention, gin rummy was developed from the parent game of rummy, or rum, in the early days of the present century, and popularised in the 1940s when it became a craze in Hollywood among the film stars.

	Me	Thee	Me	Thee	Me	Thee
Box 1						
Box 2						
Box 3						
Box 4						
Box 5						
Box 6						
Box 7						

Figure 6:4, the Hollywood score-card for gin rummy. How to enter scores is described in the text.

It is a game for two players played with a standard pack of 52 cards, ace counting low. Each player draws a card to decide dealer, the higher deals. Thereafter the winner of each hand deals the next. Dealer deals ten cards to each player, beginning with non-dealer, the remaining cards being placed face down between the players to form the stock, the top card being turned over to become the up-card, and to begin a discard pile.

Non-dealer may take the up-card into his hand, replacing it with a discard from his hand. If he refuses the up-card, dealer may take it. If he declines it, non-dealer takes the top card from the stock into his hand, and discards a card, which might be the same card. Thereafter each player in turn draws from the stock or the discard pile, and discards.

The object of the game is to form sets, either with three or four cards of the same rank, or three or more cards of the same suit in sequence. After drawing, a player may knock, i.e. he lays down his hand in sets and makes his discard. He is allowed to lay down unmatched cards if they total 10 or less. Each unmatched card has its pip value, aces counting as one and court cards as ten. No player may draw a card when the stock is down to two cards; if the player who takes the fiftieth card does not knock the hand is abandoned. If the knocker lays down all his cards with none unmatched he is said to go gin.

When a player knocks, unless he has gone gin, the other player shows his sets, and is allowed to lay off any unmatched cards on the sets of the knocker. For example, if the knocker has a set of three kings, his opponent might lay off the fourth king if he holds it. If the knocker has a sequence of 4-5-6 of hearts, his opponent might lay off 7-8 of hearts.

After laying off, if the knocker has the lower count in unmatched cards, he scores the difference of the counts. If he has declared gin, he also scores a bonus of 25. If the opponent has an equal or lesser count, he is said to undercut the knocker, and scores the difference, if any, plus a bonus of 20. A knocker going gin cannot be undercut: if his opponent discovers he also has gin, there is no difference in the counts, but knocker scores the bonus of 25.

The Hollywood scoring is complicated, and is recorded on a card like that in Figure 6:4.

The first time that a player scores he enters his score in the first of the three columns against box 1. The second time he enters his score in the second column against box 1 and also adds the points to his score in the first column, writing the total opposite box 2. The third time he scores he enters the score in the third column, and adds the points to those already scored in the first two columns. Thereafter, each score is added on to all three of the columns.

When a player's score reaches 100 in a column, he wins the column and scores 100 points for winning it plus 20 points for each box he has won more than his opponent. If the opponent has scored more boxes, 20 points are deducted for each extra box. If a player fails to score in a column, he is said to be blitzed, and the score of the winner of the column is doubled. Once a column is won, no more scores are added to it. A player blitzed in the first column must enter his first score in the second column.

If a player wins all three columns, his final score is the sum of the three totals. If both players win a column, the player with the higher score wins by the difference in the two scores. Settlement is at a rate per point, or ten points, to be agreed beforehand.

Strategy

The best play lies in remembering the discards, so that no attempt is made to form a set that is impossible or difficult to make because all or some of the required cards are buried in the discard pile.

It should be appreciated that a combination of ♥6♦6♦5 affords four chances of a set with ♠6♣6♦4 and ♦7 whereas ♠A♦A♦2 affords only three. A holding like ♦8♦7♣10♣8♣7 affords six chances of a set, including one of four cards, and whichever set is formed, two matching cards can still be kept. A sequence is more valuable than a set of three of a kind, as more cards can be added to it, two immediately at each end of a sequence, one only on a threesome. The cards the opponent takes from the discard pile, and the cards he discards, should be noted to form a picture of his hand. Cards which might help him should be kept both to block him and to afford laying off opportunities should he knock. Other things being equal it is better to hold low cards than high cards, so that any adverse score is kept down and also because they afford opportunities to knock. Most gin hands are won on two sets and three or four unmatched cards.

The early discards tend to be high cards, and it is often worth holding potential high-card sets early in the game. If such sets are not formed after four or five discards, however, they might be expensive to hold. The longer the game continues, the more wary a player must be of knocking with a high total of unmatched cards, as it is likely that his opponent might undercut him. It is not usually good policy, when it is possible to knock, to hold on hoping for gin.

Napoleon

The game of Napoleon, or nap, is played with a standard pack of 52 cards, ace counting high. The first dealer is decided by any agreed method, and subsequently the deal passes to each player clockwise.

All players, including dealer, are dealt five cards, face down, one at a time. There is then one round of bidding, each player in turn from the dealer's left being given the opportunity to contract to make a stated number of tricks, with trumps the suit of his choice. After the first bid, subsequent bids must be in ascending order. The bids are Two, Three, Four or Nap (all five tricks).

The player who contracts to make the most tricks (the declarer), then leads to the first trick. The first card led indicates trumps. Tricks are won in the normal manner of trick-making games, the winner of each trick leading to the next. The declarer receives or pays to all other players depending upon whether or not he makes his contract. Payment is at the following rate:

Contract	*Declarer wins*	*Declarer pays*
Two	2 units	2 units
Three	3 units	3 units
Four	4 units	4 units
Nap	10 units	5 units

Overtricks and undertricks do not carry bonuses or penalties, and settlement is made immediately.

In order to give the game more variety, some players allow further bids. Misery, a contract to lose all tricks, there being no trumps, ranks between the bids of Three and Four, and pays or loses 3 units to each player. Wellington is a bid which can be made only above nap, and is a contract to win all five tricks at double stakes (i.e. it wins 20 and loses 10). Blucher is a bid which can be made only over Wellington, and pays triple stakes for a contract of five (30 and 15). Peep nap allows the player who has bid nap to exchange a card for the top card of the pack if he wishes. Purchase nap allows each player, if he wishes, to look at the top card of the pack before bidding, by contributing one unit to a pool. The player who becomes declarer, if he has paid to look at the top card, is allowed to take it into his hand in exchange for another card before leading.

Strategy

The best play comes from estimating the likelihood of missing cards being in the pack or in another player's hand. With four or five hands dealt, it is more likely than not that a missing card is sleeping, i.e. in the pack. A player holding three of a suit, which he might make trumps, should know that it is about $16\frac{1}{2}$ 1 against any specific other player holding three or more trumps. Should there be six players, it is about 4–1 against any other player holding three or more trumps. Therefore a player with AKx in the trump suit and

Bridge is thought by some to have received its name from biritch, or Russian whist, described in a pamphlet published in London in 1889. The final polish on the game which led it to become to-day's contract bridge was the invention of Harold S. Vanderbilt and his card-playing friends in 1925. Bridge soon became the most popular game in the history of card-playing, and has acquired a worldwide literature comparable to that of chess. These Americans are enjoying a game in the open air.

an outside ace can expect to make four tricks about four times in five. A player holding AK only in the trump suit against five other players has a 6–4 on chance of clearing trumps, and with an outside ace should make three. A player with four small trumps, on the other hand, in a game of five players, will find it is 2–1 on another player holding two trumps, and even with an outside ace cannot expect to make more than three.

Red dog and shoot

Also known as high-card pool, red dog is a game for up to ten players. Each player in turn deals. Before the deal each player contributes an agreed number of units to a pool. The dealer gives each player five cards, one by one, face down, and places the stock face down in front of him. With nine or ten players, each player has four cards each. The player on dealer's left examines his hand and bets a stake ranging from one unit to the entire pool that he has a card of the same suit and higher than the top card of the stock. Dealer turns over the top card, and if the player can show a higher card in the suit, he is paid by the dealer from the pool the amount of his bet. If he loses, he adds his bet to the pool after showing his cards to the other players. Ace counts high. When the first player has won or lost, his cards and the top card are placed face down in a discard pile and the player on his left is the next to play. When the whole pool is won, or if at the beginning of a fresh deal it has fallen below an agreed minimum, all players replenish it equally.

Shoot, or slippery sam, is a similar game to red dog, but is a banking game. Each player in turn, when dealer, puts a sum in the centre as the pool. The amount of the pool can be agreed beforehand; otherwise a minimum should be agreed. Shoot is possibly unique among banking games in that the advantage is with the players.

The dealer deals each player three face-down cards, one by one, and each player at his turn, after examining his cards, bets any amount from an agreed minimum to the amount in the pool that he can beat the top card in its suit. A player betting the whole pool 'shoots the pool' by announcing 'shoot'. As in red dog, the dealer exposes the top card, and the player takes from or adds to the pool the amount of his bet. When the pool is taken, the player on the dealer's left puts up a pool and becomes dealer. Each player when dealer deals three rounds, when he may withdraw the pool and pass the bank to the next player. He has an option of a fourth and final deal if he wishes.

Strategy in red dog and shoot comes from remembering the cards already exposed in the deal and calculating how many cards remain to beat your hand and how many remain that you beat. A player holding ♦A♣J♥10 in shoot knows that he can beat any diamond, nine of twelve clubs and eight of twelve hearts. Any spade beats him. If he were first to play he would have 29 chances to win, 20 to lose. If four cards have been exposed, he might have 27 chances to 18 to win, or odds of 3–2 on. He should bet heavily. The best staking plan is to shoot every time the odds favour you, and to bet the minimum when they do not, but a player using this strategy will not be popular with his fellow players.

Other card games

The former British Prime Minister, Harold Macmillan, enjoyed a variation of red dog and shoot called farmer's joy, in which all players, including the dealer, put an ante into a pool, and the dealer then turns up the cards until a 7 or lower appears. He then deals three face-down cards to the players, who without looking at them bet in turn that they can beat the up card in its suit. Ace counts high. The bet must be between one unit and the total units in the pool. The dealer deals one round before passing the cards to the next player. A player's chances depend upon the number and suits of the cards turned up by the dealer before the final up card. If the first card turned is a 7, the player's chance of beating it is about 7–4 against. If it is a 2, his chances are slightly better than 5–4 on winning. If the fourth card turned up is a 2, and it is the first of its suit, the player's chance of winning becomes 17–12 on. In the majority of deals, therefore, the player's chance will be between 6–4 on and 6–4 against, and experience will soon teach a player to estimate it fairly accurately without doing the sums.

There are, of course, several other card games designed specifically for gambling, many of them excellent games. Ecarté is a game for two players which Nico Zographos was fond of playing for small stakes before he took on the heavy punters at the Deauville and Monte Carlo baccarat tables. It is a game with endless scope for studying probabilities. Pope Joan is a very old gambling game originally played on an attractive decorated circular wooden table with compartments, some of which are found today in museums and antique shops. It is a pleasant game played on one of these tables. A modern simpler variation is the game known variously as newmarket, boodle and stops in Britain, and michigan, saratoga and chicago in America. These games and others could well be discussed in this book, did space allow. Descriptions of them can be found in authoritative books on card games (see bibliography), and the reader can have the pleasure of working out the probabilities and optimum strategies for himself.

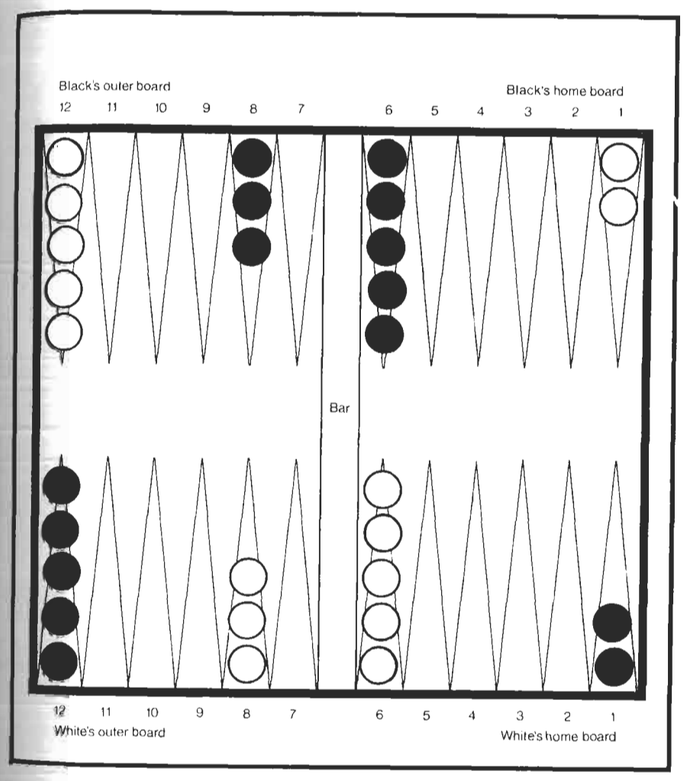


Figure 6:5, the layout at the start of a game of backgammon. Traditionally, the home board is nearest the window or other source of light. The actual board is not marked with any annotation, which is included to facilitate the explanation of the game.

Backgammon

There is reason to believe that the first games played in which men were moved around a board used the principle of throwing dice to determine the movements of the men. Games of this sort have been played for 5000 years, and backgammon and pachisi (an early form of ludo) are probably the oldest of these games still played in something like their original form. The name backgammon first appeared in the seventeenth century, although the French name for the game, tric-trac, is older. The conception of doubling is about fifty years old, and has contributed to the present popularity of backgammon, on which a great deal of gambling now takes place.

Backgammon is one of the oldest of games still played in something like its original form. Roman literature refers to a game called 'Ludus Duodecim Scriptorium', the game of twelve lines, which closely resembled backgammon. Variations of the game accumulated many names through the ages, the commonest being the word 'tables' by which it was known in various languages. In France it became 'tric-trac', and later 'jaquet'. The illustrations on these pages show players at tric-trac, that above dating from the sixteenth century.

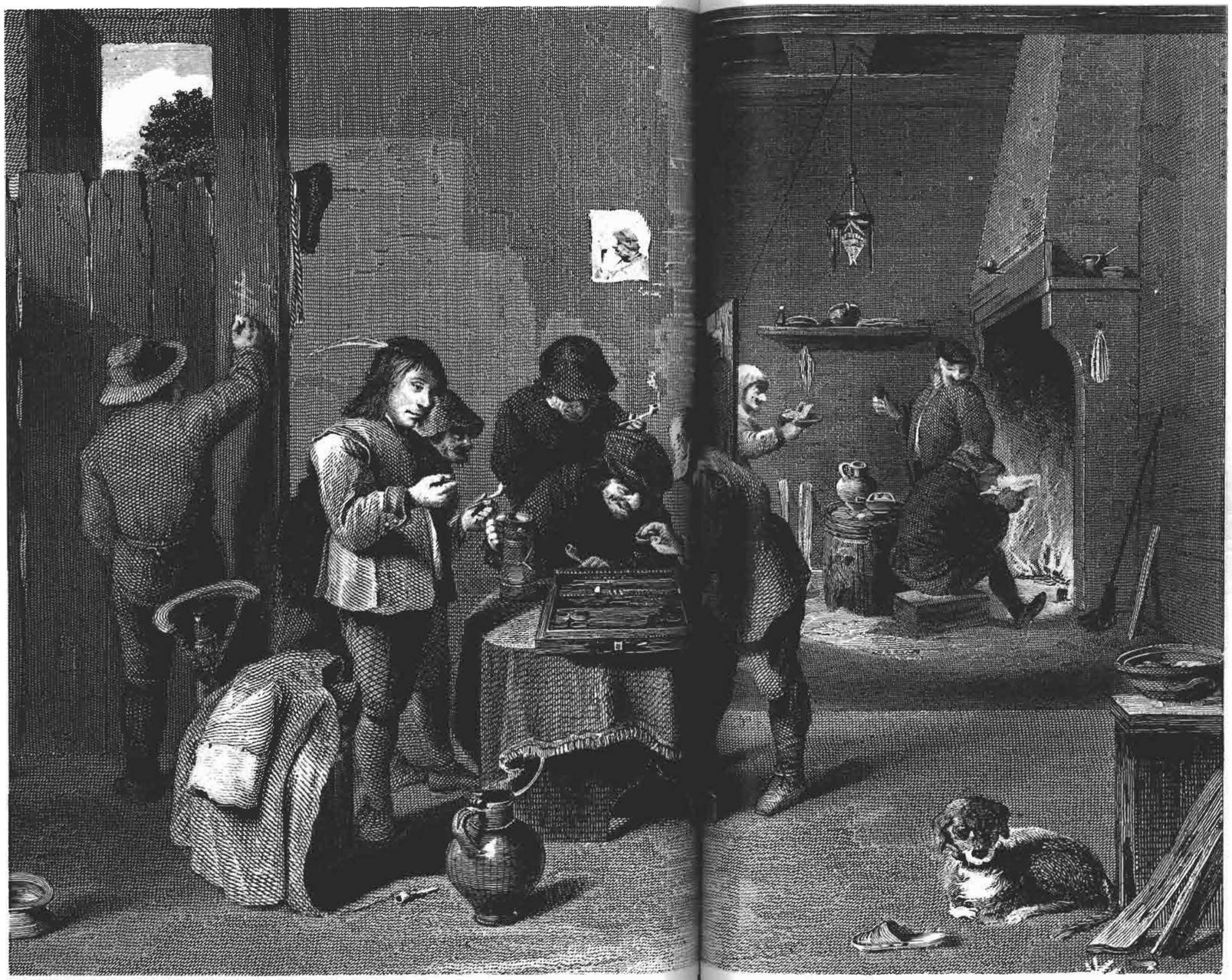
Backgammon is played on a board by two players, each of whom has fifteen men (also called stones or pieces). It is a race game, each player trying to move his men round and off the board before the other.

The starting position is shown in Figure 6:5. The triangular spaces on the board are known as points. The points are numbered in the illustration to enable the moves to be described, and the raised ledge which divides the board into two halves is labelled 'bar', although on the actual board there is no annotation. Each player has a home board and an outer board. In the illustration the home boards are shown on the right, although the board could be reversed from left to right, with the home boards on the left. Traditionally, the home board is on the side of the window, or source of light. The men move in opposite directions towards their home board: in the set-up illustrated, black men move clockwise and white anti-clockwise. The first object of each player is to move all his men into his home board (i.e. on to his points numbered 1 to 6) whence he can begin to bear them off.

Each player has two dice. For the first roll only each player throws one die. The player who rolls the higher number has the first move, and takes the numbers shown on the two dice as his first roll. Throughout the game, if a die is cocked, i.e. resting on a man or against the bar or the side of the board, both dice must be re-thrown.

On his turn, a player must move his men according to the totals shown on his dice, each total being independent. If he throws 1 and 4, he cannot move one man five spaces. He can move one man one space and another four, or he can move the same man one space and four, or four and one. Except when bearing off, a man can only be moved the exact number shown on the die, for instance if a 6 is thrown none of the men on the home 6-

Backgammon has enjoyed many revivals and became a craze throughout Europe in the early sixteenth century. This engraving shows a domestic scene in which eating, drinking and smoking accompany the pleasures of the game. The men are playing puff, which was the German name for backgammon.



point can be moved, as a move of 6 would carry it off the board. Another restriction is that no man can be moved onto a point already occupied by two or more of the opposing men. A player with two or more of his men on a point is said to have made the point. No point can be occupied by men of different colours. If a player has one man only on a point, that man is known as a blot. An opposing man can now occupy the point, when it is said that the blot is hit. A man hit is removed to the bar, and the player with a man on the bar must re-enter him if possible on his next turn. He is not allowed to move another man until he has re-entered the man on the bar. A man must re-enter on his opponent's home board. If the throw is 6-3, and the opponent has made both these points (he starts the game with his 6-point made) then the man on the bar cannot be re-entered and the turn is forfeited. If a player throws a double, he must move the number thrown four times. Again, the four moves are independent.

Sometimes a player cannot move men in accordance with the two numbers thrown (or four if a double is thrown) in which case he makes the move or moves he can and forfeits the other or others. It sometimes happens that he can move in accordance with either of the numbers thrown but not both, in which case he must move according to the higher number and forfeit the lower.

When it comes to bearing off, i.e. moving men from the home board off the board, special rules apply. A player must move his men according to the rules already given, with the option, where applicable, of bearing off a man or of moving a more backward man forward. For example, if he has men on his 6-point and on his 2-point, and one of his dice indicates 2, he may bear off a man from the 2-point or move a man from the 6-point to the 4-point. Sometimes, however, he will not be able to move a man according to these rules. For example, he might throw 5-4, and have four remaining men on the 1, 2, 3 and 4-points. In this case he may bear off the man on the 4-point, corresponding to his throw of 4. For this throw of 5, he must bear off the man on the highest point remaining, in this case the man on the 3-point. Now, with men on the 1 and 2-points, he must win on his next

Backgammon has retained its popularity in the Middle East during periods when it was practically unplayed in the West. This game, with its interested kibitzer, is taking place in a back yard in Cyprus.

throw (as double-1 will entitle him to four moves of 1) unless his opponent bears all his men off next turn, or unless his opponent has a man on the bar, which he can re-enter with a throw of 1 or 2 and hit the blot.

Betting and the Doubling Cube

The item not so far mentioned, and the one which has elevated (or reduced) backgammon into a gambling game for high stakes, is the doubling cube. The doubling cube is a die, usually larger than the others used in the game, on which appear the numbers 2, 4, 8, 16, 32 and 64. At the beginning of the game, the agreed stake for which the players are playing is one unit (it might be that each player stakes £1 or $1, or £5 or $10 or whatever). The doubling cube is placed to one side of the board showing 64 uppermost (since there is no 1 on the cube). At any stage of the game a player who thinks he has the upper hand may offer his opponent a double before he takes his turn. The opponent either declines, in which case he loses the game and pays one unit, or accepts, in which case the cube is turned to 2 and the game continues with two units as the stake. When a player accepts a double, the cube is placed on his side of the table, and only he is allowed to make the next double. Therefore, in a game of much doubling, each player will double alternately. The player declining a double pays the amount shown on the cube at the time.

There are three classes of win. A straight win is when the loser has begun bearing off, in which case he pays the stake shown on the doubling cube. The second class of win is known as a gammon. If a player loses before he has begun to bear off his men he is said to be gammoned, and pays twice the stake on the doubling cube. If a player loses while he still has a man in his opponent's home board, or on the bar, he is backgammoned, and pays triple the stake on the doubling cube. The maximum loss therefore is 192 units. Backgammons are rare, and it is usual in Britain not to play them. Players should agree beforehand whether or not to recognise backgammons.

Chouette

This is a means of enabling three or more players to share a game. One player (called the man in the box) plays against the others, only one of whom actually plays the moves. He is called the captain. If the man in the box wins, he remains in the box, and the next player in line becomes the captain, the losing captain going to the back of the line. If the captain wins, he becomes the man in the box for the next game, the next in line becoming captain, and the losing man in the box going to the back of the line. Other players may advise the captain, but he makes all decisions on the play and doubling. All players pay or are paid by the man in the box, who if he is playing against two players is in effect playing for double stakes. Any player may accept or decline any double made by either the man in the box or the captain, but he cannot double unilaterally. If he declines he pays the man in the box the stake shown on the cube. Should the captain decline a double, he pays up and moves to the back of the line, and the remainder of the game is played by the player first in precedence to accept the double.

Strategy

The best players learn the best strategy by practice and experience, but research by experts has resulted in general agreement as to the best moves to be made on the opening rolls. These are set out in Table 6:4.

Table 6:4 The best opening moves in backgammon (for White)

Throw	*The best moves*
6-5	B1 to B12
6-4	B1 to B11
6-3	B1 to B10
6-2	B12 to W5
6-1	B12 to W7; W8 to W7
5-4	B1 to B10
5-3	W8 to W3; W6 to W3
5-2	B12 to W8; B12 to W11
5-1	B12 to W8; W6 to W5
4-3	B12 to W9; B12 to W10
4-2	W8 to W4; W6 to W4
4-1	B12 to W9; W6 to W5
3-2	B12 to W10; B12 to W11
3-1	W8 to W5; W6 to W5
2-1	B12 to W11; W6 to W5

The first player cannot, by the rules, begin with a double (although there is a variant in which the player who throws the higher die re-throws both dice for his opening roll). The second player might begin with a double. Table 6:5 shows moves agreed to be good ones when throwing a double at an early stage in the game.

Table 6:5 Good opening moves when throwing an early double (for black)

Throw	*The best early moves*
6-6	W1 to W7 (twice); W12 to B7 (twice)
5-5	W12 to B8 to B3 (twice)
4-4	W1 to W5 (twice); W12 to B9 (twice)
3-3	B8 to B5 (twice); B6 to B3 (twice)
2-2	W12 to B11 (twice); B6 to B4 (twice)
1-1	B8 to B7 (twice); B6 to B5 (twice)

These men in Jerusalem are playing shesh besh, a variation of backgammon.

The probabilities of throwing any particular roll or total can be calculated by reference to Figure 2:1.

There are two distinct overall strategies in backgammon. The first is known as the forward or running game. In this strategy the player tries to move his men round the board as quickly as possible ignoring within reason his opponent's play and the risk of leaving blots. Without interference a player should be able to bear off his men in around 24 throws. The reverse game, known as the back game, is a strategy which allows the opponent to run while concentrating on making points and if possible to build blocks or a prime. A block is a succession of adjacent points made, making it difficult for the opponent to move past. A prime is six adjacent points made, making it impossible for an enemy man to pass. A block can sometimes be walked round the board by moving the men on the backward point to the forward point, keeping the block intact. Players hold two good points for blocking at the start of the game in their 6-point and 8-point. If a player can make his 7-point (as he can with an opening roll of 6-1) he can build a block on points 6, 7 and 8. If he can make his 9 and 5 points he nearly has a

Backgammon had a boom in the 1970s, when it became the fashionable game in many parts of the world. On the following pages, two famous players receive advice from Solly Kerzner of the Southern Sun Hotel Corporation. They are Peter Sellers, the actor, left, and Dr Christiaan Barnard, the heart surgeon.

Backgammon is a simple game to learn, but a difficult game to master. It is also an ideal game for train and plane trips, which perhaps contributed to its appeal for modern jet-setters. Hugh Hefner, of the Playboy organization, playing a game with a playmate on a flight to Los Angeles.

prime. The best players will usually combine both strategies, trying to run their men and to make points.

Do not be over-anxious to hit blots. If you have a big lead in time, it is better to let your opponent's runners pass, so that they cannot hit your blots. Take risks in leaving blots early in the game, when an adverse hit is less damaging. When the two armies of men pass each other, do not waste points – get your men into your home board as quickly as possible to begin bearing off, even if most stack up on your 6-point.

Double when you have a firm strategic advantage, like a big lead in a running game, or when you have important blocks on the bar or 5-points, or when you throw a double-6 in a close game. Do not decline a double just because you think your opponent has an advantage. Try to assess his advantage. If it is less than 3-1 accept the double. If your opponent doubles first four times, and you decline each time you lose four units. If each time his chance was 3-1 on, you can 'expect' to win one of the games, winning two units and losing six, again a net loss of four units. If his chances were less than 3-1, you will have gained the edge by accepting. This does not mean that a player should not double until he estimates he has a 3-1 advantage. A player with an advantage clearly wants the stakes as high as possible, and if he can force a faint-hearted opponent to decline doubles in games he would ultimately have won, he is gaining a positive edge!

Although knowledge of good strategy and the probabilities when throwing two dice are essential to the good backgammon player, learning to apply this knowledge comes through playing, and practice is the best teacher.

General

The most popular dice game in Puerto Rico is known as general. Although it is often played elsewhere, a variation known as yacht is more common. Any number may play and five dice are used. A score sheet is ruled up as in Figure 6:6.

The hands, which are based on poker hands, and scores for them are as follows:

Five of a kind. All five dice showing the same number. When thrown on the first throw of a turn, this is known as big general and automatically wins the game. When obtained on a second or third throw, it is known as small general and is worth 60 points.

Four of a kind. Worth 45 points on first throw, 40 subsequently.

Full house. Three dice showing one number, and two another. Worth 35 points on first throw, 30 subsequently.

Straight. A throw of 2-3-4-5-6 or 1-2-3-4-5. Worth 25 on the first throw, 20 subsequently. In straights, a die showing 1 is partially wild, and can represent a 2 or a 6.

Point numbers. These are valued at their total spot count, e.g. three 6s are worth 18, two 4s are worth eight.

Each player throws all five dice to determine the order of play, the lowest total going first, the next second, etc. Ties re-throw. Each player has one, two or three throws per turn, and a game consists of ten turns per player, unless a big general is thrown and wins.

The first player throws the five dice. If he throws a full house, or straight, he enters the score against that hand on the score sheet. If he throws any other collection of numbers, he may put aside any dice and throw the others again, or he may throw all five dice again. This is similar to drawing cards at poker, the object being to improve the hand. If he does not achieve a poker hand on his second throw, he may re-throw any of the dice a third and final time. If he throws four of a kind on his first throw, he may enter 45 points immediately against four of a kind. Alternatively, he may throw the odd die twice more in an effort to score 60 for small general. If he fails, he will score only 40 for his four of a kind.

If after three throws a player still has not thrown a poker hand, he may nominate any point, and score accordingly. For instance, if he ends his turn with 6-6-6-3-2, he might nominate 6 as his point, and enter 18 against sixes on the score-sheet. If he has 1-2-2-4-6, he might nominate 2 as his point and score four against twos. He could score six by nominating 6s, but a later turn might prove more profitable, and he does not forfeit many points by scoring only four against twos. Once a player has entered a score against any of the hands, he cannot score for that hand sub-

HAND	PLAYERS A	B	C	D	E
Aces					
Twos					
Threes					
Fours					
Fives					
Sixes					
Straight					
Full house					
Four of a kind					
Small general					

Figure 6:6, the score-sheet for the dice game general. This is a game in which the chance throwing of dice is allied to skill in calculating odds. The use of the score-sheet is described in the text.

sequently. Thus, on his tenth turn, a player will have only one space on the score sheet on which he can make a further score. A player with a very poor hand after three throws, say 2, 2, 3, 5, 6 when he has already entered a score against twos, has the option of discounting the hand and scoring zero in any empty space on the score-sheet. He might select aces in this case, as he does not lose much by scoring zero for aces, and stands to lose more by scoring only five or six points in the appropriate space.

If a player has entered a score against small general, and throws small general again on his second throw, he cannot score again in this space, and must throw one die again in an effort to score four of a kind, or if this is also already scored, two dice for a full house. If he ends his turn still with a small general, he must count the hand as a point number, or as a zero in any available space.

At the end of the game the points are totalled, and all losers pay the winner units according to the difference in scores. A player throwing big general collects 100 units from all other players.

Strategy arises in knowing dice probabilities and deciding which dice to re-throw in an effort to score in an empty space on the score sheet, and which point to choose to enter a score against at the end of the turn.

Yacht is basically the same game, but the terms are different, and there are twelve scoring hands. Five of a kind is called yacht and scores 50. There is no big yacht and small yacht. Straights are big straight (2-3-4-5-6) and little straight (1-2-3-4-5) and score 30 each. Each has a space on the score sheet. Aces cannot be counted as wild. Full house and four of a kind score the total number of spots shown on the hand, including, in four of a kind, the odd die. Thus 4-4-4-4-6 counts 22 points against four of a kind. Point numbers score as in general. An additional scoring hand is choice, where all spots shown are scored. A hand of 6-6-5-5-4, for example, might be better scored as 26 against choice than 12 against sixes. The strategy and scoring are the same as in general, although yacht is more complex, and consequently the better game.

Poker dice

A set of poker dice consists of five dice on which are printed, instead of spots, six playing card denominations: A, K, Q, J, 10, 9. A set is shown in Figure 6:7.

Any number can play. The object is to obtain a higher poker hand than any of the other players. The hands rank: five of a kind, four of a kind, full house, straight, three of a kind, two pairs, one pair. Usually spades is the only suit shown, so there are no flushes. The odd dice in four or three of a kind, or pairs, do not settle tied hands. The first dealer is decided by all players throwing the dice once, the highest hand being dealer. Thereafter the deal passes clockwise.

All players put up an equal stake, and the dealer throws the five dice from a cup. He may either stand on the hand thrown, or set aside any number of dice and re-throw the remainder, equivalent to drawing in poker. The player on dealer's left then attempts to beat the dealer's hand, but he may not have more throws than the dealer. If the dealer did not re-throw, no other player may. Each player in turn throws, the winner taking the pool. If there is a tie, the pool is shared.

The dealer decides whether or not to re-throw. Table 6:6 indicates the best play against various numbers of players.

Table 6:6 Dealer's advisability on re-throwing at poker dice

Hand	*Number of players* 2	3	4	5	6
Three queens	S	S	S	S	R
Three jacks	S	S	S	R	R
Three 10s	S	S	S	R	R
Three 9s	S	S	R	R	R
2 pairs (aces up)	S	S	R	R	R
2 pairs (kings up)	S	R	R	R	R
2 pairs (queens up)	S	R	R	R	R
2 pairs (jacks up)	S	R	R	R	R
2 pairs (10s up)	S	R	R	R	R
Pair of aces	S	R	R	R	R

S = Stand, R = re-throw. With three kings or above, stand. With a pair of kings or below, re-throw. Dealer is advised to stand when the probability of winning is over 50 per cent.

Liar dice

This game is played with a set of poker dice by any number of players. All players throw the dice, and the highest hand becomes first shooter. Each player puts three betting units in front of him, and the shooter begins the game by shaking the dice cup and turning it upside down in front of him, so that the dice remain hidden. The shooter looks at the dice, being careful not to allow the other players to see them. He then announces a poker hand (see poker dice), including any odd die or dice. He might say, for example, 'three jacks, ace, nine'. The hand announced might be the hand actually thrown, or it might be higher or lower. The player on the shooter's left has the option of accepting or declining the hand (by declining, he is, in effect, calling the shooter a liar). If he declines, the shooter must expose his hand. If his hand is as good as, or better than, he said it was, the doubter puts a betting unit into a central pool. If the shooter *was* lying,

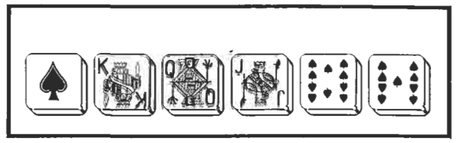


Figure 6:7, a set of poker dice. These dice can be used for various games, including liar dice, by which they are sometimes known.

he puts a betting unit into the pool, and pays one to the doubter, who now has four betting units before him. The doubter then takes the cup and dice and repeats the process, announcing a hand to the player on his left.

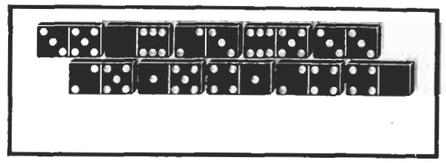
If a player accepts the hand, he looks at the dice, and may then re-cast all the dice or put any number aside, re-casting the remainder. He may put all aside and re-cast none. At no time should he allow the other players to see any dice. He then announces a hand to his left-hand player, which must be higher than the hand he accepted. If the first player *had* called 'three jacks, ace, nine', and the second player had accepted, the second player might re-cast one die only and announce 'three jacks, ace, queen'. The third player decides to accept or decline according to his opinion of whether the first player lied or not.

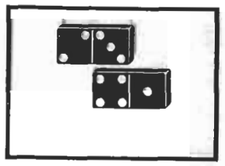
When a player loses his three betting units, he retires, and the last player in takes the pool. A fresh game is then begun, with the player on the left of the preceding shooter becoming shooter.

Liar dice is essentially a game of bluffing, but the good player should know that the 'average' hand is a pair of aces. A player accepting a pair of aces or below has an even chance of beating the hand even if the previous player were lying. Accepting a straight is dangerous. A player accepting a low straight (K-Q-J-10-9) might re-cast one die and announce 'high straight', but he has only one chance in six of achieving it, and is certain to be called liar. He might re-throw none and announce 'high straight', implying that the previous player had undercalled his hand. Undercalling can be seen as a nice ploy whereby a player can set a trap for the player next but one to play.

Dominoes

All games can be played for money, and dominoes is one of the largest family of games. The most common domino set is that of 28 bones, using all numbers from one to six, but in theory there is no limit to the number in a





Dominoes were a Chinese invention, but are now universal. The commonest set is the 28-bone set, with a double-6 as the highest domino, but there are other sets. Chinese sets have no blanks, but some other dominoes are duplicated. The men in the photograph are playing the draw game, the simplest and best-known of the many domino games. Figure 6:8 above is an example of matching dominoes at matador, and Figure 6:9 shows a game of matador in progress.

set, and sets are commonly used in which double-9 and double-12 are the highest.

One of the best games, matador, is described as an example of domino games. It is best played by two players, alternately being first player. The dominoes are placed face down and shuffled, and each player draws seven, the remainder forming the bone-yard. The first player lays a domino, and the second player can play to either end a matching domino. A domino matches if the matching ends total 7. The second domino is laid as in Figure 6:8. Four dominoes are wild: 6-1, 5-2, 4-3 and double-blank, and these can be played at any time, with either end forming the match. They are known as matadors, and only a matador can be matched to an end which is a blank. A player on his turn may draw as many dominoes as he wishes from the bone-yard, and if he cannot go must draw until he can. However, the last domino must be left in the bone-yard, and a player who then cannot go loses his turn.

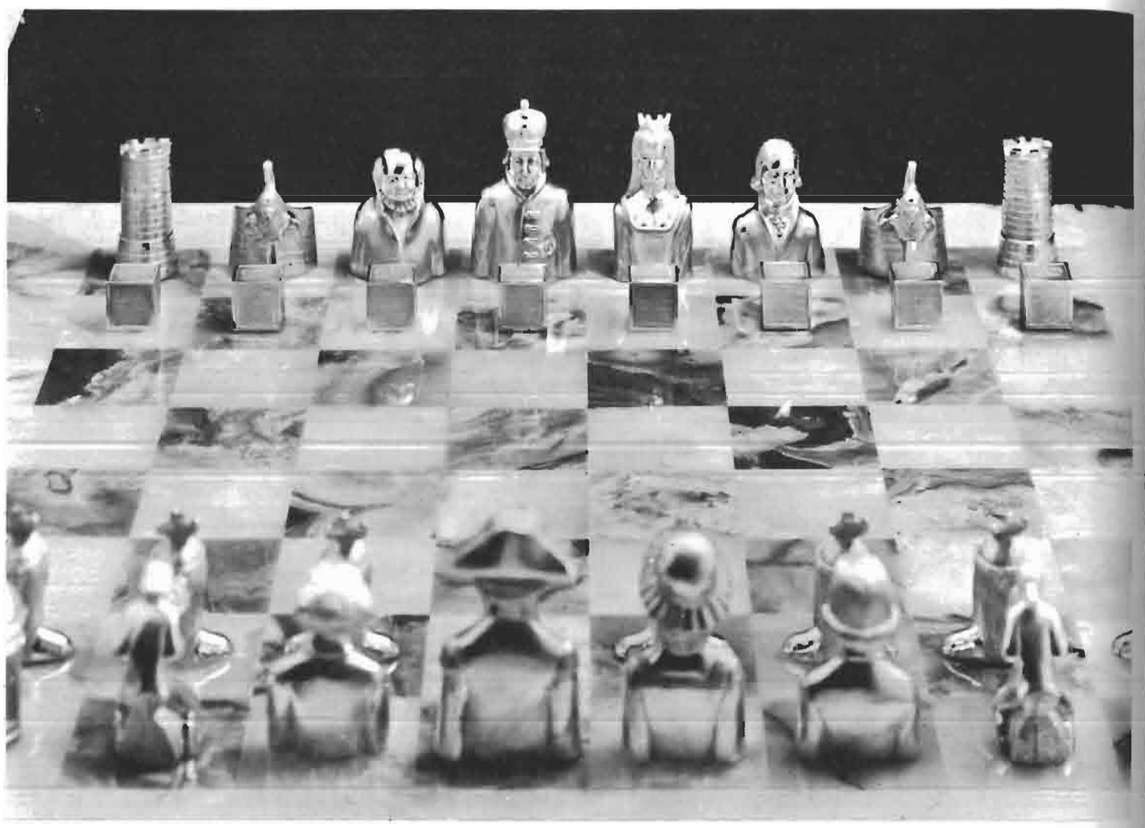
The game begun in Figure 6:8 might look like Figure 6:9 after each player has played five dominoes. This illustration shows how a matador and a double is played. At one end of the chain a 4 is needed to match, at the other a matador, since only a matador can be played to a blank end.

The game ends when a player runs out, i.e. plays all his dominoes, or neither player can go. Payment is made at an agreed amount per spot, or per ten spots, left in the hand. A double-blank held by the loser counts 25; other matadors 10. If neither player goes out, he with the lower total wins according to the difference in totals.

Spoof

The simple game of spoof can be played by any number of players. It is best for two, and has the beauty of requiring only six coins, and so can be played anywhere.

Each player draws from 0 to 3 coins from



Ancestors of modern chess, which dates from about the fifteenth century, were played hundreds of years before the birth of Christ. Many believe it to be finest of all games, and designers have reflected this opinion with beautiful equipment.

his pocket in his closed fist. The first player guesses the total number in both hands, which might be any of seven numbers between 0 and 6. The second player then guesses, but must guess a different number from the first. The two hands are then shown. If a player guesses right, he wins a point, and the first player to win three points wins the game. Stakes are one unit per game. Throughout the game, players take turns in guessing first.

Although it is a simple game, two players who play regularly can exercise skill and derive pleasure in trying to out-guess each other. The second player to guess has an advantage in being able to get an idea of the total from the first player's guess. Should the first player guess two, he cannot be holding three. Should he guess five he cannot be holding less than two. However, the first player might deliberately forego his chance when guessing first by just such a ploy, giving himself the advantage on the next round. This is known as spoofing, and there is satisfaction in spotting the spoof and winning.

Spoof is based on the very ancient game of atep, in which a player guessed the total number of fingers extended by his opponent and himself on one hand held behind the back. The game is also called the match game, as it is frequently played with matches. When more than two play, the concept of spoofing is less valuable, and the game becomes one of pure arithmetical calculation for the later guessers.

Other games of skill

Perhaps the three best intellectual (as opposed to physical) games in the world are bridge, chess and 'go'. Certainly the first two have the most extensive literature. As hundreds of books have been published on aspects of each, it would be out of place and useless in this book to attempt to give hints to players who wish to bet on the outcomes of games.

Bridge is usually played for small stakes per point. It is a partnership game and must be played by pairs of more or less equal ability if betting is to be satisfactory. Big bets have been made on challenge matches, the most famous being two matches in the 1930s played by Ely Culbertson's team against teams of Sidney Lenz and Hal Sims. Culbertson won both. On the former he gave odds of 5-1, $6,000 being at stake, and the match received tremendous publicity.

Open air chess in America. Chess has so far escaped heavy gambling, but many bets were struck on the Fischer-Spassky world championship match.

Chess is not normally associated with gambling. It is a game of pure skill for two players, in which the better player's supremacy should triumph in a relatively short series of games. Handicaps have been invented, but tend to alter the nature of the game. Nevertheless, betting does take place. Ivan the Terrible being said to have gambled huge amounts on his skill.

'Go' is the principle game of the Far East, being invented in China, where it is known as wei-ch'i, and becoming the national game of Japan. It is played on a board which consists of a grid of 19 horizontal and 19 vertical lines, the points of play being not the spaces but the 361 points of intersection of the lines. Each of the two players has circular stones (181 for black and 180 for white) and they alternately

place a stone on one of the points. Opposing stones can be captured by surrounding them, but the object is to acquire territory by completely enclosing vacant points. The game has recently attracted serious players in the West. It is as subtle as chess, and requires as much study to become a top player. In Japan and Korea there are professional players, and one must serve an apprenticeship to join their ranks. All players have a grade, similar to the dan grades in judo, and not unlike the handicap classifications which golfers have. There is a system of handicapping based on these grades, which is more satisfactory than the handicapping system used in golf or chess. Players of unequal ability can thus play each other, and a good deal of gambling takes place. There have been crazes in the West for the Oriental game of mah jong and more recently backgammon, both inferior games to go, and go will doubtless one day enjoy a similar boom.

Mah jong is a name trade-marked in 1920 for a Western version of a game played in China under various names. It enjoyed a boom in the 1920s as great as the passion for backgammon in the 1970s. The Western game attempted to incorporate most of the variations found in many local versions of the game in China, and the proliferation of hands and complicated scoring made the whole thing too complex. The game is for four players, who build sets and attempt to go out in a manner similar to that in the card game rummy. There are no universally accepted rules. A modern set might consist of 136 tiles, of which 108 are in suits (bamboos, characters and circles) and the other 28 are honours (east, south, west and north winds, and red, green and white dragons). Some sets include eight additional tiles called flowers or seasons. The local Chinese games are simpler than the Western versions, and much betting takes place on them.

Whist is a simple card game of the trick-making sort, which offers scope for a considerable degree of skill. It is a medium for mild gambling through the popularity of whist drives, which are games played by a number of people in local halls like the Women's Institute, usually to raise funds for good causes. It is a partnership game for four

Mah jong is a Western name for a game played in different ways in China. The appeal of the many kinds of tiles led to some interest in the West, but it never achieved the popularity it enjoys in China. It is similar in principle to the card game rummy, and is a medium of gambling in the East. These Western players have some stakes riding on the result.

Snooker, billiards and pool belong to the same family of games, in which side-bets are usually made by the players. This American player is sitting on a pool table while awaiting his turn at snooker on the adjoining table.

players. In whist drives, games take place simultaneously on a number of tables, partnerships changing by rotation after each deal. Each player carries a 'travelling' score-card, and there are usually prizes at the end for the best score and the worst (the booby prize). Despite the modest value of the prizes, which makes a drive more a social than a gambling occasion, addicts take the play very seriously, and woe betide a player who disobeys a convention which requires a certain card to be led from a particular holding, or plays low when he should have played high.

Draughts, or checkers in America, is an old game **which has had a lite**rature since 1756, and which recently has attracted more and more attention from serious games players. It is played on a 64-square board, like a chess board, by two players with twelve men each, the object being to capture all the opponent's men. It is not as complex as chess, and in many languages has been given a name which translated means 'a game for ladies'. It is a game of pure skill, however, in which the expert will nearly always beat the beginner. Betting is restricted to the result, but games for small stakes are often played, sometimes in the open air outside cafes in Europe and America.

Other games on which betting takes place are games of physical skill such as snooker, billiards, pool or darts. Games are frequently played in clubs or bars for stakes which might be as small as a drink. Betting is not essential, but most players find that a small stake adds spice to the game.

PART SEVEN

Some famous casinos

Legal casinos are to be found in most countries of the world, and many illegal casinos thrive in the remainder. The oldest casino still operating is probably that at Baden-Baden in West Germany, where casino gambling has been taking place for 200 years, though not continuously. Some of the newest sprang up in Great Britain after the Gaming Acts of the 1960s, which made Great Britain one of the most important gambling centres of the world.

However, when the world's casinos are discussed, pride of place must go to Monte Carlo, the most famous and aristocratic of them all, closely followed by the complex of casinos in Nevada, centred on Las Vegas. Las Vegas has in a comparatively short time become a town synonymous with gambling, where, in typical American fashion, all those qualities and vices which have come to be associated with gambling – wealth, poverty, avarice, vulgarity and corruption – can be seen to a degree.

A casino was built in Monaco in 1856, on the initiative of Prince Florestan I, who badly needed to attract capital to the principality. It was a failure, as the bad roads and irregular boat service were deterrents to visitors. Most of Monaco was annexed by France in 1861, which was a blessing in disguise, as the French agreed to build a railway line between Nice and Monaco. Building began on the present casino in 1863, and Prince Charles III, after whom Monte Carlo was named, invited François Blanc, the very successful director of the casino at Homburg, to run his new casino. François Blanc was a financial genius whose gains were not always legally obtained. He and his brother Louis had served prison sentences for fraud before making a success of the casino at Homburg, where Louis died. Fran-

Opposite above: the Kurhaus, Baden-Baden. The impressiveness of the exterior is overshadowed by the magnificence of the spacious gaming rooms inside. Below: the last days of rouge et noir at Baden-Baden in 1872, when the government closed gaming houses. Baden-Baden was allowed to re-open 61 years later. Left: this photograph is claimed to be the first ever taken of a group in play in a Continental casino. The game is chemin de fer in the main salon at Monte Carlo, 1870.

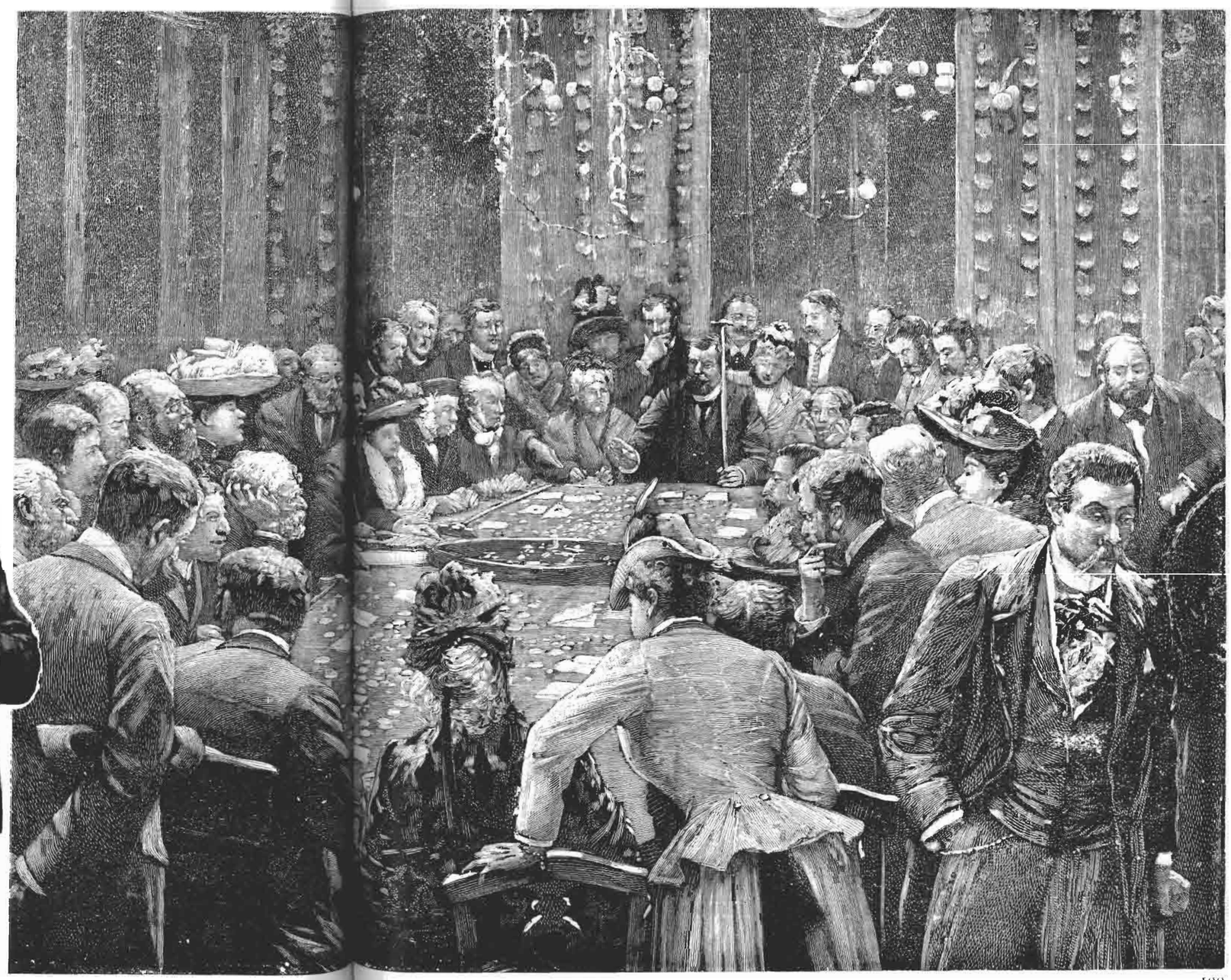
Overleaf: the casino at Monte Carlo, the most famous of all. For fifty years after its opening in 1863, its fame grew as the world's kings and princes went to gamble and socialise with the merely rich and famous. Nowadays the casino itself has been surpassed in style and elegance, but its name remains supreme.

Gambling at Monte Carlo in the naughty nineties. The happy couple below are leaving the tables with their winnings. The engraving from the painting by Jean Beraud, right, shows a common scene as rows of standing gamblers and would-be gamblers crowd behind those seated at the gaming tables.

çois offered 1,700,000 francs for the Monte Carlo casino, an offer which the nearly bankrupt Prince Charles could not refuse.

François Blanc was an astute business man, and used to advantage the opportunities he was given. Casinos were illegal in France, and Blanc financed a successful movement against the proposed new casinos in Italy. With no local competition, Blanc advertised his casino in the prospering French resorts of Nice and Cannes, and when the new railway was finished in 1868 the trickle of visitors to Monte Carlo became a steady stream.

The company Blanc formed to run the casino was named the Société des Bains de Mer et Cercle des Etrangers – the Sea Bathing Society and Circle of Foreigners. The last part of the name referred to the ban on locals from



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Elsa Maxwell, the famous party-giver and socialite, was invited in the 1920s to lend her considerable talents to re-building the reputation of Monte Carlo as the playground of the rich, a reputation interrupted by the First World War.

Previous page: the splendour of the best European casinos. Monte Carlo and Germany set the style for luxurious interiors, and casinos in France, legalised in 1907, maintained the tradition.

gambling in the casino. Blanc's Homburg casino had met criticism because by taking the money of the townspeople it was creating more hardship than prosperity.

The casino's growing success caused envy in the French resorts, but Blanc was good at public relations, and knew that money spent with French newspapers would ensure good reports of his enterprise. Nobody has done more to make Monaco what it is to-day. He built hotels, imported soil to the barren rock for gardens and used the casino profits to improve the public services in all the ways he could. Much publicity was given by his rivals to the evils of gambling. Blanc arranged that suicides, if found first by casino staff, would have their pockets filled with money to prevent stories of ruined gamblers killing

themselves. He was very generous to gamblers who lost all their money but not their lives, giving them funds to return home. Although the stories of money being planted on corpses became widespread, it was less well-known that poisons and fire-arms were not allowed to be sold in Monaco, and that hotel detectives searched visitors' baggage for guns and ammunition.

Monte Carlo rapidly built itself around the casino, and practically incorporated Monaco itself. When the Prince of Wales, later to become King Edward VII, began in 1870 a series of visits to Monte Carlo, the principality became a centre of fashionable society. For a number of years the Royal yacht *Britannia* was to be seen in the harbour, and the Aga Khan, most of the crowned heads of Europe, and American millionaires like W. K. Vanderbilt and J. P. Morgan were to be found at the tables or in the Grand Hotel, where César Ritz presided and Auguste Escoffier looked after the kitchens. Blanc died in 1877, and for nearly fifty years afterwards his son Camille maintained the elegance and prestige of Monte Carlo, despite competition from the great French casinos, legalised in 1907.

Camille Blanc died in 1927, having just lost control of the casino to Basil Zaharoff, the arms king, who saw ownership of the casino as a means of ousting the Royal family and putting his intended bride, the Duchess of

Overleaf: 'Vegas Vic', the trademark of the Las Vegas Chamber of Commerce, stands out from the other neon signs which make Las Vegas at night a blazing invitation to gamble.

Famous faces at Monte Carlo. The late Aga Khan (smaller picture) was frequently seen at the tables and race courses of Europe. He gambled against the Greek Syndicate. Aristotle Onassis gained control of the casino in the 1960s, and his yacht was usually in the harbour. The government created new shares to reduce his power in 1966 and he sold the shares he owned.

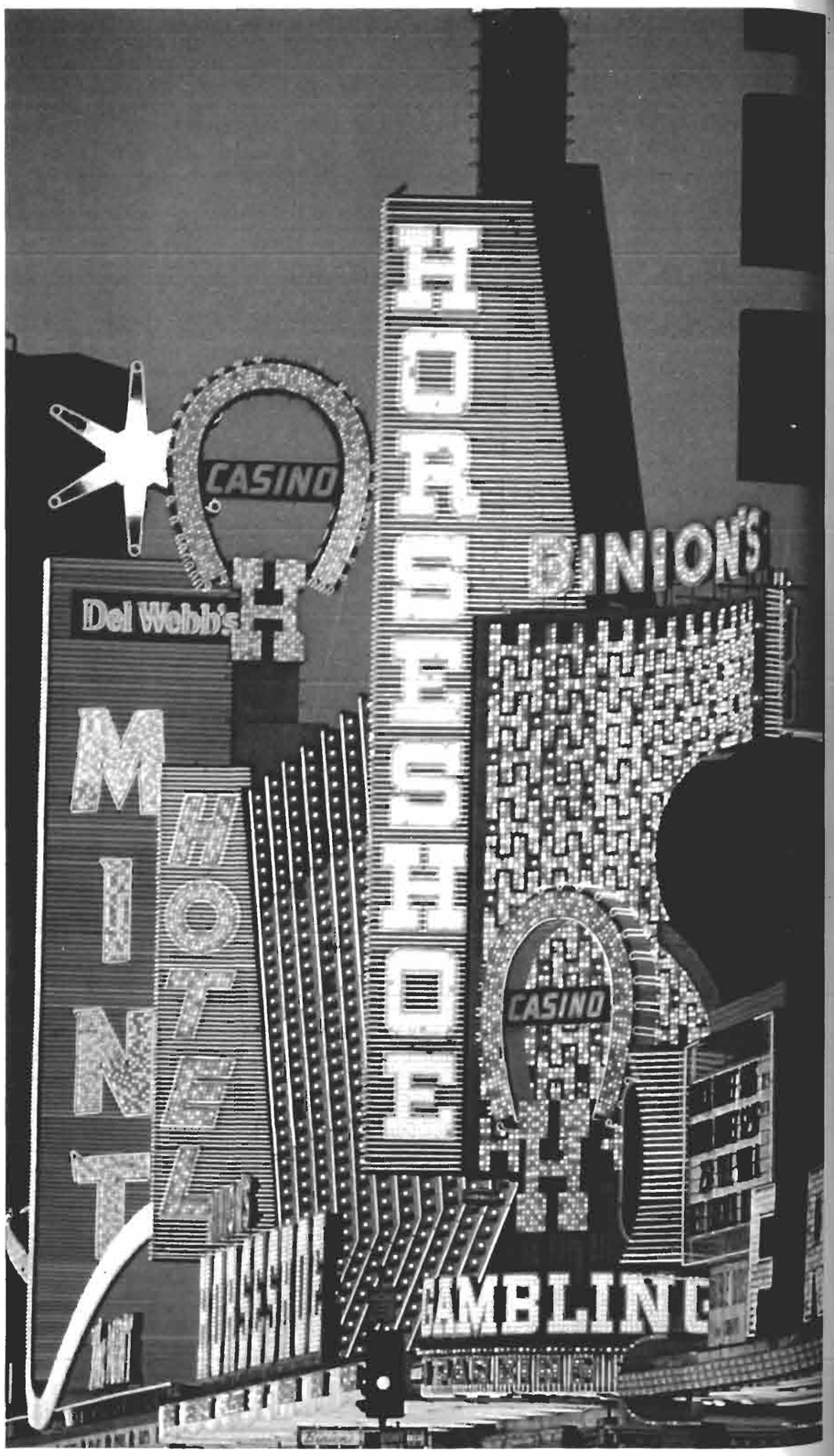
GOLDEN
NUGGET
GAMBLING HALL
CASINO
PIONEER
BINGO
CASINO
15

Villafranca, on the throne. However, the Duchess died in 1926, and Zaharoff sold his interest to a syndicate led by Dreyfus, the banking company. The casino declined with the end of the Blanc era. The Blancs built Monte Carlo, and it is the golden years of their reign rather than its present attractions on which the glamorous reputation of the Monte Carlo casino rests.

In the 1920s, Prince Pierre invited Elsa Maxwell, the socialite and party giver, to come to Monte Carlo and help revive its fading splendour. The Sporting Club, a summer casino, was built, and the wealthy returned in greater numbers, film stars, statesmen and industrialists rubbing shoulders with kings, princes and maharajahs. Monte Carlo was by now a complex of casinos and hotels. It was successful, but it was not the old Monte Carlo.

Business continued during the war, but profits took a sharp drop in the austere years afterwards, when many countries limited the amount of currency which could be taken abroad. By 1953, the casinos were withstanding heavy losses, but Aristotle Onassis, the immensely wealthy ship-owner, bought a controlling interest in the Société des Bains and set about the task of restoring the profits. Prince Rainier II, who had succeeded to the throne, married Grace Kelly, the film actress, in 1956, and the world's newspapers treated the romance of prince and showgirl as a story which no reader would want to miss. Nearly 2,000 reporters and photographers at the wedding kept Monte Carlo in the headlines at a time when returning affluence meant that publicity would have a maximum effect on the fortunes of the principality. Once again a yacht, Onassis' *Christina*, was frequently in the harbour and in the news, as Maria Callas, the celebrated opera singer, and Winston Churchill became guests aboard. But the impetus again waned, and Prince Rainier was forced to create new shares in the Society for the government, so that development could continue under government control. Onassis sold out to the state, and the popularising of the resort begun by Elsa Maxwell was increased. A new Monte Carlo Sporting Club was opened on land reclaimed from the sea, and the whole complex now resembles its

Nevada became the gambling state of America when legal organized gambling was resumed there in 1931. Other states have allowed legal gaming in the past, such as Arizona, California and Louisiana. No laws will prevent gambling. These old men were gambling in large sums in an American bar in 1913.



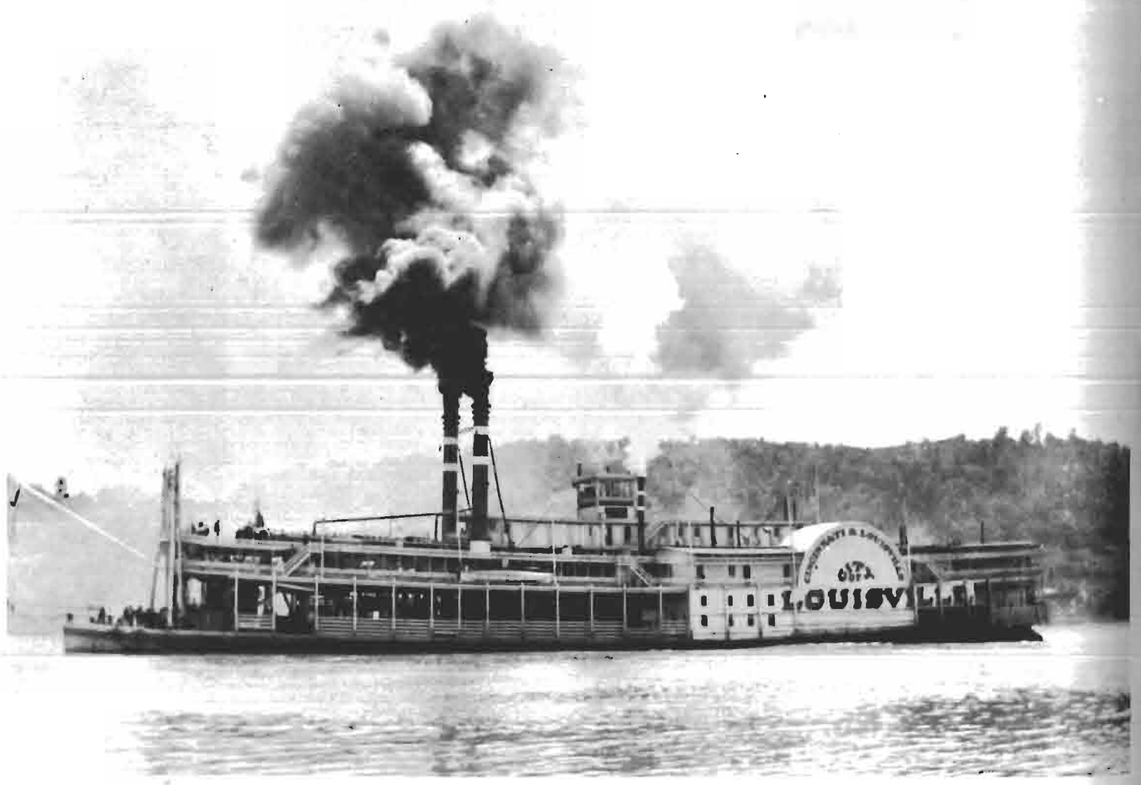
The down-town Fremont Street area of Las Vegas, known as Glitter Gulch. The conversion of Las Vegas from a desolate desert town to a glittering gambling resort was begun by gangster Bugsy Siegel, who built the fabulous Flamingo in 1946.

A gambling entrepreneur in life and death. The photograph of Benjamin 'Bugsy' Siegel in his prime does not do justice to his handsome appearance. He used the methods of a gangster and the money of the mob to build his casino.

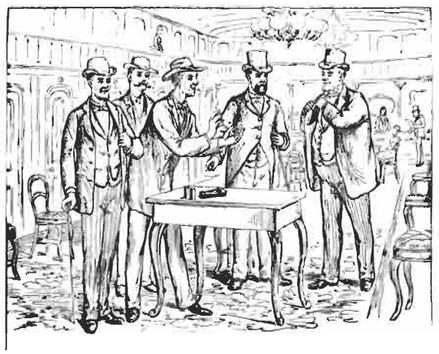
French rivals. The majesty and exclusiveness have departed, and the fight is now on for the spending money of the middle-class holiday maker.

Inevitably the casino has become a tourist attraction, and nowadays the visitor must pay to enter. Some of the old aura can be found in the salles privées, where big-stake gambling on baccarat, roulette and chemin de fer takes place in relative luxury and quiet. In the salles ordinaires, known collectively as the kitchen, are two salons, the Salon de l'Europe, in which are found the trente et quarante tables among the European games, and the Salon des Amériques, where American visitors can play craps, introduced in 1949. The craps tables offer prohibitive odds, and are spurned by self-respecting gamblers. Visitors can play blackjack and boule, and, perhaps the biggest indication of the way cheapness has overcome grandeur, there is the ultimate Nevada horror – a slot machine alley.

The phenomenon of the gambling empire in the Nevada desert is of recent origin. While François Blanc was an opportunist who stooped to fraud, the man who began the Las Vegas boom was a gangster of the first rank, Benjamin 'Bugsy' Siegel. Siegel served an apprenticeship in crime, having his own gang by the time he was 14 years old. When 20 he formed with Meyer Lansky the gang known as the Bug and Meyer mob. They were murderers by contract for such hoodlums as Al Capone and Johnny Torrio. Siegel and Lansky joined the board of directors of the group known as the Combination, which included Capone, Torrio, Lucky Luciano, Frank Costello and other gangsters whose names are as infamous. Siegel was different



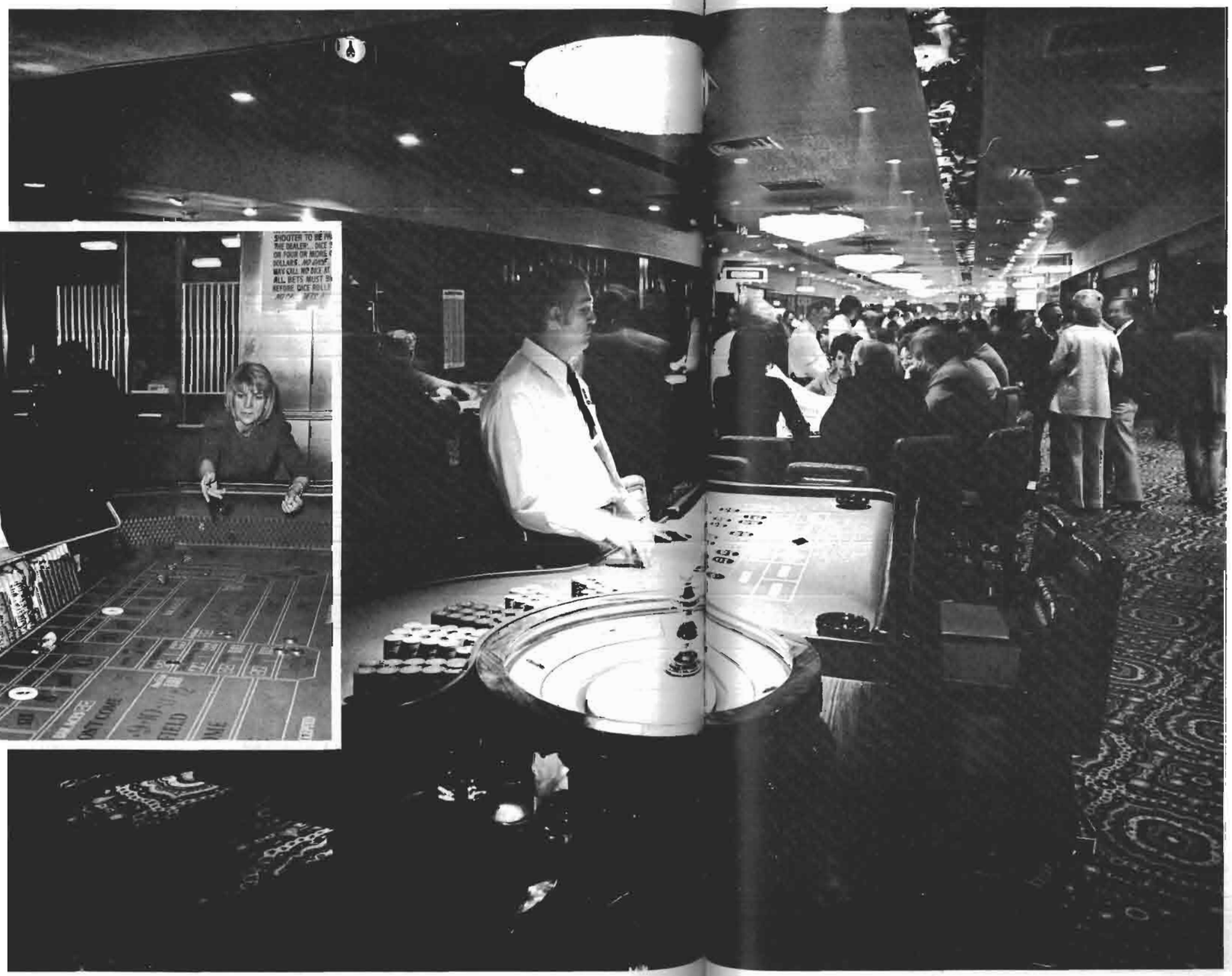
The Mississippi steamboats provided easy pickings for professional gamblers, both honest and dishonest, who were sometimes in collusion with the officers. The photograph shows the steamboat 'City of Louisville' in the 1880s, and the illustrations show the gamblers at work from a book 'Forty Years a Gambler on the Mississippi' by George Devol, published in 1887.



Howard Hughes with Ginger Rogers during his years as a film magnate in Hollywood. In the late 1960s Hughes bought controlling interests in several casinos in Las Vegas and Reno, but was reluctant to meet the state's gaming authorities and lost interest in developing further the gambling city.

from the others, not in ruthlessness but in looks. He was as handsome as a film star, and more vain than most. Silk monogrammed shirts, hand-made shoes and sharp suits contributed to his film-star image, and in 1937 he was sent by the board to organise their criminal activities in California. Bugsy had paid many visits to Hollywood, and already counted a number of stars as his friends, including the screen vamp Jean Harlow, whom he pursued. Now he was in his element, organising the mobs and mixing with the Beverly Hills social elite. With drugs, prostitution and bookmaking rackets bringing in a fortune for himself and the Combination, Bugsy turned his attention to Las Vegas when his share in a fleet of gambling ships operating off the Californian coast was made worthless by state legislation. Gambling had been legal in Nevada since 1931, but few ventured into the desert to play the craps tables and slot machines. Bugsy reasoned that if gamblers were prepared to go three miles out to sea to gamble, they would brave the desert if the facilities were attractive enough. He had a vision of himself as the gambling king of America, and in 1946 set out for Las Vegas and began to build the fabulous Flamingo Hotel. The cost reached $6 million, partly due to Bugsy having to pay heavily on the black market for materials. While building was in progress, Bugsy fell out with the mob. Capone acquired the Continental Press Service, which provided a service to

A roulette wheel doing no business at the Hotel Sahara, Las Vegas. A 'carpet joint', the Sahara has an expensive decor which lacks the elegant intimacy of the best European salons.



The dealer at the craps table at Harold's Club, Reno, is dressed to correspond with the Western motif of the club.

bookmakers, and wanted to close the rival Trans-America Wire Service which Bugsy had set up for the Combination. Bugsy needed the revenue from Trans-America for his operations and at a meeting of directors of the Combination demanded $2 million to close it. The mob would not brook independence, and from then on Bugsy's days were numbered.

On Boxing Day, 1946, the casino part of the Flamingo opened. After losing $100,000 in the first fortnight, it closed again. Bugsy decided to re-open when the hotel itself was finished. Meanwhile bookmakers were objecting bitterly at having to pay Capone and Siegel for both the wire services. Siegel fell out with Lucky Luciano, who asked when the Combination's investment of $3 million in the Flamingo would pay dividends. The Flamingo re-opened in March 1947, and in a month or two profits began to roll in. But on June 20, Bugsy, who claimed to have killed 12 men, was himself the victim of the mob. While sitting on a sofa in the Beverly Hills mansion of his girl friend, Virginia Hill, he was hit by four slugs fired through a window by a hired killer. Spattered with blood, he lay with a message pinned to his newspaper, 'Good night. Sleep peacefully with the compliments of Jack's'. Jack was never found.

While the police were arriving at the scene, the Flamingo was being quietly taken over by Gus Greenbaum, Siegel's old friend and fellow-hood. He made $4 million profit in the first year. Eventually he, too, displeased the mob, and ended with his throat cut, but by then modern Las Vegas was on its way.

Most of the casinos which followed the Flamingo were owned and controlled by gangsters. The Desert Inn was the second largest casino-hotel to open. It began operations in 1950, and was followed in 1952 by the Sands and the Sahara. These are luxury establishments on the Strip, the Las Vegas main highway, and have been joined by, among others, the Tropicana, Riviera, Thunderbird, Stardust, Caesar's Palace and Dunes. They are known as 'carpet joints'. At the poorer end of Las Vegas are the 'sawdust joints', noisy, less elaborate casinos with names like Golden Nugget, Horseshoe, Lucky Strike, Monte Carlo and Jackpot.

Gambling in films. Opposite: Peter Sellers and Orson Welles face each other across the baccarat table in 'Casino Royale'. Above: Walter Huston tries to restrain the greed of Gregory Peck as he wins a vast sum of money at the roulette table in The Great Sinner *(1947). Left: Marlene Dietrich in a more restrained scene as she plays chemin de fer in 'The Monte Carlo Story.'*

Alfred d'Orsay throwing a main at Crockford's Club, London, in the nineteenth century. The game is hazard, the forerunner of craps. The caster first established a main point (5, 6, 7, 8, 9), then a chance point (4, 5, 6, 7, 8, 9, 10). If he duplicated his chance point first he won, his main point first, he lost.

Hogarth's gaming house scene from his eighteenth century series 'The Rake's Progress'. The atmosphere is of dissolution, with the rake ranting at his losses while other gamblers gloat. The setting was a well-known gambling den in Covent Garden.

The gangland killings, together with bribery of police and officials, continued, and were exposed to all in 1957 when Mafia chief Frank Costello was shot in the foyer of an apartment house in New York. Detectives found in his pocket a summary of accounts of the Tropicana. The Nevada Gaming Control Board was forced to tidy up the ownership of the Tropicana, but this event was a hiccup in the smooth control that gangland held over the casinos.

In the late 1960s the multi-millionaire Howard Hughes began buying control of several of the Las Vegas casinos, and he was followed by conglomerate businesses such as the Hilton Hotels group and M.G.M. Many of the casinos are now just one interest of multi-part concerns dealing in real estate, restaurants, building and so on.

The casinos on the Strip offer round-the-clock gambling at blackjack, craps, roulette, baccarat and keno, with countless slot machines ready for the loose change. The complex provides everything the visitor needs, from golf to swimming pools. Expensive but vulgar cabarets keep the customers amused. Frank Sinatra, a former casino owner, Tom Jones, Barbra Streisand and Liberace are among the entertainers to appear on the Strip. Top-

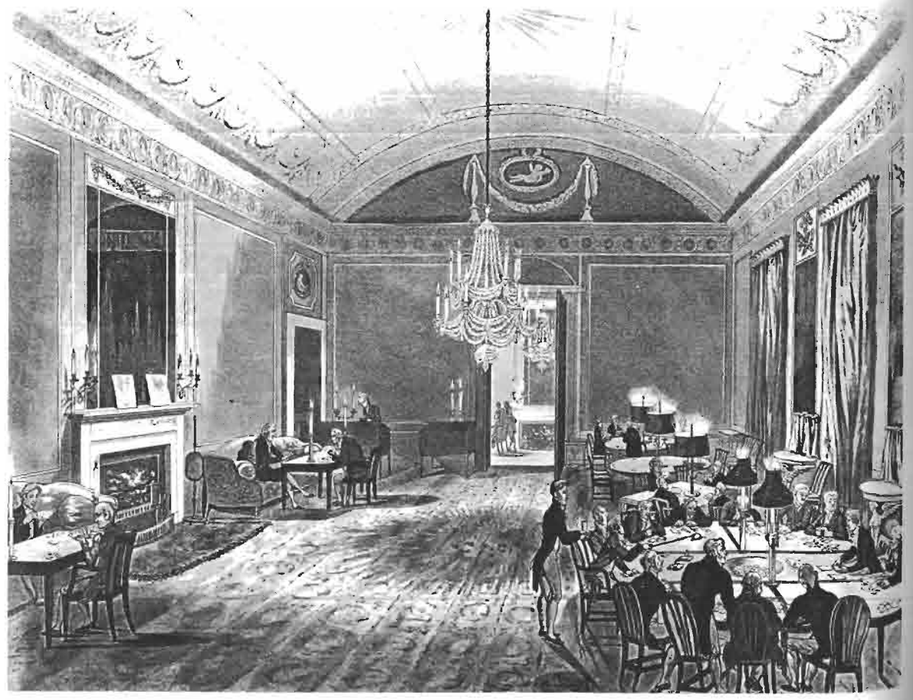
line boxing matches have been held in Caesar's Palace; in the Circus-Circus trapeze acts and human cannonballs are part of the show. But these are the trimmings, the public relations, the advertising designed to give the impression that sophisticated entertainment is provided for holiday-makers.

In fact, everything is secondary to gambling, and a man is as important as the size of his bets. In the cocoon of the artificially-lit casino, the gambler will see no windows or clocks. He can enter the casino at whatever hour he likes and find the same artificial atmosphere. The hooked gambler does not seek variety. He is content to spend hour after hour courting Lady Luck, and the Strip casinos cater for him.

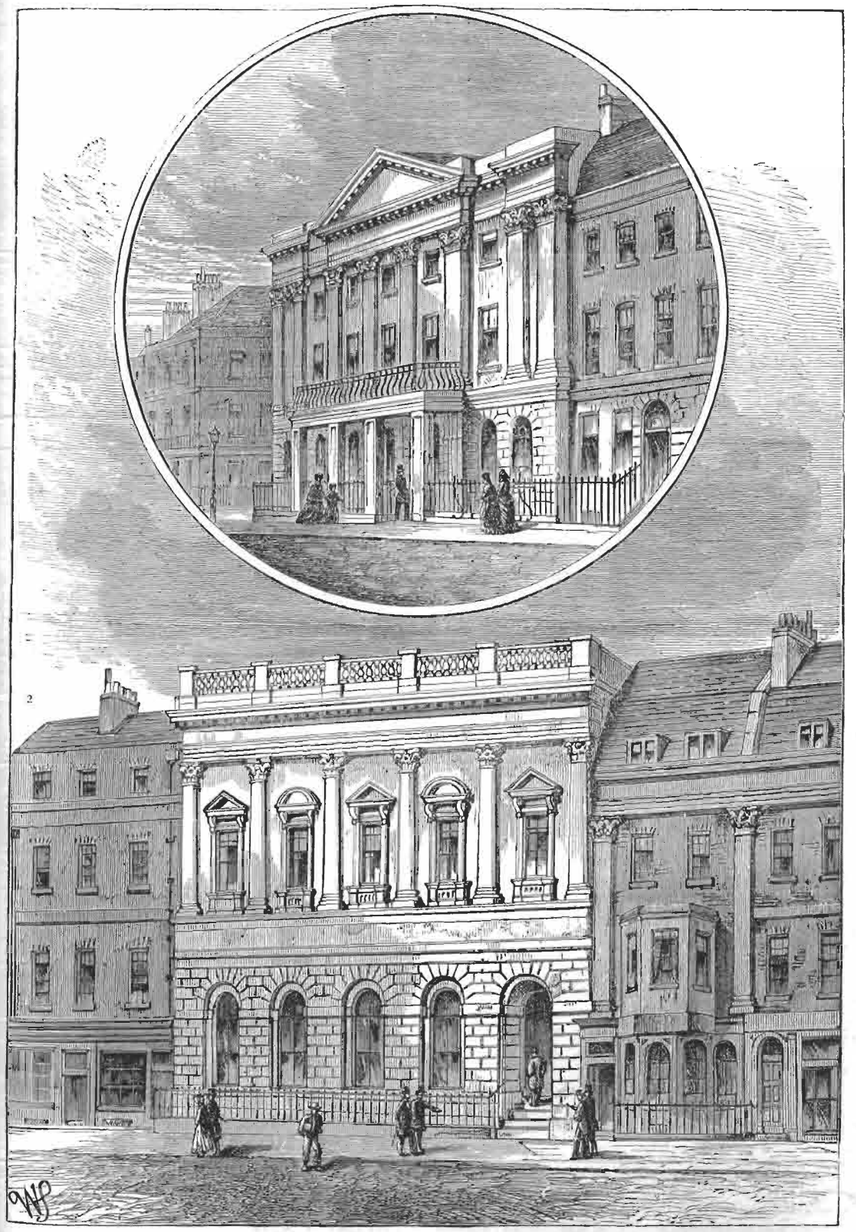
The sawdust joints centred on Freemont Street comprise the most dense area of gambling opportunities in the world. Known as 'Glitter Gulch' the area lacks the luxury of the Strip, and unashamedly gets down to business. Elaborate neon signs lure the gamblers inside the casinos, where there are no distractions to compete with the tables, side games and thousands of slot machines. The stakes are lower in Glitter Gulch, and here the locals, the less wealthy, the players down to their last few dollars and the addicts eking out their resources accumulate. Here slot-machine players can be seen operating four machines at once, perhaps wearing a glove to prevent blisters on the hand, becoming almost as automatic in their movements as the machines they feed.

To the north of Las Vegas are two other Nevadan gambling centres. At the holiday resort of Lake Tahoe are casinos which include the large and rich Harrahs, one of the biggest money-spinners in Nevada. In the town of Reno, famous for Hollywood divorces, is a complex of casinos dominated by Harolds Club. While the gambling activities in these towns are not as obtrusive as at Glitter Gulch, where the casinos are back to back, gambling is by far the biggest industry.

Around 20 million visitors go to Nevada



Brooks's Club in St James's Street, London, was the scene of some heavy gambling by its aristocratic members of the eighteenth and nineteenth centuries. This painting by Thomas Rowlandson shows card games being played in the Great Subscription Room.



1. ARTHUR'S CLUB. 2. BROOKS'S CLUB.

The stately buildings which housed exclusive gambling clubs of the eighteenth century, Brooks's Club and, inset, Arthur's Club. It was at Brooks's that Beau Brummell was said to have won a fortune when he beat a brewer 25 times running at hazard. 'I shall never drink any porter but yours' he told him, and received the reply 'I wish every blackguard in London would tell me the same'.

annually to gamble. Few leave with more than they brought and many leave with nothing. Some of those who lose stay, and many ex-convicts and down-and-outs gravitate to the towns where money changes hands quicker than anywhere else. Nevada has the highest crime rate of all the states of America, and more policemen per head than any other. The suicide rate in Las Vegas is higher than that of any other city in the world. In this city of crime there is only one sin – that of being without money.

The example of Las Vegas led other countries to be wary when legalising gambling. The Betting and Gaming Act of 1960 led to a boom in British casino gambling, but this was carefully regulated through additional Acts of Parliament and the setting up of the Gaming Board in 1968. Only through these limitations could the Home Secretary be satisfied that gangsterism and tax evasion in gambling were being brought under control. In Britain casinos must be licensed as clubs, with gaming restricted to members and their guests. Applicants to join clubs cannot be issued membership cards immediately, but must wait two days for acceptance. Advertising for members is not permitted, and while drinks may be served, licensing hours must be observed, and eating and drinking is kept

The Playboy Club opened in Park Lane, London, in 1966. It caters for the 'middle' class of gamblers, like young executives, who can eat a subsidised meal there before playing at the tables. It is also popular with foreign visitors to the capital.

Opposite: One of London's newer gambling clubs, the Ladbroke Club. Ladbroke's are an old established bookmaking company which since the British gaming acts of the 1960s has enlarged its scope to include betting shops and gambling casinos.

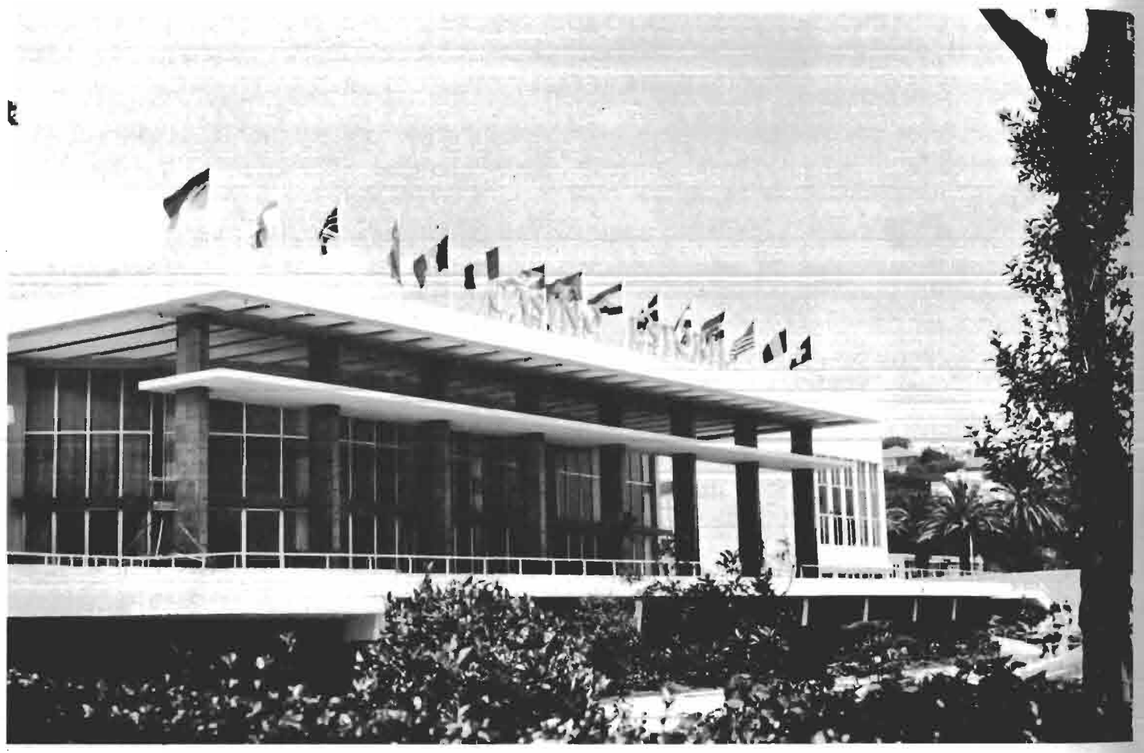
The casinos at Deauville, above, and Biarritz, opposite. As their architecture suggests, these casinos belong to the charm of an earlier age. To gamble in the quietness of their palatial but faded rooms is to exchange the rush and vulgarity of much modern gambling for a gentler, more leisurely way of losing money.

separate from the gambling. The guiding principle is that gambling is provided for those who must, but casinos must not attempt to attract custom.

The Gaming Board must examine the credentials of a club applying for a gaming licence, and be satisfied about the integrity and financial status of the applicant, before issuing a 'certificate of consent'. The local licensing authority then has to approve the premises and seek the opinions of local residents and the police on the desirability of and demand for a gaming club. Licences are granted on an area basis, so that gaming is reasonably accessible to the whole community, without there being a concentration of casinos in any locality. Therefore, whereas Britain might be regarded in its entirety as a diluted island Las Vegas, it is impossible for a small gambling centre within it to be built.

London, of course, has the most casinos, some under joint ownership. The Curzon House group operates the Palm Beach Club in Mayfair, and Crockford's, a new club using an old name in British gambling. The Mecca group, as well as having large investments in bingo, own among other casinos the Golden Nugget, a Soho club using a Las Vegas name. The Playboy Club has bunny girls to take its members' coats, and its modest minimum stakes at the tables allow young middle-class gamblers to bet shoulder-to-shoulder with its richer cosmopolitan clientele. The Playboy group own the more exclusive Clermont Club, where Lord Lucan played backgammon before his notorious disappearance.

While the London casinos offer a wide range in comfort and in the amounts that can be staked, most are housed in buildings not designed as casinos, and generally are not as spacious or plush as casinos on the Las Vegas Strip. Cabaret acts, dancing and live music



The casino at Estoril in Portugal looks modern and functional, and if gambling, like convenience foods, could be plastic-wrapped, that would be the Estoril style. It is modelled on Las Vegas and includes some of the American casino side-games.

are forbidden, although muzak is ever-present in many. The casinos in the provinces are often quite seedy, being housed perhaps in old dance halls. The segregation of live entertainment and gambling is a problem to casino owners outside London, and particularly in the north, where in the 1960s the gaming tables were side attractions to the cabaret and dancing. The 1970 Act forced the operators to move the gaming into separate premises where it is less popular, and casino turnover outside London is considerably smaller than that in the capital.

Most British casinos contain roulette and blackjack tables; baccarat can be played at the more exclusive ones, punto banco is increasing in popularity, and craps, while still not popular with most British gamblers, is available at least in those casinos likely to be patronised by American visitors. The various Gaming Acts have been concerned with guaranteeing the punter a square deal, which has led to some strange legislation, but which has had the merit of eliminating the more outrageous sucker bets to be found in Las Vegas and recently in Monte Carlo. In a comparatively short time, considering the associations which gambling has always had with the criminal classes, modern British legislation has done much to ensure that casinos are well-run and reputable. Scotland Yard and the Churches Council on Gambling have expressed satisfaction with the operation of the law and if the atmosphere is a little clinical compared with the razzmatazz of Las Vegas, the dedicated gambler will not mind that.

The Palace casino in Douglas, Isle of Man, just off the English coast, enjoys a curious advantage over mainland casinos. As the

Roulette on a single-ended French table in the casino of the Grand Hotel, Rhodes. The decor contains nothing extraneous or distracting, and the customers can settle to some straightforward simple gambling.

Iron curtain countries generally frown on gambling although most allow casinos, and lotteries which raise funds for the state and in which the prizes are frequently commodities. Roulette is popular. These players are in the Mamaia Melody Bar in Romania.

Isle of Man is outside the legislation of Westminster in local matters, the casino is not inhibited by British gaming laws. It is interesting that it compares unfavourably with British casinos. Some of the roulette wheels have single zeros, some double. Pontoon is played alongside blackjack. Pontoon is primarily a private gambling game with a big advantage to the banker. It is not played in any other casino, and the main difference between blackjack and pontoon, that the dealer wins all ties, ensures a substantial house edge for the Palace casino.

Casino gambling on the Continent, as in Britain, has sometimes been allowed, sometimes banned. In France, public casinos have been legal since 1907, and the best are among the most stylish in the world. Casino complexes must offer entertainment and dining of a high standard before being granted the right of gaming. The games to be found are baccarat and chemin de fer, roulette, trente et quarante, blackjack, boule and vingt-trois. Recently craps has been introduced. French casinos are the best regulated in the world, being always under the supervision of inspectors of the Ministry of the Interior. Over half the receipts, which are counted in public, are taken by state and local taxes, an arrangement very satisfactory to the citizens of Cannes, for instance, the biggest gambling centre with three casinos.

Although inflation has meant that the profits of the casinos increase, the golden age of French casino gambling was in the 1920s, before roulette was allowed, but when **François André** was running the magnificent **casino at Deauville** and Nico Zographos was playing the world's biggest gamblers at baccarat for unlimited stakes. The traditions of elegant gambling are continued in many French casinos by André's nephew, Lucien Barrière, who has holdings in casinos at both Cannes and Deauville. The Deauville complex, with its large restaurant, golf course, cinema and theatre, has the height of its season in August, when the race-course provides first-class sport.

Other splendid casinos with an illustrious history are to be found at Biarritz and Aix-les-Bains, and there is a large casino at Divonne-les-Bains, near the Swiss border. In the old palatial casinos, the gambling takes place in a sedate atmosphere, as if it were a pastime for those of discernment and taste. Entrance fees are minimal, but all casinos have a list of interdits, people who are barred from French casinos. The professional physiognomists, who stand at the doors with the faces and physical characteristics of thousands of interdits imprinted in their minds, are justly famous.

Not all French casinos are on the grand scale. Of the 150 or so currently operating, many are in new or converted buildings at seaside resorts with no pretensions to class. But the selective gambler can find the most civilised and aesthetically satisfying gaming in France.

West German resorts contain some of the most beautiful casinos in the world, including

There are gambling casinos in the Bulgarian holiday resorts on the Black Sea. The decor and atmosphere do not suggest the battleground of kings and tycoons, which might be thought too capitalistic, but rather a genteel working man's club. This is the Goldstrand casino.

Overleaf: the entrance to the casino at Aix-les-Bains, once owned by the legendary François André, but not now part of the empire ruled by his nephew Lucien Barrière. The gambling between the wars at the great French casinos, like André's Deauville and Aix-les-Bains, had a style that owed something to the innocence of the world, to the rich and famous men who enjoyed gambling and to the palatial casinos.

ROULETTE · BOULE · BACCARA ✶ CABARET

la belle Epoque
WHITE HORSE B+B

la belle Epoque
Cabaret-Dancing

SAMEDI

L'ORCHESTRE
QUARTET
LOOK

la belle Epoque

aix les bains

JEAN
NARDIN

CONCERTS

CONCERTS
DE VARIETES

that at Baden-Baden, perhaps the most elegant of all. Like Deauville, Baden-Baden has a race-course, where around Christmas the best horse-racing Germany can offer takes place. The fine restaurants and other places of recreation to be found at a health resort cannot compete with the magnificance of the ornate casino, in which roulette, baccarat and blackjack are the principal games. Dostoevsky gambled at the German casinos, and based Roulettenburg, the setting of his novel *The Gambler*, on Wiesbaden.

European countries outside Germany and France have fewer casinos, and they tend to be more functional and less redolent of a more leisurely and stylish age. The Cercle Privé in Vienna is in the Palais Esterhazy, and has an old-world charm of its own. Italians gamble at San Remo, Venice and St. Vincent, where Sean Connery brought off a notable coup. The larger Belgian resorts have casinos, the biggest being at Ostend, where the games are limited to chemin de fer and roulette, which is played without a zero, the house deducting a six per cent commission from winning bets. There are a number of casinos in Portugal, the largest and most vulgar being at Estoril, which is deliberately designed to attract American gamblers by offering them the traditional games found in Nevada. Spain does not permit casino gambling. The small island of Malta has one of the pleasantest casinos, in a palatial building at St. Julian's, where French and American roulette, chemin de fer, blackjack and boule can be played.

In most iron curtain countries private gambling is forbidden, but casinos are found in Romania, Yugoslavia, Bulgaria and Czechoslovakia. Nearby Greece allows casino betting as do Morocco, Tunisia and Egypt across the Mediterranean. Other African countries have casinos and those near South Africa provide facilities for rich South Africans, who have no casinos in their own country. Most Arab countries do not permit gambling and rich oilmen go elsewhere for their casino gaming.

China itself does not allow casinos, but the lavish gambling centre which has grown up on the Portuguese island colony of Macão has many attractions for Chinese gamblers from nearby Hong Kong.

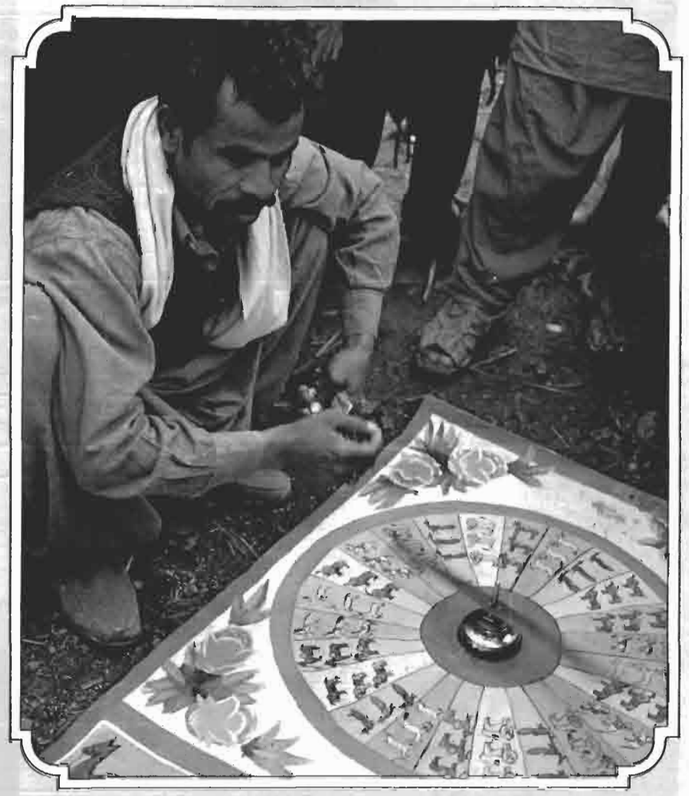
Single-ended roulette tables at a casino in Mauritius, a small island in the Indian Ocean, where even the lampshades are shaped like dice. Although the tables are of the American design, there is only one zero.

There are three casinos on the tiny Portuguese island of Macao. They attract big business from neighbouring states, particularly the British colony of Hong Kong, where there are no legal casinos. This is the Hotel Lisboa casino, offering a variety of European-style gambling.

Australian gambling, like that in the United States, is controlled on a state-by-state basis. The first legal casino was opened in 1973 near Hobart in Tasmania, and has been a success. A hotel-casino complex, it is well-run according to strict legislation, which is enforced by government agents. The state takes a share of the profits. The games offered are the usual ones of French and American roulette, blackjack, punto banco and craps. There is also a casino version of the popular Australian game of two-up, described elsewhere. There is not a rush to Tasmania to gamble, as most large cities in Australia contain illegal casinos, of varying luxury and fairness. These casinos, while risking occasional police raids, are more or less tolerated by the state.

One of the world's largest casinos is in the Mar del Plata, in Argentina, and the larger and richer South American countries permit casino gambling, with the notable exception of Brazil. Although Fidel Castro closed the badly-run but flourishing casino industry in Cuba, many other islands in the Caribbean area permit gaming, the casinos often being run in conjunction with hotels to attract the holiday-makers from North America. The largest group of casinos is found in Puerto Rico. They are subject to government rules and inspection and bear no relation to the Nevadan casinos. Betting is with casino chips only, the hours of opening are limited (usually from 8.30 p.m. to 3.30 a.m.), applicants for licences are strictly investigated, low maximum stakes are enforced, and although light refreshments and beverages may be served, alcoholic drinks are forbidden. The games played are American roulette, chemin de fer, craps and blackjack, although, surprisingly, there are no slot machines.

PART EIGHT



Gambling oddities

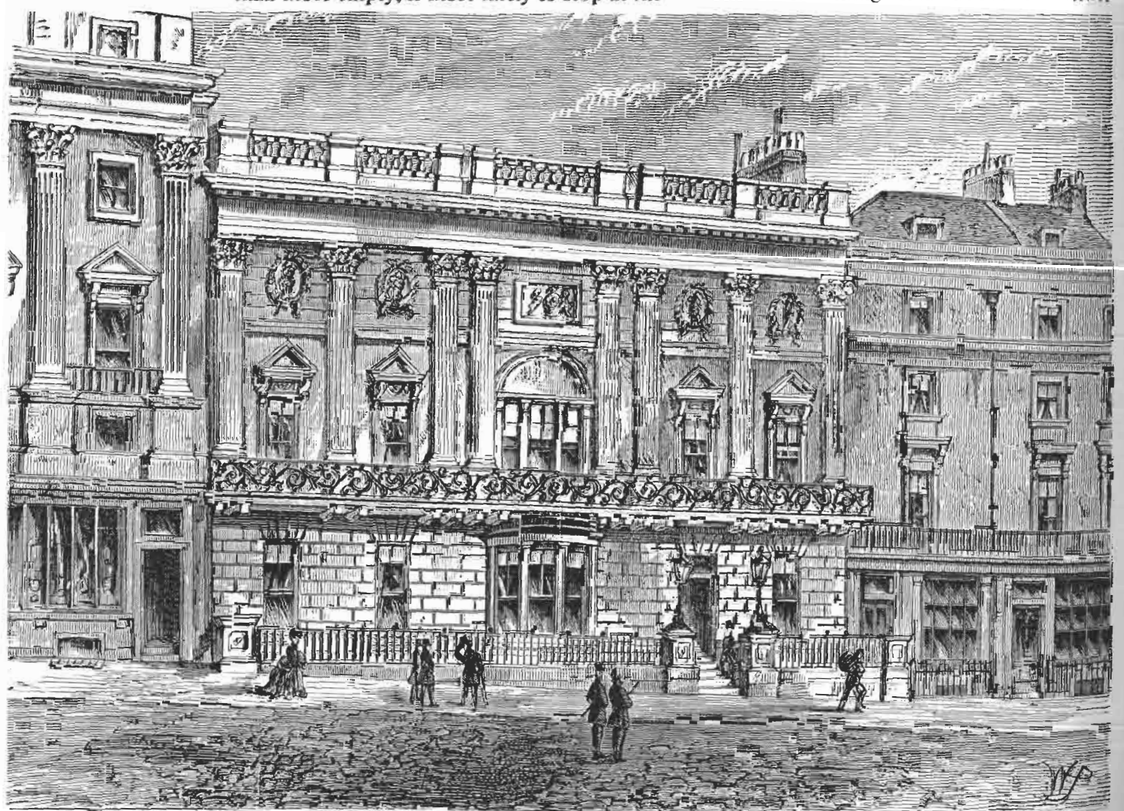
White's Club in London, the scene of some of the most extraordinary bets ever recorded. So keen were the members on betting that on one occasion when a man collapsed outside the door and was brought in, many bets were soon struck at various odds that he would die. It was decided that he should not be treated, as this would affect the bet, and so he died and the winners collected. A similar story has been told of Las Vegas, but the first version has the backing of Horace Walpole, who recorded it in a letter.

Gambling addicts are never stuck for a bet. There might be no games to hand, there might be a shortage of money, but a way will be found to satisfy the need for a wager.

Two moneyless Chinamen were reported to have bet their ears on which side a falling leaf would settle, and the loser paid up. There were numerous stories of wives being the stake in a gamble. An Indian prince lost not only his wife, but his slaves as well. The biggest stake is put up in Russian roulette, when a single bullet is put into a chamber of a pistol. The cylinder is spun, the pistol put to the head and the trigger pulled. Some say that the odds against an 'unfavourable outcome' with a six-shooter are longer than 5–1 against, as the chamber holding the bullet, being heavier than those empty, is more likely to stop at the bottom of the cylinder, and not be fired. Whatever the house edge, it seems a poor bet. A better idea was that of two Eastern princes who, instead of going to war, staked their riches on a game of chess, on the grounds that the better strategist would win at chess or war, and the spoils could be won without bloodshed.

Monarchs can be lavish with their bets. King Henry VIII lost the bells of St. Paul's Church in a game of dice. Robbers can be equally lavish. The famous English train robbers of 1963, when holed up in a remote farmhouse, amused themselves by playing Monopoly with real money: with nearly £3 million in the bank, who cares about landing on Mayfair, even with a hotel?

The worst thing said about inveterate gamblers is that they would bet on flies walking up a wall, or raindrops running down a window. John Gates was fond of the latter. According to legend, he won over $20,000 during a train journey in the rain by astute selection of the fastest drops. The attraction sugar cubes hold for flies has inspired many bored gamblers to set up cubes of sugar and bet which will be first visited by a fly. Shipmates on a tedious voyage in the Fernandel film *The Sheep Has Five Legs*, having exhausted cards and dice as a diversion, discovered a fly in the cabin and played the sugar cube game. Additional excitement was provided for all by the fly deciding to tour the body of a partly dressed young lady, who was not permitted to move in case she influenced the outcome.



The members of White's Club in the eighteenth century were famous for their eccentric bets. A particularly aged member would be likely to have a number of bets resting on the date he would become an ex-member. An expectant girl might carry not only a child but several wagers on the date it would appear. If she were unmarried, opinions as to the father would be backed up with cash. Bets were recorded in a book. The feelings of the subjects of the bets were not recorded.

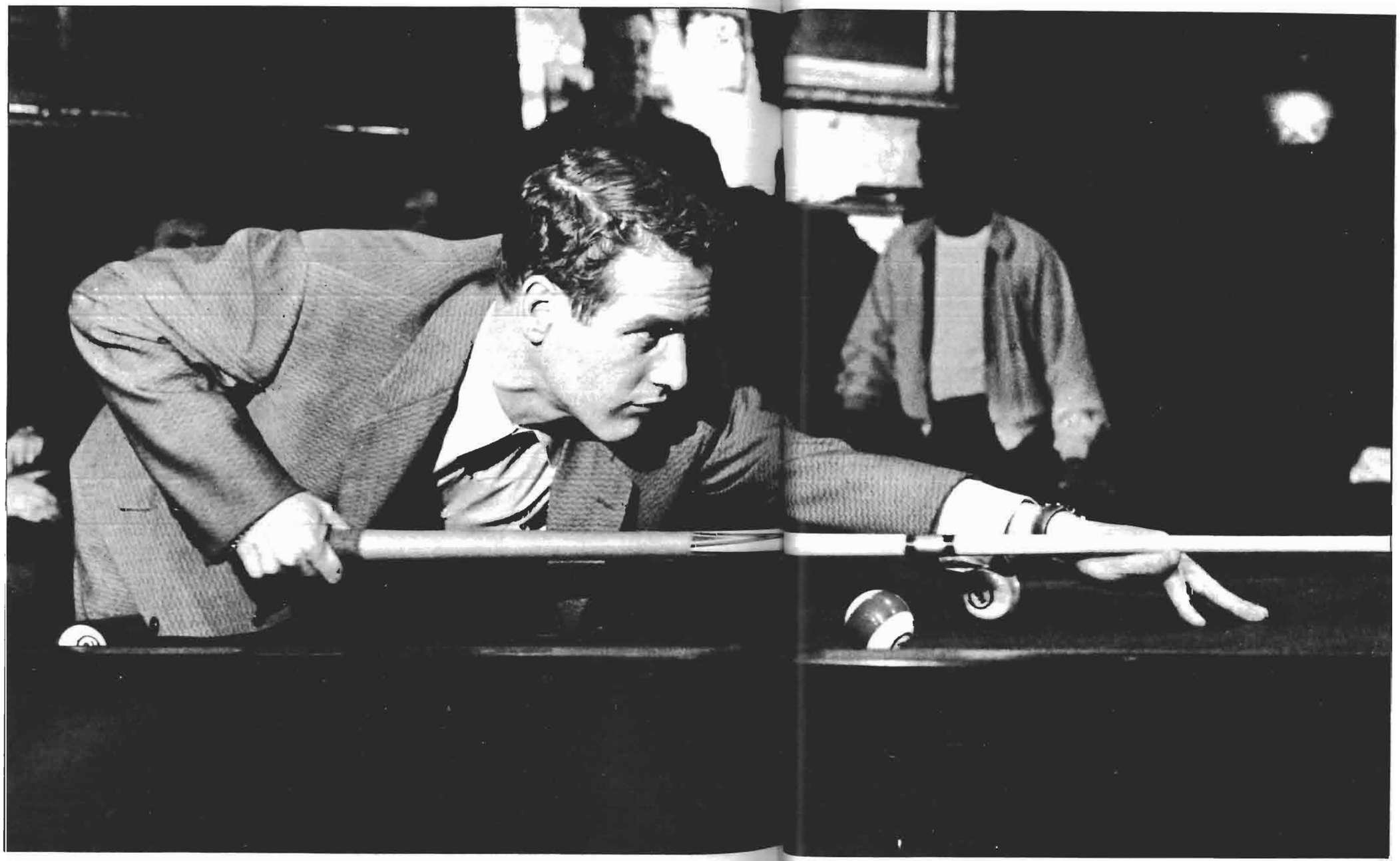
In more modern times, betting on general elections has become big business in Great Britain, with millions of pounds being staked on the winners and the majority. Bookmakers are not slow to make books on one-off events which catch the public's fancy. In 1966, when a number of jail-breaks were causing both concern and amusement in Britain, the public could bet on how many prisoners would be reported missing that day, with double odds paid for naming the careless prison. Wagers were also struck on the names the Queen would choose for her children. This idea spread to Chicago, where American gamblers failed to select Charles for the first-born, unlike British gamblers who had a better knowledge of the form.

Italians have been moved, when the Pope dies, to bet on his successor. Not to be outdone, the British bet on the new Archbishop of Canterbury in 1974. A bet of £7,000 to £350 struck on a 20–1 outsider, the Bishop of Durham, caused his odds to shorten overnight to 5–1. It was a misplaced bet, as the 2–1 favourite, the Archbishop of York, became the new Archbishop of Canterbury. Cardinal Montini was also favourite before his election as Pope in 1963, so the religious formbook is reliable.

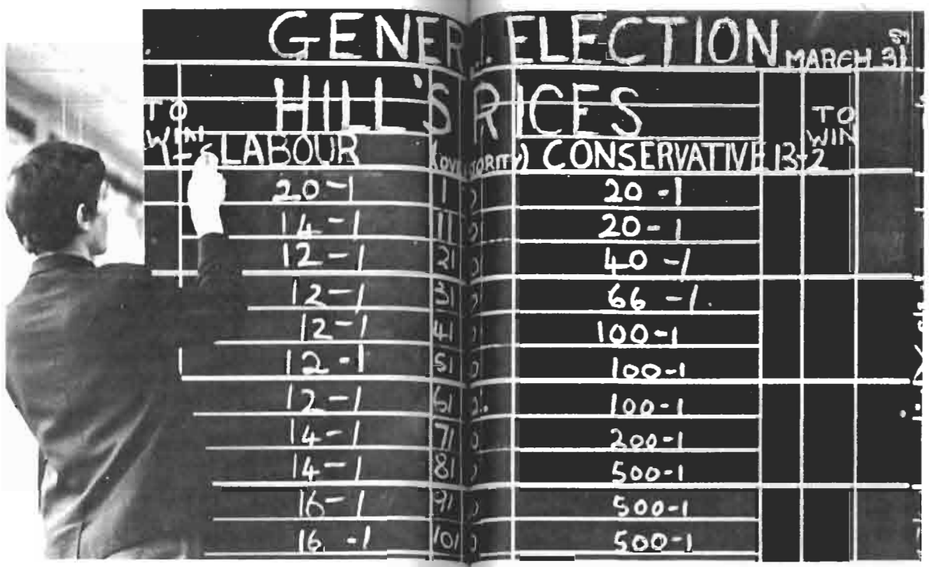
This amusing engraving is labelled 'Lady gambler fleeces male sucker in Pullman comfort on train'. The game appears to be poker and it looks as if the lady has four aces and the male sucker might have four kings, in which case he has every reason to look outraged.

Cheating has received little attention in this book. Obviously gambling is particularly attractive to cheats, with large sums of money changing hands on chance events. Anybody who has watched in close-up a top-class conjuror performing sleight of hand will realise that dice, coins, even cards, can be switched by a smooth operator at will. The only precaution one can take against being cheated is not to play for high stakes with strangers and always to be on guard.

A hustler is a particular form of cheat who wins not by cheating in the event itself but by one of two more subtle means. If he is a player of a game of skill, he might deliberately falsify his form so that he brings off a surprise win when the big stakes are down. It is no reflection on the game of golf to state that some players do not strive too hard to improve their handicaps in games played only for fun. Paul Newman, in the film *The Hustler*, was a pool player who deliberately allowed other players to gain a false impression of his ability.



Paul Newman playing pool in 'The Hustler.' Newman was the perfect example of a gambling hustler, a super player who lost one or two games when the stakes were low and won the big ones by just enough: tactics designed to persuade suckers that they could beat him. The highlight of the film was a tense match with Jackie Gleason as Minnesota Fats, the local champion.



It has long been a custom on sea voyages for the passengers to have a stake in the distance the liner travels during the day. Sometimes this takes the form of a sweepstake, sometimes, as in the case illustrated, passengers bet on the last figure of the ship's daily run. Passengers seem to prefer the numbers 5, 6, 7 and 8, although all have an equal chance. Bookmakers in Britain have in recent years taken large bets on general elections. This board (far right) shows some of the odds being offered by the William Hill Organization on an election which the Labour Party were hot favourites to win. Bets were struck on the overall majority: 21 to 70 was expected.

The other form of hustler does not cheat at all. His angle is to know the true odds about certain events and to entice other gamblers into accepting disadvantageous bets. The best propositions are those where the victim has a little knowledge of the theory of probability, but not enough. He might think he has the better of the odds, and put his losses down to bad luck. Most people know, for instance, that if two dice are rolled, the likeliest number to be thrown is 7. If a hustler suggests that he can throw a 6 and an 8 before two 7s, the victim might reason that as 7 is more probable than either 6 or 8, the hustler should be invited to back up his statement with money. A little knowledge is a dangerous thing. What is overlooked is that the hustler can throw 6 and 8 in any order. The probability of throwing 6 or 8 is $\frac{10}{36}$. Having achieved either, the probability of throwing the other is $\frac{5}{36}$. The probability of throwing 6 and 8 with two throws is the product of these probabilities,

$$\frac{50}{36 \times 36}$$

. The probability of throwing 7 is $\frac{6}{36}$, and of throwing two successively

$$\frac{36}{36 \times 36}$$

The hustler will win the bet therefore 50 times to his victim's 36, an edge to him of 16·2791 per cent.

A good hustler will introduce his proposition casually into the conversation. After a game of cards, he might stand two packs face down and speculate on his chances of finding two identical cards on the top of each pile if he turned over the cards one at a time from the top of each. Pity the innocent who reasons thus: for each card in pile A the chances are 51–1 against the identical card in pile B being in the same position in the pile; therefore as there are 52 attempts at matching a card, it must be an even chance that a match will be found. The hustler will readily attempt to try to find a match if the victim bets him at level stakes that he cannot.

In fact, converse probabilities must be used in calculating the probability that there will be a match. If there are two cards in each pile, the probability of no match is 1 divided by 2! If there are three cards the probability is

$$\frac{1}{2!} - \frac{1}{3!}$$

Thereafter, the factorial number in the denominator increases by 1, and the signs + and − alternate between the fractions. Thus the probability of not getting a match with two packs of 52 cards is

$$\frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} - \frac{1}{5!} + \frac{1}{6!} \cdots \frac{1}{51!} + \frac{1}{52!}$$

The fraction at the end of the expression gets smaller and smaller, so that after 7 terms the fraction being added or subtracted does not alter the value of the whole expression if it is required to only four places of decimals. The probability of no match is only 0·3679, and the hustler's edge will be 26·4242 per cent.

Looked at another way, the 'break-even' point for finding a match can be worked out in the way described in Part Two for the problem of the Chevalier de Méré. The break-even point is

$$\frac{\log 2}{\log 52 - \log 51}$$

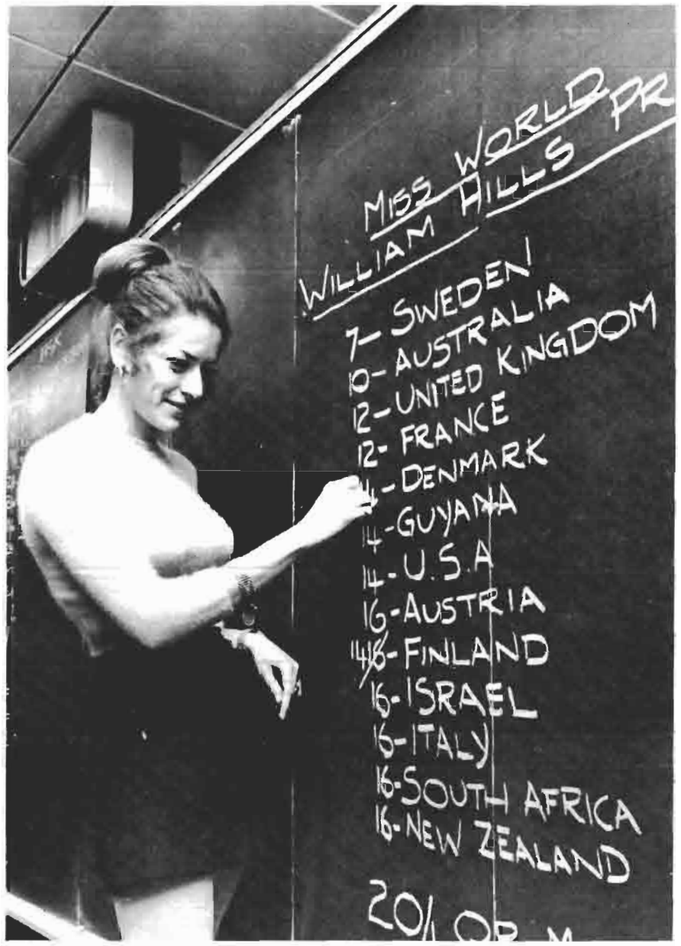
or alternatively 0·6931 × 51

The hustler will need 36 trials to give himself an even chance. As he has 52, he has a considerable advantage.

The above propositions give the hustler an edge. He is not guaranteed to win each time, but over a period the percentage will work for him. Some hustlers will present propositions in which they are sure to win. Van Gogh is said in a music-hall joke to have bet a Parisian 100 francs that he could bite his own ear. The bet being accepted, Van Gogh took his ear from his pocket and bit it. When his victim offered for 200 francs to do the same, Van Gogh accepted the bet, whereat the Parisian took out his false teeth and bit *his* ear.

The game of drawing matches from a pile is one which the hustler reckons to win. A pile of matches, of a number known to both players, is set on a table. Each player in turn removes one, two, or three matches. The player who takes the last match wins. The hustler wins the game by making sure that his victim draws his last matches from a pile of four; then, no matter how many he takes, the hustler takes the rest. He makes sure the victim is left a pile of four by ensuring that his previous draw is from eight. So long as the victim draws from a pile divisible by four, the hustler can ensure that each pile he draws from subsequently is a multiple of four, guaranteeing the outcome. If the victim wants to change the game so that the player who takes the last match is the loser, the hustler ensures that the victim always draws from a multiple of four, plus an extra match. No matter what number the victim takes from his last pile of five matches, the hustler can draw enough to leave one match. An unscrupulous hustler can have a box of matches prepared, containing a given number, so that he can tip them onto the table and win from a pile of an apparently unknown number. This will make it more difficult for the victim to work out afterwards how he was duped.

A card game uses the same principle. One player has all the red cards and another all the black. The players lay a card in turn, adding their values together and keeping a running total. Cards are valued at their pip count, aces counting one and all court cards ten. A player who can make the total exactly 31 wins. A player who raises the total above 31 loses. Any card played can have another



The odds against the 'runners' in the 1970 Miss World contest in London. At William Hill's Blackfriars office, Miss Sweden was a firm favourite at 7–1. Favourites have a poor record in this event, suggesting that the average gamblers' opinions on the forms of women are as diverse as their views on the form of race horses.

added to it to make 11; therefore the player forced to play when the total is 20 will lose, *unless his opponent has already been forced to play a pair*. For example, if a player has to play when the total is 20, but has already forced his opponent to play both his fours, he can safely play seven and win. The object of the game is therefore to reach 20 without using a pair.

Alternatively, a player can allow his opponent to make 20, provided that he has to use a pair to reach it. If a player can force his opponent to play from nine, he can then force him to play from 20. Unfortunately, to do this he can be forced himself to use a pair to reach 20, when he will lose, unless he has already forced his opponent to use a smaller pair.

The game is extremely complex, but the hustler who understands the principles can win consistently while his victim is grasping the knack, and he has one certainty to fall back upon: when he goes first he can be sure of winning. He must play nine, and make the score 20 no matter what his opponent plays. His opponent's only hope is to play two, hoping the hustler will use his second nine to reach 20. The hustler however, plays seven, and now his victim can only reach 20 by playing his second two. To vary the method, the hustler can first play eight. If his victim plays four to force a second eight, the hustler merely plays four himself, forcing a second four from his victim.

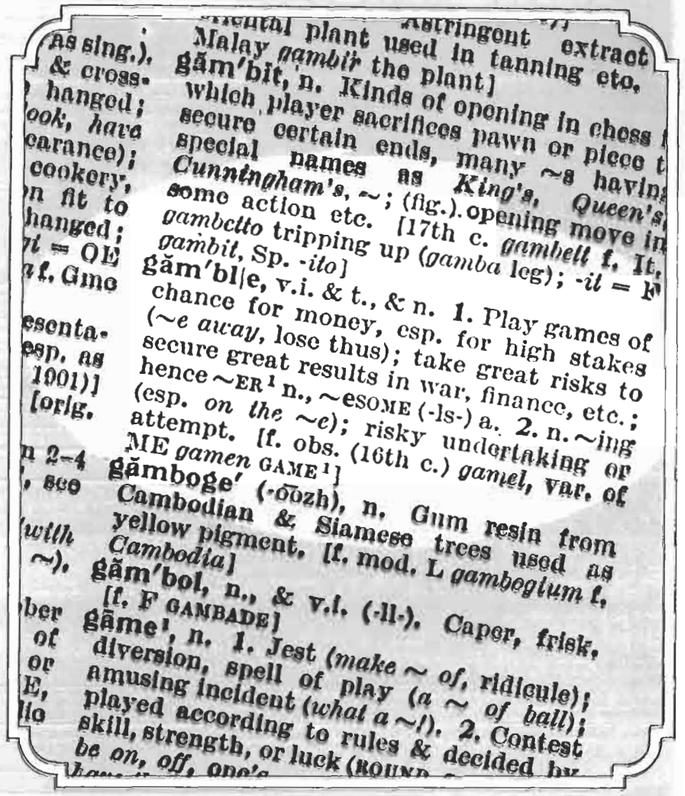
The most famous swindle is that known as the three-card trick, or three-card monte, or find the lady. It is a game which depends on sleight of hand by the operator, who, however, does not work alone. A three-card-trick team consists of several members, collectively making sure that no member of the public will win even by accident. The game arose from the three-thimble game, in which a pea was placed under one of three thimbles, which were moved around on a makeshift table before the onlookers were asked to pick the thimble hiding the pea. Because of trickery, none got it right.

In the three-card trick, one of the cards is usually a queen. This is the card the victim has to pick, hence 'find the lady'. Several methods are used to fool the victim. If he guesses right by accident, one of the operator's colleagues will usually bet on another card. The operator will decline to accept bets on two cards in one deal, his colleague will provoke an argument and the operator will cancel the deal without exposing the cards and start again. When a bystander does appear to win, and to get paid, he is one of the gang.

Sometimes the queen acquires a bent corner. The victim puts his money on the bent card only to find that an outside card has become bent.

Not content to fleece the public by trickery, the three-card trick swindle team usually includes pickpockets too. While the crowd is craning forward to watch the action, the pickpockets are busy removing wallets. The three-card trick is illegal, so one of the team is a look-out. His job is to stop the game when the law appears, but he can also step in with a spurious warning when anything untoward happens, like a customer missing his wallet. On his urgent instruction to 'fold', the gang quickly vanishes to reassemble elsewhere and begin operations again.

PART NINE


Astringent extract
Malay *gambir* the plant]
(as sing.), & cross- hanged; ook, have earance); cookery, n fit to hanged; t = OE f. Gmc
gām'bit, n. Kinds of opening in chess which player sacrifices pawn or piece t secure certain ends, many ~s havin special names as *King's*, *Queen's*, *Cunningham's*, ~; (fig.) opening move in some action etc. [17th c. *gambett* f. It, *gambetto* tripping up (*gamba* leg); *-il* = F *gambit*, Sp. *-ito*]
esenta- esp, as 1001)] [orig.
gām'ble, v.i. & t., & n. 1. Play games of chance for money, esp. for high stakes (~*e away*, lose thus); take great results in war, finance, etc.; hence ~ER[1] n., ~ESOME (-ls-) a. 2. n. ~ing (esp. *on the* ~*e*); risky undertaking or attempt. [f. obs. (16th c.) *gamel*, var. of ME *gamen* GAME[1]]
n 2–4 , see
gămboge' (-ōōzh), n. Gum resin from Cambodian & Siamese trees used as yellow pigment. [f. mod. L *gamboglum* f, *Cambodia*]
with ~),
gām'bol, n., & v.i. (-ll-). Caper, frisk, [f. F GAMBADE]
ber of or E, lic
gāme[1], n. 1. Jest (*make* ~ *of*, ridicule); diversion, spell of play (*a* ~ *of ball*); amusing incident (*what a* ~*!*). 2. Contest played according to rules & decided by skill, strength, or luck (ROUND
be on, off, one's

Glossary

A

ACCORDING TO HOYLE Played to a strict code of rules.
ACCUMULATOR A cumulative bet, usually on four or more events, called a parlay in America.
ACE The playing card with one pip; the one-spot of a die.
ACES UP A poker hand containing two pairs, the higher of which is aces. Also kings up, queens up, etc.
A CHEVAL A stake on two adjacent numbers on the roulette table; a stake on both sides of the table at baccarat.
ACROSS THE BOARD A bet on win, place and show in American racing.
ACTIVE PLAYER The player who plays the cards for a group of players in baccarat or chemin de fer.
ALLOWANCE In a horse race, a reduction in the weight set to be carried, allowed to an apprentice jockey, or sometimes to a horse which has not won.
ALSO RAN A horse which does not finish in one of the first three places in a race.
ANCHOR MAN The player to the right of the dealer at blackjack, who plays last.
ANTE A stake placed in the pool before betting begins.
ANY RAFFLE A bet that three of a kind will appear at hazard.
ANY TO COME An instruction to a bookmaker that if any money is to come from a bet, it is to be staked on a second bet.
APPRENTICE A jockey who has not ridden a stipulated number of winners, and who in certain races claims an allowance.
AT THE POST Horses at the start of a race are said to be at the post.

B

BACK To bet on.
BACK GAME In backgammon, the strategy of not advancing runners, but of using them to hit adverse blots when the opponent is advanced.
BACKGAMMON A win at backgammon when the loser has a man on the bar or in the opposing home board.
BACK STRETCH OR BACK STRAIGHT In a horse race, the long stretch on the opposite side of the course to the grandstand.
BACK TO BACK In stud poker, this is said of the hole card and first up card when they are a pair.
BANCO A call at chemin de fer by which the caller offers to stake the whole amount of the bank.
BANCO SUIVI A call at chemin de fer by which the caller, who has called banco and lost on the previous coup, claims his right to stake the whole amount of the bank again.
BANK The amount at stake in banking games; the amount put up by the casino to finance a gaming table.
BANKER The person who operates the bank in banking games.
BANKING GAME Any game in which the amount at stake is put up by one person (the banker), or organization (the casino), for the players to bet against.
BEST BET An American newspaper tipster's, or handicapper's, selection as the winner of a race.
BET THE POT To bet as many chips as there are in the pot.
BETTING FORECAST A forecast, usually in a morning paper, of the odds likely to be offered against the runners in that day's races.
BEVELS Crooked dice having one or more sides rounded.
BIG SIX AND BIG EIGHT Bets at craps that a 6 or an 8 will be thrown before a 7.
BINGO The cry of the winner in the game of bingo.
BLACKJACK A two-card hand of 21 in the game blackjack, made up of an ace and a ten-value card.
BLANKET FINISH A close finish to a race.
BLIND BET A bet made in ignorance of its value, e.g. before examining the cards held in brag.
BLOT A single man on a point at backgammon.
BLOWER The telephone service by which bookmakers can transfer bets to the course, thus ensuring that the starting price reflects the betting.
BLUFF To bet on a weak hand in order to mislead the opposition, especially in poker.
BOAT RACE A crooked horse race.
BONES Colloquial name for dominoes or dice.
BONEYARD The stock of dominoes from which a player draws when unable to play from his hand.
BOOBY PRIZE Prize for lowest score.
BOOKMAKER A person who quotes odds and accepts bets from the public.
BOTTOM DEALER A card cheat who deals from the bottom of the pack.
BOXCARS In craps, a roll of two sixes.
BOXMAN The controller of a casino craps game.
BOX NUMBERS Those numbers at craps (4, 5, 6, 8, 9, 10) which establish a point for the shooter.
BREAKAGE The amount left after the pool has been divided arising from winners being paid to the nearest unit below the division, especially in American racing.
BUCK The marker placed on a craps table to show the shooter's point.
BUG A clip placed beneath a card table to hold cards for cheating.
BURNED CARDS Cards taken from the top of a shuffled deck and not used in the game.
BUST To exceed a total of 21 at blackjack or pontoon.

C

CAGNOTTE The box beneath a slot in a baccarat or chemin de fer table into which the casino levy is dropped; the levy itself.
CALCUTTA A method of betting at golf, whereby players are 'auctioned' to gamblers.
CALL In poker, to match the last stake.
CALLER The operator at a bingo game who calls the winning numbers.
CARD SENSE Natural card playing ability.
CAMERA PATROL The system used in Britain to record a race on film from various angles to help the stewards to adjudge on objections.
CANADIAN A British 26-part bet covering five horses in doubles, trebles and accumulators.
CARPET JOINT A high-class casino or gaming club, especially in America.
CARRÉ A stake on four adjacent numbers on the roulette table.
CARTE BLANCHE A hand without a face card.
CASE THE DECK To memorise some or all of the cards as they are played, especially at blackjack.
CASE-KEEPER In faro, the person who records the cards taken from the box.
CENTRE BET In craps, the bet between the shooter and the faders placed in the centre of the playing surface.
CHECK A gambling token used instead of cash in America.
CHEF DE PARTIE The controller of a gambling table in a French casino.
CHICANE A hand of cards void of trumps.
CHIP A gambling token used instead of cash.
CHOUETTE A form of backgammon in which more than two players can take part.
CLASSICS The classic horse-races for three-year-olds. In Britain, the One Thousand Guineas (for fillies only), the Two Thousand Guineas, The Oaks (for fillies only), the Derby, the St. Leger.
CLEVERLY Description of how a horse wins when the winning margin suggests that it has not given its maximum effort.
COLD DECK A pack, or deck, of cards secretly arranged in a desired order for the purpose of cheating.
COLONNE or COLUMN A stake on a column of 12 numbers on a roulette table.
COMBINATION TICKET In American horse-racing, a bet on a horse for a win, place or show.
COMBINATIONS The different ways in which a number of articles can be taken from a larger number of articles.
COMMISSION A bet made on behalf of a racing stable.
COME A bet at craps that the shooter will win, the shooter's next roll being regarded as the come-out roll.
COME-OUT The shooter's first roll at craps.
COME UP To win.
COMING OUT The cry of the stickman at craps warning that the dice are about to be thrown and bets should be made.
COMPLET or COMPLETE A bet at roulette in which a number is backed singly and in all the combinations possible with the adjacent numbers on the table.
CONSOLE A flat-topped electric slot machine which can be played by several players simultaneously.
COULEUR A bet at trente et quarante that the first card dealt will be of the same colour as the winning row.
COUP. One play or round of a game.
COUPLÉ An off-course pari mutuel bet in France in which two horses are backed in one race to finish in the first two (win couplé) or the first three (place couplé).
COURT CARD Any king, queen or jack in a pack of cards.
COVER A BET To accept a wager.
CRAPS The totals 2, 3 or 12, which if thrown on the come-out roll of the game of craps are immediate losers.
CROSS-EYES A throw of three at dice.
CROUPIER A casino employee who directs the gaming at the tables and pays off and collects the bets.
CUP A receptacle used for shaking dice.
CURSE OF SCOTLAND The nine of diamonds.
CUT To divide a pack of cards into two parts and reverse their order.

D

DAILY DOUBLE A cumulative bet on a horse in each of two selected races in American horse-racing, operated by the tote.
DEAD HEAT A race in which two or more competitors finish level.
DEADWOOD In poker, the discard pile; in gin rummy, the unmatched cards of a hand.
DEALER The player or casino employee who deals the cards.
DENOMINATION The rank or value of a card.
DEUCE The playing card with two pips; the two-spot of a die.
DEVIL'S BED POSTS The four of clubs.
DICE The plural of die.
DICE-STICK The stick with which the stickman manipulates the dice at craps.
DOG A racehorse who quits under pressure.
DON'T COME A bet at craps that the shooter will lose, the shooter's next roll being regarded as the come-out roll.
DON'T PASS A bet at craps that the shooter will lose, made before the shooter's come-out roll.
DOPE Drugs given to a horse or dog in order to improve or impair its performance.
DOUBLE A cumulative bet on two horses or dogs in separate races; in backgammon to double the stake by using the doubling cube.
DOUBLE DOWN To double the stake at blackjack and receive an additional card.
DOUBLET A domino with the same number at each end.
DOUZAINE A stake on the 12 numbers at roulette marked either première (1–12), moyenne (13–24) or dernière (25–36).
DOZEN A stake on the 12 numbers at roulette marked 1st dozen (1–12), 2nd dozen (13–24) or 3rd dozen (25–36).
DRAW To ask for, or take, another card; a type of poker in which the player can discard and draw replacements.
DRY Broke, having no money.
DUAL FORECAST A bet in horse-racing in which the first two horses to finish must be named in either order.
DUTCH BOOK A list of odds unfavourable to the bookmaker, an overbroke book.

E

EACH-WAY BET In Britain, a bet that a horse will win or be placed – in effect two separate bets, one on a win and one on a place.
EDGE The advantage held by the casino or bank in games of chance, usually referred to as the house edge.

ENGLISH The sliding and spinning action of the dice in a controlled cast.
EN PLEIN A stake on a single number at roulette.
EQUITABLE A game is equitable if it is fair for all players.
EVEN CHANCE When a favourable outcome to an event is as likely to occur as not, it is said to have an even chance.

F

FACE CARD Any court card, i.e. king, queen or jack: a card displayed or dealt face-up.
FADE To cover the shooter's stake in craps.
FAITES VOS JEUX A call by the croupier for players to place their bets.
FALSE FAVOURITE A horse which is made favourite in a race, but does not fulfil expectations.
FALSE PRICE Odds quoted about a horse or dog which do not represent its true chance.
FAUX TIRAGE A draw made at chemin de fer or baccarat which ignores the recommended table of play. It may be intentional and within the rules, as in the case of the banker at baccarat, or it may be a mistake.
FAVOURITE A competitor, particularly a horse, considered most likely to win, and therefore quoted at the shortest odds.
FIELD A bet at craps on the numbers in the field, usually 2, 3, 4, 9, 10, 11 and 12, with 2 and 12 paying double; all the runners in a race.
FINALS The last digits of the roulette numbers. A bet on the '6' finals is a bet on 6, 16, 26 and 36.
FLAT RACING Horse-racing in which there are no jumps.
FLATS Crooked dice shaved so that they are brick-shaped.
FIX A swindle or bribe. A fixed game is one that is rigged for the purpose of cheating.
FLOATING GAME An illegal game, especially craps, which moves from place to place to avoid the law.
FLUSH In poker or brag, a hand in which the cards are of the same suit.
FLUTTER In Britain, a bet, usually a small or casual bet.
FOLD In poker, to drop out of the betting.
FORECAST In racing, a combination bet which names the first and second to finish in the correct order.
FORM The past performances of a competitor, especially a horse.
FOUR OF A KIND In poker, four cards of the same rank.
FRAME The board announcing the numbers of the placed horses in a race, hence 'in the frame', meaning to be placed.
FREE BET An additional bet at craps allowed in certain circumstances to a player, in which winning bets are settled at the correct odds, i.e. without a house edge.
FRONT LINE BET A bet at craps that the shooter will win.
FRONT RUNNER A horse which sets the pace for the others.
FRUIT MACHINE A slot machine, especially in Britain.
FULL HOUSE A poker hand containing three cards of one rank and two of another.

G

GAFF To rig gambling equipment. Gaffed dice are doctored for cheating.
GAMMON A win at backgammon in which the loser does not bear off any men.
GATE In horse-racing, the apparatus for starting races, or the start itself.
GELDING A male racehorse which has been castrated.
GET OUT To regain one's losses, especially in the last race of a meeting.
GIMMICK Any device or method used in cheating.
GIN A hand in gin rummy in which all ten cards are melded.
GO DOWN, GO OUT In gin rummy, to lay down the hand.
GOING In horse-racing, the state of the ground, e.g. hard, firm, good, soft, heavy, etc.
GOOD THING Said of a racehorse or greyhound confidently expected to win.
GO THROUGH THE CARD To back every winner at a day's racing.
LE GRAND A two-card point of 9 at baccarat or chemin de fer.

H

HANDICAP A horse-race in which the horses are allotted differing weights to carry with a view to giving them all an equal chance of winning.
HANDLE American expression for the turnover of cash in a business concern.
HARD HAND A blackjack hand containing an ace which is counted as 11.
HARDWAY A bet at craps that a shooter with a point of 4, 6, 8 or 10 will make it the hard way, i.e. by throwing a double.
HARNESS RACES Races in which trotting horses pull drivers seated in two-wheeled lightweight racing rigs.
HEAD TO HEAD A game between two players only, or the state of a game, e.g. poker, where only two players remain in.
HEDGE To transfer a bet, e.g. from one bookmaker to another.
HIGH ROLLER A big bettor, especially at craps in America.
HIT A request for an additional card at blackjack; in backgammon to send a man on a blot to the bar.
HOLE CARD The face-down card of the dealer at blackjack; the first card dealt to a player at stud poker, which remains face-down until the showdown.
HOME STRETCH or HOME STRAIGHT The straight part of a race-course leading to the winning post.
HOT A player on a winning streak is said to be hot, and in craps the dice of such a player are said to be hot.
HOUSE The casino or club operating a game.
HOUSE ADVANTAGE The edge enjoyed by the house in offering odds shorter than the true ones in games of chance.
HUNCH An impulse. A hunch bettor or player is one who bets on impulse or irrational fancies.
HURDLE The movable obstacle, lower than a fence, over which horses must jump in a hurdle race; the race itself.
HUSTLER A gambler who preys on the ignorance of his victims, or who falsifies his form to mislead his opponents.

I

ICE Money paid to police and officials to overlook illegal gambling.
IF MONEY WAGER A bet conditional on a previous bet winning. In Britain usually called an 'any-to-come' bet.
IMPAIR A stake on the odd numbers at roulette or boule.
IN THE BAG Said of a sporting event that is considered a certainty, as 'the favourite has it in the bag'. In America, it sometimes means that the event is fixed.
IN THE FRAME, IN THE MONEY Said of the horses which finish in the first three in a race.
INEQUITABLE A game which is not fair to all players is inequitable.
INFORMATION 'Inside' information from a stable or other connections that a horse is expected to win. Hence information horse – a horse made the medium of a gamble.
INSIDE STRAIGHT In poker, four cards requiring an an interior card to make a straight, as 6, 7, 9, 10.
INSIDE TICKET In keno, a duplicate of the punched-out ticket, given to a player as a receipt.
IN THE HOLE Losing, or having a minus score.
INSURANCE A bet at blackjack that a dealer with an ace as his up-card will complete a natural or blackjack; the opportunity of a player at trente et quarante to guard against a refait by paying a premium of one per cent of his stake.
INTERDIT A player who is banned from French casinos.
INVERSE A bet at trente et quarante that the first card dealt will be of the opposite colour to the winning row.

J

JACKPOT The top prize, especially from a slot machine.
JETON A French gambling token, used instead of cash.
JEU The French for game.
JOCKEY The rider of a horse in a race.
JOKER A playing card to which a player may attach any value.
JUICE JOINT A crooked dice or roulette game in which the cheating is accomplished by electromagnets.
JUMPER A racehorse which races over obstacles or jumps, a steeplechaser or hurdler.

K

KIBITZER A spectator at a card game.
KICKER In draw poker, an extra card, usually an ace or king, kept with a pair for a two-card draw.
KITTY A pool, especially of stakes for distribution to the winner.
KNAVE In card games, an alternative name for the jack, particularly in Britain.
KNOCKER In gin rummy, the player who lays down his hand first.

L

LABOUCHÈRE A staking system named after Henry Labouchère, English editor and wit.
LADDERMAN An inspector in a casino who sits on a high chair overlooking the gaming tables.
LAYDOWN In America, a diagram of betting spaces on which stakes are laid, or the wager itself. In Britain, a hand at cards which cannot be beaten, and which therefore does not need to be played out.
LAY OFF To pass on a bet, as from one bookmaker to another; in gin rummy to get rid of cards by laying them on the knocker's melds.
LAY THE ODDS To bet where the amount which can be won is less than that which can be lost. To lay six to four is to risk losing six for the chance of winning four.
LAYOUT The arrangement of a gaming table on which the stakes are placed.
LEFT In racing, describes a horse or dog which does not start, or is slow to start.
LET IT RIDE To leave winnings on the gaming table as the stake for the next coup.
LEVY A charge by a casino or bookmaker for the privilege of playing, often exacted on winnings.
LIMIT The minimum or maximum stake allowed at the gaming table.
LINE BET A stake on six numbers in two adjacent rows on the roulette table.
LONG ODDS Odds quoted of a competitor or horse with little chance, for example 100–1.
LONG SHOT A competitior unlikely to win, especially a horse.

M

MAIDEN A racehorse, of either sex, which has not won a race.
MAKE A BOOK To offer odds, to set up as a bookmaker.

MANQUE A bet on the numbers 1–18 at roulette or 1–4 at boule.
MARK A victim singled out to be swindled.
MARKER CARD A card placed in the pack to indicate the end of play. It is a device to ensure that a certain number of cards are not used in the game. At baccarat the card indicates the end of the shoe, at blackjack that the cards must be re-shuffled.
MARKET The betting on a race, especially a horse-race; the odds quoted on a race.
MARTINGALE A staking system in which bets are doubled after each loss.
MATCH In horse racing, a race with two runners only, often privately arranged.
MECHANIC A manipulator of cards or dice for cheating.
MEETING The period of racing, usually of a few days, at a certain course, e.g. the Epsom spring meeting.
MELD A combination of cards in rummy games, such as three or more cards of consecutive rank and the same suit; to make such a combination.
MISS-OUT A losing roll for the shooter at craps.
MIXED DOUBLES A method of backing several horses or dogs with each other in all possible doubles. Thus four selections represent six mixed doubles.
MORNING GLORY A racehorse impressive at morning exercises but which runs badly in races.
MORNING LINE In America, a morning forecast of the odds likely to be offered on the horses running that day.
MUDLARK A horse that runs well in muddy conditions.
MUTUEL NUMBERS The numbers game.

N

NAP Short for the card game napoleon; a British racing tipster's best bet of the day.
NATURAL At craps, a winning roll of 7 or 11 on the come-out roll; at blackjack, a two-card hand totalling 21, consisting of an ace and ten-count card; at card games in which wild cards are used, a ranking hand which does not contain a wild card.
NO DICE A roll of dice which is invalid, e.g. one in which a die is cocked.
NOBBLE To get at a horse or dog and injure or dope it to prevent it winning.
NOIR A bet on the black numbers at roulette, boule or vingt-trois; a bet on the first row of cards at trente et quarante.
NUMBER BOARD In horse racing, the board which displays the jockeys and starting position of all horses in a race.

O

ODDS A method of expressing probabilities as a ratio of the unfavourable chances to the favourable; the price quoted on a competitor in an event.
ODDS BOARD The board at an American racetrack showing the approximate odds of the runners.
ODDS ON A probability greater than an even chance; a price quoted in which the stake is higher than the amount to be won.
OFF-COURSE BET A bet made in a bookmaker's office or betting shop, by telephone, or anywhere away from the race-course.
ON THE NOSE Colloquial expression for a bet on a horse or dog to win only.
ONE-ARMED BANDIT A slot machine.
ONE-ROLL BET A bet at craps to be decided on the next roll of the dice.
OPEN In poker, to make the first bet.
OPEN-ENDED STRAIGHT In poker, four cards in sequence requiring a card at either end to complete the straight, e.g. 8, 7, 6, 5.
OUTSIDER A horse or dog with little chance of winning, and therefore quoted at a long price.
OVER-BROKE Describes a list of odds favourable to the punter.
OVER-ROUND Describes a list of odds favourable to the bookmaker; the amount of stakes which the bookmaker can expect to retain as profit.
OVER THE STICKS Used at hurdle races or steeple-chases, the opposite of racing on the flat.

P

PACK The 52 standard playing cards. In America usually called a deck.
PAIR A stake on the even numbers at roulette or boule; two cards of the same denomination.
PAIR ROYAL Three cards of the same denomination.
PALETTE A wooden spatula used by the croupier to manipulate the cards at baccarat.
PARI MUTUEL A totalisator; the system of totalisator betting.
PARLAY A cumulative bet, especially in America, on two or more events or horses. In Britain, called a double, treble or accumulator.
PAROLI A staking system in which winnings are allowed to stay on the table to double. 'Parlay' is a corruption of paroli.
LE PARTAGE The convention in which half of the stakes on even-money bets at roulette are lost when zero wins.
PARTIE A series of coups.
PASS A bet at craps that the shooter will win. It is made on the pass-line on the craps layout.
PASSE A bet on the numbers 19–36 at roulette, or 6–9 at boule.
PAT HAND In draw poker a hand that cannot be improved by the draw.
PENALTY An additional weight to be carried by a horse on account of a recent win.
PERCENTAGE The advantage enjoyed by a casino in offering odds shorter than the true ones on various games is known as the house edge, or the percentage.
PERMUTATION The arrangment of a number of items in every possible order; a system of betting on the football pools which entails combinations but is colloquially called a permutation.
PHOTO FINISH A photo record of the finish of a race taken through a narrow aperture as the field passes the post, used to determine the winner in a close race; used to describe any close race.
PHYSIONOMISTE OR PHYSIOGNOMIST A casino employee trained to memorise the characteristics of all players, and to recognise those banned by the casino.
PICTURE CARD A face card or court card.
PIPS The spots on playing cards.
PIT BOSS A supervisor of a group of gaming tables, especially in America.
PITCH A bookmaker's stand or territory on a race-course.
PLACE BET A bet at craps that a box number will win or lose; a bet in horse-racing that a horse will finish, (a) in Britain and most other countries, in the first four, three or two, according to the number of runners, (b) in America, in the first two.
PLAIN SUIT Any suit which is not trumps.
PLAQUE A rectangular gaming token used instead of cash, usually of a high value.
PLATER A poor horse which runs in minor races.
PLUNGE To make a big bet.
POINT The total pip value of a hand of cards at certain games.
POINT NUMBERS At craps, the numbers 4, 5, 6, 8, 9 or 10.
POLE A distance mark in a horse race. Thus the two-furlong pole is two furlongs from the winning post.
LE PONTE The French term for a gambler or punter.
POST The starting or finishing point of a horse race.
POT In poker, the total amount bet on a hand; a kitty or pool.
POUSETTE A form of cheating, usually at baccarat, in which the cheat pushes his chip or chips from one position to another in order to increase or decrease his stake according to the cards held.
LES PREMIÉRES The first four numbers (0, 1, 2, 3) on the roulette table, or a bet on them.
PRIAL Three cards of the same rank, especially at brag. A corruption of pair royal.
PRICE The odds quoted against a competitor, e.g. a horse's price might be 7–2 against.
PRICE LINE An American bookmaker's list of prices for baseball or other sports. A twenty-cent line is a line that has a differential of one point between the lay and take odds, e.g. a bookmaker might offer odds of 6–7 Yankees favourites, which means he offers 7–5 on Yankees and 6–5 against their opponents, a difference of one point in five, or 20 cents in a dollar.
PRIME A series of six or seven points on a backgammon board occupied by men of the same colour.
PRISON A convention whereby a stake on the even-money chances at roulette is left on the table, or 'put in prison' when zero appears, to be either retained by the bettor or lost according to the next spin; a convention in trente et quarante whereby on a refait all bets remain on the table to be either retrieved or lost according to the next deal.
PROPOSITION BET At craps, another name for a one-roll bet, in which bets are determined by the next throw; an ancillary bet not covered by the rules of the game.
PULLING The holding back of a horse by the jockey.
PUNTER In Britain, any gambler, or bettor; in America, usually one who plays against the bank.
PUNTO A bet at punto banco that the bank will lose.
PURSE The prize money, especially for a horse race or a prize fight.

Q

QUARTER HORSE A horse which runs well for a short distance only, the implication being that it quits after a quarter of a mile.
QUINIELA In American racing, a bet requiring the bettor to name the first and second horses to finish in either order. Known in Britain as a dual forecast.
QUOTATION The price quoted on a competitor in an event.

R

RACING CERTAINTY Said of a horse that (in theory) cannot lose.
RAFFLE A lottery; in hazard, three dice showing the same number.
RAISE In poker, to increase the stake by betting more than the previous bettor.
RAKE The implement with which the croupier at a gaming table rakes in the chips.
RANDOM DISTRIBUTION Distribution by chance.
RANK The denomination or value of a card.
READERS Marked cards; the lenses required to read some marked cards.
REFAIT The occurrence of both rows of cards in trente et quarante equalling 31.
REVOKE To fail to follow suit in card games.
RIEN NE VA PLUS The announcement of the croupier, especially at roulette, that no more bets will be accepted.
RIFFLE A manner of shuffling cards.
RIG To tamper with gaming equipment for the purpose of cheating.
RIGHT BET A bet at craps that the shooter will win.
RING An enclosure at a race-course where bets are made, e.g. Silver Ring; a syndicate of big bettors.
RINGER A horse or dog running in the name of another, usually inferior.
RING IN To introduce crooked equipment into a game.
ROGUE An ill-tempered or unwilling horse.
ROUGE A bet on the red numbers at roulette, or on the second row dealt at trente et quarante.
ROUND ROBIN A series of cumulative bets in which all the selections are bet in all combinations with each other in parlays.
ROUND-THE-CORNER Circular sequence of ranks of cards whereby high and low cards are regarded as in sequence, as in Q, K, A, 2, 3.
ROUND THE HORN A craps bet on 2, 3, 11 and 12.
ROYAL FLUSH The highest poker hand: the ace, king, queen, jack, ten of the same suit.
RUFF To trump, to play a trump card on a lead of a plain suit.
RUN A sequence of three or more cards, especially in brag.
RUNNER A participant in a race; an illegal bookmaker's

employee who collects bets for the bookmaker; an agent in the numbers game.
RUNNING GAME In backgammon, the strategy of bringing all men into the home board as quickly as possible.
RUNT A poker hand of lower value than a pair.

S

SABOT A card-dealing box, also known as a shoe, from which cards are dealt in a casino.
SALIVA TEST A test of a horse's saliva to determine if it is doped.
SALLE PRIVÉE A private salon in a casino, reserved for high-stake games.
SAWDUST JOINT An illegal or low-grade gaming club or casino, especially in America.
SEE To cover the last bet at poker or brag without raising the stake.
SEQUENCE In card games like rummy, a run of cards of the same suit; in games of chance any series of events or results.
SETTLEMENT The payment of losses and collection of winnings; the cashing in of chips.
SETTLER An employee in a betting shop who calculates payouts.
SEVEN OUT In craps, to lose by throwing a seven.
SHILL A casino employee who is paid to play at the tables to encourage other players.
SHIMMY A colloquial term for chemin de fer.
SHOE Another name for a sabot, a box from which cards are dealt; the period of play, especially at baccarat, from the first hand until the cards in the shoe are exhausted.
SHOOTER The player who throws the dice at craps.
SHORT ODDS Odds quoted on fancied competitors, the opposite of long odds.
SHOW A bet in America that a horse will finish in the first three of a race.
SHOWDOWN In poker, the exposure of hands to decide the winner.
SHUFFLE To mix the cards in a pack prior to cutting and dealing.
SHUTOUT In America, to win a game without the opponent scoring. In Britian usually called a whitewash.
SHY Short, usually used of a pot. A pot to which chips are to be added is called shy.
SIDE BET A bet made by onlookers at a craps game.
SIDE CARD The highest odd card in a poker hand, outside of a pair or two pairs.
SIDE SUIT A plain suit, i.e. not the trump suit.
SIXAIN A bet on six numbers forming two adjacent transversales on the roulette table; the six packs of cards used in a shoe at baccarat or trente et quarante.
SLEEPER A number which has not appeared for a long time, especially at roulette; a bet left unclaimed on a betting layout.
SNAKE-EYES The double-1 at craps and other two-dice games.
SODA In faro, the top card when the pack is placed in the dealing box.
SOFT HAND A blackjack hand containing an ace which is counted as one.
SPATULA A tool to assist the croupier to handle cards.
SPLIT A bet on two adjacent numbers on the roulette table.
SPLITTING PAIRS A convention at blackjack whereby a player dealt a pair may split them and regard each as the first card of two separate hands, with an equal stake on each.
SQUARE A bet on four adjacent numbers forming a square on the roulette table.
STACK A pile of chips; to fold or drop out of a card game.
STACKED DECK A pack of cards pre-arranged in a desired order for cheating.
STAND To play at blackjack with the cards held, i.e. to decline to draw a further card.
STANDARD PACK OR DECK The ordinary pack of 52 playing cards.
STAND-OFF The situation in gambling games where two or more players, or the player and dealer, tie, and the rules state that no stakes change hands.
STAKE An amount bet on an event.
STARTING PRICE The final odds offered on a horse before the race begins.
STEEPLECHASE A race run over fences.
STICK To play at pontoon with the cards held, i.e. to decline to draw a further card.
STICKMAN At craps, the casino employee who handles the dice and sometimes settles the proposition bets.
STOCK The undealt portion of a pack of cards.
STRAIGHT In poker, a run of cards in sequence, but not of the same suit; in roulette a bet on a single number.
STRAIGHT FLUSH In poker, a run of cards in sequence and of the same suit.
STREET The American term for a bet on three adjacent numbers forming a row on the roulette table.
STRIPPERS Cards that have had their edges stripped to form a convex or concave shape in order to facilitate cheating.
STUD A form of poker in which the first card is dealt face down and the remainder face up and there is no draw.
SWEETEN THE POT Add chips or money to the pot.
SYSTEM A plan of staking or betting.
SYSTÉMIER One who employs a system.

T

TAB Totalisator Agency Board, which runs on- and off-course tote betting in Australia.
TABLEAU The layout of a gaming table.
TABLEAU DES VOISINS A table showing each number on a roulette wheel in relation to its neighbours.
TABLE OF PLAY The recommended standing or drawing procedure for the player and banker at baccarat, chemin de fer and punto banco.
TABLE LIMITS The upper and lower staking limits at a gambling table.
LE TAILLEUR The dealer, usually at trente et quarante.
TAKE THE LEAD In stud poker, to make the first bet in a round.
TAKE THE ODDS To bet where the possible win is greater than the possible loss. To take six to four is to accept six for a win and pay out four for a loss.
TALON In card games, the waste pile.
TAP To pass in card games by tapping on the table.
TIC-TAC A method of hand signals used in British racing in which a bookmaker's employees relate information about current odds and betting to each other.
TIERCÉ A combination bet in French racing in which the bettor must forecast the first, second and third horses to finish.
TIPSTER A person who sells his predictions of winners to the public. A newspaper tipster is one who publishes his selections in a paper.
TIREUR A player who always draws to 5 at baccarat.
TOTALISATOR, TOTE The machine which calculates dividends by dividing total stakes by the winning stakes; the system of betting thus.
TOTE BOARD The information board at a race course which shows the amounts bet and the approximate payouts for each runner.
TOTE DOUBLE AND TREBLE A cumulative bet operated by the totalisator in Britain in which the backer must name the winners of two or three selected races, usually the third and fifth for the tote double and the second, fourth and sixth for the treble.
TOTE JACKPOT A cumulative bet operated by the totalisator in Britain in which the backer must name the winners of six races. If it is not won, the pool is carried forward to the next day or meeting.
TOPS AND BOTTOMS Gaffed dice which show only three numbers, two of each.
TOUT One who watches training gallops and exercises at racing stables to spot future winners.
TRANSVERSALE A bet on three adjacent numbers forming a row on the roulette table, known in America as a street.
TREBLE A cumulative bet on three horses or dogs in separate races.
TREY A three-pip playing card.
TRICK The cards played in one round of play in games like whist and bridge.
TRIELLA A bet in Australian horse-racing requiring the first three in a race to be named in the correct order.
TRIPLE A bet in American horse-racing requiring the first three in a race to be named in the correct order.
TRUMP In trick-taking games, a card from a suit given a higher value than other suits.
TURF Usually preceded by 'the'. The sport of horse-racing.
TURF ACCOUNTANT A bookmaker who accepts bets on horseraces.

U

UNDERCUT In gin rummy, to show a hand lower in point count than the knocker's.
UNDER THE GUN In draw poker, the player who must open the betting is said to be under the gun.
UNLIMITED POKER A poker game of unlimited stakes.
UNMATCHED CARD In gin rummy, a card that is not part of a meld.
UPCARD In gin rummy, the first card turned up from the stock; in stud poker, any card dealt face up, as opposed to the hole card.

V

VIGORISH The percentage taken by a banking game operator as commission for running the game; any bookmaker's or gambling proprietor's percentage.
VOISINS The numbers on a roulette wheel which are neighbours to any particular number.

W

WASTE PILE In card games, the talon or discard pile.
WAGER A bet.
WEIGHT The weight carried by a horse in a race, adjusted by the use of lead in the saddle.
WELSH To fail to pay a gambling debt.
WHEEL ROLLER The croupier who spins the wheel at roulette in an American casino.
WHITEWASH In Britain, to win a game without the opponent scoring, usually called a shutout in America.
WIDE RUNNER A greyhound which runs wide on the bends.
WILD CARD A card to which its holder may attach any value. It might be the joker, and is sometimes called a joker.
WIN A bet at craps that the shooter will win.
WRONG BET A bet at craps that the shooter will lose, i.e. a bet on 'don't pass' or 'don't come'.

X

x A symbol used to represent a low card whose rank is immaterial, as in K-J-x-x.

Y

YANKEE A popular bet in Britain in which four horses or dogs are backed in all combinations of doubles, trebles and accumulators – six doubles, four trebles, one accumulator.
YARBOROUGH In whist and bridge, a hand containing no card higher than a nine.

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Bibliography

As befits a fascinating pastime which is at the same time a big business, gambling has inspired many books, varying from the dispensable to the necessary. The present author acknowledges a debt to most of the books listed below. All of them are enjoyable and authoritative.

The most comprehensive is **Scarne's Complete Guide to Gambling**, published in 1961 and revised and re-issued as **Scarne's New Complete Guide to Gambling** in 1975. This is published by Simon and Schuster in New York, and Constable in London.

For the clearest exposition of the rules and playing strategy of more than 500 games played with dice, cards, boards and counters, **The New Complete Hoyle** by Albert H. Morehead, Richard L. Frey and Geoffrey Mott-Smith is especially valuable. This was published by Doubleday, New York, in 1964.

Casino games are described by Barrie Hughes in **The Educated Gambler**, published by Stanley Paul, London, in 1976. **The Casino Gambler's Guide** by Allan N. Wilson, published by Harper and Row, New York, in 1971, is a penetrating analysis. **Beat the Dealer** by Edward O. Thorp, is subtitled 'A Winning Strategy for the Game of 21'. It caused anxiety among Las Vegas casino owners, and amendments to the method of playing blackjack, when it was published by Blaisdell, of New York, in 1962.

Gamblers' Handbook by E. Lenos Figgis was published in 1976 by Hamlyn, London, and Domus Books, Northbrook, Illinois. This work covers the arithmetic of gambling and the various gambling activities with a lot of useful statistics and tables. The same author's **Challenge to Chance**, published by Arco Publications, London, in 1957, uses the device of fictional characters playing poker and roulette and discussing other gambling pastimes to impart good advice in an entertaining manner.

The history of gambling and games is told by Alan Wykes in **Gambling**, published by Aldus Books, London, in 1964.

The life and times of the Greek Syndicate and the golden era of baccarat at Deauville from 1922 onwards are recreated by Charles Graves in **None But the Rich**, published by Cassell, London, in 1963. The development of the Monte Carlo casino is the subject of **The Big Wheel** subtitled 'Monte Carlo's Opulent Century', by George W. Herald and Edward D. Radin, published by William Morrow, New York, in 1963 and Robert Hale, London, in 1965. The growth of Las Vegas, with particular reference to the way casinos were manipulated by the underworld, is described by Ed Reid and Ovid Demaris in **The Green Felt Jungle**, published by Trident Press, New York, in 1963, and Heinemann, London, in 1965.

An account of the theory of probability and the statistics of chance is **Lady Luck** by Warren Weaver, published by Educational Testing Services, Inc., U.S.A., in 1963 and in Britain by Heinemann Educational Books, London, 1964 and Pelican Books, Harmondsworth, 1977.

Good sense on getting the most for your money is the theme of **Oswald Jacoby on Gambling**, published by Hart, New York, in 1963.