

The group to which *pachisi* and *patolli* belong is most familiar to Europeans in trictrac or backgammon, though some other forms are in use, such as the "royal game of goose" (*jeu de l'oie*, *juego de la oca*, &c) and various race-games and others. In their complete forms, games of this class are played by opponents who move pieces on a diagram or board in opposition to one another, the number of places moved being determined by the players throwing lots or dice. It has to be noticed that just as dice-throwing by itself serves as a means of gambling, so it is with lot-throwing, the appearance of which latter in America has to form part of the present argument. Dico and their use need no special remark here, but this kind of gaming with lots is less familiar, and must be briefly considered. The lots used are two-faced, and their earliest purpose may have been for divination, before they came to serve for sport. The sacred lots consulted in Confucian temples in China are here represented in Fig. 10; they are halves of a bambu root which are solemnly thrown down, both round sides up giving a negative, both flat sides an indifferent, and one round and one flat side an affirmative answer of the oracle. By a larger number of lots gamesters obtain a greater variety of results, in a mode which may be best explained by setting down, according to the elementary rule of probability, the frequency of the combinations of heads and tails when n coins are tossed together ($1, n, \frac{n(n-1)}{2}, \frac{n(n-1)(n-2)}{2.3}, \text{etc.}$), and thence the proportionate value of each combination. For example, let five coins be tossed, and let the value of the two best throws, five heads or tails, be taken as 25.

Heads up	5	4	3	2	1	0.
or						
Tails up. . . .	0	1	2	3	4	5.
Frequency	1	5	10	10	5	1.
Value of "best" . .	25	5	$2\frac{1}{2}$	$2\frac{1}{2}$	5	25.

When the calculated values of the throws are compared with the values given to them in the various games to be presently described, it will be seen that the rules of scoring are in general inexact. For instance the game of *pachisi*, played by throwing five cowries, ought to conform in the scoring to the figures just given, but in fact it only shows an imperfect similarity. At the same time, the whole series of lot-games displays a consciousness of the infrequency of throws of all, or nearly all the faces one way, as compared with throws where the faces are nearly equally divided. When these games were invented, the mathematical method of working out the combinations had not been reached, and apparently the only guide was experience, showing which throws were rarest and therefore ought to count most. Thus these games are of interest in the history of mathematics, as showing the early empirical stage of the doctrine of chances, which reached its logical development in the hands of PASCAL and FERMAT far on in the 17th century. As a means of gambling except in its simplest forms, the casting of two-faced lots is a clumsy process in comparison with the use of numbered dice, which tends to supersede it wherever both are known, so that it may be reasonably thought that the lot-games represent the original form, out of which the dice-games arose.