

Expedition

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AMERICAN INDIAN GAMING ARROWS AND STICK-DICE

By FRANCES EYMAN

Games and gambling seem to be world-wide in their appeal. Only the most archaic of hunting cultures, those of the Australian, the Pygmy, and the Bushman, seem to lack a tradition of gambling. Yet for them life itself is a daily gamble, and they do recognize methods for casting lots. When we watch the play at an American poker table or crap game, we observe behavior and conventions that are old, that are difficult to interpret in the contexts of modern life. We watch a ritual substitution for the gamble that is life itself, a substitution that the Australian dare not make. What is the history of gambling as a ritual substitute for the hazard of real life?

For an answer we must go to history, ethnology, and archaeology through their data we can see that contemporary gambling is a cultural residue, the survival of extinct ceremonial behavior. The roots of modern gaming lie in earlier religious formalities. Thus the study of games is a special field in anthropology, throwing light on both modern behavior and past culture history.

Modern games of chance have a long history, reaching back into the distant human past. Gambling is an ancient vice, rooted in the ceremonies of our distant pagan ancestors. Cards and dice are secularized rituals of divination. A confirmed gambler displays faith in the hands of the gods who move the dice or stack the cards. Such belief was once formally defined, a standard orthodoxy. Games, like lots, were rituals of communication with deities. Gambling is the superstitious survival of antique religious belief.

Students of the American Indian have long noted that gambling played dual roles in native life. Each native game was part of a ritual, and was filled with nature symbolism. At the same

time, real property was at hazard on each throw of the dice. Compulsive gambling and consequent economic ruin were known to many American Indian tribes.

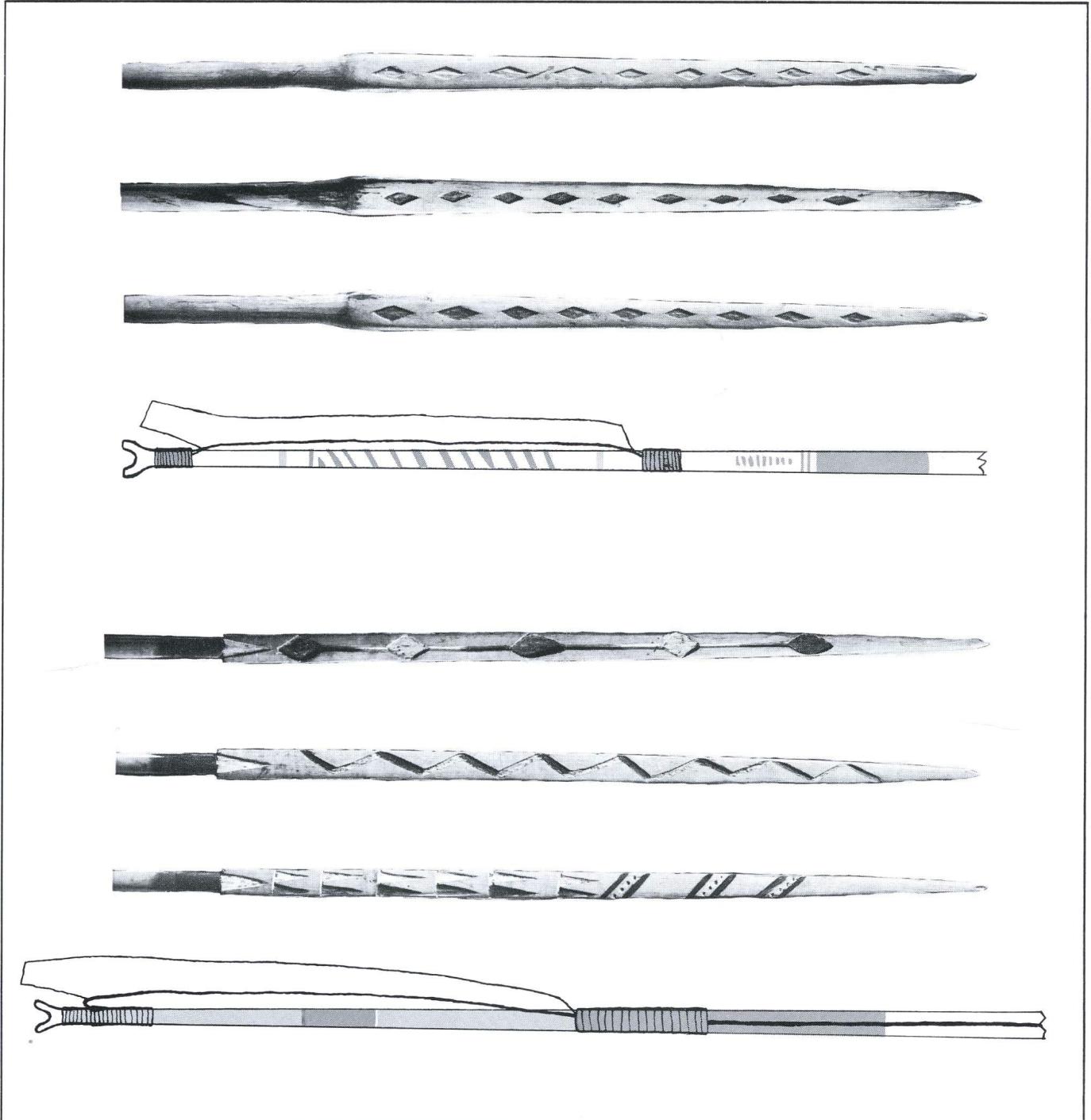
Frank Hamilton Cushing, a pioneer American archaeologist and ethnologist, is the father of the study of American Indian games. As an employee of the Bureau of American Ethnology, he had lived in the Indian community of Zuni, New Mexico, during the 1880's. He had become a tribal member and had been elected to the post of "Lesser Bow Priest," a war leader. As one duty of his office, he blocked a major land theft that railroad officials had contrived against the people of Zuni. The thwarted land thieves went back to Washington and forced Cushing's discharge. After 1889 he worked on contract and for short intervals for a number of other institutions, including the University Museum.

Cushing learned the elaborate stick-dice and board game of the Pueblo peoples during his sojourn at Zuni. Starting from insights offered by Zuni gamblers, he studied other American and Asiatic games, and thus began to reconstruct the early history of playing cards.

Meantime, Stewart Culin, an orientalist, had begun the comparative study of Old World games. Culin set up an exhibit of Asiatic and European games for the 1892 Columbian Exposition. In the fall of 1891, while working in Chicago, he met Cushing who was preparing a Southwestern archaeological exhibit for the same exposition. They found a common interest in the comparative study, history, and psychology of gambling. Cushing pointed out the close relationships between oriental games and those of the American Indian. They planned to collaborate on a comprehensive study of the games of the world.

Cushing and Culin were struck by the subtle, complex, expert mathematics displayed in games. This is now a separate field in mathematics, involving the laws of probability and the theory of games. Cushing was probably the first student to recognize gaming as a field of expert calculation and as a source of new tools for modern mathematics.

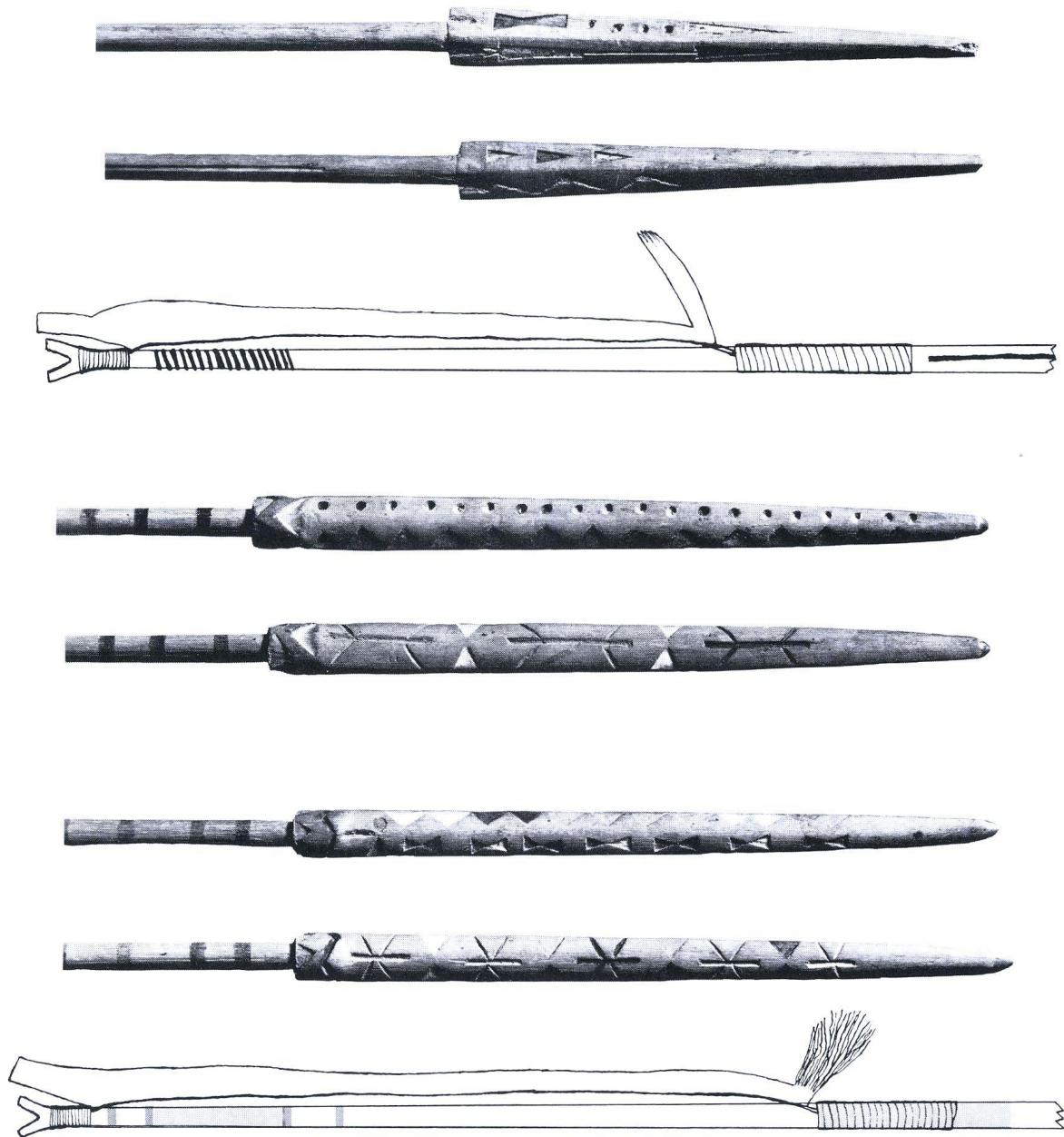
In 1892, Culin became the Director of the American Section and the Section of Ethnography of the University Museum. Cushing, in 1895, came to Philadelphia to catalogue and set up exhibits of Southwestern archaeological material which Mrs. Phoebe Hearst had bought for the museum from C. D. Hazzard of the H. Jay Smith Exploring Company, who had exhibited it at the Columbian Exposition. Cushing and Culin continued to work together



Plains Indian gambling arrows with three-sided heads. The upper one (catalogue number 45-15-1278) is 29 inches long; its tip, 6 $\frac{3}{8}$ inches long. The diamonds in the face shown at the top are painted red (vermilion), the others blue (indigo). The interior of the nock is painted red, the sinew bindings on the fletching blue. The blue spiral has a red ring at each end, and the rest of the cresting is in blue. The second specimen (catalogue number 38058) is 28 inches long. Incised designs on the tip are red and blue (vermilion and indigo). The sinew binding near the nock is a faded green, extending to the blue band at the center of the fletching. A second green zone extends to the other sinew binding, which is part of a broad blue band. The green dye has not been identified, but the blue and red were commercial pigments. This arrow has three grooves, "lightning marks," two of which are straight and the third sinuous.

In each illustration, only one of the three feathers is drawn in outline.

Painted designs on the shaftments of arrows are generally interpreted as owner's marks. Cushing and Culin believed that the markings on stick-dice were originally arrow crests.



Plains Indian gambling arrows with two-sided heads. The specimen at the top (catalogue number 38058, old number 118) is 26½ inches long, its head 4½ inches long. The carved designs are colored with vermillion and indigo. The spiral crest is of commercial red sealing-wax. There are three straight grooves or "lightning marks" on the shaft, painted blue. The other two specimens are a pair, from a set of four arrows (the other two are lost). They are 27½ inches long; their catalogue number 38058, old numbers 117 and 32. The head is painted with red, dark green, light green, and yellow. There are four brown rings on the shaft near the head, and the binding at the front of the fletching is brown. The crest is two dark green rings on each side of a red zone.



*Four sets of Zuni stick-dice, each two dice made from a joint of reed or cane split in half. The two sets to the left were collected from shrines of the Twin War Gods, where they had been left as offerings. Within each set, the four patterns, from left to right, are symbols for North, West, South, and East. They were made from arrow reed (*Phragmites vulgaris*). The third and fourth sets, which are copies, are of cane (*Arundinaria*). The last set shows scorched patterns on the reverse or concave side, which have almost no variation between sets. Catalogue numbers 22581, 16543, 22471, and 22473. The first set are $6\frac{1}{16}$ inches long.*

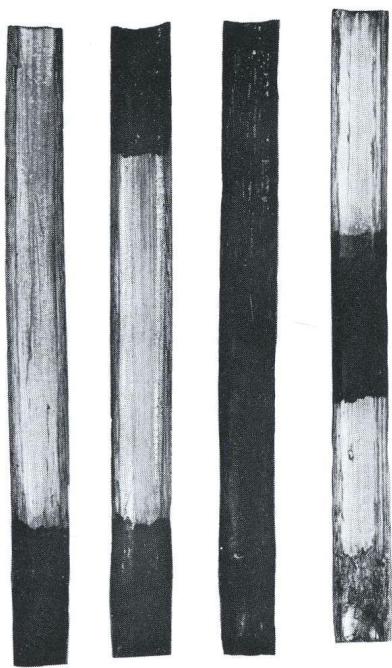
at the games, but Cushing was marked for early death. Broken in health by years of living under primitive conditions, and laden with parasites picked up in primitive communities, he died in Washington in 1900 at the age of forty-three. In his short life he had made many brilliant contributions to American anthropology.

Culin continued to assemble one of the world's great collections of gaming equipment at the University Museum, and published several fundamental studies. Culin's thesis, that the arrow was the ancestor of the playing card, still stands without contradiction. However, there were serious gaps in the data available to him, representing areas that had then been little studied. Perhaps the most serious flaw was Culin's inability to document any game played with arrows which could stand as a prototype to stick-dice. We can now rectify this fault with recent field data and newly-recognized gaming pieces. The ultimate ancestor of the poker deck is now known, and can be given an approximate date in the evolution of culture.

Culin quoted several notices of arrow games, but they gave no details, suggesting that the arrows were cast like darts. Arrow games were apparently thought of as casual pastimes, and earlier students made little inquiry about them.

A formal arrow game has recently been discovered among the Cherokee of western North Carolina. Older allusions to arrow games among other tribes suggest that similar games were widespread.

The Cherokee arrow game, called *adhasadiis-tih*, "put one hard thing on another," or *ditlsud-hiski*, "things hit across one another," was played in the afternoon before a ritual beginning at dusk. It was played in the square where the marble game was played and where the men met in conferences. A heap of small brush about three feet in diameter and about three feet high was placed in the middle of the square. A line was drawn about twenty feet from the edge of the brush heap. The first player stepped up to the line. He held his left hand in front of him, fist clenched with the forefinger upward and the large knuckle of the thumb nearest his body. He balanced an arrow upon his left hand, with the point directed toward his body and the feathered end pointing at the brush heap. He placed the forefinger of his right hand under the tip of the arrow, and flipped the point of the arrow upward, so that it would rise in the air, turn over with the tip pointing to the brush while in flight, and come to rest within the brush. If he missed the brush pile, he retrieved his arrow and lost his next turn.



The second player then cast his arrow into the brush in the same manner, and each other player followed. When an arrow cast by a player came to rest with its shaft in contact with another arrow, the player retrieved both arrows. When his arrow came to rest with its feathers in contact with the feathers of another arrow, he took all of the arrows that were in the brush heap. There might be side bets, but the only stakes actually placed on the game were the arrows of the players. Thus behave men who have little resources, yet gamble with the tools and weapons of their simple economic life.

Allusions to arrow-casting games indicate that a game of this sort was formerly known to most of the peoples of the Eastern Woodlands and the Plains. Quivers of mixed arrows in old museum collections, containing arrows obviously made by several different people and with different crestings, suggest the arrow-casting game. Groups of flint arrowheads found in graves with points of various materials and workmanship likewise suggest that the game was known in prehistoric times.

The names and shapes of pieces in Indian stick-dice games, and the context of archaeological specimens, indicate that dice games are older than the bow, and that the games originated when the spearthrower and javelin were the most advanced hunting tools. Early dice were portions of a dart or light spear; the original arrow-casting game was played with such darts and the spearthrower. Thus, games derived from darts probably originated many thousands of years ago.

Among the central tribes, including the Dakota, Cheyenne, Kiowa, and Navajo, special arrows were made for use in the arrow-flipping game. These Plains peoples included the most reckless gamblers in native North America, addicted to stick-dice and eager to borrow the white man's games, including the Spanish version of poker and the 18th century British version of marbles. Doubtless their arrow games were played for wagers rather than arrows. Their gambling arrows were carved from one piece of wood with large heavy points; the symbolism of the engraved designs on their tips is unknown.

Games descended from the gambling of arrows are almost infinite in their variety. In most of the Americas, stick-dice or basket-dice games of some sort were important. Only among the northeastern peoples (Naskapi and Cree) and the folk of Tierra del Fuego and the Chilean Peninsula were dice games lacking. These peoples were marginal, and represent a culture stage older than the evolution of stick-dice. In more central parts of the Americas, dice games became involved in complex elaborations.

We find the most curious concept among the Crow of the northwestern Plains. They believed that each man's fate was determined by the luck and the magical power of his dream guardian, the animal spirit with whom he had entered into mystical alliance during his puberty vision quest. Everything that happened to him depended upon the fortune of his guardian spirit in a stick-dice game. In the Other World a game was being played. On the one side were the guardian spirits. On the other were anthropomorphic gods. As the dice went, so went a man's career. When one of the spirit guardians lost the game, his man died. The fatalism that was rationalized about the supernatural stick-dice game went deep into Crow life and behavior; their recklessness in war and the enormous losses in population which they sustained during the 19th century were believed due to the shifting play of the celestial dice game.

However, two specialized games should be mentioned. The related stick-dice and board games of Mexico and our Southwest are among the great games of calculation, with some of the intellectual appeal of chess. The simple stick-dice game of the Dakota Indians (discussed later) has little except guess and chance as challenge. These represent two extremes among the descendants of arrow flipping.

The arrow game, as known from the Cherokee and inferred for other tribes, is one of the simplest games in an American Indian ritual sequence. Every Cherokee game preceded a ritual



Arrow-shaped dice of cottonwood, from the Piegan band of Blackfoot, Montana. This set was found by Charles Stephens at the 1891 Sun Dance Lodge on the north side of Badger Creek, a mile from the Blackfoot Agency. It is believed that these fourteen pieces were used in connection with a hunt after the manner described for the Dakota, or that they were elaborate counters for a stick-dice game played with four bone dice. Catalogue number 45-15-1277 Length about 11 inches. These dice are also shown on the front and back covers.

or was part of a rite. There were other American Indian games which were so elaborate that men devoted a lifetime to their challenge. A stick-dice game, *patolli*, which has been compared with the Hindu game of *pachesi*, was played among Mexican peoples. Similar games are known as far north as the Kiowa, with a continuous distribution in north central Mexico and among the Pueblo peoples, and the Pima, Papago, and other tribes of our Southwest. There are many variants, and different forms of the game are sometimes played within the same community.

These games, sometimes all called *patolli* from the Aztec name for their dice, were complex stick-dice and board games, semi-religious and involved in divination. The detailed rules for the Mexican game are poorly recorded, so much about *patolli* is obscure. Modern survivals have been little studied, and early accounts are scarce.

The Zuni game is the most important since we have the benefit of detailed first-hand observations and of native interpretations rather than historical reconstruction and conjecture. The game is called *sholiwi*, "parts of arrows." Four stick-dice are split lengths of arrow reed, the convex surface of each one engraved with a different design. Each die represents one of the four cardinal directions. Cushing noted that some particularly sacred sets of dice were actually made from the crested ends of arrows which had been taken

from enemies in ancient times. The game was played by members of the "Bow Priest Society," the war leaders of the Zuni. It was played for divination, to foretell the future.

According to the fall of the dice, markers were moved along a circular board painted upon a bison hide. The circular track consisted of 160 squares, broken into four arcs of 40 spaces each. There were four players, representing four clans, and the first player to make a circuit of the board won. Cushing, who became the "Lesser Bow Priest" of the Zuni, learned some expert skills at the odds and the general tactics of the game. At this stage, having been initiated to the level of competent performance, Cushing began to see the subtleties.

He learned first that there were instantaneous ways of calculating odds that he could not understand, since they were partly in an exotic mathematics, partly subconscious. Secondly, he learned that his gaming friends were slaves to the dice and the board, and that all of their time, attention, and financial resources were devoted to the play. He decided that he was by nature an outsider to such dedication, which was compounded of priesthood and self-destructive impulses. The gambler was a ritual officer of Zuni society; the game which he played was a sacred thing, both a prayer to the gods and a technique for learning from the gods what fortune the people might ex-

pect. At the same time, the gambler lived at the edge of survival, striving for the masochistic thrills of near ruin and magical salvation. Three things were apparent: the religious nature of the gambler's struggle; the great and subtle mathematical calculations which ruled his life; his constant thrill at skirting the precipice of total ruin through addiction to the game. Cushing noted the resemblances to the experience of the poker addict of his time, and decided he could never be more than an amateur at the game.

Thus Cushing was shocked to discover that one calling of the Zuni priesthood demanded that a man stake his property, his clothes, his food, perhaps even his life on the throw of the dice. Members of a primitive society were not expected to develop such civilized vices! Especially upsetting was the knowledge that religion demanded this, that men in each generation must devote their lives to the game. Human lives and their subsistence meant less than divination. Knowing this of Zuni, on the margins of Mexico, one wonders what stakes were at hazard in Yucatan, Honduras, and the Valley of Mexico. Certainly large wagers were placed on another Mesoamerican game—a sacred game played in special courts with rubber balls. Early historical accounts say even the lives of the players were at stake.

The Zuni and other Southwestern games are played on boards with four-direction symbolism. Some of the boards are four sided, others are crosses with a track of spaces that follows around the edge of the cross. The Hopi have stick-dice games of several kinds, some using a square track, others a cross-shaped diagram. Northern Mexican tribes using the board game include the Tarahumara, Opata, Tepehuan, and Zaque. None of these games has been adequately studied, nor is so fully known as the Zuni games. All apparently involve direction and color symbolism, a four-sided board and four dice symbolizing the four directions, two-sided dice split from arrow reed or cane (or a modern substitute split from wooden sticks), and strong ritual associations.

Alfonso Caso has surveyed data on *patolli* in Mexico. He believes that the game was originally played with beans as dice because certain large varieties of beans are called *patoles* in Tlaxcalla and Jalisco. Two early sources refer to beans as dice, three refer to canes. Caso discovered that a form of *patolli* was still played in the mountains of northern Puebla, northeast of Mexico City, in the vicinity of the towns of Zapotitlán and Huitzilán, an area of Totonac speech.

The game is called *petol* in Mexican Spanish, a term also used for any other gambling game.

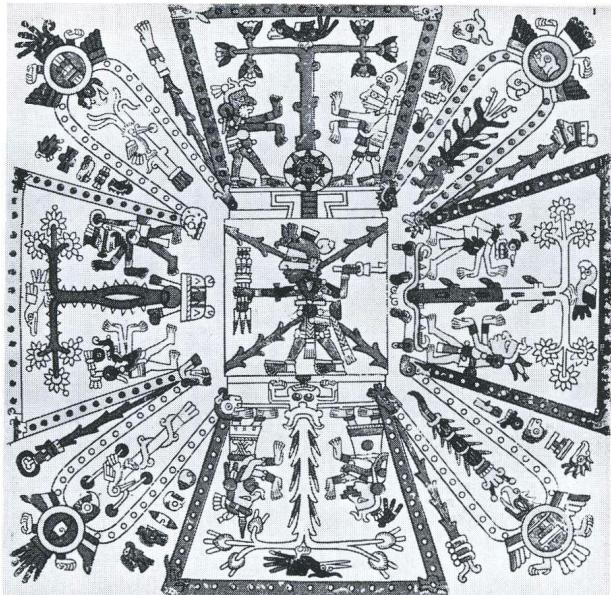
It is called *lizla* in Totonac, which is the name for the dice of split arrow reed used in the game. Four stick-dice are bounced upon the board, and a marker moved along a track on a swastika-like diagram according to the combinations of the eight faces of the dice. The players start from opposite ends of the track, so that their markers pass one another midway in the game. If a marker lands upon a space occupied by an opponent's piece, the opponent must start that piece at the beginning again. There are three players on each side; otherwise one or two persons on each side play with two or three counters. There are elaborate rules for entering markers into the circuit, for the throws necessary to get over the last few places of the circuit, and for the values of different dice combinations. The first side to carry all markers through the circuit wins.

Some years before Caso's study of *patolli*, Cushing had described the Zuni equivalent to Culin. As Culin continued to collect fragments from the literature about the distribution of *patolli* and other games, he began to wonder, among other things, about the content of certain Mesoamerican hieroglyphic codices. The manuscripts record a ritual cycle of 260 units which was an integral part of the calendars. Three of the codices include diagrams of a hollow cross with lobes between the arms of the cross, formed by a track of 260 units.

Culin suggested that these diagrams were pictures of game boards used in elaborate ritual versions of *patolli* for purposes of divination. Later students have explored the symbolism of such codices, and have not taken note of Culin's suggestion. No one doubts the calendric significance of the codices. Yet many scholars have tried to discover the derivation of the 260-day cycle, which corresponds to no natural period. It does represent the combinations of 20 named days and 13 numbered days. These two figures are ritual numbers.

If Culin were right in deriving the 260-day cycle from a form of *patolli*, and in interpreting the crosses in the codices Fejervary-Mayer (Liverpool), Borgia, and Tro-Cortesianus as game boards, the codices known as *tonalamatl* might be related to divination by gaming as well as to calendrical divination. However, this idea is not supported by modern study of the calendrics.

Culin may have been misled by his detailed knowledge of a major stick-dice divinatory game of China and Korea generally called *nyout*. This game is actually more like *patolli* than is the Indic game of *pachesi*. *Nyout* involves two-sided stick-dice, a circuit upon a board with direction



First page of the Codex Fejervary-Mayer, a pre-Columbian manuscript on parchment which probably came from the region of Tehuacan, Mexico. Culin interpreted the track which forms the cross as a gaming board. Later students have studied its calendric associations. According to Seler and Thompson, the Fire God, holding a spearthrower and three darts, stands at the center of the cross. East is to the top, with pictures of the Young Sun God and the Knife God; North at the left, with pictures of the Rain God and the Mountain God; West at the bottom, with pictures of the Water Goddess and the Earth Goddess; South at the right, with pictures of the Maize God and the Death God. Other magical and religious symbols can be seen throughout the drawing.

This 260-day calendric table is arranged in the form of a Greek cross with lobes between the three-sided arms of the cross. The track is formed by twenty lines of dots which are assembled into a circuit. Each angle is marked by a day-sign instead of a dot, with twelve dots between each pair of day-signs. If we follow the track around from right to left (counter-clockwise) each space represents a day, each day-sign beginning one of the 13-day "weeks" which perhaps took their names from their day-signs. The continuous circuit may be repeated indefinitely as one counts off the days and weeks of the recurrent tonalpohualli cycle.

symbolism, and ancient manuscript manuals for interpreting the game. These manuscripts are generally titled *The Book of Divination* and consist of diagrams with accompanying text. Culin felt that some of the codices were comparable to *The Book of Divination*, and might include guides, glossaries, and tables made for multiple use in divination.

The magic books of Mexico are full of forebodings of loss. As we look at these books with their gruesome, colorful, barbaric splendor, we are reminded of the tarot deck of the clairvoyant European fortuneteller, who lays out the deck

that "begins with a fool and ends with a knave." As the tarot cards are laid out in a Great Game, the colorful grotesque pictures of the cards enter into the trance-state of a clairvoyant. Their patterns bring fantastic responses from the unconscious mind. The emblems of the codices are replete with pictures of suicide, human sacrifice, and ruin of many kinds.

While men in the great city states of Mexico and the crowded pueblos of our Southwest played elaborate games with stick-dice, they had fellows in less populous areas. Gambling for real wealth is a widespread compulsion. Rev Stephen R. Riggs, missionary to the Dakota from 1837 to 1883, recorded much information on the Plains Indian buffalo hunt. Unlike most accounts, his notes are detailed and down to earth, many of them recorded in the Dakota language.

When scouts learn of a herd, officers for the hunt are elected. Four men have absolute authority. A woman lends them her tipi to use during the hunt and moves in with a friend. Her husband remains as one of the officials, and is in charge of the lodge. Two men called "touchers" are also elected; they must care for and do all the chores necessary for the lodge, relieving the officials for their duties. A "crier" is appointed as spokesman for the four leaders, and two scouts are named to bring back reports about the movements of the bison herd. These ten officials apparently do not take part in the hunt, but are its overseers.

A number of short rod-like sticks are prepared, one for each participant in the hunt. Some are painted black to represent grown men; others red, to represent youths. Each is also marked with an individual symbol (like an arrow cresting) to represent a person. They are issued to the men of the camp. Each is a ticket to the hunt; without it, a man is boycotted, and has no access to game. When the scouts go out and the "crier" notifies the men, each comes to the "soldiers' tipi" with his pass. Sticks are collected and bundled in the lodge.

As the hunters wait, the scouts come back to report about the herd. They may not speak to anyone until they have entered the lodge of the officials of the hunt. However, a pile of buffalo chips has been heaped in the center of the camp. If the scouts walk slowly, they express failure. If they have found game, they run toward the chip-pile. They leap over the pile to indicate a great herd, and skirt it if they have found few animals. Thus they give the hunters forewarning.

When successful scouts return to the camp, the "crier" comes out and says, "Bind on saddles! For half a day I will kill precious children"

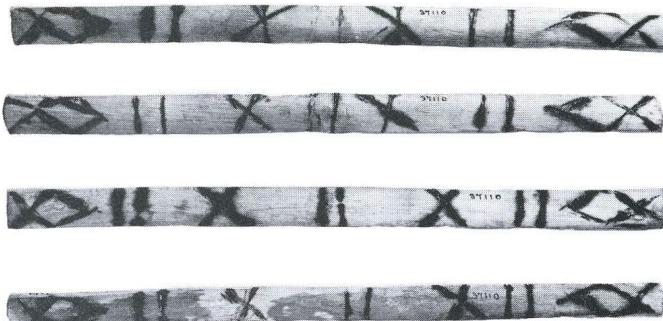
(i.e., the buffalo), calling them to a successful hunt. The men set out under the direction of the officials. In surrounding the herd each man must take his place quietly. If he should startle or kill an animal before the signal is given by the officers, his tipi and property will be destroyed, his horses might be killed, and he could even be left with broken arms and legs upon the prairie. Coordination is this important in the bison hunt.

When each man has silently taken his place and the herd is surrounded, a signal is given to begin the killing. The game belonging to each man is identified by the owner's marks in the cresting of his arrows. Women and children follow to butcher the animals, carry home the meat with their pack horses, and prepare the hides. When the hunt is done, the men return to the "soldiers' tipi" and sit down to smoke and to regain their painted sticks, their original badges of admission to the hunt.

The sticks of admission are collected and placed in a loose pile on the floor. They are used in a stick-dice game of very simple form, quite distinct from the game played with four cast dice. One of the officials, eyes closed, divides the sticks into two piles. As he does so, a hunter makes a wager; one pile has an odd number of sticks, the other pile an even number. The stakes are pieces of meat. Since the officials of the hunt have killed no game, but have been occupied in the organization of the hunt, they have no meat. They gain meat for their families by a stick-dice game, and each hunter must hazard some of his family's provisions on the game. No member of a prosperous cosmopolitan community could throw down his stake with better reason, nor run a greater risk.

After the hunt, boys also play at the arrow-flipping game in a quiet corner of the camp. The most ancient of games, it is a test of simple skill and dexterity, with little of luck or odds. Its stakes are slight—arrows or small wagers. Meantime, men gamble for meat in the soldiers' lodge. The odds are like those of flipping a coin, almost pure chance. Their game was descended from arrow-flipping, but the relationship had long been forgotten.

In other parts of the world, even more arduous games had evolved from the contest of arrows. Men played at whist in London clubs, gambling away fortunes and titles. Chinese card players gambled wealth and station on their narrow stick-like cards. In the Southwest and Mexico, men staked everything on the cast of the stick-dice. All shared a common compulsion, but no one knew of their brotherhood. The roots of the impulse were too deeply buried in time.



Stick-dice of the Uinta Ute, White Rocks, Utah. Four willow sticks, one side of each flat and painted blue, the opposite sides slightly curved and marked alike with burnt designs. Collected by Culin in 1900. Catalogue number 37110. Length 9½ inches.

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