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PRE-COLUMBIAN MIDDLE AMERICA MEDICINE

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THE American Indians from the north as far as the Dakotas to the south as far as the lower borders of Chile, had entered upon advanced stages of social and cultural development long before the land of the Americas was discovered by Columbus and his followers. However, it is difficult for the historian of the present to unravel the story which must have been presented to one, who in the early colonial period, would visit these ancient races in their native homes and villages. In but a few instances have definite pictorial records of their daily existence been handed down by these people. Even in our own country of the United States with its backward native civilization, the mound builders evidently had reached a high grade of a crude civilization centuries before the white man came. Because of absence of a written language, it is only by piecing together here and there objects found in these mounds that it is possible in a hazy and unsatisfying manner to form a concept of what the daily life of these early people might have been.

However, as we go farther south into Mexico and Central America and beyond into the Highlands of Bolivia, Peru and Ecuador, we find more permanent ruins and fairly well preserved archeological structures which indicate to us that a high culture had existed in this region centuries before Columbus came. The temples of the Toltecs, Zapatecs, Chimus, Incas, and the Mayas built of enduring stone indicate the high plane of civilization attained by these ancient peoples. We

know that the Aztecs and those who preceded them, the Toltecs, and even before that, the more ancient people called the Archaic race, had developed the arts of peace as well as those of war to a high degree. We also know that the Incas of Peru and the preceding race, the Chimu, were of high intelligence and great ability. As they gradually learned to produce the architectural wonders which even in their ruins astound us, we must give them credit for having been advanced in other fields of human endeavor. The conclusion is impressed upon us that many generations of thinkers must have brought to these intelligent peoples some ideas of the causes of disease, and the experiences gained in their contemplative philosophy must have aided them in developing a system of therapy by which they sought to cure or to remove the ills to which their bodies were subjected. However, since they were not acquainted with the physical make-up of their body and only knew in a hazy manner a few of its functions, they were engulfed in a sea of uncertainty and ignorance. Out of this void of uncertainty by sheer intellectual effort, contemplative study, and comparative deduction, they groped their way to their own metaphysical interpretations of the phenomena of disease. Naturally their conclusions were full of distortion and error. As a corollary of an existence which was full of terror, uncertainty and dread, they associated the many ills of the body with the activities of demons or of evil spirits who had entered into and took possession

of it. By holding to such a philosophy it is easy to understand how the cult of the priest and that of the physician in time became almost indistinguishably welded.

The priest was supposed to understand the habits, languages and motives of the spirit world and was regarded as competent by the exercise of exorcism and magic to remove unwelcome visitors of the spirit and demon world who, entering into the body, had caused its suffering and disease. When the processes of exorcism became too involved and complicated, specialism took place in the ranks of the priesthood. Especially was this so in the Americas among the Mayas. Gradually a group of the priesthood assumed as their own particular prerogative the practice of the healing arts and the care of the sick and injured. The members of this specialized group were called Shamen. It is interesting to note that the term Shaman was generally used among primitive people over almost the entire world to designate the type of individual who was entrusted with a combination of ecclesiastical and medical duties. We find that the priestly doctors were called Shamen in far northern Siberia, in the Alaskas, among the Polynesians and the early Egyptians. We also find the term is used to designate a form of minor priesthood in the Hebrew religion where the shaman has somewhat the same standing as the elders in the Presbyterian church. The traveler in South America and in certain parts of Central America, especially in the Highlands of Guatemala, will find that where the customs are still primitive and Catholic priests are unavailable, the party or person who takes the place of the priest is called a shaman. It would be an interesting diversion to dwell upon the universal and wide use of this term as an indicator of the common ancestry of certain components of the human race and to speculate upon the interrelation of various tribes and peoples.

Among the American Indians the shaman also had a place of high respect for we find that in the early Indian religion

that the shaman was entrusted with special duties and had assumed definite obligations. Among the Mayas and the Toltecs, one of the duties of the medicine man or priest-physician was to administer at the religious services to the serpent god.

We know that folk customs and practices are particularly tenacious and are hard to change since they have sunk deep into the very roots of racial existence so that even in this enlightened day we find that a type of serpent worship still persists in widely separated regions. This worship is serviced by particular and specialized ceremonies as illustrated by the serpent dances of the Hopi Indians, by whom the serpent is regarded almost with veneration. We even find in the legends of the early Hebrew and Christian religions that at times the serpent was held in a venerated or deified position and even as a repository of wisdom was accused of having tempted Eve to seek forbidden knowledge by eating of the apple. In this manner the serpent in his evil power was associated with the downfall of man.

We may permit speculation as to the reasons why the serpent had acquired such a hold upon the imagination and philosophy of primitive man. It is likely that his reverence for the serpent and his belief of its association with occult power and lethal influence might to some extent be explained by the mystery of its mode of existence, its silent and unexpected appearance from the recesses of the forest with its graceful forward movement without legs, its very long life which seemed to partake of life everlasting, the periodical casting off of its skin by which it was thought to reincarnate itself, its long disappearance into the depths of the ground where it apparently became associated with the demon gods of the nether world, and its ability to kill with the poison generated in its own body. All of these fired the primitive imagination which clothed the serpent with supernatural powers. As the most important of these many attributes the serpent was thought to have

knowledge of good and evil. He was regarded as a teacher of wisdom and a prognosticator of future events and as the dispenser of health to those whom he condescended to aid. The latter attribute or power probably explains the association of the serpent with the healing art.

It is also easy to understand how in early anthology this worship with its sinister implications could become the embodiment of all that was evil. Because of the stealthy approach of the serpent and its unannounced presence it became an object of fear and dread. As a consequence, effort was made to appease it, and in the course of time it was elevated to the rank of a deity. As man's ability to live and survive depends upon the vigor of his body and his freedom from destructive disease and crippling accidents, it is not surprising that he sought to appease and propitiate this serpent god who was so potent for good or for evil.

In consonance with the tendencies of other races of the world it is not surprising that the American Indians, especially the Toltecs and Mayas, developed a well defined cult of medicine and that this was associated with the worship of the serpent god. The priests of this cult were regarded as skilled in the arts of healing the sick and in the treatment of wounds. This reputation was well merited because in the course of many generations they had accumulated a considerable fund of knowledge and were expert in the treatment of disease. As is usual with all groups who possess special skill, they finally organized themselves into a kind of brotherhood which required that novitiates be scrupulously selected both for intelligence and natural ability, and that after selection they be put through a rigid course of instruction and training. It is significant of a constantly increasing restrictive tendency that among the Aztecs and the Nahuas of ancient Mexico the medical priesthood was hereditary and descended from father to son, from generation to generation. This same procedure was

noted in Chile by Ovalle whose observations were made in 1649. Education was under the father's guidance and in Mexico opportunity for practice in the public hospitals was given. There was also free access to the botanical gardens. Anatomical knowledge was advanced by dissection of the bodies of the persons killed during sacrificial ceremonies.

The Maya Indians regarded the medicine man with great reverence and respect and designated selected boys at an early age for this high calling at the age of ten or twelve years. Boys destined for the priesthood were selected because of their natural inclination and their peculiar aptitude and intelligence. They were required to have a strong pulse and a healthy body. After selection they were segregated into special schools where they were instructed in the obligations and duties of their high office. They agreed to remain in celibacy for twenty years and had to respond to all calls of the sick and afflicted. For at least a period of their instruction they were confined in solitary buildings where they dwelt in company with their instructors. For the first two years they were subjected to severe discipline. They must not eat flesh nor anything having life, but live solely on vegetables, drink only water and not indulge in sexual intercourse. During the probationary term neither parents nor friends were permitted to see them. At night only were they visited by professional masters who instructed them in the mysteries of necromantic art.

Among other Indian tribes it was required that a young man desiring to become a medicine man would first have to find a competent teacher who was willing to accept him as a student. After a prescribed period of training both teacher and student apprentice retired to a hut in the forest where the novice was instructed in the more intimate ceremonials and the incantations and medical practices required of the medicine man for proper functioning of his art in the treatment and cure of

disease. When the period of instruction was completed the apprentice was left alone in the hut and was then supposed to encounter a serpent (boa-constrictor), which reared up and placed his tongue in the mouth of the young man and transferred to him the wisdom of his calling. In this way the initiation was completed. Among some of the Maya tribes three novices were assembled at one time and at the end of the investment ceremony each of the novices was supposed to be devoured by a snake and was later expelled through the anus. In his passage through the snake, the novice was supposed to acquire the knowledge of various herbs and drugs and medical practices.

After his education was completed the neophyte entered upon the practice of his profession and was granted the privilege of wearing the insignia of the medicine man. In some tribes, as the Wabeno tribe of North American Indians, (Schoonkroft, H. H.), a musci scroll of medical or magical significance was given to the student on completion of his course of training. From the presenting symptoms he made his diagnosis and prescribed his treatment. Empirical diagnosis based upon symptoms was not always easy and in some cases required considerable intelligence of a high type.*

The medicine man not only prepared the medicine which he used but he frequently administered it. This was accompanied by proper ceremonial incantations and ritualistic formulas by which such assurance was conveyed to the patient that he became convinced of the authoritative source of the methods used in his treatment. Incantations were also used to qualify the diagnosis and to indicate the proper drugs and practices to be used in treatment. They also were the means of determining the prognosis of the particular condition from which the patient was suffering. In the medical seances the

rapport or sympathetic relationship between patient and medicine man was very considerable. By the hypnotism of his calling the medicine man had become convinced of his own power and was acting in most cases in entire harmony with both his patient and his art, so that the patient imbued with the confidence displayed by the medicine man, did not doubt his ability to bring him into contact with the spiritual world through which he would obtain relief. As an aid to this state of mutual accord a mild intoxication was induced in both medicine man and patient by the administration of narcotics or by the drinking of intoxicating liquors. The *Datura* or ginseng weed of the southwest, or tobacco which was indigenous in all the Americas, was frequently used. A state of half consciousness was induced; in this trance-like state hazy and half formed visions would materialize. These visions embodied the ideas and conclusions suggested by the medicine man. Also certain things which the patient was to avoid and which were to be taboo were suggested to him in his narcotic semi-consciousness.

The members of the tribe usually had great respect and reverence for the medicine man who usually was of outstanding personality and shrewd intelligence and carried himself with great dignity. By his skill and cunning he was able to deceive the simple minded members of his tribe. He impressed them with the magnitude of his powers and developed a position of respect and prestige for himself and his art. This was very necessary for his success because the medicine man was held to be particularly qualified to treat disease because of his intimate contact with the spirits of his ancestors. Also he was thought to be in communion with the gods who were represented in the various birds, quadrupeds and reptiles whom he had encountered in his journey through life. From them he was supposed to have learned many intimate qualities of life's mysteries.

* BANCROFT, H. H. *Native Races of the Pacific of North America*. New York, 1875-1876. D. Appleton & Company.

By his superior knowledge of the elements he was credited with the ability to see into the future and was regarded as qualified to predict changes in the continuance of an individual's health and the onset of disease. In difficult cases he was supposed to see and hear the spirit of the patient and thereby was able to understand better the spiritual and physical conflicts occurring in the patient. From this knowledge he was considered as capable of prognosticating the course of the disease and the prospects for recovery. The medicine man not only impressed his followers with his ability in the healing arts and in the cure of human ills, but also with his general superiority in all lines of endeavor.

In the treatment of disease his methods may be formulated into (1) the rituals and mysteries of sorcery, (2) incantations and mummeries of magic, (3) in his more material therapeutics he made use of organic substances, animal or vegetable, and inorganic substances, minerals, etc., (4) manipulative procedures, (5) physical measures as baths, blood-letting, etc., and (6) surgical procedures.

In the practice of sorcery and magic, incantation usually was associated with dancing which was regarded as a necessary part of the procedure. This dancing consisted of strenuous movements of a ceremonial character with a shuffling two step and a third step in between, by which the entire movement was exaggerated. The dance was accompanied by a chant; both dance and chant were of almost interminable duration, so that they frequently were terminated by the medicine man and his acolytes falling down unconscious from exhaustion.

An example of the procedure of medical divination as practiced among the ancient Mexicans is given by Nuttall as follows: "When someone was ill they called the medicine woman or man in order to ascertain how the illness would end, and placed an idol in front of the patient. This idol was named Quetzalcoatl, or 'Plumed serpent.' On entering the house

permission was asked of the household god. A demijohn of balche, an intoxicating liquor, was received and during the procedure the shaman kept himself goodly intoxicated, according to Meetal.* A mat was laid upon the floor and the medicine man or woman sat on this and in front spread a white cotton cloth. The shaman then took twenty grains of maize in his hand and cast them upon the white cloth, just as the Spaniards cast dice. If the said grains fell in a circle, leaving an empty space in the center, it was a sign that the patient would die of his illness and would be buried, the empty space being regarded as the sign for a grave. If the grains fell on top of each other, it signified that the illness had been caused by sorcery or witchcraft, but if in falling the grains divided into two parts, one half being on one side and one on the other, so that a straight line could be drawn through the middle of the group without touching a single grain, it was a sign that the disease would leave the patient and that he would recover."†

Types of sorcery and magic somewhat similar to that of other ancient days are at present being practiced among the descendants of the Mayas, by individuals who combine the functions of priest, sorcerer and physician. These "yerbateros" of today are called Ah-men by Roy's and H'men by Starr.

"These on occasion might undertake to cure disease or to provide a love potion." (Shattuck quoting Roy's—Roy's 1931 *Ethno Botany of the Mayas* quoted by Shattuck, George C. *The Peninsula of Yucatan*, 1933, P. 64, pub. Carnegie Inst. Washington, D.C.

In more materialistic application of the therapeutic art are to be grouped methods of the Maya and the ancient Nahuas who lived in what is now Mexico. They, like all other peoples, subscribed to the prin-

* MEETAL, B. T. *Medicine in Ancient America. Hygeia*, 13: 343, 1935.

† Sorcery, Medicine and Surgery in Ancient Mexico, by Nuttall, Z. *Johns Hopkins Hosp. Bull.*, April, 1902.

ciple that "like cures like." So it happened that many Indian tribes, the Mayas in particular, treated a disease with objects which would produce changes similar to those present in the disease, such as the application of crushed wasps nests or other stinging insects for skin eruptions or the decoction of yellow plants for jaundice. (Ciba Symposia; 1: 13, 1939.)

In the more material concept of disease as being due to disturbances of the structures of the body and in his rationalization of methods of treatment of disease, some tribes of the early American Indians, especially the Mayas and the Aztecs were as far advanced, if not farther, at least in some respects than the contemporaneous Europeans. This was confirmed by the Spaniards who noted that Indian medicine was far advanced and they marveled at its sufficiency. Such a high proficiency is quite conceivable, because it is understandable how an intelligent but primitive people can marshal observations and formulate them into conclusions from which concepts of astounding accuracy may be deducted. These crude concepts of the early Indian medicine men are startling in their similarity to those which were later formulated by trained observers who had at hand a wealth of scientific data. It is therefore, not surprising that the medical and therapeutic methods and procedures of the Aztecs and Mayas were rich in innovation and qualified achievement, though they were entirely different and at times were at variance yet in some respects were far in advance of the practices of the civilization of the old world. For instance, their method of treating wounds was an example of their advanced technic in that they coapted the edges of an incised wound with hair sutures. After closure, the wound was bathed with the juice of the agave plant. However, if the wound had healed badly and had left an ugly mark, it was reopened and was cauterized. It was again sewed with hair and covered with melted ulii which is the juice of the India rubber plant.

In the treatment of disease the Indian used herbs, roots, leaves or twigs, occasionally seed flowers. Animal substances, insects, earth and minerals were also included in the therapeutic armamentarium. From these substances extracts and infusions, powders and concoctions were made. These were given to the patient to drink or were applied to the surface of the body. Indian medicine men were acquainted with and used preparation of narcotics, sedatives, purgatives, emetics and stimulants. They used hemastatic substances to control bleeding and applied healing and cleansing solutions for wounds. They also were acquainted with physical methods of treatment such as massage, scarification, venesection, counter-irritation, bandaging, poulticing, tooth pulling, cupping and sucking. They were able to set fractures and apply splints. They also applied manipulation by pressure and controlled hemorrhage by tourniquet. They also used cauterization. Some of these practices were based upon observation but many, however, were thought by the Indians to be the result of a supposed mystic and supernatural directional guidance obtained by the medicine man from the spirit world. It is interesting to know that the American Indian used fifty-nine drugs which are now included in modern pharmacopeias.*

Drug preparations which have been found valuable, and are now in universal use, were indigenous among many Indian tribes and were originally used by the Indians are: *canabis indica*, *cascara sagrada*, *chapparro*, *chenopodium*, *condurango*, *cocoa*, *copal*, *guiac*, *hualtata*, *hydrastis*, *ippecac*, *jaborandi*, *jalap*, *krameria*, *mandragora* (I believe this was already known in Asia Minor), *peruvian balsam*, *sabadilla*, *sarsaparilla*, and *tolu balsam*. In addition to their medical practice, Indians were accustomed to embalm and to cremate. Isolation was used in the treatment of cer-

* Stone Age Medicine among the American Indian. New York, 1932. Hoeferm, Quoted from Ciba Symposia, W. M. Grogman, 1:11, April, 1939.

tain infectious fevers. Drugs were sold in open markets in special areas of these markets. To supply one of such markets the emperor Montezuma had established a botanical garden in which practically all the drugs used by the medicine men of his realm were grown. This garden was very extensive. Most of the three thousand plants used by the Mexican Indians in the treatment of disease were cultivated. Strange to say, these early Indians had rubber syringes which they used for giving enemas. Circumcision was also practiced. They also used flowers of *datura stramonium*, the so-called jimson weed, to produce twilight sleep.

The present day Indians of this continent may well be proud of their pre-Columbian ancestors who along with their other arts and sciences, especially astronomy, developed medicine to a remarkable degree. In the present article it is

impossible to consider in more detail the diseases of the Indians, the physical deformities from which they suffered, also the detailed methods of treatment which were in use especially by drugs and other means. It is interesting to know that hospitals had been erected by the Aztecs long before the coming of the Spaniards and that in some areas the infectious diseases which they had learned could be communicated from one to another were segregated in special areas and buildings.

It will also be interesting to compare the treatment practiced at the time of the conquest with that prevalent in Europe, and to learn how many methods, innovations, and improvements in practice were introduced into European medicine from the suggestions obtained by the Spaniards from the great Indian races of the western hemisphere.

