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THE MEDICINE-MAN
OF THE
AMERICAN INDIAN
AND
HIS CULTURAL BACKGROUND



THE MEDICINE-MAN

(Courtesy of the Fairmount Park Art Association, Philadelphia.)

THE MEDICINE-MAN OF THE AMERICAN INDIAN AND HIS CULTURAL BACKGROUND

By

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CHARLES C THOMAS

SPRINGFIELD · ILLINOIS BALTIMORE · MARYLAND

PREFACE

TO AN AMERICAN his Indian is a never failing source of interest. And since things medical are of increasing general concern, it is thought that the present volume may be of value and the subject of which it treats will become more so as time goes on.

My interest was quickened at an early age by finding arrow points and other Indian relics which the plowman had turned up with the soil. Early in my medical career, too, I was fortunate in meeting him in a professional way, so that my interest in the American Indian has never waned.

Primitive man, ever since the earliest period in the history of the human race, when face to face with bodily pain or mental anguish, or when in danger of losing his life, has sought salvation, help and comfort from some power outside himself. Hence the call which has sounded throughout the ages for one who is able to mitigate pain and to preserve life. From this ingrained longing there have arisen among all peoples and in various epochs the physician and priest. Often these offices have been combined in one person. This, in fact, we find among most of the tribes of the aborigines of the Western Hemisphere. This intertwining of the Indian's religious beliefs and rites with his practice of medicine is often found to be inextricable, and may account for the sacerdotal atmosphere which drifts into the text from time to time throughout the work.

In books dealing with the American Indian so little concentrated attention has been given to his medicine-man from a medical point of view that it is thought a survey and study of his cultural background, methods of procedure and personality in simple language might fill a real want. It is my purpose to present a medical picture of most of the important aboriginal tribes of the Americas, and in some degree to follow them down to the time when they are personally known to us. Hitherto we of the dominating white race have dwelt too much on their savagery and barbarism, on their deep-rooted adherence to witchcraft and its attendant enormities. As we are now learning more about the inner life of these people, we are enabled to recognize even in their witchcraft some

useful elements and that, in many ways, their medicine-men were to them as useful and held in as high esteem—and rightly so—as our physicians are by us.

I have sought, as occasion offered, to become acquainted with this elusive personality and to collect from available sources the scattered facts and legends regarding him. In this I have drawn freely from the writings and reports of others, but in doing so I have endeavored in each instance to verify and give full credit. Many of these are given in the original because it is thought that a new rendering might lessen the apparent reality and remove it from the atmosphere in which it was originally written.

In collecting this material I have been met with uniform courtesy and consideration and take this opportunity to express my appreciation to many persons of both races, some of whose names appear in the text and in footnotes throughout the work. To Dr. Roy Lee Moodie especially I am indebted for numerous suggestions, particularly on the paleopathology of the aborigine, on which he is a recognized authority, for reading the first four parts of the manuscript, and for having placed at my disposal photographs and other illustrations of objects of pre-historic and later periods. I am also indebted to Miss H. Newell Wardle of the University of Pennsylvania Museum for a helpful outline and other valuable suggestions. Further I have availed myself of the services of Mr. Paul S. Martin of the Field Museum for reading and making such changes as the manuscript required. In the section on plants used by the Indians, I have availed myself of the courtesies of Professor F. J. Bacon of the Department of Pharmacognosy of Western Reserve University.

Finally, while I realize that I have but scratched the surface of this quasi-medical subject, I hope that others will continue in this line of enquiry before it is too late—before one of the important sources of information becomes obliterated and the old people of the tribes who are among my most reliable informants pass on.

I might add this is not a medical book. It has as much religion as medicine, and more theology than pathology. If it were not so it would not be a true account of the medicine-man of the American Indian.

Cleveland, 1935

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PART ONE

THE AMERICAN INDIAN: HIS ORIGIN AND CULTURE

CHAPTER I

INTRODUCTION

1. RACIAL ORIGIN OF THE AMERICAN INDIAN

THE question as to the origin of the American Indian and his racial and cultural affiliations was more perplexing in the past than it is at present. From the time of Columbus, when the misnomer "Indian" was first applied, until the present many books have been written attempting to settle these problems.

These attempts to erect a family tree for the orphaned Red Race branched off in many directions. One of the explanations which received much favor was that the Indians were descended from the Lost Tribes of Israel. Numerous apparently similar cultural phenomena seemed to argue for a connection with the tribes of the Old Testament. Supporters of this theory attempted to show a physical resemblance between the present Hebrew physical type and that of the Indian. Another explanation of the peopling of the continents (more especially North America) was that the inhabitants were descended from the Welsh. The settling of America has been explained by some as having been effected by boat across the Pacific, while other writers have looked to the legend, attributed to Plato, of the Lost Atlantis for the clue to the location of the cultural home and racial relations of the American Indian.

Since we are here concerned with the medicine and medicine man of the American Indian, we shall pause to explain what is meant by the American Indian or American race in order to understand better the physical characteristics of the subjects of our main discourse. Then we shall attempt to trace the route by which he came to America and his dispersion over the two continents, and to explain what we mean when we speak of Indian cultures and tribes.

The term *race* when used in its proper connotation expresses the concept of a group of people having in common anatomical traits which distinguish them from other groups, and who are united in blood and heredity.

In general it may be said that mankind is classed as belonging to one of three divisions, Caucasoid, Mongoloid, and Negroid.

Within these main divisions we find the smaller groups or races. The Caucasoid is usually divided into the Nordic, Alpine, and Mediterranean; the Mongoloid into the Mongolians of eastern Asia, the Malaysian and the American Indians; and the Negroid into the African negro, the Oceanic Melanesian and the Negritos.

In distinguishing racial groups the physical anthropologist relies on observation and measurement of physical characteristics: the pigmentation of the skin; the color, form and distribution of the hair; the color of the eye and the arrangement of the skin-folds of the eye; the shape of the head (relation of the breadth to the length); the shape of the incisor teeth; facial width; the size and shape of the nose; the size and proportion of the hard palate; and many other criteria.

The American Indian or American race is grouped with the Mongoloid division of mankind because of the predominance of Mongoloid characteristics in his makeup, and because, as will be explained later in this chapter, the Indian originally it is now generally believed came from Asia. Physical anthropologists, upon an exhaustive study of prehistoric skeletal material as well as of living tribes and individuals, have concluded that prior to the arrival of Europeans only one race inhabited the two continents of North and South America. It is also now recognized that within the American race a number of sub-races exist which show admixture with other physical types. This admixture is generally conceived of as having taken place in the Old World, with subsequent intermarriage in some instances and relative isolation of tribes in others further accentuating or confusing type differences.

The predominant racial characteristics of the American Indian are coarse, straight, black hair, abundant and long on the head, with little body hair; broad faces with prominent malar (cheek) bones; face also long with square jaws; nose usually high bridged and convex; lips of medium thickness or thin; slight to medium alveolar prognathism (bulging of the alveolar region of the upper and lower jaws which lodge the front teeth); the shape of the upper incisors (front teeth), which gives their inner or lingual surface a shovel-shaped character.

The oldest physical type now known in America is recognized

principally from skeletal remains. The group was long headed, with a long, narrow face, narrow cheek bones, weak chin, low broad nose, short of stature with slight body build, skin color probably yellowish brown, black hair wavy to curly, sparse on the body and abundant on the head. This type, which Hooton has called "Basket Maker," is represented in earlier skeletal material and in mixed form in many Amazonian tribes and some of the forest tribes of Central America. The pueblo peoples of the southwestern United States represent another type which is in general located in the western portion of both continents. This type has a broad head, very wide cheek bones and square jaws, some trace of the Mongolian fold, and is short and heavy of build.

Another easily identifiable type, located mainly in the northeastern United States and southeastern Canada, is characterized by a ruddier skin color, tall stature, long or medium long head, aquiline or beaked nose, broad but long face, large lower jaw with strongly projecting chin, and little alveolar prognathism. The Eskimo presents still another physical type. According to Hrdlička, "The two families, Indian and Eskimo, appear much, it may be repeated, like the thumb and fingers of one and the same hand, the hand being the large, original palaeo-Asiatic source of both." The color of the Eskimo varies from tan or light reddish yellow to medium brown, stature from short to above the average, head form from long headed to round headed. Many of the Eskimos have a decidedly Mongolian cast to the eyes, and the nose form varies from medium broad to long and narrow.

2. PEOPLING OF THE NEW WORLD

Almost everyone who is interested in the American Indian wants to know where he came from and why, when he arrived in the New World, and how he got here. The explanation to be given here has been worked out by the most competent anthropologists, whose business it is to delve into such subjects.

It is often claimed that man has lived here for hundreds of thousands of years. But not a single fragment of any skeleton of any ancient type of man has ever come to light anywhere in the New World. Every so-called "ancient man" that has ever turned

up on this continent is easily and correctly classified as Indian, and differs in no way from the skeletons of some branch of the modern American Indian race.

Even the recent finds of human artifacts associated with now extinct species of animals, such as the great ground sloth and the American camel, (as found in Gypsum Cave, Nevada), do not necessarily indicate any great antiquity. Most or many paleontologists feel reasonably sure that the sloth and the camel, as well as the horse, (which was extinct in the New World when discovered and explored by Europeans) lingered on in favorable, secluded areas long after the recession of the last glacier and then finally died out.

Therefore, it seems fairly certain that the American Indian entered the New World some eight to twenty thousand years ago.

It has been shown that the American Indian is thought by most ethnologists to be a branch or offshoot of the Mongolian stock. In other words, the Indians are *Mongoloids.* Everyone knows that the Mongoloid division of the human race has inhabited the eastern and northern parts of Asia for many millennia. It seems plausible, since the American Indian is a branch of the Mongoloid division of mankind, and since the Mongoloids inhabited eastern Asia, that the Indians came *from* Asia *to* the American continent.

If you will glance at a map of the world, and search for the easiest and most logical place for a primitive people to cross (who had at their disposal only very limited and primitive methods of transportation) you will quickly see that only a narrow strip of water separates East Cape, Siberia, from Cape Prince of Wales, Alaska. That strip of water is known as Bering Strait and is approximately only sixty miles wide at that point. And to help matters, almost in the center of this Strait lie the Diomede Islands, which serve to break the distance and to make the journey safer and more possible. On clear days the Alaskan coast can be seen plainly from East Cape, Siberia; and in the summer months Bering Strait is smooth and resembles an inland lake more than an arm of the ocean. The Eskimos of today often cross over to the Siberian shore for trading purposes and nothing about this jaunt is thought to be dangerous or impossible. Often in the winter time

the Strait freezes over. Even if the firstcomers to the New World did not possess boats, they could have crossed from one side to the other on foot.

It seems fairly certain also that the Indians did not emigrate to America via the Pacific islands, for the distance between the west coast of South America and the closest Pacific islands is over two thousand miles. Such a tremendous distance would have made it practically impossible to cross by this route unless the newcomers were equipped for a very long, difficult voyage. Moreover, at the time the first Indians are assumed to have arrived in the New World, the Pacific Islands were probably uninhabited. It is believed by most authorities that the American Indians emigrated to the New World via Bering Strait.

But why did these people, whom we call Indians, take the trouble to search out a new land? Of course they did not know they were coming to a new continent, but being nomads and ever anxious to find new hunting and fishing grounds they wandered or overflowed into this continent. Perhaps there was pressure from behind by other nomads which forced them to spill over, so to speak. Certain it seems, there was no resistance in the new country by unfriendly groups; whereas behind, there may have been many warlike tribes, who were likewise looking for new hunting grounds. Perhaps the wandering propensities of nomad groups were sufficient to impel them to cross Bering Strait. Once they had arrived, they stayed, wandered, and slowly multiplied and in due course of time (probably many thousands of years) penetrated every portion of the New World from Alaska to Patagonia. It must be clearly understood that this peopling of the New World was a long, slow process, a prolonged dribbling, and was not, in any sense, an invasion by a large group under the aegis of a leader. Many divergent groups, embracing probably divergent physical types, customs, and languages, came over in successive migrations.

But how long ago did these first Indians come to the New World? That is a difficult question to answer, but certain facts are at hand to help us date their arrival in approximate terms.

We know, from archaeologists, that about eight to ten thousand years ago many plants and animals, for example, barley, millet,

rice, wheat, cattle, goats, pigs, and sheep, were known and extensively used in the Old World. It is clear that if the American race had migrated to the New World *after* these domesticated plants and animals were known and employed, they would have brought some one or more of these valuable possessions with them. But the fact is that the American Indians arrived without any knowledge of agriculture and they lived here many millennia before any New World plant was domesticated. Likewise, if the wheel had been known to them at the time of their emigration, they would have introduced that valuable invention into this continent. Therefore, since no Old World domesticated plant or animal was ever known or employed by the American Indian, it seems logical to suppose that they left the Old World *prior* to the development of agriculture and husbandry.

That the Indian was not stationary and was undergoing a process of evolution and change, tradition and history confirm. From information available and from modern conditions, one can safely infer that this wide range of country, from the ice fields of the far north to the inhospitable cliffs of what the Spanish invaders called the land of fire or Tierra del Fuego, was not always the Elysian Fields of fantasy nor the happy hunting ground of song and story, but on the contrary was often the scene of much human suffering, of man in his natural state, a savage, struggling to survive, and following his primitive impulses, which led to numerous bloody encounters with warring tribes of men. In this state of human suffering and because of it, the man of medicine, the man of mystery and of healing was born. Let us consider then his cultural background, his customs, manners and philosophy in the different regions of the American continents where this development took place.

The cultural elements that the American Indians brought with them were meager indeed. It is fairly well established that these elements or traits were as follows: the dog, the firedrill, the harpoon, basketry, ideas concerning the causes and cures for disease, family groups, and some ceremonial rites. The Indian arrived with but very little culture; and by keeping this list in mind, the reader will understand, as he reads further in this chapter, the number

of remarkable advances which were made and which were developed in the New World independent of any later stimulation from the Old World.

3. CULTURAL DIVISIONS OF THE NEW WORLD

The pre-Columbian history of the American Indians north of the Rio Grande is gradually being unearthed, but thus far there is nothing to show that they possessed the cultural status which would place them equal to those of Central and South America. The nearest approach is found among the Pueblo Indians of the Southwest. Physical prowess, a few outstanding personalities later to be introduced, and many noble qualities are their chief characteristics. They were slowly emerging into a higher plane as is shown by their agricultural pursuits, pottery-making and social organization. They have left behind them mementos of their life and customs in the mounds of southeastern United States and the Mississippi and Ohio river valleys, and archaeologists are year by year bringing to light additional facts concerning the prehistoric Indian of North America.

Most people think that all the Indians dressed and acted alike, spoke the same language, and possessed the same political and social organizations, and that by citing a specific cultural trait common among one group they may safely generalize as to the behavior of all Indians. Nothing could be further from the truth. It is true that many tribes of one region were somewhat alike culturally, but there are so many astonishing differences between various groups that anthropologists have divided up North, Central and South America into a number of cultural divisions or areas. This is not only proper but necessary, because when Europeans first began to study the habits and customs of the Indians they soon found that although the Indians had no written history (with one or two exceptions), they must have history behind them. In other words, the culture and history of the Indians, as first observed by the whites, were without any perspective or depth. And so it has been the object of anthropologists to delve into the past and present of Indian culture, in an attempt to read depth or perspective or historical sequence into the picture. As an aid to this

goal, the New World has been divided up into a number of so-called cultural divisions, which are admittedly only descriptive, but which are helpful. These divisions are in no sense chronological. The ancient and the modern are indiscriminately described. Naturally, a tribe of one division may share some of the cultural traits of another group. But the basis for these cultural divisions is founded on the fact that certain groups *living in the same region* (not necessarily speaking the same language) have outstanding or peculiar traits or characteristics which they share in common. Such groups are bundled together by anthropologists and tagged as belonging to such and such a cultural division. For example, many tribes living today in Arizona and New Mexico build terraced pueblo houses of stone, carry on agriculture in a certain way, manufacture a particular kind of pottery which is decorated with peculiar and distinctive painted designs, and carry on elaborate, interesting, and curious ceremonies for insuring a plentiful supply of rain and a bounteous harvest. These tribes go to make up what is known as the "Southwest or Pueblo" cultural area or division. Compare these traits, which have just been enumerated, with those of the Plains Indians who roved over the Dakotas, eastern Colorado, Oklahoma, and elsewhere. The comparison is striking when the reader learns that the Plains Indians never built terraced, stone houses, but used skin dwellings, carried on agriculture only in a haphazard fashion if at all, rarely made pottery and, when they did, produced unpainted and undecorated vessels of shapes unlike those fashioned by their Pueblo neighbors to the south. Thus it will be seen that many types of culture were flourishing in the New World. A brief description of these culture areas or divisions will be given, so that when, in the succeeding chapters on the medicine-men and their practices, these areas are referred to, the reader will understand what the various allusions mean, and what the background of each group is.

In this connection it may be well to define what anthropologists mean by the word "culture." As used here it means everything that man does, creates, thinks about and imagines, and hands on to the next generation by precept. In short, it is all human behavior, which is developed and used daily and which is handed down to the

next generation by teaching and example. European culture differs from Chinese culture, although one borrows from the other. If I showed you two paintings, one by an European artist, and one by a Chinese artist, you would have very little difficulty in selecting that which was European, provided, of course, that it was done in typical European style. This recognition is perhaps unconsciously based on the fact that any group of people living together for many generations evolve distinctive and individual processes of thought, conceptions of beauty, customs and manners, which can be discerned in every phase of their lives and in their manner of expressing themselves in art, architecture, music and literature.

So among the Indians, one can quickly learn to distinguish Pueblo pottery from that which was made by the Florida Indians; or a Plains Indian war-bonnet or headdress from the type used by the Iroquois. You are able to make this distinction because the *material culture* of these various tribes differs so greatly. In the same way the social organization of one culture appears peculiar to one area and not to another. And all of this is so, because the culture (that is, behavior ways of doing things and ways of thinking and organizing) varies from place to place and group to group, owing to the fact that each group has been subjected to different backgrounds, associations and stimuli.

It is customary to divide the New World into these fifteen different culture areas or centers:

North America

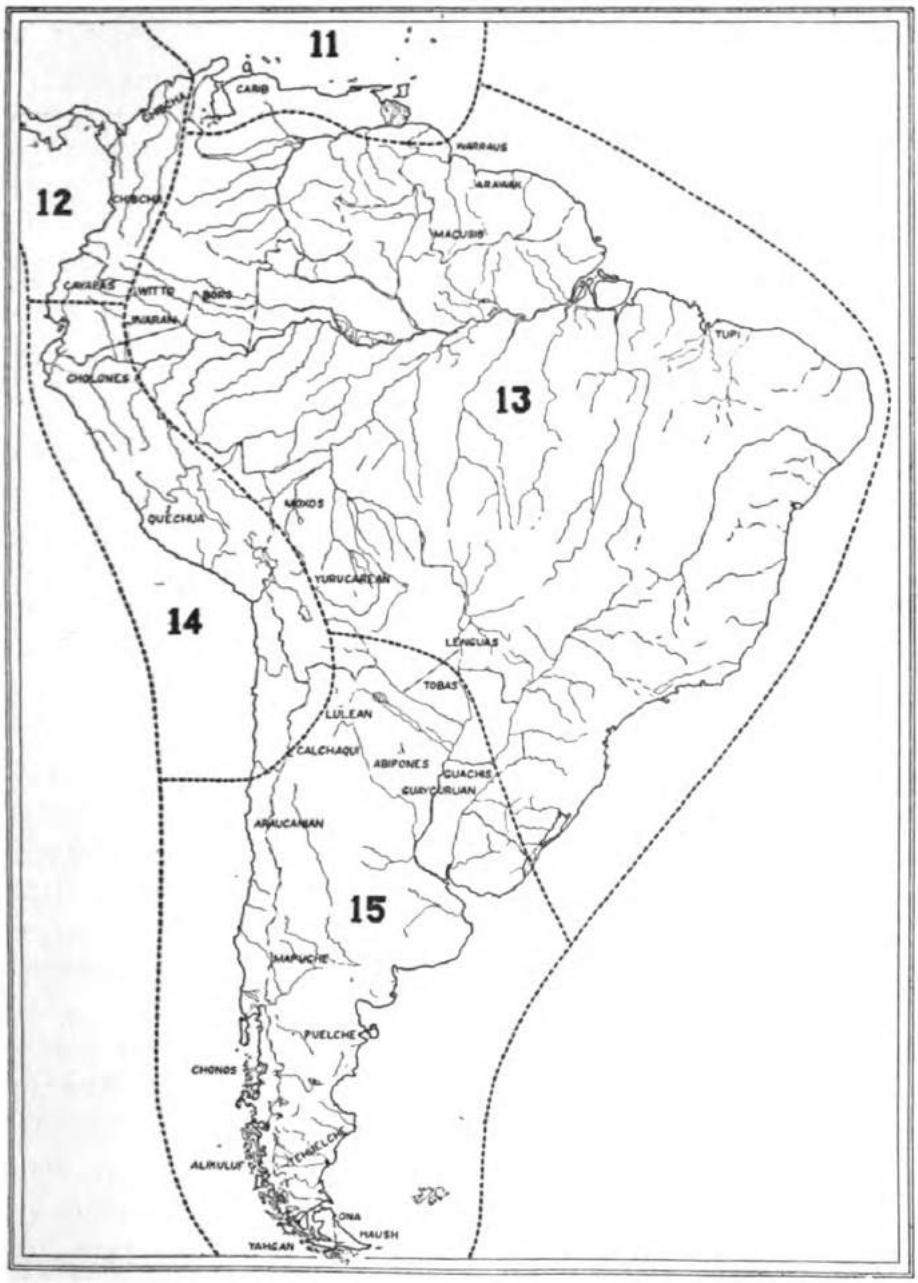
1. Eskimo or Arctic: a coastal type.
2. North Pacific Coast or Northwest (British Columbia, Vancouver Island, etc.): a coastal type.
3. California-Great Basin (includes parts of Nevada and Utah).
4. Plateau: the northern inter-mountain region (Idaho, Wyoming, Montana).
5. Mackenzie-Yukon: northern interior plains and forest area.
6. Plains: the rolling prairie region of the United States and southern Canada (North and South Dakota, Nebraska, Kansas, eastern parts of Colorado and Wyoming, Saskatchewan, Manitoba).
7. Northern Woodland (all the region east of Iowa and Minnesota to Maine and Maryland and north almost to the Arctic Ocean).
8. Southern Woodland: forested (includes all the southeastern United States from Arkansas eastward).



(Regional areas of Indian culture: Courtesy of Dr. Clark Wissler. Base Map: From Goode's Base Map No. 102, Courtesy of the University of Chicago Press.)

Key to Map of North America

Area 1. Eskimo or Arctic; Area 2. North Pacific Coast; Area 3. California-Great Basin; Area 4. Plateau; Area 5. MacKenzie-Yukon; Area 6. Plains; Area 7. Northern Woodland; Area 8. Southern Woodland; Area 9. Southwest; Area 10. Central America; Area 11. Arawak.



(Regional areas of Indian culture: Courtesy of Dr. Clark Wissler. Base Map: From Goode's Base Map No. 103, Courtesy of the University of Chicago Press.)

Key to Map of South America

Area 11. Antillean or West Indies (Arawak); Area 12. Colombia; Area 13. Tropical Forest or Amazon Region; Area 14. Peru or Inca Area; Area 15. Patagonia.

9. Southwest or Pueblo area: a sub-arid region (includes New Mexico, Arizona, and part of southern California).

Central America

10. Central America (Aztecs and Mayas).
11. Antillean (West Indies).

South America

12. Tropical Forest or Amazon Area.
13. Colombia or Chibcha
14. Peruvian
15. Patagonia

For the purposes of this book, certain unimportant cultures that are relatively colorless, vague, and deficient, will be omitted. Thus areas 4 and 5 (Plateau and Mackenzie-Yukon) will be subordinated or grouped with the adjacent culture areas, that is, the North Pacific Coast and the Plains. Area 3 (California) will likewise be treated in part at least, as belonging to the North Pacific Coast, on the one hand, and to the Southwest, on the other. This is possible because many of the elements of the culture of northern California are typical of, or related to, certain elements found in the North Pacific Coast area; likewise some of the important components of southern California culture were certainly derived from the Southwest area; while the culture of central California is merely a slight development of some of the basic elements which the Indians brought to the New World with them and which extend eastward quite beyond the limits of California.

I shall attempt a very brief description or characterization of the important culture centers of North, Central and South America. I do this because even to-day with us and in the more restricted meaning of the term the medical man reflects and is a fair representative of the culture group in which he lives. Furthermore approaching the medicine-man of the American Indian from our point of view might fail to give an impression of what the medicine-man really is.

The Eskimo area.—The Eskimo, who inhabit the shores of the Arctic Ocean, are a remarkably interesting people who have been able to live in a harsh, bleak environment because they developed, elsewhere, a culture in a similar environment which makes it pos-

sible to cope with their daily problems. The Eskimo, in the winter time, camp upon the frozen sea and live chiefly on seal. Some of their most outstanding developments are the skin boat or kayak, the stone lamp, in which blubber oil is burned, snow goggles to prevent sun blindness, the harpoon, and the use of dogs for pulling their sleds. These traits set them off from any other area and justify the division known as the Arctic or Eskimo area.

The North Pacific area.—The North Pacific or Northwest Coast peoples are likewise coast dwellers. Wood-working is their specialty. They use wood for every purpose you and I can think of, and a great many more. For example, one finds wood employed for houses, totem poles, boxes; pails, cooking vessels, coffins, and dishes. It was not their custom to manufacture pottery nor to practice agriculture. Excellent basketry and mats were woven, however. The art and social organization of the North Pacific peoples was elaborate and noteworthy. While many of the other culture areas of North America received ideas or cultural traits from Central America (which was like a powerful broadcasting station of culture sending its waves out in many directions for many miles) so far as is known, the culture of the North Pacific Coast developed independently, with a few later intrusive elements coming from Asia.

The Plains area.—The Indians of the Plains (especially the so-called typical tribes, such as the Blackfoot, the Crow, the Cheyenne, the Kiowa, the Comanche, and the Arapaho) borrowed practically nothing in the way of culture from the Southwest, their near neighbors. These more typical and more advanced Plains tribes were more affected by the culture of the Southern Woodland or Southeast Area. It is possible that the culture elements from the Southeast came up the Mississippi valley, a route which was doubtless important and much used. Perhaps the three most outstanding and typical elements of Plains Indians are: (1) the dependence on the buffalo for food, clothing, and skin tents; (2) tents made of buffalo hides; and (3) the dog travois or frame to which the rolled-up tents were lashed and on which they were transported from place to place. Pottery was but rarely made and agriculture

was not practiced to any extent. Of course the Plains tribes excelled in all sorts of skin work and made bags, shields, moccasin soles and cases, of raw-hide.

The Northern Woodland area.—The Indians of this region comprised three main groups: The Iroquoian, the Central Algonkin, and the Eastern Algonkin. The culture was, as a whole, a modified and somewhat attenuated copy of the Southern Woodland or Southeast area. Agriculture was carried on (maize, squash, and beans being the main staples); likewise, maple sugar was manufactured. Pottery was made, but it was inferior to that found to the south. Houses were of two types: a rectangular bark house for summer; and a dome-shaped bark lodge for winter. Snowshoes were used. It is noteworthy that burial mounds were erected by some of the groups even into historic times.

The Southern Woodland area.—This area was occupied chiefly by the Muskkogean tribes, although there were others, such as some Iroquois (the Tuscarora and the Cherokee), Yuchi, the Quapaw, the Biloxi, and the Seminole. The culture of this region probably received its stimuli from Mexico, as well as from the West Indies, and, possibly, northern South America. Agriculture was extensively practiced and pottery was well made, painted, and varied in form. The houses were generally rectangular, having curved roofs of thatch or bark. Most of the houses were set within stockades or palisades, and these house groups made up sizeable towns. It should be noted that in this region the people were accustomed to setting aside special or ceremonial houses for sun worship, and in them perpetual fires were kept burning. Their chiefs were supposed to be under the direct influence of the Sun God and were highly regarded.

The Southwest or Pueblo area.—In this arid region the highest civilization north of Mexico was developed. A few of the outstanding and peculiar traits are herewith given: stone houses built in terraces, three or four stories high; high development of and complete dependence on agriculture; painted and unpainted pottery of an excellent grade; elaborate and complex religious ritual, the main purpose of which was to bring rain; baskets and cloth

weaving of a high order; well-developed town life with many communal features; domesticated turkeys; and grinding of corn on corn-grinding stones instead of in mortars, as in other regions.

Likewise, within this area were several so-called nomadic tribes who practiced agriculture to a certain extent, wove cloth, made baskets and mediocre pottery. These nomads did not build permanent stone houses, but constructed crude huts or shelters of brush or earth-covered logs.

Central America: the Aztecs and the Mayas.—When our survey of aboriginal cultures in the Americas goes south of the Rio Grande, we are at once struck by the development of high civilization in Central America and Peru. In Central America, five "nations" assumed the ascendancy, namely the Zapotecans, the Toltecs, the Chichimecas, the Aztecs, and the Mayas. Our knowledge of these civilizations is gathered from the remains of their material culture, from the writings of the early Spaniards, and from what few manuscripts escaped the destruction of too zealous Christians. From these incomplete records it is easy to recognize that these five peoples were more advanced culturally than their neighbors in North and South America, and it is generally conceded that the Mayas had established one of the highest civilizations of the New World.

It is not possible, nor is it to the point, to review in detail the achievements of all these "nations." But the Aztecs and their neighbors are so well known that a short summary of their culture is included.

When the Spaniards first came to Mexico, the Aztecs were the dominant people. A great deal of credit is generally given them for their highly developed civilization. As a matter of fact, the Aztecs' history covered only a few hundred years, and many of their cultural achievements were borrowed from or based on the discoveries and advances of the nation who had preceded them. At the time of the discovery of the country, Mexico had progressed considerably in civilization. Her people had developed a means of computing time and the changes of the seasons, a record of which has been left us on the famed Calendar Stone. Their skill in pottery,

glazing, basketry, featherwork, and weaving, is the marvel of connoisseurs today. They had developed a system of hieroglyphics or picture writing, which was recorded both on a kind of parchment and on stones, as for example the Sacrificial Stone of Tizoc.

The Aztecs had a highly organized government and maintained armies. Agriculture was practiced extensively and maize, fruits, gourds, beans, peppers, and cotton were raised. Ornaments of gold, silver, and copper were cast in molds. Other outstanding traits include work in obsidian and jadeite, stone mosaics, and organized priesthood, separate schools for boys and girls, and rituals with attendant sacrifices of birds, animals, and often human beings.

Near the Aztecs was the highly civilized "kingdom" of the Chichimecas, where Nezahualcoyotl reigned (died in 1472). When he ascended the throne of Acolhuacan at Tezcuco a half-century before, he found the people oppressed by the tyrant who had deprived him of his rightful kingdom for eight years, and there were discord and factional uprisings. These he mitigated and quelled, and by wise and resourceful measures restored the nation to the high estate on which his ancestors had placed it. Under his sway its borders were held secure and in some quarters extended, agriculture and commerce were encouraged and while the land was defended from aggression from without, all the arts of peace were cultivated at home. The ancient city of Tezcuco, near which now stands the City of Mexico, was enriched by temples and palaces. Human sacrifices to the god *Huitzilopochtle,* for success in war, were discouraged and an era of culture and prosperity blessed the land. Nezahualcoyotl was wise beyond his time, a poet, philosopher, and law maker. So zealous was he in his attention to justice that no trial was allowed to last more than eighty days, "and that none from their necessities might plead an excuse for being corrupted by any of the contending parties, he ordered the support of all his ministers and judges, their clothing and every necessity according to the rank and quality of the person, to be supplied out of the royal treasury."

Nezahualcoyotl grew old and no heir seemed fitted to meet the dangers that threatened his kingdom. The Aztecs, his fierce and warlike neighbors, led by the youthful and daring Montezuma, at-

tempted repeated invasions that worried him in his declining years. Then from afar, at first vaguely, he seemed to hear tidings of still another menace even more deadly to his race and the perpetuity of his reign. Strange tales, dreams, he said, of the *Ampioc,* came to him of an apparition that was to come from over the sea, bearing men of wondrous power—gods before whom all empires were as stubble before the tempest. And now, full of honors and endowed with wisdom, he felt that his days were drawing to a close. He retired to his beautiful rural palace of Teacotzinco, directed that a temple be erected and dedicated to the "unknown God, the Cause of causes," and gave himself up to the contemplation of life and of the life beyond the grave, fully realizing now the vanity of earthly riches and power in this vanishing world. To the nobles who were wont to gather about him he would say:

All things on earth have their term, and, in the most joyous career of their vanity and splendor, their strength fails, and they sink into the dust. The world at large is but a sepulchre; and there is nothing which lives on its surface that shall not be hidden and entombed beneath it. Rivers, torrents, and streams move onward to their destination. Not one flows back to its pleasant source. They rush onward, hastening to bury themselves in the deep bosom of the ocean. The things of yesterday are no more today; and the things of today shall cease, perhaps on the morrow. These burying grounds are full of the loathsome dust of bodies, once quickened by living souls, who occupied thrones, presided over assemblies, marshalled armies, subdued provinces, arrogated to themselves worship, were puffed up with vainglorious pomp, and power, and empire. But all of these glories have passed away, like the fearful smoke that issues from the throat of Popocatepetl, and with no other memorial of their existence than the record on the page of the chronicler.

The great, the wise, the valiant, the beautiful—alas! where are they now? They are all mingled with the clod; and that which has befallen them shall happen to us, and to those that come after us. Yet let us take courage, illustrious nobles and chieftains, true friends and loyal subjects, let us aspire to that heaven where all is eternal and corruption cannot come. The horrors of the tomb are but the cradle of the Sun, and the dark shadows of death are made brilliant by the light of the stars.[1]

Such is the material of which gods and saints were made and later canonized by the Church. But alas, Nezahualcoyotl was only human and, being so, he fell into pitfalls that mortals have fallen into before. That we may form a mental picture as true as possible of the civilization of the time and place, it is sometimes necessary to give also the shadows which have come down to soften the glow of a too ardent history. One story related by Wilson,[8] the breaker of historic idols, is something like this: Tepechpan, an old lord of the Tezcuco court, had a beautiful girl whom he was educating to become his wife, according to the custom of the country. At one time the girl did the honors of the table when the king was invited to dine. A violent passion was kindled in the breast of the king already advanced in years, which he determined to gratify at the sacrifice of the life of his host. Accordingly the king gave order that Tepechpan should assume command of an expedition against the Tlascalans, who had been encroaching on his territory. At the same time two persons were instructed to keep close to him and entice him into the thickest of the fight that he might lose his life. This he did, and after a suitable period of mourning his betrothed was invited to some public spectacle where the king ostensibly was supposed to have seen her for the first time. This royal inquisitiveness, continues the chronicler, led to an acquaintance which terminated in public pledges of mutual affection and in the end the old lord's betrothed became the king's wife.

Again, the following is told by Clavigero:[9] During the time the king was deprived of his rightful throne by the usurper, Tezozomoc, he one day, in wandering about the country, came to a village in the province of Chalco, where lived a lady named Tziltomiaub, a widow who owned a large plantation of aloes from which she extracted wine, not only for use in her family, but also for sale. This latter was strictly forbidden by the Chechemecan code of laws. The king observed this, it is related, was so fired with zeal for the laws of his fathers that he took upon himself the task of apprehending the offender and on the spot executing with his own hand the sentence of death.

Thus about thirty years before Columbus sighted the island of

Guanahani (Cat Island) in 1492 and nearly a half-century before Grigalva sighted the shores of Anahuac or Mexico, Nezahualcoyotl, the great Indian chieftain, the king of the Acolhua, passed away, leaving behind him a record of the highest civilization North America had known and rivaling that of the Inca kings who ruled over the Quichua nation in the southern hemisphere. His people recalled his prophetic sayings, and the dark, dream-like visions of his declining years were made real to his race by the rising power of Montezuma, the Aztec king, and the landing of the Conquistadores from Spain.

We come now to the Mayas, whose culture was more advanced in many ways than that of the Aztecs. No American archaeologist believes that this or any of the other high American civilizations received its cultural impetus or background from the Old World. Some of the outstanding achievements of the Maya came with his development of city life, probably based on agriculture, producing buildings which are the object of many present-day archaeological expeditions. The important buildings were erected on large mounds of earth and rubble which were then faced with earth and stone. The temples were usually rectangular, usually of one floor, but sometimes having two or three stories. Since they did not use the true arch, windows were rare and doors were frequent. The architectural genius of the Mayas reached its greatest expression in the decoration of the buildings of the New Empire.

Maya writing was one of their highest intellectual achievements and deserves to be ranked with their use of a symbol for zero over one thousand years before it was invented by the Hindus, and their remarkably accurate astronomical observations by which they had calculated the length of the year with an error of only one day in approximately one thousand years. Pottery was extensively used and the ware recovered shows excellent workmanship. Textile work, basketry, jade carving, gold and copper work, and wood work were highly developed, as well as the exquisite stone carving which is found on their buildings and the stelae. Human sacrifice was not common and was probably introduced late in Maya history. Religious ceremonies and the priesthood were highly developed; confession was practiced, as well as a form of

baptism. Maize was the food staple but many other plants yielded the Maya a varied food supply; bees and turkeys were domesticated. Numerous musical instruments were common and dancing was a favorite amusement or ceremony. The Maya played a game of ball which has been compared to basketball but the similarity is a bit far-fetched.

Why the Maya culture was in the low state in which it was found by the Spaniards is a difficult question. The breakup of the Old Empire, which had lasted from A.D. 176 to 600, has been attributed to plagues, earthquakes, impoverishment of the soil, change of climate, and other less plausible causes. The New Empire, which flourished from A.D. 980 to 1450 was destroyed by civil war, discord, abandonment of the large cities, famine, pestilence, and the Spaniards.

The present-day Mayas, direct descendants of the pre-Columbian Maya, are largely agricultural, depending to some extent on hunting and fishing. With the wiping out of the educated classes, progress ceased and the Maya village today bears little outward resemblance to the large cities which characterized the civilization that has disappeared.

Antillean or West Indies.—The Antillean or West Indies area was closely related to the Tropical or Amazon area of South America. Its culture was completely destroyed by the Spanish conquerors so early that very little is known about it. It appears from the Spanish records of that period that the original inhabitants were Arawak Indians from South America and that these were later conquered by the Caribs, also from the South American mainland. The culture reminds one of the Tropical Forest or Amazon area and probably included the following important traits: manioc and cotton culture, use of the hammock, tobacco snuffed and inhaled, cigars and no pipes, ceremonial emetics, and fish poisons.

As pointed out in the discussion of the Southern Woodland area, many of these traits, and perhaps others not mentioned, found their way into southern North America.

Tropical Forest or Amazon Area.—The Amazon drainage covers an enormous area in which we find an underlying cultural similarity with many variations from group to group. The food supply

is furnished by hunting and fishing, and agriculture with manioc as the staple. Other plants are tobacco, cocoa, maize, yams, pumpkins, peppers, and sugar cane. The fields are cleared by fire and cultivated by a digging stick. The most famous weapon of the area is the blow-gun; the throwing spear, the club, and the bow are also used. They have pottery and baskets but do not work metals. The canoes are dug out of tree trunks and the houses are large, providing dwelling space for a whole community under a single roof. Shamanism plays an important part in the lives of the people, and is accompanied by many religious ceremonies and veneration of the sun and moon.

The Indians of this area differ materially from those with whom we are more or less familiar, for the term "red-skin" applies less to him than it does to the Indian of North America. Rather, is he of a yellowish brown color which varies in tint according to the special region which he inhabits. Nor is he of tall stature, muscular, and dignified nor distinguished by the high cheek bones and thin lips that from childhood we have been accustomed to see.

These Indians are not unusually tall and, as a whole, they average less in stature than white men. Many of the Indians of the Amazon district are barely five feet in height, and the women average a little over four feet. Nor is the average Indian in tropical America either a powerfully built or a physically well-proportioned man. Many tribes are so deformed in appearance, owing to the manner of living or to customs of deformation, that we would consider them physically defective.

Every character, habit, industry, custom, and invention of the Indian varies tremendously according to the tribe to which he belongs and to his environment. In no other race do we find greater differentiation in government, costume, religion, language, and family life. Many tribes show even more points of similarity to white man than they do to the Indian. This variation is seen in both North and South America. True, they are sometimes strikingly similar in their beliefs, psychology, and home customs, but these similarities are rather due to their being at equal culture levels than to any relationship between them. On the whole, the South American Indians are not so varied among themselves as are those

of the northern continent, but unique peculiarities are frequently observed.

Of the tribes of the north or tropical South America, the Caribs are probably the most numerous and most widely distributed. In color they are more yellow than brown. Being tall, well proportioned, and possessing small hands and feet, they are very capable warriors and formidable foes. In former days, their man-eating propensities proved a source of interest to explorers and a terror to captives. Today, they are quite peaceful and have lost their taste for human flesh. They are expert hunters and fishermen, fairly good agriculturists, and make excellent pottery.

The Arawaks are the next in number to the Carib tribes. They originally inhabited the West Indies, as well as the adjacent mainland, but are now confined to coastal districts and lower rivers of northern South America. In comparison to the Caribs, the Arawaks are shorter, stockier, more brown-skinned, and have a more gentle and good-natured temperament. They are very industrious and primarily agriculturists, although their hunting and fishing technique are fairly good. Their pottery is crude. Cotton is unknown and basketry is far inferior to that of the Caribs. They excel all other tribes around them in canoe-making and are the only ones who use double-bladed paddles.

About the delta of the Orinoco and extending to the lowlands of British Guiana, the territory is occupied by the Warraus. These Indians are dark copper in color, well set up, and very strong. Their food mainly consists of manioc, sago, and chicha. For clothing they wear only a tiny apron. Necklaces of pearls or colored beads constitute their principal ornaments. As a preventive against mosquito bites, they smear their bodies with a dull red paint made by boiling the powdered bark and wood of a creeper vine in turtle or alligator fat. This latter custom is interesting because it shows that even among the Indians comfort necessitates industry.

Among the Jivaros, a peculiar custom was prevalent. This custom consisted in preserving and shrinking human heads as trophies or fetishes, corresponding to the scalp-removing propensity of the North American brave. The cranial bones were first broken by pounding with a wooden club and removed through the opening

in the neck. The head was then steeped in a tanning solution, dried and cured, and finally presented itself as a hard, almost black distorted object about the size of an apple. The lips were always sewn up to keep the spirit from cursing the owner.[4] In former times these heads sold readily to tourists and others who happened to be in the district, but when the Indians found it a profitable industry and began to take any good head they saw upon a stranger and prepare it for the market, the governments of Ecuador and Peru were obliged to pass laws prohibiting the sale or possession of shrunken heads.

One of the most prevalent beliefs among the tribes of tropical South America is that of the transmigration of souls. Thus the Mosetene Indians of Bolivia believe that the dead transform themselves into dogs, mules, monkeys, and other animals. Nordenskiöld relates that when a certain Mosetene Indian died, his tribesmen thought that he roamed about in the village in the shape of a dog; and when a dog barked, they accounted the barking to his soul.[5] Numerous instances illustrating this Indian belief may be gathered from Brazil. According to Koch-Grünberg the animals conjured in the so-called "mask dances" are evidently nothing but departed human souls which are supposed to have taken their new abode in mountains, cataracts, fishes, reptiles, birds, and plants.[6] The Piaroas, a tribe on the Orinoco, believe the doctrine of metempsychosis to such an extent that they call the tapir their grandfather.

Colombia or Chibcha area.—Colombia, dominated by the Chibcha Indians, is a region which is interesting because the greater part of the dominant culture was similar to the cultural foundations of Mexico and Peru, and because it served as a transmitter for passing on any cultural traits which flowed between Mexico and Peru. No important developments or inventions may be credited to this area, however. Agriculture was varied; beasts of burden were unknown; irrigation was extensively employed; rude thatch-and-mud buildings were the rule, whereas stone buildings were not erected; gold was employed for all sorts of ornaments, and was thought by some to be more skillfully fashioned and manipulated than anywhere else in the New World; and the people of this area were ignorant of writing or any calendrical system.

The Peruvian or Inca area.—With the possible exception of Mexico the western Andean region furnishes the most fertile field for the student of prehistoric medicine in the New World. Also, thanks to the writings of the early Spanish invaders, we know more of its culture.

In the southern hemisphere at the time of the discovery of America, the dominant family was the Inca of the Quichua nation who ruled over a wide extent of what is now Peru, Bolivia, Ecuador, and Chile, extending to the western slopes of Brazil and into what is now the Argentine Republic, a distance of twenty-two hundred miles along the coast line and extending a variable distance over the Cordillera and Andean ranges of mountains to the sources of the Amazon, the Orinoco, and the Plata.

That this domination, surrounded as it was by hostile and encroaching tribes such as the Huanacas and the Fungas, was maintained by unceasing vigilance and frequent fierce combats, we not only have reason to believe from our knowledge of men, but we find it confirmed by the reports of the archaeologist and the ethnologist. These have brought to light many hidden secrets of the people inhabiting the lands that Pizarro usurped in the name of the Spanish crown. Here, too, we find that culture had progressed, that the art of healing had been developed to a higher state than we have evidence of among the Indians of the north, and that it compared not unfavorably with that prevalent at the time in the Old World.

In pre-Columbian Peru the people who have passed away left behind them many evidences of their civilization and culture. The engineer of today recognizes in the mountain aqueducts the genius of a superior race; the artisan in stone seeks in vain for greater technical skill than is found in the ruins of Cuzco, and the artificer in gold, in the personal adornment of the Inca kings. Metallurgy had attained the highest state found on the American continents. Not only gold, but silver, copper, and lead were fashioned into useful objects. Plating and gilding were understood, as well as soldering one metal with another. They had also discovered that a combination of copper and tin made a harder tool than copper alone.

Bronze, previous to the arrival of the European, was their hardest metal. The Peruvians had reached a high degree of skill in the potter's art, and some of their portrait pottery gives us the only clew we have of some of the diseases of the place and time. Basketry and the weaving of textiles were extensively carried on, with beautiful designs in both cotton and the fine wool of the vicuña. The ponchos and headdresses of featherwork found on mummies are veritable works of art. As might be expected, agriculture was more highly developed here than elsewhere in the New World.

In each succeeding reign of the Incas there were men trained in recording and handing down to the next generation the main events and traditions of the past. These men were called *ayllus,* and with the aid of the *quipus,* or knotted cords, were able in a primitive way to record history.

That they had a conception of one of the fundamental principles of modern hygiene, a plentiful supply of water, is attested by the aqueducts of stone that are found for long distances, hundreds of miles in length.

In the subjugation and control of neighboring tribes over which the Incas ruled previous to the Spanish Conquest, it was necessary to construct roads of communication between various sections of this vast mountainous empire. This required engineering skill, for galleries were to be cut through the solid rock, and bridges suspended over rivers and securely fastened on each bank. These we know afforded safe conduct over deep and fordless torrents for man and beast, for the prehistoric Peruvians had tamed the llama and made of him a beast of burden. With this means of transportation they were able to maintain their supremacy and transport from place to place merchandise and other commodities in use. One of their greatest territorial acquisitions came with the conquest and subjugation of the coast people ruled by the Chimu chieftains. Among them were many skilled artisans who equaled, if they did not excel, those of the dominant country.

Along with all these tremendous strides in their material culture, the Peruvians developed a serious interest in philosophy, religion, and the medical arts. Medicine, as we understand it today, was

and still is associated with if not identical with the religion of the American Indian.

According to the accounts available, the Supreme Being was called *Con,* and had no human form or material body, but was an invisible and omnipotent spirit which inhabited the universe. . . . "Thus overflowing with the gifts of Providence, the human race remained for a long time happy, until mankind gave themselves up to vice and crime, disregarding the respect and worship due to *Con,* and entangling themselves more and more in sin."[1]

In opposition to the Supreme Being of beneficent intent, the Incas also believed in the existence of another being, of evil disposition and very powerful, animated with an inextinguishable hatred against human beings, and disposed to injure them in various ways. According to Father Blas Valera, this being was called *Supay,* who by the character attributed to him, reminds one of the Satan of the Jews and Christians. But *Supay* was subordinate to *Pachacamac,* the intermediary between the Supreme Being and man, and none could injure those who were protected by this beneficent divinity, the invocation of whose name alone was sufficient to appease all malignant spirits. This corresponds to some of the purposes attributed to Christ. Thus offerings of various things—flowers, a handful of water, a twig from a tree and even stones were offered up. Even now the traveler in Peru may find at the top of steep hills piles of stones which attest the gratitude of those who have safely made the ascent.

When the Inca régime began, it is said, it was thought best to introduce among the people a more tangible form of worship, one that would appeal more to the senses. The sun, therefore, from which it was taught the first Inca king descended, was chosen as the principal deity. Then, as now among certain sects, independent thinking was discouraged. For a skilful and cunning man, as the first Inca must have been, it was not difficult to exercise his intellectual superiority to his own profit and for the general good. Neither was it difficult for the docile and submissive Peruvians to adopt a religion which was better adapted to their understanding, their pleasures, and their tastes.

It is interesting to hear what one of the later Inca Kings (*Tupac-*

Inca-Yupanqui) says, according to Father Blas Valera in Garcilasso de la Vega's Royal Commentaries[8]:

Many say that the sun lives, and that he is the maker of all things; consequently, that which makes anything must assist that which he has made; but many things are made during the absence of the sun, therefore he is not the maker of all things; and that he does not live is proved, because his trips do not tire him. If he were a living thing he would grow weary like ourselves, or if he were free he would visit other parts of the heavens where he has never been. It is like a tethered beast which always makes the same circuit, or like the arrow, which goes where it is sent and not where it wishes.

Another extract is also given from the learned *Inca-Huayna-Capac:*

The Indians relate that on one day of the nine during which the principal feast of the sun, called *Raymi,* lasted, the Inca took the liberty of gazing upon the sun, which was prohibited, as it savored of disrespect. He cast his eyes upon it as long as it was possible, and remained thus for some time, gazing at it. The chief priest, who was one of his uncles, and stood by his side, said to him, "What are you doing, Inca? Do you not know that it is not lawful to do this?" The king then cast down his eyes, but after a short time took the same liberty and fixed them again upon the sun. The chief priest said, "Consider, my lord, what you are doing; for besides being prohibited, as we are, from looking with freedom upon the sun, as it is deemed disrespectful, see the bad example given to your court, and to the whole empire, here assembled to celebrate the worship and adoration due to your father, the sun, as the supreme and only lord." *Huayna-Capac,* looking at the priest, said to him, "I will propose to you two questions in reply to what you have said. I am your king and universal lord; are any of you rash enough to order me, for your own pleasure, to leave my throne, and thus make the way clear?" The priest replied, "Who would be mad enough to do thus?" To which the Inca said, "And is there any noble among my subjects, however rich and powerful he be, would not obey me if I ordered him to go by post from here to Chile?" The priest replied, "No, Inca, there are none who would not obey thee to the death, in all that thou commandest."

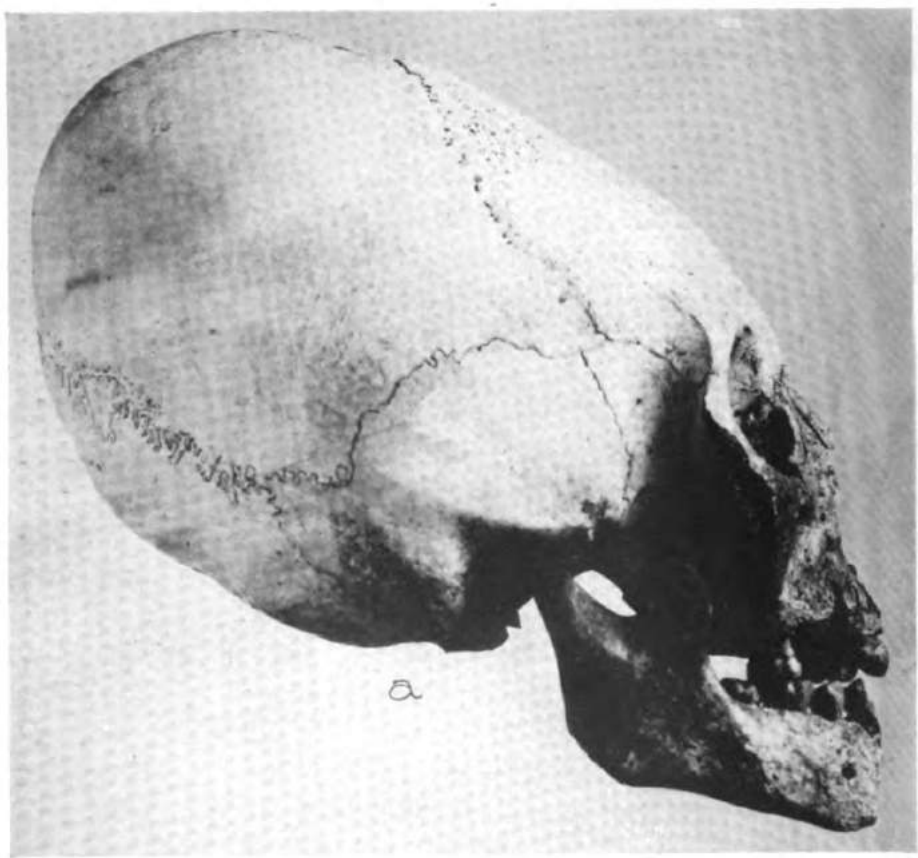
The King then said, "Well, then, I tell thee that this our father, the sun, must have another lord or master more powerful than himself, who commands him each day to make the circuit that he makes without stopping; because were he the supreme Lord, he would sometimes leave off traveling and rest for his own pleasure, even though there might be no necessity for so doing."

Venus (*Chhasqui Coyllur*) was worshipped as a page of the sun which closely followed her master when he rose and when he set. The constellation of the Pleiades (*Onccoy coyllur*) was an object of devotion on account of the influence attributed to it in many diseases. The moon (*quilla*) was considered as the sister and wife of the sun,* and was an object of profound respect, but the worship given to it was much more limited than that given to the sun. The moon was considered to be the protecting deity of women in childbirth.

Again, among the elemental deities, we must particularly mention the air (*Huayra*), the fire (*nina*), the lightning and thunder (*Ilipiac* or *illapi*), and the rainbow (*chuichi*): these latter two were considered as servants of the sun, and were consequently respected, especially the *Ilipiac,* to whom they sacrificed llamas.

The terrestrial deities were very numerous; many of them had temples, and the Peruvians sacrificed to all, invoking their aid. To the earth (*Mampacha*), they offered, in the time of harvest, ground corn (maize), and *chicha,* imploring it to grant a good harvest. The hills, mountains, and snowy ridges received a worship somewhat mysterious, as did also the rocks of uncommon shape, which are sometimes observed in the Cordilleras, and appear like men converted into stone. The sea (*Mamacocha*) was piously invoked by those Indians who dwelt between the Sierra and the coast, imploring it to grant them good health, since they believed—and in this they may not have been far wrong—that its vapors produced the diseases from which men suffered who lived on the plains near the sea. On the banks of rivers (*Mayu*) they performed the ceremony called *Mayuchalla,* which consisted in taking a little water in the hollow of the hand and drinking it, invoking the god of

* To perpetuate the purity of the royal blood, the Incas married their sisters.



Skull of a young woman about 17 years old, showing extreme Aymara or highland deformation. Lateral view. From a cave near Machu Picchu, Peru. (After Eaton)

the river to permit them to pass it or to give them fish; and to render it propitious, they threw corn into it. Indian corn or maize was considered sacred by many tribes because for them it was the staff of life and by some even thought to be its source.

In some of the archives of the Quichuas of Peru, Sir Clements Markham has brought to light the following, which shows that the belief in faith cure was older than even American history: "It was in the month for the great nocturnal expiatory festival called *situa*. On the gold breastplate of the high priest the signs represented the nocturnal character of the feast. The object of the festival was to pray to the Creator to be pleased to shield the people from sickness, and to drive all evils from the land."[9]*

Among the Andean peoples, household gods, too, abounded, as well as those pertaining to the tribe.

The great bulk of Indian population in Peru today consists of the Quichua, whereas in Bolivia the Aymara predominate. The lesser tribes are so much like these two that they are scarcely distinguishable and differ only in name. Most are, like the Quichua, docile and subservient, but some, who are related to the Aymara, possess the haughty, quick tempered, and pugnacious characteristics of the latter. In stature these Indians are all well above the average of South American aborigines and are well proportioned.

Their ritualistic and ceremonial organization is exemplified in many curious customs of both modern and ancient Peruvian Indians. Garcilasso de la Vega relates that it was a custom in some ancient Peruvian provinces to have young girls prepared for motherhood with much ceremony. These indicate a very low grade of mentality and customs that would not be tolerated in communities possessing the least conception of what civilization requires.

One of the most unique and seemingly unexplainable custom among the Indians of Peru, Bolivia, and Ecuador is the artificial deformation of the head to be described later. Cobo tells us of the Aymara that they made the head extremely sharp-pointed by this method and archaeological evidence shows many Aymara deformations.[10]

* *The Incas of Peru* by Sir Clements R. Markham. Courtesy of E. P. Dutton & Co., Inc., and George Routledge & Sons, Ltd.

At the present time, this custom prevails among the Conibos of Peru. A peculiar concomitant of these deformations is the curiously shaped head-gear of the Collas, a branch of the Aymara. These Indians made a sort of hat without a brim, very high and sharp pointed. The hat was manufactured with many ceremonies and superstitions, and such also accompanied its initiation into use.

Among the Quichua and Aymara races we have some very good illustrations of the Indian's belief in magical charms.

Patagonia.—We will now leave the bleak and snow-clad Andes, and the tropical and torrid lowlands, and travel toward the south, where we shall find Indians of a very different type from those of northern South America. These are the Araucanians of Chile, and the Argentine, the Mapuches, Puelches, Abipones, Yahgans, Fuegians, and others.

Patagonia is the peripheral region of South America, for many of the most distinctive South American culture traits are lacking, and one finds many resemblances to the northern tribes of North America. Geographically, the northern portion of the area is woody and swampy. Further south, the country becomes a level, treeless area, known as the Pampas; while at the extreme tip of South America the country is rolling and scantily wooded. Houses were crude affairs consisting of a ridge-pole supporting skins or mats.

The outstanding features of the inventiveness of the Indians of the area are: a skilfully carpentered plank canoe, coiled basketry, and the bolas, a hunting weapon of three stones attached to ropes, thrown so as to wind around the neck or legs of the game.

After the Spaniards introduced horses and cattle, the natives quickly became nomadic and hunted wild cattle and other game.

The Fuegians, even in cold weather, wore little clothing. Over a large part of this area, a skin boot with long trailing hair was worn. From this footgear came the name of Patagonia, that is, "duck feet."

The typical Araucanian, about whom most is known, is the Mapuche of south-central Chile and the Argentine. In appearance this aboriginal is indistinguishable from the Caucasian and is strikingly distinct from other South American tribes. He makes excellent pottery, is unequalled in silver-working, and is an expert at

wood-carving and bead-making. His practices are similar to those of most Indians, ostensibly supernatural in character. His most sacred object is the algorroba tree. No Mapuche may injure these trees except for some sacred purpose, at which time the act is carried out with appropriate ceremonies and offerings.

Sir John Lubbock, in writing of Patagonia, tells of a tree festival as follows:*

There is a sacred tree which the Indians reverence as the altar of Walleechu. It is situated on a high part of the plain, and hence is a landmark visible at a great distance. As soon as a tribe of Indians comes in sight of it, they offer their adorations by loud shouts. It stands by itself without any neighbor, and was indeed the first tree we saw; afterwards we met with a few others of the same kind, but they were far from common. Since it was winter the tree had no leaves, but in their place numberless threads, by which the various offerings, such as cigars, bread, meat, and pieces of cloth, had been suspended. Poor people, not having anything better, only pulled a thread out of their ponchos and fastened it to the tree. The Indians, moreover, were accustomed to pour spirits and *maté* into a certain hole, and likewise to smoke upwards, thinking thus to afford all possible gratification to Walleechu. To complete the scene, the tree was surrounded by the bleached bones of the horses which had been slaughtered as sacrifices. All the Indians, of every age and sex, made their offerings; they then thought that their horses would not tire, and that they themselves should be prosperous.[11]

Contiguous with the Puelche tribes are several very inferior tribes constituting the Pampeans. These Indians, in general, are very ugly, especially the women. Their carriage is ungraceful and exemplifies the variation from our conception of the American Indian, of which I have previously spoken. A certain sense of decency obliges the women to seat themselves differently from the men, who squat in the Oriental manner. The women double up the left leg, the point of the foot resting on the ground, then they seat themselves on the heel, passing the right leg under the left thigh, taking care to place the one foot flat by the other, so as to main-

* Origin of Civilization and the Primitive Condition of Man by Sir John Lubbock. Courtesy of Longmans, Green & Co.

tain in equilibrium the close-pressed legs. This fatiguing position, to which they accustom themselves from infancy, strains the left hip in an extraordinary manner and turns the leg inwards, causing them to limp on that side.

In the extreme south of our southern continent, Tierra del Fuego, there roams a distinct type of American Indian. This Indian is a large-mouthed, thick-lipped, dark-skinned, flat-nosed, and most inferior being, primitive in every way, possessing but few arts and no approach to a culture or civilization. A savage, naked and miserable, subsisting on fish and mollusca, sheltering himself against the biting weather by a tiny hovel of branches—such is the Yahgan and Alikulufan. But little more advanced are the Onas, a hunting tribe who inhabit the grass-covered undulations and more open bush of eastern Tierra del Fuego.

Scott Elliot gives a very good picture of a Yahgan family:

The man crouches in the bow on the lookout for prey. The women, usually two, paddle the canoe from the stern. Along the shore run one or two dogs to sniff out and turn any lurking otter or sea bird. The only household goods of the Yahgan are smouldering fire-brands, which he carries on a slab of shingled turf in his canoe to each fresh halting place. He owns no faith, religion or tribal tie other than that of the family, which huddles together for food and sustenance. Should the canoe be overtaken by a storm, he will, very sensibly, throw his wife and children overboard if it is necessary to lighten the craft.

On arriving at a favorable place a few sticks are gathered to form a shelter and the family disperse to seek a meal. The women are often required to moor the canoe to the long sea-weed, and then in the icy-cold water, swim ashore. Though excellent and fearless sailors, the men are said to be unable to swim. The fire is very carefully preserved.

On shore the great anxiety of every day begins. Some sort of food must be obtained. Crabs, mussels, shell-fish of all kinds, sea-birds' eggs, dead fishes, half-decayed seals, and fungi from the dripping beechwoods are industriously sought for and brought to the few hurriedly collected boughs which is the home. Such is the life of the Yahgan.[12]*

In his "account of the great distresses," Sir John Byron relates

* *Chili* by Scott G. F. Elliot. Courtesy of Charles Scribner's Sons.

how he was saved from starvation by the women of the Alakalufs:

> One of them young and very handsome for an Indian, who came in trembling with cold, her hair streaming with water, brought two fish, which, having broiled, they gave me the largest share. The same woman, taking a basket in her mouth, jumped overboard in eight or ten fathoms of water and diving to the bottom, continued under water an amazing time. When she had filled the basket with sea eggs, she came up, and after having taken a short time to breathe, went down and up again with the same success, and so several times for the space of half an hour.[18]

As an example of penance and as a manifestation of sorrow scarification and mutilation are practiced by many tribes of Indians and especially among the Yahgans. Here the relatives of the dead lacerate their faces with sharp pieces of shells and cut their hair on the top of the head. Similarly the Onas not only manifest their sorrow through wailing and cutting of the hair, but also through scarifying their flesh with pieces of glass or bone.

Such, in short, is a general survey of the South American aborigines and the status of their culture so far as it serves as a background for the better consideration of the medicine-man of the South American Indian.

Summary.—In conclusion it should be noted that the American Indian belongs to the Mongoloid division of the human race; that it is thought by most of those who are supposed to know that he came from Asia via Bering Strait to the New World about ten to twenty thousand years ago through a series of small, dribbling migrations. I have briefly pointed out the main cultural areas of the New World and have stated their outstanding characteristics with the object of a better approach to our main theme the medicine-man. It should be clear that the Indians arrived here with a meagre, nomadic-like culture, and that all the great advances (such as the cultivation of maize, beans, potatoes, squash, tobacco, and other plants; the development of architecture; the invention of hieroglyphics, a calendar, and the concept of zero; metal working, pottery-making and irrigation) were developed in the New World after their arrival, and without any contact or help from the Old World.

Just as there are variations in culture and physical type, so there

is a striking diversity of languages. Students of American Indian linguistics formerly thought that there were one hundred and fifty distinct speech families; but now, with further study, this number is gradually shrinking, because more and more similarities between groups are being recognized. But, even so, there is considerable diversification, some of which undoubtedly took place in the New World, and some in the Old World before migration to this continent.

It is necessary to present all of these facts in this introduction, as they directly affect the following discussion of the medicine-man. As one would expect, the practices of the medicine-men of the various divisions present many underlying similarities, as well as many differences, depending upon the culture traits of each group.

We have now glanced over the main features of the American Indian—a child of nature living in a world of the supernatural.

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CHAPTER II

THE INDIAN AS A PATIENT; INDIAN DISEASES, PAST AND PRESENT

BEFORE we consider the medicine or mystery-man himself, it is well and equally important to have at least a working knowledge of the field of his endeavors. For even now in the white race the doctor and the patient act and react on each other. As intimated in the preceding chapter, and shown more clearly in this, various sections and groups present individual problems and diseases for the medicine-man to cope with, as well as certain basic features that obtain in all. These we shall attempt to follow in the present narrative.

To me the desire to visit lands associated with prehistoric contributions to the art of healing has been strong. Add to this the youthful memories of historic tales such as Prescott above all could write, and it required but the opportunity to consummate the wish to visit the home of the cinchona tree, where during the last half-century the anthropologist has furnished the world with rare findings of skeletal and other remains which show that the art of surgery was known and practiced ages before the European set foot on American soil. Such an opportunity occurred to me in 1915, when I visited the land of the ancient Incas, including the present country of Bolivia containing the ancient and now ruined city of Tiahuanaco*, reminding one more of Stonehenge in Britain or Memphis and Thebes on the Nile than the once proud capital of an ancient race, one of the oldest and most civilized of any of which we have knowledge on the American continents. While in the country of the Quichuas, the dominant race of Peru at the time of the Spanish invasion, the hope had been entertained, aside from studying some of the diseases endemic there, to obtain first-hand evidences of their ancient status in the art of medicine, for men versed in the science of the past have long since told us of their feats in the art of surgery, and from their earthen jars have recognized as embellishment some of their diseases. But while numerous

* *Tia*, a swift running animal, and *huanacu*, to sit down.

objects indicative of their advanced state of culture, and ruins beyond recognition as to their original intent by the casual observer were seen, nothing until the National Museum at Lima (Arquelogia Peruana) was visited gave me any intimation that they possessed any knowledge of medicine or used medicinal appliances.

In this museum fortune favored me in meeting the director, Dr. Julio Tello, a distinguished representative of the Quichua race, who at the time was sorting a collection of skulls. He showed me several specimens, ancient skulls that had been trephined, one or two apparently with a circular saw-like instrument. Two or three others had also been operated on with some cutting instrument, showing that the ancient peoples of Peru possessed a knowledge of the art of surgery greater than has been found to the same degree elsewhere on the American continents.

This development is so striking that Moodie says:

I believe it to be correct to state that no primitive and ancient race of people anywhere in the world had developed such a field of surgical knowledge as had the pre-Columbian Peruvians. Their surgical attempts are truly amazing and include amputations, excisions, trephining, bandaging, bone transplants (?), cauterizations, and other less evident procedures.[1]*

There are hundreds of crania showing trepanations which have received close scrutiny by prehistorians. Some of these crania exhibit not only one example, but in some cases three or four examples of bone removal. While it is not always possible to say in every instance that the operation was performed to relieve pressure caused by a blow on the skull, many of the crania examined point to that conclusion. In cases in which the trepanation does not seem to be associated with a fracture or indentation, it is thought that the generous plaques of bone which were removed from the skull also removed the signs of injury. By associating the idea of pain as generated by a wound with that pain which we know as a "headache," this neolithic surgical operation may have been also performed for that reason.

The medicine-men of the ancient Peruvians learned that by removing the depressed or partly driven-in bones they would relieve

* *Studies in Paleopathology* by Roy L. Moodie, M.D., Annals of Medical History, IX, 277, 1927. Courtesy of Paul B. Hocker, Inc.



Double trephining, pre-historic male. Infection following operation. Cinco Cerros, Peru.

the symptoms and sometimes even cure the patient completely, and from this there was but a short step towards a systematic practice and further development of primitive surgery.

In many cases these operations were remarkably successful, as shown by the absence of signs of infection, and the growth of normal bone in and about the wound; in other instances the edges appear clear-cut and show little or no sign of healing. In some of these latter cases the subject was in all probability operated on too late, or as a last resort, and did not survive, while in others he lived but a few days or weeks, dying from the results of his original injuries. The trepanning was done with stone, obsidian, or copper knives, and was effected by scraping, cutting or drilling (very rare) the bone, or by combination of two or more of these methods. No part of the vault was evidently considered too dangerous for an operation. To deaden the pain of the operation the natives of Peru and Bolivia possibly used cocoa leaves, the chewing of which was habitual in these countries.

One of the most striking characteristics of the skeletal remains from the Peruvian region, previously referred to, is the unusual amount of skull deformation. American archaeologists find skull deformation in many parts of the New World, not all of which is intentional. Nowhere is this modification of skull shape more pronounced than in Peru, where, by binding the head in infancy while the bones were still soft and pliable, the desired head shape could be produced. These deformations, as far as can be ascertained from the skeletal remains and from individuals today who have deformed skulls of a similar type, are not injurious to health.

In examining the skeletal remains as exhibited by the Peruvian collection, the high rate of infant mortality is quite noticeable. Many of these deaths no doubt were due to such causes as negligence, improper diet, and undue exposure to the elements. Many of the diseases more peculiar to childhood would leave no mark on the skeleton. In common with the rest of the New World, rickets does not seem to have been present in the Peruvian region.

A disease of which we do have evidence in the bony frame of the individuals, resembling rickets in its tendency to attack the young, is called symmetrical osteoporosis. A theory has been offered

that a diet restricted chiefly to corn and lacking such elements as calcium, phosphorus, and vitamins C and D, as would be found among a strictly agricultural population, is responsible for the disease. The osseous signs include the formation of honeycomb-like patches in the skull with spongy thickening of the bone layer. The disease is labelled "symmetrical" because it presents itself on both sides of the skull and usually proceeds from the roof of the orbit to the parietal and occipital bones. If the individual lived to adult life, the skull shows a transformation of the outer spongy bone to more compact tissue with sievelike evidences of the ravages of the disease.

A rather curious affliction prevalent among the ancient Peruvians was a bony growth in the ear which undoubtedly produced a high incidence of deafness. Probably due to some local infection or irritation the growth manifested itself in the form of smooth, solid osteomata (new growths of bone), which developed from the tympanic ring and were accompanied by a thickening of the walls of the inner ear. There are also good evidences of mastoid infections, from a number of skulls, but mastoid abscess cavities are rare. A few pathological cases have been attributed to tumors, as well as one instance of osteosarcoma (a variety of bone malignancy) which was found by MacCurdy in a skull from the highlands of Peru.

There are examples in the skeletal materials from Peru of that group of diseases which are often classed under the general term arthritis. In the living, the structure and nature of the bone is changed and weakened, which oftentimes results in serious deformities. The results are easily recognizable in the skeletal material, such as "lipping" of the vertebrae, which is caused by the protrusion of bony growths at the margins of all the articular surfaces. Another characteristic form taken by one of the arthritides, arthritis deformans, is called the "mushroom" femur, as the head of the thigh bone takes this shape. This is caused by the formation of new bone which may range in size from a small projecting rim to a large collar sloping outwards over the neck of the femur.

It is not necessary to discuss the various kinds of spondylitis deformans, a disease which attacks the spinal column. The results



Ancient Peruvian water jar. Figure with generalized eruption of verruga or Oroya fever. (After Ashmead)

of one form are observed in what is known as poker spine. The sufferer has a painful stiffening in the spinal column, and with fusion of the vertebra complete rigidity results. Moodie[3] says of this disease:

This form of arthritis has been correlated with everything under the sun—climate, cave-dwelling, tobacco, alcohol, ulcerated teeth, palatal abscesses, stress and strain, injury, etc., but we are still somewhat in the dark as to its etiology.

Concerning the endemic diseases peculiar to South America, no one of them is of more interest than Oroya fever or *Verruga peruviana.* It was first reported by Zarrate in 1543 and was medically described by von Tschudi of Vienna in 1845. A commission of scientists under the Rockefeller Foundation for Medical Research has investigated this disease and the following, in the main, is their report:*

Historians of the early seventeenth century, writing of the conquest of the Incas, refer to the Peruvian Indians as suffering from numerous warts ("verrugas"), varying in size from small red prominences to masses as large as eggs, and covering the face and limbs. Many of Pizarro's soldiers developed the warty condition and died of the fever sometimes attending it. In their ignorance they attributed death not to the peculiar disease but to fish or water supposed to have been poisoned. In earlier times the disease seems to have occurred in regions now in Ecuador, but at present it is confined to the provinces of Lima, Ancachs, and Libertad in Peru, lying in south latitude 9° to 13°.

The distribution of the disease is of interest. The districts at sea-level and twenty-five to thirty-five miles inland are free from it, but as the mountainous parts are approached the disease makes its appearance, and foci or endemic centers are encountered at altitudes of 9000 feet and over. In certain narrow clefts, called "quebradas," the disease has prevailed in a severe form from an early period.

In 1870, during the construction of the trans-Andean railway, an acute, febrile, and fatal disease carried off many thousand laborers in the region between Lima and Oroya. One feature of this destructive malady was an anemia so profound as to have blanched

* From *Science,* July 26, 1929.

the color of the natives, or, in local language, to have changed "blacks" into "whites." Another curious circumstance noted at this time was that the workmen escaped the disease so long as they avoided certain localities at night. A single night passed in these danger zones might be followed by fever and death. Finally, the laborers were removed from these zones before sunset, and after this was done the disease abated.

This severe disease of the Andes was called from the name of the locality, Oroya fever, and while it might run its fatal course without other symptoms than fever and anemia, yet at times it was attended by the warty skin affection previously mentioned. . . . Conversely, sometimes the warty disease arose attended only with mild fever and anemia. Because of their frequent association in the same individual and their common geographical distribution, the two conditions, Oroya fever and verruga, came to be regarded in the popular mind as one disease appearing in a malignant and in a benign form.

The identity of the two forms was, however, not generally accepted, and to settle it a medical student, David Carrion, in 1885, inoculated himself on both arms with tissue juice taken from "verrugas." He develop Oroya fever and died. Since this self-sacrificing experiment the malady has often been called Carrion's disease. In 1905 a Peruvian physician, Barton, discovered in the red blood corpuscles of Oroya fever patients certain rod-shaped bodies resembling bacilli, and later similar rods were detected in small numbers in the blood of verruga patients. These bodies were named *Bartonella bacilliformis* by the Commission of the Harvard School of Tropical Medicine, and regarded by them not as bacterial but as protozoal organisms. Many attempts were made to develop the rods in artificial cultures but without success. Such bacteria as were cultivated proved to be either secondarily invading organisms (paratyphoid bacilli) or extraneous contaminants. That the verrucous disease can be transmitted by inoculation from man to monkey has been known since 1909, but the Harvard Commission was unable to detect any of the rod-shaped organisms either in the human warts or in those induced in animals.

In 1925, Dr. T. S. Battistini, a Peruvian fellow of the Rockefeller Foundation, brought to Noguchi of the Rockefeller Foundation a specimen of blood taken from a case of Oroya fever. The red corpuscles of the blood contained the rods and cultivation ex-

periments were undertaken which resulted successfully. The microörganisms obtained in the cultures when inoculated into monkeys and apes produced experimental diseases agreeing with both Oroya fever and verruga. Subsequently the microörganism was isolated from the blood of two other cases of Oroya fever and seven of verruga peruana, and from the skin nodule in a case of verruga. The bacterial incitant of the disease established the important fact that, as grown outside the body, it was capable of infecting monkeys, in which could be induced the two characteristic manifestations of Carrion's disease.

Its mode of infection now engaged attention. Indications pointing to direct transfer from person to person were wanting, while evidence implicating insects in the transmission existed. The strict limitation of the endemic zone of the disease and the nocturnal dangers pointed to an insect source of inoculation. This aspect of the subject had been investigated in 1913 with remarkable energy and penetration by Charles H. T. Townsend, an American entomologist. He gave consideration to all kinds of blood-sucking insects to be found in the verruga zone, and after excluding one and another variety of insects, finally, in a brilliant manner, concentrated attention on certain blood-sucking gnats of the class Phlebotomus. By excluding all insects whose range extends outside the verruga zone, he reduced the possible carriers to buffalo-gnats, horseflies, and phlebotomi, and by excluding the insects which bite by day as well as by night, he reduced the possible verruga vectors to phlebotomi alone. So certain did he feel of his discovery that he called the gnat *Phlebotomus verrucarum.*

This brilliant work stands out as a monument to the men (Noguchi's death occurring in 1932 on the West African coast) who sacrificed their lives and to the man who furnished the means to make possible this achievement in the cause of humanity and the advancement of medical science.

A tropical disease which is found at present in Malaysia and West Africa is not now found in Peru, although we know from the portrait vases of the ancient Peruvians that it formerly existed there. This disease, which evidences itself by a swelling of the bone at the root of the nose, is called goundu or gundu. Another ancient disease, the virulence of which has not been perceptibly dimmed by the passage of centuries, is an ulcerative disease resembling

lupus, called Uta. The regions affected are usually the face, mouth, lips, ear, and neck, but occasionally the sores may appear on the arms or legs. The Harvard Expedition to South America, found that the disease was due to an undetermined species of Leishmania and was related to other tropical diseases.

At the time of the Conquest, according to Clavigero,[8] the most common diseases among the people of Mexico were: intermittent fevers, spasms, consumption; and in Vera Cruz, the black vomit. This latter disease was unknown, however, before 1726. This is evidently the plague which until quite recent times was endemic in the coast towns and notably at Vera Cruz. In other parts of the country are found, according to this observer, catarrhs, fluxes, pleurisies, and acute fevers; and diarrhoea. Besides these more frequent diseases, there were occasionally epidemics including smallpox, which was introduced by the Spaniards. There were other epidemics of what the Spaniards called vomito negro, which may have been yellow fever, and which it is said was unknown among the natives before the arrival of the Spaniards. There were severe epidemics of unknown origin or nature recorded in 1546, 1576, and in 1762.

Another type of skin disease pictured by the "huacos" or portrait vases is described as follows by Moodie,[1] "the seated figures are shown examining the soles of their feet, in which there are numerous rounded openings from which have been removed the egg-sacs of the 'nigua,' a kind of sand flea or jigger abundant in certain parts of Peru which bore holes in the soles of the feet and deposit their egg sacs. Unless these sacs are removed entirely disastrous results are likely to ensue." Yaws, also called Frambesia, is a disease of the skin found among the Indians and half-breeds of the American tropics. It resembles somewhat the cutaneous manifestations of syphilis with which it is frequently confounded. It is caused by a spiral thread-like micro-organism, the *Spirochaeta pertenuis.* It does not, however, invade the internal organs nor does it readily attack the Caucasian race. Pinta (painted), or what the Spaniards called, *mal de los pintos,* is a peculiar patchy discoloration of the skin caused by a parasite (Hirsch). The first clear description of the disease is found in the Encyclopedia of Polanko of Mexico in

1760. It is found in various countries of tropical America and was especially prevalent among the Aztecs of Mexico.

In marked contrast to the large amount of skeletal material from the Peruvian region and the careful studies made of their physical characteristics and pathology, there is a dearth of skeletal remains from Central America. This is due to a number of reasons, chief of which is the poor state of preservation of the bones when discovered in the Maya area.

Symmetrical osteoporosis is said to have been very common in the Maya area, especially among the young. It is interesting to note that here again is a region of intensive agriculture connected with this form of osteoporosis.

Two cases of trephining have been reported from Mexico and cases are also on record from New Mexico, Michigan, and British Columbia. This removal of part of the skull was not, however, extensively practiced in North America.

It is but comparatively recently that excavations, such as have yielded valuable information of pre-Columbian medicine in Peru, have been undertaken in Mexico. Already these undertakings, according to Lumholtz and Hrdlička, have revealed that trephining was also performed.[4]

As time went on and with the conquering hosts from Spain came also the Spanish priesthood, who ruthlessly endeavored to uproot the native religion by substituting the ritual of Rome. In this the form changed but the underlying beliefs remained but little affected. From this time all native initiative in medicine ceased.

A comprehensive study of the skeletal pathology from North America would make an interesting volume by itself. Excellent work has been done with increasing thoroughness in the recovery of America's prehistory. As a consequence our knowledge of the diseases of the Indian is much more complete than in the days when Benjamin Rush wrote one of the first papers on Indian Medicine. At the same time, we lack the personal observation which this skilled physician was able to make from more intimate contact with the Indian.

I have been particularly interested in examining the wealth of skeletal material in the State Museum at Tucson, found in Arizona

where so many of the white race now go for the cure of arthritis. Examples of arthritis in pre-historic times are here fairly plentiful and show what must have been severe cases of rheumatism which now go under the name of arthritis.

The excavations at Pecos, New Mexico, which were under the direction of Dr. A. V. Kidder, have yielded considerable skeletal material which has been studied and is the subject of Dr. Hooton's book *The Indians of Pecos Pueblo.*

Fractures and traumatic lesions of the bone due to blows were found in three to four per cent of the skeletons examined. Some of the fractures showed excellent union, while others showed either marked displacement or a complete lack of union. Usually a great deal of callus formation had occurred. Symmetrical osteoporosis was evident in the skulls of a little over three per cent of the crania examined. Evidences of mastoid and sinus infections were found in a few cases. The supposed presence of syphilis in this skeletal collection will be commented upon. Examples of arthritis occur in the long bones, short bones, and joints of about four per cent of the examined material. Inflammatory diseases of the bone marrow (osteomyelitis) and of the outer layer (periostitis) are also fairly common. Hooten believes that one of his pre-Columbia skeletons shows unmistakable evidence of cancer and that another quite possibly suffered from Pott's disease (tuberculosis of the spine).

Skeletal material from many parts of the United States reveal fractures of the long bones, some of which appear to have been set, but the majority do not show such signs. Examples of arthritis, periostitis, and osteomyelitis can be found in almost every excavation that yields a reasonable amount of bone material. One of the most interesting examples of pre-historic pathology is a case of osteitis fibrosa (a degenerative fibrous and cystic weakening of the bones) found in a skeleton excavated by the University of Chicago Archaeological Survey in Fulton County, Illinois, during the summer of 1930. I quote from Denninger:[8]

The skeleton is that of a man approximately thirty-five years old. He was a cripple with an affliction involving practically the entire left side of the body. During life the left leg was bent over the

right at about the level of the knees. The left foot and toes were markedly extended and permanently fixed. The right leg curved toward the median line. Walking must have been difficult, if not almost impossible, as even the pelvic and body axes were obliquely aligned. The left half of the face was askew. A more or less constant rheumatic type of pain must have played no small part in his existence. Yet with this man there were found many distinctive artifacts, such as bear's teeth, bone needles, a shell necklace, discoidals and an effigy pipe. All these factors indicate that he probably held some important position among his fellows, and it becomes more significant when one considers the paucity of material expressions associated with other burials in the same mound. He may even have been the traditional "medicine-man."

It has been impossible to obtain a complete list of diseases prevalent on the two American continents previous to the advent of the European invader. The same might be said of Europe where many of the diseases now recognized were then unknown. Sufficient material, however, has been unearthed in recent times by the misdirected zeal of the natives, who sought from the despoiled graves gold, pottery, and other buried treasures, to enable the anthropologist to give a definite picture of many diseases in pre-Columbian times, particularly those which have left traces of pathological processes on the bones. Thus far Peru has furnished the richest field for this paleopathological research and each year is adding information from pottery and skeletal remains about the most prevailing causes of death among the people ruled over by the Inca kings.

With the arrival of Columbus and his men in 1492, a new era dawned on the American Continents, but it was not dawn to the native inhabitant—for with the white man's coming the Indian's noon-day had passed. One of the first symptoms of this oncoming twilight of the race was seen in the susceptibility of the natives to contract new contagions, and the severity of these diseases when contracted from the invader was extreme.

The first tribes of the aborigines that the followers of Columbus encountered were the Arawak and the Carib nations who inhabited the Lesser Antilles in the Caribbean Sea as well as the northeastern coast of the South American mainland. The former of these tribes was of a gentle nature, while the Caribs were fierce and warlike,

caring little even for the missionary methods of the sixteenth century, but preferred to give, or rather take, an eye for an eye and a tooth for a tooth and they did both with fair success until the introduction of measles among them. They then succumbed by the thousands. This new weapon proved to be more deadly when coming in contact with a new race than did the cannon and sword of the conquistador. Then came smallpox and whole islands and sections of country were depopulated. In like manner scarlet fever, tuberculosis, and to a less extent syphilis are now completing the process of destruction.

While syphilis may have existed from the dawn of history and before in the Old World, as it undoubtedly did, a witches' caldron of many diseases from scabies to leprosy broke out with unheard of severity at the end of the fifteenth century in Europe. It was an age of wars and licentious living. The French troops returning from the siege of Naples after the winter of 1494-5 spread what was considered a new contagion to France, where it was known as the Italian or Neapolitan disease. The Jews, expelled from Spain about this time, congregated near Rome, where a pestilence broke out among them and this too was confounded with what is now known as syphilis and was called the Spanish disease. According to some writers, Holland and Germany next were invaded, where it was called either the French or the Spanish disease. Recent researches by the indefatigable medical historian, Karl Sudhoff,[6] show that in the archives of Wurtzburg and Augsburg in Germany dating as far back as 1496 provision was made by the municipalities at that time for the treatment of syphilis or the French Disease as it was called.

Denmark (Lancereux) also reported "the new disease" in the latter part of the fifteenth century (1495), so that during a few years epidemics of a supposed new disease of venereal origin were reported throughout Europe. This leads one to infer that it had been confounded with other diseases and did not emanate from any one center. However this may be, each country tried to place the blame for its invasion on its neighbor. Finally England it is said was invaded, where, it may be from its uncertain paternity or to show themselves neutral, it was called the pox—and "the pox

take you" became a popular though mild form of blasphemy. This name has survived among the laity to this day. More appropriately than scrofula or salt rheum, it might have been called the "King's evil," since Henry VIII and some of his wives and his daughter are known to have been afflicted with the disease. Then again when we take into consideration the slow modes of travel in the fifteenth century, it seems impossible for a fairly slow-developing disease like syphilis, that Columbus himself did not make note of, to spread broadcast over wide and distant countries in two or three years and to give rise to the so-called epidemic at Naples in 1494-95.

Furthermore it must be borne in mind in this cursory consideration of the subject that syphilis as a disease *sui generis,* that is a distinct disease, was imperfectly understood until the last half of the nineteenth century (nearly 400 years after the discovery of America), when Ricord more particularly than any other separated it from other affections known in antiquity as *lues venerea* and other names. These are now known as chancroid, gonorrhoea, and other contagious diseases with which until comparatively recent times syphilis was confounded.

Finally, *ex cathedra,* Charles Singer, Professor of the History of Medicine in the University of London, and Karl Sudhoff, in the same department in the University of Leipzig, after a careful re-examination of the medical aspects of the early medical literature of the discovery of America declare that syphilis was not brought back from the New World by Columbus' sailors when they returned to Spain. Sudhoff further says that accounts were published of every imaginable detail of the voyage and the voyagers on the occasions of their receptions by the Monarchs of Spain and Portugal in March 1493. The physicians of the Spanish and Portuguese cities were at that time probably the best in Europe and their scientific curiosity was keen; yet they have no word to say of any new ailment among the sailors of the expedition who had been reported in excellent health by their commander when they sailed away several months before. The nearest date to Columbus' return on which a recognizable description of syphilis in a Spanish port was written, was 1494, when a Sicilian physician, Nicolo Squillacio, mentioned in a letter "the new death that has come down out of Gaul." Nor

was any attempt made to attach the responsibility for the disease to the adventures of Columbus' sailors in the Caribbean Islands until nearly a generation had passed away.[6]

While it is thought by some who rely on the Spanish reports of the early writers that syphilis was brought to Europe from America, one must not forget that with the exception of Ruiz Dias de Isla (Tractado contra el mal Serpentino, Seville, 1535)[7] the observations which gave rise to this opinion were not written until many years later (Ovidedo 1526, Las Casas 1550) and by voluminous writers, soldiers of fortune who were not medical men. In regard to Dias de Isla, most authentic scholars of early Spanish authors discredit the accuracy of his statements. For example, in his work on the Serpentine Disease, supposed to be syphilis, published in 1510, he says that he has had forty years experience in treating the disease in Barcelona, which would be eighteen years before Columbus even discovered America. The writings of Oviedo and Las Casas are likewise inconsistent as shown by Holcomb.[17]

One must look for a description of syphilis as we now know it not from these Spanish writers, but in the works of such medical observers as Johannes Widmann (Tractatus de Pestilentia, with a supplement by Gabriel Biel, De Fuga Pestis, Tübingen, 1501). This work is especially important in this connection for the statement that syphilis first appeared there in 1457, thus negativing the American origin. Widmann stood high in the faculty of the University of Tübingen and was among the first to introduce mercury in the treatment in western Europe. I might say further that Hieronymus Fracastorius of Verona, Italy,[18] a contemporary writer, 1525, of whom both Alfred Fournier and Sir William Osler speak in high terms as a scientific observer, in his work, Syphilis sive Morbus Gallicus (Syphilis or the French Disease) describes the disease and gives mercurial inunctions, which is one of the standard treatments today. The most noteworthy statement in this work is that he denies that syphilis is of American origin and brought to Europe by the Spaniards.

The paleopathologist[1] has likewise endeavored to eludicate this subject and for this purpose the skeletal material from ancient graves both in the Old World and the New have been carefully

examined by paleopathologists and physical anthropologists in an attempt to ascertain the origin of syphilis. It has been quite difficult to recognize with certainty the destructive results of syphilis on dry bones, as diseases such as yaws, which sometimes causes inflammation of the periosteum may be confused with syphilis. For this reason most of the competent authorities have been content to say that there has been no skeletal material found in America which is certainly pre-Columbian, that has been identified as absolutely syphilitic.

In examining 14,000 skulls, neither Hrdlička nor Moodie found a single instance of cranial syphilis in pre-Columbian times, while subsequent to the invasion of the European its presence in examined crania is extremely common. They hold the opinion expressed by Hrdlička in an address given before the Cleveland Medical Library Association in January, 1931, that syphilis did not exist in America previous to the arrival of the white man.

Opposed to this view is that advocated by H. U. Williams of the University of Buffalo, who describes at length and in a painstaking manner bones found in Pecos, New Mexico, Peru, Argentina, the Ohio mounds, and in the State of Tennessee. From a study of this material Williams is of the opinion that syphilis existed over a wide area of the Americas before the arrival of Columbus. This is contrary to the opinion of most medical historians and so far as I know these observations have not been verified by other competent pathologists. And if the researches of Williams prove that syphilis existed in the New World in prehistoric times it shows I believe that it was of world-wide distribution and that it came to America in the Mongolian invasion by way of the Bering Strait. And now comes Russia as if to regain her one time high estate in science and reports skeletal remains of the twelfth century bearing the stigmata of syphilis.* Therefore, I believe that while there

* On the basis of the X-ray and osteological study of palaeoanthropological materials in the Museum of Anthropology and Ethnography of the Academy of Sciences of the USSR, Professor B. Vishnevsky makes the following statement: "It was discovered that lues was already present among the old population in the region of Ladoga's Lake in the XII century, which proves that Columbus was not 'guilty' in the import of this disease from America to Europe." *Anthropology in Leningrad.* American Journal of Physical Anthropology, Volume 17, Part 4, pp. 515-516. April-June, 1933.

seems to be no reason why the micro-organism of syphilis should not develop originally in the American Indian we should still approach the study of the origin of syphilis with an open mind—in other words, to admit that we do not really know the place and time when the *Spirocheta pallida* of syphilis first assumed a form virulent to the human race.

In my experience with the Chippewas, syphilis was mainly encountered in the vicinity of the iron and copper mines of Lake Superior. In these localities it was a real menace to the Indians and not without danger to the whites. While this is a very limited observation and not mentioned to prove where syphilis originally came from, yet it is in accord with the careful observations of Humboldt in Mexico, and such authentic historians as W. H. Prescott and Washington Irving together with the scholarly report of Le Conte.* Indians of North America, unlike some primitive groups, were in no sense voluptuaries, and while a favored few among them might possess a plurality of wives, yet in most instances the children came first in affection and regard. This is verified by the experience of their captives from the white settlers. In the case of women, although they might be otherwise ill-treated, their virtue was seldom at stake. They were, however, usually adopted by the tribe and married to one of their captors. I go thus into detail because America, as I have said, among other countries has been ac-

* Those who wish to pursue this subject further will find a complete and well presented *résumé* "Concerning the History of Syphilis," by H. Sutherland-Campbell, in The American Journal of Surgery, Nov. 1934. It is also treated at length with a full bibliography in *Traité Historique et Practique de Syphilis*, by E. Lancereaux, Paris, 1873; also in the medical works of Lopez De Villalobos, translated by G. Gaskoin, with commentary and bibliography, London 1870; in the works of Valescus de Taranta, *Practica, sive Philonium*, Venice, 1502. This author was a Portuguese doctor who taught and practiced in Montpellier. His writings which brought him renown and the appointment of physician to Charles VI of France- comprise a treatise on the plague and "Philonium" a work on medicine and surgery in seven books which are in the Cleveland Medical Library.

In the New York Journal of Medicine and the Collateral Sciences, March, 1844, may be found further researches on the early history of syphilis.

Dr. Wm. Allen Pusey in the *History and Epidemiology of Syphilis*, has also written entertainingly on this subject, 1933, Thomas, Springfield, Ill.

The most recent theory is that given by Jegel (Dermat. Wchnschr., Leipzig, 1934, XCVIII, 466) who cites various authorities to prove that syphilis and gonorrhea were known in Europe before the discovery of America, and suggests that they were introduced by returning crusaders from the Holy Land.

cused of giving to the world this well-nigh universal scourge to the human race.

With the white race came also other diseases which to the native Indian were unknown. Against these their native herbs and barks, together with their *temescal* or sweat bath, were found to be inert. The zymotic diseases cut them down by the thousands, and the remainder, by contact with the less devout followers of the cross, were consigned to a worse fate by contamination with syphilis and tuberculosis, and in North America by firewater, for all of which they had no antidotes.

In regard to tuberculosis, which is now a menace to the perpetuity of the Indian, some difference of opinion also exists as to its origin among them. This is due largely to the fact that "consumption," "pleurisies," and other "affections of the lungs" were observed and recorded by some of the first writers who were not, with a few exceptions, medical men. On the other hand, no less a medical authority than Benjamin Rush of Philadelphia, writing in 1794, says consumption is unknown among the Indians of North America. From Benjamin Rush to Hrdlička and Moodie there have been authorities who maintained that the Indians did not suffer from tuberculosis before the European invasion. On the other hand, the early Jesuit fathers wrote that the Indians of New France and New England suffered from a languishing disorder which they identified as consumption. Addison[10] reports a case of Pott's disease from Ontario which may be pre-Columbian. If tuberculosis was present in the early Indians it probably was quite rare. This opinion of Rush is strongly opposed by Maher[11] who says that his statement is misleading, and that it has influenced medical opinion for a century, and as a rebuttal he cites many instances of tuberculosis among the Indians of North America from the reports of the Jesuit Missionary, Le Juene, in 1633; Josselyn, in 1675, "consumption was one of the chief afflictions of the Indians of New England"; La Hontan, who reported that during his visits to the Indians of Canada from 1683 to 1694 he found them frequently afflicted with that languishing disorder which we call consumption. They looked pale, livid, and ghastly, like skeletons.

Addison reports finding near Big Bay Point, Simcoe County,

Ontario, an Indian skeleton that had been buried over two hundred years in which there were evidences of Pott's disease. He thinks that these bones are proof that not only the Indians suffered from tuberculosis before the European invasion, but also that it was a very common disease among them before the white man came. These findings have not so far as I can ascertain been confirmed by other competent men. Hrdlička[18] affirms without reservation that tuberculosis did not exist in America in pre-Columbian times.

In support of this view, according to Moodie,* there is no evidence to show that the tubercle bacillus existed in America before the Conquest. Dr. Reynolds, while Curator of the Peabody Museum, of Harvard University, in a personal interview, said that they have several specimens of bones showing changes that have been thought by some to have been caused by tuberculosis, but their highest authorities will not hazard an opinion concerning them.† From the foregoing and from the fact that diseases communicated from the white race act with unwonted severity when engrafted on the native, and until definite proof by competent observers can be furnished to the contrary, it seems highly probable that tuberculosis did not exist as an endemic disease among the aborigines of the western hemisphere in pre-Columbian times.

While some of the diseases prevalent among the Indians at the time of the discovery and invasion of the European differed little from those met with in the Caucasian race, there was nevertheless a large number of zymotic or contagious diseases unknown in the New World previous to the arrival of people from the Old. Further, these diseases engrafted in new soil wrought fatal havoc and spread with unwonted rapidity. Influenza has of late years also been added to the severe epidemic diseases imported and communicated by the whites. From time to time, previous to the arrival of the European, epidemics of an obscure origin and nature had appeared among the aborigines. Thus in one of Cartier's expeditions to Canada in 1534 his men became infected with a disease that was raging among the Indians. Those afflicted were taken suddenly ill with a high fever, and the skin of the white men became yellow. This

* Roy L. Moodie, M.D., Personal communication, June, 1929.

† Edward Reynolds, M.D., Personal communication, October, 1929.

tint could not be detected in the native. It may have been yellow fever, called *vómito* by the Spaniards.

Further to illustrate the credulity of the time both among the Europeans and the natives, it is reported by Cartier that after twenty-five of his men had died, the Indians very kindly offered to treat those still living and afflicted with the disease, which they did successfully and thus stamped out the epidemic. He further says that they used decoctions of the inner bark of the white pine (*Pinus strobus*). This will be considered later. It is also known that the Indians on the Atlantic seaboard had suffered a severe epidemic with high mortality a short time before the landing at Plymouth of the early settlers of New England. Drake,[13] quoting from Morton, says: "At this time, 1618, there was a great sickness among the Massachusetts Indians, not unlike the plague, if not the same. The extent of its ravages, as near as we can judge, was from Narraganset Bay to Kennebeck, or perhaps Penobscot. It was supposed to have commenced about 1617, with the length of its duration between two and three years, as it was nearly abated in 1619. The Indians gave a frightful account of it, saying that they died so fast that the living were not able to bury the dead." Morton continues: "When the English arrived in the country, their bones were thick upon the ground in many places. This they looked upon as a great providence, inasmuch as it had destroyed multitudes of the barbarous heathen to make way for the chosen people of God." The plague was thought by both Indians and whites to be due to comets, four in number, that appeared in 1618. Whether these epidemics had existed among them previous to the arrival of the European is not definitely known although their traditions would lead us to infer that they had existed from a remote past.

As before stated, most of the aborigines of North America who survived beyond maturity were strong and noted for physical endurance and freedom from such affections as colds and many minor ills to which the whites are more susceptible. Chronic catarrh of the upper air passages, however, was not uncommon. Fevers of an uncertain nature they had, as well as bowel disturbances of various kinds, and later in life inflammation of the eyes, asthma, pleurisy,

dropsy, and rheumatism were the diseases most commonly encountered.

Speaking recently of the prevalence of tuberculosis with Frank Mead, general inspector of Indian Reservations under the administration of President Theodore Roosevelt, said:

The Indian realizes that he has no future; his mind dwells on the past, on the deer, the buffalo, and the broad expanse of mountain, forest, and lake that were his. From childhood he seeks to break away from the restrictions of the usurpers of his land. He is frequently confined to an arid, treeless desert, and supplied with farm implements by a paternal ruler, who does not understand him, and who could not with all his knowledge of agriculture, wrestle from the soil assigned the Indian a living for himself. Further, the timber and the mountain Indian does not want to till the soil; he is a nomad as his fathers were, and all he wants is to remain so and to be left alone. His children are torn screaming from their mother's arms. With the whole family in tears, for the Indian mother loves her children and it distresses her to see them go, they are sent, it may be, twenty-five miles away to a school. The Indian does not want a school nor do his children. Their thoughts and aspirations are to chase the buffalo and the deer, to fish and to roam at large—for they are children of nature and pine away under confinement. The mothers may be permitted to visit the children once a week, but the children are sad; they droop and long to be free. I once visited the Mohave Indian School where I saw a little Indian boy looking more than usually dejected. I sat down beside him; he was trying to remember that three times twelve is thirty-six, and he didn't want to remember it. I stooped down close to the little fellow and chanted in his ear a few words of the song of the coyote and the locust: *Tchumali, tchumali, shohkoya,* in a low tone. Immediately his face brightened up and with a smile and a twinkle in his eyes he said, "You Indian?" "No," I said, "but I know them well and I know that you are longing to go back to the plains or the painted desert and chase coyotes and buffaloes, and not waste your life away trying to remember that three times twelve is thirty-six." And so he was, and so were the others I saw there. In this longing, depressing state they readily develop tuberculosis. Then they are returned to their homes to spread the disease to others of their tribe. The process of changing an American Indian into a house dweller who finds pleasure in the

arts of peace is a long and tedious road, and few there are who know best how to direct him.

I have gone into this detail concerning the evidences of disease from the skeletal material to show that the Indian in a state of nature was not the perfect physical specimen he is pictured to be. Such a romantic picture of the Indian as portrayed by Cooper and the prominence given Indian athletes by Jim Thorpe have been rather misleading.

T. Wingate Todd, Professor of Anatomy, Western Reserve University, says that on examining approximately a thousand Indian skeletons of the southwest region of North America he found the death curve reached the highest point at the age of thirty in women, while that of men was slightly higher, reaching its highest curve at forty years of age. Thus this eminent and painstaking anthropologist places the average life of the American Indian lower than is prevalent in popular belief.

The American Indian possessed the same physical structure in general that other human races possess. His body was trained from birth to conditions which most of us are thankful we do not have to face. This physical exertion did much to make his body strong.

There was still another influence at work on the whole continent which was more potent in fortifying the race during the centuries than any heretofore considered. This was nature's method of eliminating the weak, by destroying in infancy or before the time of parenthood those unable to withstand the rigors and vicissitudes to which from birth they were exposed. Thus children and those about to become mothers, if they could not survive the trying ordeals which nature had imposed, died, leaving only the physically sound to propagate the race. When death came it was said to be due to the will of the Great Spirit or to the blighting influence of the spirit of evil which, unappeased, had wrought its will, and nothing further could avail.

A few years ago in going through the wards of the general hospital at Punta Arenas, the southernmost city of the world, I was impressed by the absence of Indians among the patients representing apparently every nation, race, and color of the globe. The chief of staff told me that the aborigines of Tierra del Fuego and the mainland of Chile and Argentina seldom came under hospital care,

relying mainly when ill on their own shaman. This, he informed me, had been their custom from a remote past and the treatment received was of a most primitive kind.

A recent communication from Dr. Lain, Professor of Dermatology, University of Oklahoma, and Chief of the Skin and Cancer Clinic, says:

I have many times remarked about the absence of cancer among full-blood Indians, both in medical societies and several times in my papers. During 1911, 1912, and 1913, I visited the camps of six or eight thousand Indians in our state and have briefly examined quite a number since. Also, we are occasionally called upon to treat Indians for various skin troubles and supposed malignancies. Our records thus far show that we have not treated a single authentic case of cancer in a full-blood Indian. We have had only a few such cases in the mixed breeds. Several times, cases have been referred to us under a cancer diagnosis but a Wasserman or a pathological section would prove syphilis or tuberculosis.

In 1913 I made a special request of the Interior Department at Washington, D.C., for a report of the number of deaths of cancer in Indians. In reply, I received information that only twenty-four cases of death from cancer had then been recorded by the various physicians in charge of the Indian camps and reservations throughout the United States. None of these diagnoses, however, had been verified by laboratory examination. Knowing something of the qualifications of the class of physicians who were at that time employed to take care of the Indians, I must confess that I doubt the diagnosis of every case thus reported."*

In regard to cancer among the Indians, Dr. W. M. Krogman in a personal unpublished communication says, "We have a post-European skeleton of an adult female about forty-five years of age, from a Mandan burial site of about fifty years ago, which presents an excellent example of generalized carcinomatosis. The sacrum, vertebrae, pelvis, and ribs are markedly affected."

Todd in an oral communication to me said that he has seen these specimens and confirms the diagnosis.

In further confirmation of the rarity of cancer, Hrdlička in a recent oral communication informs me that in all his studies of pre-Columbian skeletons he has not seen a single instance of cancer

* E. S. Lain, M.D., Personal communication, 1929.

previous to the arrival of the European. It is possible that this may be due to the fact that the life of the Indian was fairly short, and that cancer more frequently occurs after forty years of age.

Among the Indians of the Southwest, tetanus and goiter were occasionally encountered, the latter in certain regions only. It was thought before Hrdlička's[18] and my own investigations that skin diseases were not common among the Indians, aside from those arising from the bites of insects, notably the *pediculus,* the *pulex-irritans* and the *pulex penetrans.* Doubtless the custom of anointing the skin with bear's grease had some protective influence. But I have observed many affections of the skin among the Indians of the Southwest bordering on Mexico. Among them were impetigo contagiosa, eczema, acne, and vitiligo.

It was my good fortune at an early stage of my medical career in 1879 to be stationed for a short time in the Hudson Bay Company's territory in northern Canada among the Ojibway or Chippewa Indians. The opportunity was unique in that the Indians were friendly and contented.

Besides receiving pay for their furs, these Indians, including their wives and children, were receiving a dole of four dollars a year from the Hudson Bay Company. Once a year, about the first of August, they gathered from far and near for what they called *L'bahomahtin,* to receive their pay and to make purchases from the trading boat which followed the government steamer. It had been the custom to supply medical aid to these Indians by one of the white race, but this year the medical man failed to accompany the trading steamer, and I was asked by a chief to fill this vacancy. An extemporized hospital, or more properly a consulting room, was provided by utilizing an abandoned trading house, and for three days Indians with various complaints were seen. Later, long journeys into the forest were made to visit those who were too ill to come to the place of meeting. It is interesting to note that the women predominated; next in frequency were the children. Their attitude towards the medical man (*muskekiwainni*) was favorable, and while they probably would steal like pirates on ordinary occasions, yet this was mysterious, sacred, and their highest aspirations were aroused. While a small fee had been stipulated for with their chief, as soon as they had received their money a few days later,

and in spite of the tempting display of red flannel which could be cut into strips to adorn the head, and tin whistles, glass beads, and tobacco, not one of these patients failed to pay his fee. As a patient, therefore, provided he is in the right state of mind, the Indian is to be commended—at least this was the impression made by the Chippewa Indians of the Hudson Bay Territory. But while not all good Indians are dead Indians, as has been so often said, yet they are not at all satisfactory when you are thought to be under the spell of the evil eye. This may best be observed among their own people, uninfluenced by extraneous circumstances. These natives were rather small in body, credulous in mind concerning things sacred, mysterious, and medical, and apprehensive when ill; but once their credulity was taken advantage of to their detriment, revenge came swiftly and with deadly intent. Most of the cases seen had been treated by their medicine-man, who showed no jealousy in seeing them treated by the very youthful and pale-faced *Loci*.

The Indians of the present time seen by me in the reservations in North America are greatly afflicted with an inflammation of the eyelids, trachoma, which spreads through whole reservations, causing much suffering and even blindness. Among the Indians of the northern part of North America, notably the Chippewas with whom I came in contact, the most prevalent affections were those of the air passages, lungs, intestinal tract, eyes, ears, and rheumatism in its various forms. Tuberculosis of the lungs was at this time already one of the most deadly of all and was fast decimating the tribe. This caused some wonder until their houses or tepees where they lived during the long winter months were seen, which were ill-ventilated and crowded. They were doubtless much better in their native state, unpampered by doles and other deleterious influences before the arrival of the white man. This is true of the North American Indian of the reservations today to such an extent that the government of the United States has recommended work as the means of saving the race.

The Teeth

One of the commonest ideas in the mind of the layman who is interested in the American Indian is that the teeth of the Indian were much better than are the teeth which the present-day whites

possess. This may be due to the fact that dental structure is one of the last parts of the skeleton to decay. When an Indian mound or burial ground is uncovered and burials disclosed, the teeth remaining in the jaws appear to be very prominent. Whatever the reason for this misconception, it is certainly erroneous. The teeth of the individuals born today, unless they suffer from dietary or congenital disease, are every bit as able to perform the tasks given them as were the teeth of the Indian a thousand years ago, or of Cro-Magnon man, twenty-five thousand years ago.

In examining the teeth from the Peruvian remains we find many of the diseases and afflictions that cause us shrinkingly to approach the dentist chair today. Unfortunately, the subjects of the Inca had no billboards or radios to warn them of incipient caries, nor had they dentists to take steps to prevent it. For despite their relatively high development of surgical practices, there is little evidence that the Peruvians realized that care of the teeth is an important prerequisite of health.

Retention of the milk teeth occurred and in almost every case caused a disturbance of one or more of the incoming permanent teeth. Examples of supernumerary teeth from Peru are not very common. The number of impacted teeth (failure to erupt) is also not great in Peru. Also the percentage of carious teeth is small. But if this region was fairly free from other dental disorders, the high incidence of pyorrhea more than made up for it. Moodie,[14] after making a study of much of the known skeletal material, says, "An absorptive, alveolar osteitis is responsible for great changes in the teeth of ancient Peruvians. Loss of teeth was very common, and numerous edentulous palates occur. . . . A high percentage of the ancient population lost their teeth at an early age, before forty at least. Part of this loss is to be attributed to alveolar abscesses, but the greater part was due to that complex series of changes commonly called pyorrhea alveolaris."

We have also from Pecos some very interesting data on wear and diseases of the teeth. Nearly ninety-eight per cent of the teeth showed excessive wear, which was undoubtedly due to the grit which came from the stones used to grind corn, and from their consumption of large quantities of rough and raw vegetable and fruit foods. Corn itself has a very wearing effect on the teeth. With

such wear of the hard parts of the teeth we should expect to find a high percentage of diseased teeth here and in the regions adjacent. Caries (those cavities which nowadays are so adequately and charmingly cleaned by the dentist's drill) was found in forty-eight per cent of the adult teeth, mostly in the molar region and pyorrhea was present in fifty-nine per cent of the cases.

I do not mean to convey the impression that the American Indians were continually suffering from toothache, but the idea that they had "wonderful teeth" is so widespread that I take this opportunity to combat it. Dental disorders varied in their intensity from group to group.

In a study of several Indian tribes, Leigh[18] obtained data on the relationship of dental diseases to the type of food eaten. He chose crania from prehistoric groups who lived under natural conditions. Among the Kentucky Indians studied, a sedentary group living on corn and by hunting and fishing, he found considerable wear of the teeth, many alveolar abscesses, some caries, and some pyorrhea. In Sioux crania, predominantly meat eaters, he found relatively little wear of the teeth, few examples of caries or alveolar abscesses, and pyorrhea was present in only thirteen per cent of the crania. A group called the Arikara, who, although mainly sedentary, were also buffalo hunters, showed considerable attrition, many alveolar abscesses, considerable caries, and thirty-three per cent suffered from pyorrhea. Among the Zuñi, almost wholly agricultural, Leigh found moderate attrition, caries in seventy-five per cent, alveolar abscesses in fifty-two per cent, and pyorrhea in fifty-six per cent.

In support of this view that there is a direct connection between type of food and dental wear, is the investigations on Eskimo teeth which show that among the Eskimo crania, those least subjected to the white man's foods and living chiefly on meat, cavities and other causes of toothache are uncommon. Where alveolar abscesses and pulp exposure are present the cause can be assigned to wear produced by chewing of skins to make them pliable, and use of the teeth as implements in performing other domestic duties. Modern Eskimo teeth show a much greater proportion of dental caries and of loss of teeth.

An examination of the skeletal material from other localities in the United States yields the same conclusions in regard to the den-

tal health of the Indians. Of course there are many examples among the Indian crania of excellent sets of teeth: so are there among the whites. Many of the present-day Indians are convinced that their ancestors had better teeth. They believe that the white man's foods have caused this degeneracy among them. In mingling with the Hopi tribe a few years ago in Arizona, I was so strongly impressed with the glittering display of gold teeth that I asked a descendant of one of their chiefs if it was the fashion to substitute gold for the natural teeth, or if it was a necessity. I was informed that, alas, since his people had taken to hot coffee and other luxuries of the white man, it was a necessity. Since the teeth withstand the weathering and other destructive processes better than the bony skeleton, it is only natural that knowledge of middle American dental disorders should be more complete than our knowledge of skeletal pathology.

The front teeth of the ancient Maya were worn down in many cases almost to the gum line, while the molars were little worn, although heavily coated with tartar. Gann[18] says that this molar attrition is so marked among the modern Maya that they say "an old man eats two rubbing stones and six rubbers during his life."*

The ancient Maya practised tooth filing, which was performed on the incisors and the canines, by old women who used stones and water for the operation. They were also the first to prepare cavities in the living teeth for the reception of inlays. These inlays, which were put in with a cement, were made of such variety of materials as jadeite, hematite, turquoise, rock-crystal, obsidian, iron pyrites, and gold. The inlays were purely ornamental and were placed in the upper incisors and canines.

Zelia Nuttal[4] in a translation from Sahagun, describes the art of dentistry as practised among the ancient Mexicans. "Inflammation of the gums is cured by lancing them with an obsidian knife and rubbing in a little salt with the finger." In toothache they applied a hot application and lanced the gum. "If these remedies do not suffice, draw the tooth and put a little salt in the hollow place." This remedy contained capsicum, which is used today as a counter-irritant and salt as an antiseptic. "In order to avoid the above disease (caries) it is well to avoid eating very hot food. If

* Corn is ground between a flat stone and a rolling stone.

hot food is eaten, do not drink very cold water immediately afterwards. Always clean the front and back teeth after eating, also employ a wooden toothpick. Use cold water and salt for cleaning the teeth and rub them frequently with a cloth and some finely ground charcoal."

From the foregoing it should be clear that the American Indian, far from being a red Apollo was after all an ordinary human being, who, in his struggle to keep his stomach filled and his scalp intact, encountered diseases and ailments which vex and beset modern man. Some of his ailments are distinct problems to medical science today, and we are patiently awaiting their analysis and cure. With this in mind it will be interesting to meet the medicine-man himself, to examine the viewpoint of the various Indian groups toward disease and see what steps they took to relieve their bodies from pain, and their attitude toward those individuals who undertook to perform a function somewhat similar to our own "medicine-men."

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CHAPTER III

RELIGION, MEDICINE-MEN, AND DISEASE

BEFORE taking up in the next chapters, the subject of the medicine-man or shaman and his functions and practices, it is necessary further to prepare the ground by examining briefly the basic religious idea of the American Indians, if we are to understand how and why the medicine-man, disease, and healing were inextricably bound up with the religious concepts of the various groups.

The conception of disease by the American Indian corresponds to that which prevailed in the Old World two thousand years ago. With other primitive races he regards disease as a visitation of some ill-defined spirit or more material object that gained access to the body, and naturally the process of getting rid of, or eliminating, this malevolent influence or substance constitutes the art of medicine. One of the main functions of the medicine-man is to drive out of the body these deadly substances or spirits of evil—as in the parable of the facetious man who said his name was Legion, "because many devils were entered into him. . . . Then went the devils out of the man, and entered into the swine; and the herd ran violently down to a steep place into the sea and were drowned." And such in principle to the present day is the Indian's conception of disease and its cure.

It is more difficult to write of a "primitive" religion, because the word alone has so many different meanings. In general, it may be said that religion is a recognition of something which transcends the known, the expected, or the natural. It is an acknowledgment of the Extraordinary, the Mysterious, or the Supernatural.

In general, it may be said that the basic principle underlying the religion of the American Indians attributed supernatural or magical powers, intelligence, and even life to many or most animate and inanimate things. Accompanying this animistic state of mind was the occurrence of shamanism, for, quite logically, if life or supernatural powers be credited to inanimate objects, one must have some medium for controlling or, at least, communicating with the supernatural powers residing in rocks, trees, lakes, storms, and the like.

The medicine-man or shaman was this medium who obtained his alleged power from the spirits. He was a sort of middleman or agent who could, by means of his special powers and his special relationship with the supernatural world, perform many acts contrary to, or different from, normal experiences or daily events. He could read the future, make the game plentiful or the harvest insufficient, avert catastrophes, and cause droughts or floods. But his most important function was to cure or cause illness and to combat and prevent death, since it was often believed that disease and death could, by invoking the aid of spirits through the medium of the medicine-man, be dispersed and thus overcome.

Among the simpler or more "primitive" tribes, such as the Eskimo, the medicine-man was an important, outstanding person; while, among the more "civilized" groups, such as the Mayas or the Incas, the shaman or medicine-man was not so supreme or prominent, and played only a minor rôle in the religious life of his community.

It is interesting that the emphasis of the religion of the various groups of Indians would depend in large part on the aspects of life forced on them by environment. The Indians of the Southwest (Arizona and New Mexico) with their complete dependence on agriculture, possessed a religious life with interests, aims, and ceremonies entirely different from that, say, of the Eskimo, who hunted and fished and whose religion centered about their medicine-men.

To gain an insight into the power and functions of the medicine-man, it is necessary to understand that his power depended upon a more or less close connection with the supernatural or spiritual world.

The shamans received their power from the supernatural forces, which guided and decided men's destinies, both intentionally and involuntarily. The most common methods were by deliberate searching or seeking, by dreams, and by trances.

For example, a person desirous of becoming a medicine-man might attain this goal by searching for outside power, instead of having it given him during a dream. Thus, a person desirous of securing power from the supernatural forces would spend a night or so on the top of a high mountain peak; or would bathe alone at

night in lakes or rivers known to be inhabited by monsters. The supplicant for power might fast, wail, pray, torture, or disfigure his body. If his request was granted, a spirit messenger in human guise would appear and give him special directions for gaining whatever ends were desired, such as martial glory, ability to control the supply of game, or power to cure disease.

This method of seeking for power, rather than receiving it in a dream, is shown by the following quotation, taken from Walker:[1]

To seek a vision one should strip and wear only a robe, a breechclout, and moccasins. Clothed thus, he should take a pipe, smoking materials, and a knife, and go to the top of a high place where others are not likely to intrude. There he should remove every living or growing thing from a space on the ground sufficiently large for him to sit or lie upon. Then he should go to this space and remain on it until he has a vision, or until he is convinced that he will have none. When he enters the cleared space, he should invoke the Four Winds in order that they may not bring inclement weather upon him. Then he should await a vision, meditating continuously upon his quest. He may invoke the gods, verbally or mentally, either in song or prayer. . . .

The vision may come to him, either when he is awake, or when he is asleep. It may appear in the form of anything that breathes or as some inanimate thing. If it communicates with him, it may speak intelligibly to him, or it may use words that he does not understand, or speak in the language of birds or beasts. By something that it says or does it will make known to him that it is the vision he seeks. . . .

Or, the future medicine-man might dream that he was visited by an animal, a deceased friend or relative, or some spirit animal or bird, and from this connection with supernatural forces gain his power. Such a spirit as appears in a dream is sometimes called a "guardian spirit."

Obtaining supernatural power by means of dreams is well illustrated by the following material taken from Kroeber:[2]

Shasta (Indians of California) shamanism and ideas of disease and control of spirits are very similar to those obtaining among the northwestern tribes.

The shaman was almost always a woman. . . . The inception of the acquisition of supernatural power was invariably by dreams, and in these dreams a former ancestor who had herself been a shaman frequently or regularly appeared to the woman.

Catastrophic dreams also soon asserted themselves, and after a time swarms of yellowjackets were seen. This last type of dream was regarded as a conclusive proof of impending shamanistic power, the insects being interpreted as spirits. . . . A persistent refusal of the dreamer to accept the power thrust upon her by the spirits would result in her death.

An important method of gaining supernatural power was by means of a trance. A man might be out hunting or perhaps traveling in a desolate spot, when an appearance or a phantom or spirit might suddenly become visible. The man falls unconscious, and during his trance a spirit instructs him in the arts and ways of a medicine-man. After receiving his supernatural power, the future medicine-man is weak or demented, but subsequently becomes normal and is able to control supernatural forces.

A typical case of this kind, taken from the life of the Sinkyone Indians of California, follows:[8]

One man, for instance, returned from hunting with bleeding nose and mouth after a delay that had caused his family to fear for his safety. Converging deer trails led him to a house in the rocks, he recounted, with deer hair and dung lying deep. When he faced two condors with red-striped breasts and spread wings, he fell unconscious and lay until night. He sang with reference to this experience until a dance house was erected for him and older colleagues made him into a skillful medicine man. His success was equal at curing sickness, affecting the weather, succeeding in the hunt, winning at play, and foretelling the future . . .

The ability to have a revelation was not always the prerogative of the shaman, but could be sought for by all men, as among some of the Plains Indians. But visions, in some form or another, seemed to be important among most New World tribes.

Since it was believed by many groups that the medicine-man was not only able to cure disease but also to cause sickness and death, it is not surprising to learn that a medicine-man might be put to

death if more than two or three of his patients died. Sometimes, the death penalty was not insisted upon; but if the medicine-man failed to effect a cure, he had to return the fee, which he had collected in advance.

What caused illness and death? Naturally, the Indian's conception of disease was different from that held today by some educated people, but was not so unlike that of many modern European peasants or American farm-folk.

The Indian possessed a large measure of common-sense. He knew that many natural conditions would or might affect him adversely. For example, he realized that extreme exposures to heat or cold were injurious, that man needed food and water in order to live, and that certain plants and animals, as well as other men, could easily make him suffer and even cause him to die. Sickness that arose from such causes was often understood and regarded in a sensible manner. Any illness or pain, the origin and nature of which was not readily understood or appreciated, was viewed with fear, and appeals to a supernatural agency or power were resorted to.

The idea concerning the cause of disease and of death which was most widespread in the New World was that which supported the belief that some unfriendly individual had caused a small material object to enter another person's body. The extraction of this object was the main job of the medicine-man. This removal was most frequently accomplished by sucking on the irritated or aching spot directly with the mouth, or by means of a tubular stone or pottery pipe. Since the material object, causing the agony and illness, had entered the patient's body without leaving any wound or trace of its ingress, it was necessary and possible for the medicine-man to suck it out in the same manner. Thus the power and skill of the shaman was demonstrated. The disease or pain-causing object might be a small stick, a piece of bone, an insect, a pebble, a splinter, an arrow, a maggot, or a bit of hair. After sucking out the object which caused the pain and illness, the medicine-man usually showed it to the patient, relatives, or friends, after which it was destroyed or retained by the shaman for personal use.

Sometimes this healing process was accompanied by elaborate ceremonies many days in length, and often the treatment also in-

cluded singing, dancing, blowing, kneading, prayers, and incantations.

Most of the tribes have some special medicine song which is sung by the medicine-men of the tribe when illness occurs. These songs are really prayers directed to the Great Spirit, but which react most powerfully on the patient. They usually begin in a low, sometimes tremulous tone of voice, accompanied by the muffled beat of the medicine-drum. The words are frequently repeated, to produce a soothing effect, as in our lullaby cradle songs. Sometimes the rhythm as well as the words tend to soothe, reassure and to give confidence of recovery. Typical of this variety is the Tjahalla or spirit cure, the medicine chant of the Apaches,* which has the reputation of having affected numerous and wonderful cures among this people. This song is best known to us by the interpretation of the accomplished Indian Princess Watawaso, daughter of a Penobscot chieftain, who has sung it before numerous audiences. It begins as a quiescent:

Never despair, banish all fear,
Clouds in the sky, soon they pass by,
Watch for the sunlight with joy and delight,
Mother Sun is our guide.
Never despair, banish all fear,
Be of good cheer, help will be here.

Then comes the inspiring note in which the patient is asked to join:

Sing with us, sing with us, smile with us, . . .

Finally, the calm of hope, as in:

Drop, drop, drop, drop, drop, drop,
Cheerful and bright, look for the light,
Hope for the best, take a good rest.
All will be well, all will be well.
Doubt and fear, you must dispel.
All will be well, all will be well,"

In some regions of the New World, soul-loss (soul-kidnapping, or soul theft) was supposed to have been a cause of illness. The theory underlying this idea is that if one's soul is lost or stolen by

* From *Apache Medicine Chant;* Carlos Troyer. Copyright 1914 by Theodore Presser Co., Philadelphia. Used by permission.

a ghost, enemy, sorcerer, or unfriendly medicine-man, the owner becomes ill and will eventually die unless the stolen soul is returned to his body. It is the function of the medicine-man to recapture this kidnapped vital principle and restore it to his suffering patient. Very often the doctrine of soul theft is united with that of the intrusion of a material object. The shaman then has a double duty to perform, namely recapturing the lost soul, and sucking out the disease-causing object.

I once knew an intelligent looking Zuñi Indian, a medicine-man of local celebrity, who told me in quite a matter-of-fact way that he had two homes and that he lived "up there," pointing to the sky, sometimes and felt very comfortable while there and learned many things that he might otherwise not have known. Then he came down and lived here with his tribe and cured them of many diseases. This ascension was verified by other members of the Zuñi who said when he went "up there" no one could find him until he came down.

This tranquil state while "up there" described by this Indian reminds me of the well-known hymn of the John Wesley period:

> When I can read my title clear to mansions in the skies,
> I'll bid adieu to every fear and wipe my weeping eyes.

This Indian not only had a clear title to his home "up there," but could go and come at will.*

In addition to these two widely held ideas concerning the cause of disease (disease-object intrusion, and soul-loss) there were three others, which deserve mention. These are: (1) Sorcery; (2) Breach of taboo, and (3) Spirit intrusion.

* As I proceed with this study I am more and more impressed with the close similarity between the Medicine-Man of the American Indian and some of the early white settlers. As a small boy I knew a wheezy, asthmatic old man called "Doctor" X, who owned the adjoining farm. How much "doctoring" he did I do not know, but he used to quote Aristotle as his latest medical authority. He combined the dual offices of doctor and preacher. Of a Sunday if the pulpit were not occupied by the regular officiate, he, unless dissuaded, would fill the vacancy. His star performance, however, was during the winter "revival," when in wrestling with the powers of darkness he would work himself into a frenzy or ecstasy as the occasion required. In these encounters he sometimes was overthrown—at least temporarily. Then writhing and struggling on the floor he would remain until he overcame his satanic Majesty.

I might add that these performances were not on the regular bill, but were regarded as an exuberance of zeal and were condoned with pious consideration.

Sorcery was held accountable for sickness which resulted from the magical manipulations or influences of witches or sorcerers. Among the Yurok Indians of California there were some people who acquired a charm with which they could destroy those whom they envied or hated. This end was accomplished by placing the deadly charm on the end of a little arrow and shooting it with a toy bow towards the house of the person to be killed.

Breach of taboo was a serious offense which terminated in sickness and sometimes in death. This kind of sickness was felt to be a punishment sent by the gods for breaking some religious or social custom or law. It mattered not whether this grievous sin was intentional or not; sickness resulted regardless. It was sometimes possible to cure these innocent offenders by means of confession. Breach of taboo, among the Crow Indians of the Plains, was felt to be a cause of sickness and trouble. For example, a person who ate of a forbidden food, such as choke cherries, or a special part of a buffalo, was almost certain to be ill.

In certain regions, disease and death were believed to be caused by the intrusion of evil spirits, ghosts, or demons into the body. The Eskimos of the Bering Strait region believe that the ghosts of the dead possess evil powers. An Eskimo father, for three months after the death of a son, may not drink from an uncovered cup for fear of swallowing some ghost impurity, which would cause certain death.

Many tribes were aware of the fact that a strong, well-developed body was better able to resist ordinary ailments than a weak, underdeveloped body. Therefore, in some regions youth were inured to all sorts of hardship so that as men they could be healthy and better warriors. Brief illustrations of this point, as among the Blackfoot Indians of North America and the Incas of Peru, are herewith presented.

From birth the Blackfoot Indian had his body toughened to resist injury, cold and hunger, heat and thirst. Rough usage, therefore, became his accustomed mode of living. Later, while yet in childhood, he was schooled to endure pain with stolid indifference. He was plunged into cold water, compelled to swim, while his body was scarified and stung with various irritating substances. A

whimper classed him among the women of the tribe, while the bold, unflinching bearing of the warrior was extolled and held as a model for imitation. Nor were the women less inured to pain and suffering than the men, for although less conspicuous, almost retiring in their bearing, they, excepting a favored few, supplied the necessities and comforts of the lodge, dressed skins, made clothing, and educated the children in tribal lore, while the braves were on the warpath or the hunt. Concerning this, an educated Indian of the Blackfoot tribe, Long Lance,[3] says*:

Our moral training was entirely in the hands of our mothers. They told us about the Great Spirit, and that when we grew older the Great Spirit would delegate some other good spirit whose home was in the spirit world to be our guide and to look after our well-being. This spirit would give us "medicine" (which means some lucky charm), as well as our medicine song and our death song, the former to be sung at all times when in trouble or distress; the latter when we were called on to die.

Thus the Indian youth was trained to physical endurance, and as the full estate of warrior was attained he often [of his own accord and to gain the further approbation of his fellows], subjected himself to greater feats of endurance. Running long distances, swimming against the current or the tide, and later performing feats in horsemanship, all tended to make the American Indian, before and after the arrival of the European, almost invulnerable to exposure, ordinary injury, or disease. Even at the present time [or at least within the memory of men still living] running as a devotional or religious observance is still in vogue.

In the region of the Andes about Cuzco, the products of agriculture, fishing, and the chase were the main food supply sources, and excepting in a few favored localities this entailed sufficient labor and hardship to inure the common people from physical decline. But not so with the royal house and the nobility—these at the time of the Conquest were showing the effect of their luxurious mode of living. To obviate this decline the youths of the nobility were drilled in the art of war and other hardening processes.

Markham[4] describes a formative or hardening method as prac-

* *Long Lance* by Chief Buffalo Child Long Lance. Cosmopolitan Book Corporation. Courtesy of Farrar and Rinehart, Inc.

ticed in the fourth rite of the year by the Peruvian nobility and their kings, in vogue in pre-Columbian days. It continued from September 22 to October 22, the season of the vernal equinox in the southern hemisphere. The occasion was the most important and therefore the most imposing and magnificent of the year, for the youth were assembled to perform feats of physical strength, and to be received into the proud estate of manhood. Markham says that at dawn the high priest appeared at the main entrance of the Temple of the Sun arrayed in the gorgeous robes of his high office, woven from the wool of the vicuña and resplendent with a breastplate of gold on which the artificer had depicted the zodiacal nature of the feast. The youths were to be given breeches made of aloe fiber and sewed with sinews of the llama. They then marched to a ravine, where they were met by relatives and friends; here the aspirants were severely flogged to test their endurance and to initiate them into the hardships of adult life. This was followed by songs and such mirth as the flogged youths could display. After this ceremony the entire company returned to Cuzco, where the young men reassembled in the great square where they were again flogged. The insignia of the Inca was then brought out, dances followed and the people dispersed to their homes, bearing and partaking of the sacrificial llama from the altar. These hardening processes, with foot racing and other enduring feats lasted for a month. Of all, the foot race was the most enamoring and possessed a flavor of romance. Preceding this, the youths passed the night in a deep ravine or gorge. The following morning they repaired to a hill two leagues from Cuzco. Each held a staff mounted with gold or bronze. As a morning prayer, five lambs were sacrificed to the Creator and to the Sun, which was again followed by songs. The course of the race was a long one, one-and-a-half leagues, and at the end maidens, selected for their beauty, were stationed with supplies of *chicha* to refresh the exhausted runners, singing songs which bore the refrain, "Come quickly, youths, we are waiting for you." The runners, it is said, frequently numbering several hundred, first stood at the bottom of the hill in a row. The starter was an official of high rank gorgeously attired, and at a signal hundreds of "aspirants ran like deer across the plain—a

thrilling sight. Few people, in the New or Old World, could equal the Peruvians in speed, and the competition to be the first to receive drinks from the hands of beauty was very close." More songs with merriment followed, with more disciplinary flogging and in the evening all returned to Cuzco, forming a grand procession headed by one of high office bearing the insignia of the Royal Inca. This was the climax of Indian hardening and disciplinary training in this region and it is the most humane, the most pleasing and colorful of the rites of the aborigines of the Americas. In spite of this hardening process, or because it was not continuous, the luxurious Inca nobility were not noted for hardihood, and this was beginning to extend to the common people for their infant mortality was unusually high and who from their paternal form of government, we are told, were a docile and easy going nation which readily fell before the invading hosts from Spain.

Thus, it should be clear that religion, medicine-men, and causes and cures of diseases were all closely and logically linked together in the mind of the American Indian. A recognition of the Extraordinary, the Mysterious, and of the power residing in animate and inanimate things to cause sickness and death, would create the need, as well as the desire, for communication with this spirit world, so that the powers unfriendly to man could be cajoled or bullied into doing good rather than evil.

Music in the running brook we may have, and sermons in stone too, but the Indian, untutored in some of the fine arts as well as in the laws of gravitation, was nearer to nature than are we. To him the brook was endowed with animate life, so it murmured and moved like other wild life in the forest, and bore his canoe along in its course. The rocks flashed forth fire on provocation, hence might be their claim to animation. For to the North American Indian, as with us, the winds personify divine power—the north wind was the cold breath of a spirit or god whose name varied with the tribe, a monster who lived far to the northward in a land of perpetual snow and ice and who with his breath froze the streams and in autumn dried up and scattered the leaves; while the sharp east wind was the breath of a being scarcely less potent but equally endowed with a personality, who in his wrath blew and the tornado devas-

tated the land and laid low the forest trees with its cold, moist breath. So, too, was she of gentle breath, whom we name Zephyrus, a soothing goddess who whispered softly to the North American Indian from her home in the southland whereupon the leaves and every green and flowering thing answered to the call, each in its own peculiar way—but not the less animate.

Like the wild bird and the beast, like the cloud and the forest tree, the primitive savage is a part of nature. He is in it and of it. He studies it all through his life. He can read its language. It is the one thing that he knows. He is an observer. Nothing escapes his eye. . . . He is not a reasoner. He is quick to notice the connection between two events, but often he does not know what that connection is. Thus it may be seen that to the Indian the Great Spirit was supreme, while the sun and moon, as well as certain animals and inanimate objects were endowed with a mysterious power, some even sacred, and all to be invoked in time of need. The trees spoke in a language of their own; the cataract roared in a tone both menacing and terrible; the lightning flashed in anger and the thunder broke in deafening peals; these and other objects spoke in a language understood only by the few—the wise, the especially endowed, the mystery-men of the tribe. Thus, there came into being the office of the medicine-man, and he acted as an intermediary between the people and the supernatural world.

It seems conclusive that the Indian presents a high type—favorable to himself and to the medical man who treats him. His robust constitution tends to a speedy cure and the Indian is a grateful and generous patient whose honorarium is of his best and not infrequently is his all. The strongest when ill are not infrequently the most easily despondent and easily frightened, and the Indian is no exception to this rule. At the same time he has the most abiding faith in the shaman or medicine-man of the tribe, who, according to prevailing belief, is in communication with the spirits both of good and evil; who commands them; who propitiates them when necessary. These spirits according to the Indian belief even of today hold in their hand the destiny of men; who afflict some and restore others to health, and who are upon occasion let loose epidemics which, like thistle down, are borne on the wind and men

fall like trees in the path of the hurricane. These spirits of the air and below must be placated by song and dance, by rattle and beat of drum as well as by sweet incense, the smoke of tobacco which bears their supplications aloft and are pleasing to the good spirits both great and small. Then there are potent herbs, selected and gathered according to the traditions and prescribed rituals of the tribe, which are thought to be well nigh infallible and which have been handed down from generation to generation.

Finally, in the selection of him who is to mediate between earth and sky, there is one whom the "powers" have already called. For he is especially endowed by the Great Spirit to become the leader in all things spiritual, which to the Indian mind includes the art and practice of medicine.

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PART TWO

MEDICINE-MEN OF THE NEW WORLD

CHAPTER IV

THE ARCTIC

In studying the medicine-man of the American Indian, I have not gone to him as a teacher nor as a prophet of Israel, but as a humble seeker after the truth. I have endeavored to place myself in accord with the Indian's mentality, and at the same time to glean the real from the apparent. One may discern certain features of the medicine-man which may be looked upon as the quickening germ from which medicine as a science grew. Some of these practitioners of medicine among the Indians, had they a common written language to record and a desire to impart, would have left behind them many valuable observations which others might utilize today. As some of these men possessed a high type of mental development, with ability to treat disease, they might be looked upon as the Sydenhams, the John Hunters, and the Ambroise Parés of the American Indians. They were more occupied with the arts of peace than with war or the chase. They possessed little knowledge of scientific medicine, nor did the European possess very much at that time. While, according to some observers, the pathology of the Indians was extremely rudimentary, as it was the world over, yet they knew that respiration and circulation were essential to life, and that the lungs performed the first, while the heart and blood vessels were essential for the last named. They knew the general function of the brain and were familiar with the regions of the body most vulnerable in attacking an enemy. While it is to be regretted that written records of the Indian medicine-man have not come down to us more fully, yet as it is, we may rely on the medicine as practiced at the time of the discovery in the fifteenth century to represent fairly well Indian medicine which had come down generation after generation with little or no essential variation from a remote past.

As might be expected in duties so diversified, all medicine-men were not equally capable of performing them. This gave rise to a certain division of labor and also to a certain extent to the exist-

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ence of what might be termed specialties such as existed in the ancient days of Egypt. Whitebread[1] attempts roughly to class the groups as priest-doctors, prophet-doctors, and herbalist doctors.

While not attempting to draw a sharply defined distinction between the various types of medical, or mystery-men and women of the American Indians who ministered to the sick and injured, yet there was a distinction, however ill-defined; because some majored in medicine as we understand it, some in magic and the supernatural, others in manual methods of cure, while each type merged almost imperceptibly into the other and all were permeated with superstition. In fact, superstition was the ground-work of all—the superstructure was that obtained from observation, experience, and the precepts of the tribe handed down from a remote past.

It must further be borne in mind that medicine as it existed among the American Indians was not so well defined nor was it organized as it is with us now. There were no written records nor instruction north of the Rio Grande other than one might obtain as above described, or from personal experience. The only instruction at all resembling our most primitive medical schools as given by Leh as found among the Cree nation in the southeastern part of the United States.[2] Neither was there any sharp, well-defined line of demarcation to distinguish between those who might and those who might not practice the art of healing. Many, especially among the squaws, were more or less adept at making decoctions and poultices and in gathering plants and other medicinal substances. Some were even given to sorcery and sooth-saying which with them were fundamentally associated with medicine. The state of medicine among the Indians was similar to that which obtained among the early whites, for in both, when illness occurred, the patient was usually given a cathartic or an emetic, followed by a sweat-bath; further, among the white settlers his feet at least were immersed in a hot smartweed infusion, and he was given copious draughts of hot boneset tea, or other less nauseating concoctions. Usually the patient recovered; if not, the medicine-man or, among the first settlers, the doctor, if one were procurable, was called.

I. THE ARCTIC AREA

The Western Eskimo[8]

A great teacher once said to his people, "Unless ye become as little children ye cannot enter the kingdom of heaven." So, too, in entering into a full understanding of the Indian medicine-man of Alaska, you as a little child must look on him as living apart in wonderland. The Eskimo, like all other peoples of the world, suffer from various pains, injuries and illnesses. As in our own civilization, certain men began attempting, very long ago, to cure these ills, and a profession of those devoted to such efforts was developed. These medicine-men or shamans, either men or women, receive special training and preparation, but their methods bear little resemblance to those employed by our own medical profession. In the first place, the ordinary layman cannot become a medicine-man. He must be selected by the supernatural powers which rule the universe; he must be "called" to the profession, just as in the days of our grandfathers, people were "called to the ministry." In this way the field never becomes crowded and all the medicine-men have about an equal amount of practice.

One of the commonest methods of becoming a medicine-man is to have one's attention drawn to some remarkable circumstance. For example, one venerable shaman relates that he was led to enter the profession by the fact that his sleep was uneasy because of strange dreams and fancies which seemed to fill his mind. He remarked that often when he awoke in the morning he found himself lying in a different place from that where he had gone to sleep. He concluded from these curious experiences that the supernatural forces wanted him to become a shaman.

Sometimes the control that a medicine-man exercises over the spiritual world may be bought, sold, or inherited. A shaman may be paid to teach a candidate how to obtain control over certain spirits, although the shaman never guarantees that the spirits will obey this novice. A shaman may bequeath a knowledge of the medicine-man's procedure and technique to his son, although the acquisition of actual healing powers must be obtained in other ways. For example, the candidate must go out to some forsaken spot and invoke the spirit, who may appear, and who will tell him that its

power is at his disposal. This power, plus the procedure which is purchased or inherited, will then cause a man to become a noted shaman. Thus, one man, who had purchased several spirits, used to wander about alone and summon the spirits to come to him. For a long time none came. But one day several appeared. They resembled young men. Their instructions consisted of a warning never to eat of the stomach of a caribou, but to eat well of its brains. If this injunction were obeyed, the spirits promised to obey the aspirant and to bestow magical powers upon him.

It is commonly believed by the western Eskimo that the chief causes of illness are: (1) Soul loss; (2) Entrance into the body of a disease-causing object; and (3) Eclipses of the sun or moon. The loss of one's soul is a very serious matter, and unless the medicine-man can recapture it, the patient dies. The shade of a dead man may steal the soul of a living person. When this occurs, it is the duty of the medicine-man to pray to the spirits to return the soul; to lure it back by means of presents; or to go himself to the land of the dead, seek out the stolen soul, and bring it back to the patient.

In case a sickness is considered magical in origin, it is most easily cured by means of counter-magic. Often enough, a correct diagnosis is considered enough to arrest an illness, especially if the patient obeys the shaman's orders.

If a piece of bone, wood, or other object enters the body by magical means, sickness, or at least a local pain, ensues. The shaman is called, diagnoses the trouble, and then cures the ailment by sucking the skin where the pain is most pronounced. After a bit of sucking, the medicine-man takes the disease-causing object out of his mouth and shows it triumphantly to the patient, who immediately feels better.

Lunar eclipses foretell the coming of an epidemic; and the longer the duration of the eclipse, the more severe and protracted will be the epidemic. The shamans gather together at once in order to try to find out why an epidemic is to be visited upon their people. Such a misfortune is generally felt to be due to the breaking of some tribal taboo, or to the wickedness of some member of the community, or to sorcery. The only sure way for the shamans to

find out the true cause of the threatened epidemic is to travel to the moon and to inquire the cause of the man who lives there. Two or more medicine-men make this journey, because one, alone it is believed would be blinded and embarrassed. One may either climb up tall mountain peaks until the moon is gained, or may fly directly up to it. The latter method is considered quicker, but may be performed only by the most noted and powerful shamans.

It is interesting to note that some of the Eskimos believe that a dangerously unclean essence or gas emanates from the moon or sun during an eclipse. If this gas collects in any pots, pans, or utensils of any kind, it will cause sickness. The women of the community know of this danger, and fend it off by turning upside down all their cooking dishes during an eclipse.

The Eskimos firmly believe that their shamans can travel to the moon. This credulity is exemplified by what Stefansson relates.* One day when I was explaining to my Eskimo that there were mountains on the moon, and going into details of the moon's physical characteristics, the account I gave did not coincide with the opinion held by my Eskimo listeners, and they asked me how I knew these things were so. I explained that we had telescopes as long as the masts of ships and that through them we could see things on the moon's surface. "But had any white man ever been to the moon in person?" I was asked, and when I replied that no one ever had, they said that while they did not have any telescopes as long as ships' masts, yet they did have men, and truthful men, too, that had been to the moon, walked about there and seen everything, and they had come back and told them about it. With all deference to the ingenuity of white men, they thought that under the circumstances the Eskimo ought to be better informed than the white man as to the facts regarding the moon.[4]

If a person becomes ill and the shamans cannot diagnose the sickness as being due to soul-loss, the intrusion of a disease-causing object, or to lunar eclipses, another curious method is resorted to in order to determine the character of the illness. A cord is attached to the patient's head or to one of his limbs as he lies outstretched. By lifting the affected part with the cord, the character of the dis-

* From *My Life with the Eskimo* by Vilhjalmus Stefansson. By permission of The Macmillan Company, publishers.

ease is diagnosed, for if the part is affected, it will be heavy and difficult to raise. If a man has a pain in his leg, the shaman ties a cord to the patient's foot. He then tugs away, meanwhile angrily asking questions of the spirits. If the shaman asks the correct question of the spirits, that is, makes the right diagnosis, the leg will be easy to lift, and thus the question is felt to be answered in the affirmative. If not, the leg will be difficult to lift.

Blood-letting by means of stone lancets to relieve aches or swellings, uttering magic formulas, and rubbing the saliva of a strong, well friend on the affected part, are more common methods of curing disease. For snow-blindness, a counter irritant is used, such as dense smoke from burning heather.

In addition to curing diseases, the medicine-men have other duties. They may change the weather, visit the land of the dead, make hunting successful, and bless fetishes which ward off danger and illness.

An Arctic explorer, traveling in Alaska, was overtaken by a severe storm. He took refuge in a village, where he found a shaman, who, for a price, agreed to change the weather. After darkness had fallen, the shaman enveloped himself, with the exception of his face, in a large gut shirt, and knelt on a straw mat in the middle of the men's club house. He then uttered a long speech in a loud tone; after which he withdrew his head inside his shirt and emitted an amazing variety of grunts, groans, and other noises. The shaman finally allowed his voice to die out in the distance, and arose and announced that there would be a change of weather in two days.

In order to maintain their prestige and to demonstrate their omnipotence, the medicine-men, instead of attending conventions and giving learned discussions, pretend to be burned to death, visit the land of the dead, and then to return to life. The following incident will give the procedure used in such an act.

A shaman, wishing to impress his community, decided to be burned to death and then to return to life. He chose two confederates who were ordered to build a hollow, square cribe of driftwood. The villagers assembled and observed that the hands and feet of the shaman had been securely bound, and that a large mask

covered his face and chest. After the people had placed the shaman inside the drift-wood crib, they were ordered to withdraw to the ceremonial house. As soon as the crowd was out of sight, the confederates, quickly untied and released the shaman, so that he could conceal himself near by, then substituted for his figure a log of wood, capped by the mask he had worn. The fore-part of this crib-pyre was then lighted, and when smoke and flames rendered the inside of the crib obscure, the people were called to witness the fact that the shaman was still inside the crib and was being slowly burned. The people could make out the outlines of the mask, and felt satisfied that the medicine-man was actually inside the burning crib. In the meantime, everyone, except the confederates, was again ordered to withdraw to the ceremonial house and remain there until the next morning. At daybreak, the shaman reappeared before the people and was thereafter considered a very powerful man.

However, the life of the medicine-man is not always an enviable one. Although he may be greatly feared and respected, yet too many failures to cure disease or to render sound advice may, and often does, lead to his death. Moreover, if a shaman uses his power for working evil against his village, he will surely and quickly be put to death.

The Eastern Eskimo[5]

Every medicine-man of the eastern Eskimo is expected to help train worth-while people in the ways of the shaman. This is done for a price. The training which the initiate buys consists not so much of actual healing methods, but merely in the preparation for acquiring power over certain spirits. The future medicine-man is taught how to go in great secrecy to fetch a special kind of sea-weed from the beach; how to wash himself with it; and how he is to go to a quiet spot in the mountains to select a grind-stone. The grind-stone is a small rock which is to be used for rubbing against the flat surface of a cliff or boulder. The initiate grinds away by the hour, because this is the traditional method of summoning spirits. During all the time he is rubbing the stone, he must fast, although several days may elapse before a spirit appears. Every summer this procedure is repeated, and every summer another spirit

is acquired. These spirits belong to the novice and may be used only by him. Payment for such instructions as are given may include bear and seal skins, sledge and dog, or a seal bladder.

The mystic or sacred language which the shaman uses in conversing with the spirits is gradually picked up by the novice when attending all the ceremonies. These sacred words are not nonsense syllables, but are obsolete Eskimo words, which, when employed, contribute a solemn and mystical character to the gathering.

The notions of the eastern Eskimo concerning the causes of disease are similar to those of the western Eskimo. They believe every part of the human body has a soul. If a part of a man's body aches, it is said to be "sick," that is, the little soul has abandoned that part of the body. The loss of a soul is regarded as due to one of two principal causes; either sorcerers have driven it out by magic, or a higher power, as the moon, has seized it, punishing the sick one for some sin.

Violation of a taboo is regarded as a cause of illness. If a person falls ill, a shaman is called. In the dim light of the house he strips off his outer jacket, clasps his hands, shakes his body, and utters strange sounds. Then he plies the sick person with questions, such as: "Did you work when it was not allowed?" "Did you eat of food which is forbidden?" "Did you hunt when you were not supposed to?" and so on. The sick person, who is supposed to answer truthfully every question, racks his brain in an effort to remember whether he has violated any taboo. If he has, he confesses: "Yes, yes, I have hunted when it was forbidden." The shaman then gives certain commands, so that atonement may be made. These commands amount almost to a penance. For example, the sick man may be told to adopt a sick child of another family in order to save its life; or the people of a whole village may be forbidden to wash themselves for several days, to clean their urine pots before sunrise, to eat venison, or to work on deerskins.

Another method of diagnosing illness is "head-lifting." Among the eastern Eskimo, "head-lifting" is practiced as follows: a thong is tied around the head of the sick person, who reclines on his bed. Then the medicine-man asks the spirits, which he controls, whether the patient had failed to observe a certain law; or whether he had

hunted when it was forbidden, and so on. If the spirits answer a question in the affirmative, the head may easily be lifted. If the answer is in the negative, the shaman is unable to move the patient's head.

There are very few actual herbs or medicines administered. Treatment consists mainly in relieving the patient's mind rather than in giving drugs. One remedy used by some of the shamans consists in laying a piece of burning wick upon the aching portion of the body and then blowing upon it to make it glow.

Tricks are used by the medicine-men to impress their followers seeking aid. When calling upon the invisible Powers to come to his aid, the shaman sometimes enters a darkened hut and hides behind a screen. He then creates a small, distant voice by means of ventriloquism. This type of voice is supposed to be that of the spirits talking to the shaman. When the hut shakes, the people believe that it does so because the invisible Power, summoned by the shaman, is approaching.

Another trick, employed by the shamans and which produces a deep impression on the people, is that which gives the illustration of self-stabbing. It may be described as follows: a very powerful shaman is asked to drive away Sedna, the mistress of the Underworld. The performance begins with incantations uttered within a darkened hut. Suddenly the shaman jumps up, seizes a mounted harpoon, and falls upon it in such a manner as to cause the observers to believe that the harpoon has pierced his breast. Blood gushes forth, stains the shaman's garments and spills upon the ground. After a time, he pulls out the harpoon and lies down on his bed and apparently falls into a deep sleep. Upon awakening, he shows everyone that his breast bears no evidence of a wound, although everyone saw blood gush forth.

Such an astonishing performance is easily explained. The performer fills animal bladders with blood and places them beforehand underneath his coat. The harpoon is jabbed into these bladders and the blood flows forth.

Another feat, which is a favorite one, is one which resembles the Houdini handcuff trick. A shaman has his hands tied together behind his back and a thong fastened around his knees and neck.

Then he invokes aid from the supernatural world. Presently his soul leaves his body and flies away for a visit. When the soul returns, the thongs are found untied.

If a medicine-man cures a sick person, he must be paid for his services. This payment may consist of skins, oil, sleds, harness, dogs' meat, or implements. If a cure is not affected, no payment is made. For this reason, the medicine-men are wary of taking cases which they feel sure are incurable.

Some people may believe that the practices of the medicine-men are mere shams; and that the people who are so credulous as to be taken in, very stupid. But one must remember that the people are trained to believe in the powers of the medicine-man, so that if he says his soul has been in the spirit world, his statement is accepted as true. Then the medicine-men themselves deceive the public so often that they deceive themselves. Shamanistic performances are usually given when intense emotional excitement reigns; so that anything may happen.

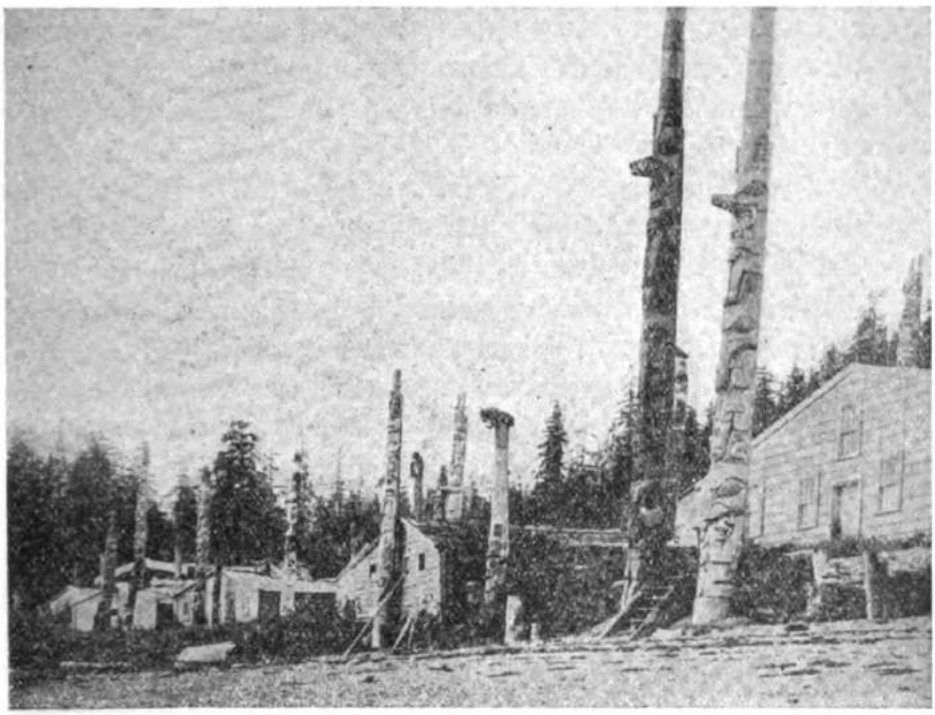
Their methods of "curing" people are crude and perhaps valueless; but it should not be forgotten that some of any healer's job, be he a medicine-man or a doctor of medicine, is to inspire confidence, change the mental outlook of the patient, and in some instances to give nature a chance to do the rest. To do this drugs are not always a necessity.

II. THE NORTHWEST COAST AREA[6]

On the narrow, heavily forested coast of British Columbia, there live seven tribes of Indians (Tlingit, Haida, Tsimshian, Kwakiutl, Nootka, Bella Coola, and Salish), who, as pointed out in Chapter I, have developed a homogeneous culture, quite different from, and little influenced by, any other North American culture. Of these seven, the Haida are most typical, because their position is geographically nearly midway north and south. Their medicine-men will be described as typical, while those of the Tlingit, who, while perhaps not so typical in every respect, developed shamanism to a high degree, will serve as a foil. I shall first treat of the Haida.

How are Haida medicine-men chosen? This distinction is generally handed down from father to son, or from maternal uncle to

nephew. Before a shaman dies, he reveals his secrets and his personal spirit-helpers to his successor. After the elder shaman has died, the novice increases his power by obtaining additional spirit assistants. This is accomplished in two ways: by walking alone in the woods and calling upon the spirits to come to him; or by ac-



Totem poles of the Indians of Alaska. Note the members of the Bear Society; to the left one indicates that the dweller inclines to the ways and dress of the white man. (Courtesy of the Smithsonian Institution)

cidentally winning the favor of a spirit. The following myth illustrates this last method:

There once lived a young shaman who had very little power. The people did not honor him. One time, while visiting a neighboring town, where there was a sick person, he was asked to cure this sick man, because all the other medicine-men had failed. The unsuccessful medicine-men made fun of the young shaman and caused him to stumble and fumble while performing. He saw that he could do nothing in this unfriendly atmosphere; so he got into his canoe and went away. As he paddled along he drank sea-water.

After awhile, being tired, he went ashore, captured a sea-otter, and cut off the right part of the tip of its tongue by a secret method. This he did to obtain more power. Then he went back home and walked up stream on foot. Suddenly he heard someone shouting to him. He searched and hunted, and finally heard a voice saying, "Put me together." Looking down, he saw the bones of a salmon. He took these up and blew upon them for some time. Soon the salmon struggled, came to life, and jumped into the river. In this manner he obtained power from this salmon, and became a more powerful shaman.

There are other ways of obtaining additional spirit assistants, but these are secret and are not divulged to white men. Any person who has inherited his father's or his uncle's spirits and right to be a shaman, and who procures for himself more spirit-helpers, is a shaman or medicine-man. When the influence of a particular spirit takes possession of the medicine-man's body, the medicine-man wears the mask and speaks the language of that spirit. If a spirit comes from the Tlingit country, the shaman speaks the Tlingit language, although in his normal uninspired moments, he may claim that he knows not a single word of Tlingit! Likewise, while acting as the mouthpiece of any particular spirit, he takes the name of the spirit. If another spirit displaces the first one, the shaman changes his name to that of the new spirit. In other words, when the spirit is present, the identity and individuality of the medicine-man are non-existent. Sometimes the spirits seek a man and he has to become a shaman against his will.

The Haida shaman wears distinctive clothes which set him off from other people. He wears a dancing blanket, carries a rattle, and permits his hair, which is never washed or combed, to grow long. He always wears a long piece of bone in the perforated septum of his nose. When called to treat a sick person, he carries a short piece of board upon which he beats time with a baton, and a carved, hollow bone through which he blows or sucks away disease.

As among most other North American tribes, sickness is believed to be due to the intrusion of a disease-causing object, such as a bit of wood, a piece of stone, some hair, or some other foreign

object. Likewise, illness is attributed to the loss of the soul or to the presence of a bad spirit in the body of the sick person.

If sickness is the result of some object in the patient's body, the shaman places his hollow tube upon the afflicted part, sucks vigorously, and by a sleight-of-hand trick, produces the object from his mouth.

If the patient's soul is lost, the medicine-man must seek it. He fasts four or five days and then walks about in the forest looking for the soul. When he sees it, he catches it between the palms of his hands and returns to the sick man, who lies covered by a reed mat. Relatives and friends who are present, beat time and sing and the medicine-man puts the soul back into the body. The patient, who in the meantime has been dosed with purgatives and deprived of food, is now allowed to eat first the tail and later the chest of a salmon.

If a spirit has gained entrance to a man's body by supernatural means, and the man falls ill, only the shaman is able to see the spirit and he can either blow it out by breathing on the affected part of the body, or can suck it out with his bone tube.

If a witch is able to secure saliva from anyone, it is believed she can cause the owner of the saliva to have a sore throat. When a person thus becomes ill, only the shaman can diagnose it as being due to a witch. The medicine-man then takes a live mouse and repeats before it the names of everyone in town, even the names of the children. When he mentions the right name, the mouse lets him know by some affirmative movement of its head. The evil-doer must then be killed, and the shaman so orders the people to do. As a result fights often take place, because naturally a man, who feels he is innocent, does not care to be punished by death. If the one accused of sorcery confesses that he took some of the patient's saliva and that he bewitched him with it, the people compel the witch to return it. The patient then recovers.

When a doctor writes a prescription the patient naturally hopes that the medicine will be of pleasant taste. But how would the following typical Haida prescription appeal to most of our patients today?

Upon rising in the morning one must go without his breakfast

and collect the following ingredients: (1) Four roots from two species of ferns; (2) Hemlock-bark from four different trees; (3) Bark from four different alders; (4) Bark from four different wild crab-apple trees; (5) Four mussels, shell and all; (6) Barnacles collected only from the east faces of four different stones; (7) Salt water caught in the hollow of the hand from the crests of four waves; (8) A handful of stagnant water; (9) Four young spruce trees about six inches high; (10) Four round stones.

The pharmacist must take all these ingredients home, speak to no one on the way, and on reaching his house pass around it to the left until he comes to the front door. Instead of entering there, he must circle the house once more in the same direction and enter the back door.

After entering the house he puts four stones in the fire. If one bursts or cracks, the patient will die. A pot containing all the above ingredients is then placed near the fire, and the contents warmed by means of the hot stones, which are placed in the mixture. This compound is then given to the patient, who drinks as much of it as he can for four days. If he improves it is good medicine. If not, another prescription must be compounded.

But how much more versatile is a medicine-man than one of our trained physicians! For the duties of a medicine-man are not confined merely to diagnosing and curing illness. He has many other duties to perform. For example, a shaman is able to foretell events and to see into the future; a shaman accompanies every war party, points out favorable places and times for attack, and warns of ambushes and other dangers. Likewise, a medicine-man can tell the people of the location of a stranded whale (a rare delicacy) and of a river where a good run of fish is to be had.

A Haida medicine-man does not have to wait months and years before collecting "for professional services rendered." He is canny. At the time he is asked to take a case, he is given presents and payment. The payment may consist of elk-skins, slaves, blankets, baskets, copper, or other useful articles.

Now let us pass on to the Tlinget Indians, the northern neighbors of the Haida. The Tlinget medicine-men are more powerful

and influential and even more dreaded than are the medicine-men among the Haida. As among the Haida, the right to become a shaman is hereditary and passes generally from maternal uncle to nephew.

When a medicine-man is in his last illness, his spirit comes to him and says, "You are going to die in five days now." The dying man then tells his nephew what spirits are to inspire him, how cures are made, how he can increase his powers, and how to use herbs.

After the old shaman is buried, all the clan assemble in his house, where they fast and keep clean (comparatively). After a stated time, all the clan sing, and while the singing goes on, the nephew of the deceased shaman falls over in a trance. The people all work a long time on him and finally he comes to. He is then a shaman.

A medicine-man may increase his power by obtaining many split animal tongues. These are combined with eagle claws, curious pebbles, and other articles, and are wrapped into a sacred medicine-bundle, which is carefully treasured. A Tlingit shaman is of high social rank, and may be possessed of many spirits at the same time.

The Tlingit Indians, like the Haida, believe that illness is due to one of the following causes: (1) Intrusion into the body of a disease-causing object (such as an arrow, a pebble, a bit of wood, or a fish bone); (2) Loss of one's soul; (3) Presence in the body of a bad spirit.

The treatment of sickness is much the same as among the Haida. When a medicine-man comes to treat a sick person, he first runs rapidly around the fire. While the friends and relatives beat drums, shake rattles, and sing. Then the shaman blows away or sucks out the illness. Sometimes he merely passes his hands over the affected parts. This treatment is generally preceded or followed by fasting and purging. If the patient's soul is lost, the shaman goes forth and walks in the woods until he finds it. He captures it by magical means and returns it to the sick man's body.

The medicines prescribed have very few medicinal virtues, and effect cures, if any, by their supernatural properties. A few examples will be given to show the truth of this statement.

1. Vines or stems on which berries grow in strings may be heated and held close to a cataract, which will then loosen up and fall out.

2. A slimy solution consisting of slugs dissolved in water is given to one who spits blood.

3. A compound made from a land-otter is taken for short-windedness.

4. A medicine made of certain flowers will, when taken, inform one of all that is going on in the village or in the house next door. A most convenient medicine!

Thus it should be clear that the medicine-men of the Haida and Tlingit Indians depend more on "mental-healing" than on the use of specific drugs. Many times good sense is combined with methods which depend on the aid of supernatural powers. But if a patient dies, the medicine-men place the blame on the spirits, which are sometimes too powerful to be controlled by even the most able of shamans.

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CHAPTER V

THE PLAINS AREA

BLACKFOOT

It is difficult to present a clear picture of medical practices and the position of the medicine-men in the Plains area. The group mobility allowed by the use of the horse as a carrier and the importance of hunting as the primary source of food serve to complicate the problem. In the South among the Pawnee we find suggestions of Southwest and Northeast practices; among the Siouan tribes we are struck by resemblances to the Southeast; while the Algonkian-speaking peoples present analagous practices to their kindred in the East.

The Blackfoot Indians are an Algonkian-speaking people living in the northern portion of the Plains area. They are a typical Plains tribe. In common with the other Plains tribes and with most American Indian cultures, the Blackfoot lay particular stress upon a supernatural experience called a vision. This is obtained by various methods, but usually by fasting; or by merely observing some phenomenon of nature. Anyone in the tribe can obtain a vision, and a vision may be sought at any time as an attempt to obtain supernatural guidance in an affair of the heart, in a proposed raid, or for a hunt. The Blackfoot doctor, perhaps more than any other member of the tribe, has to seek a vision. He owes his curative powers to a direct revelation from some supernatural power which he receives through visions or dreams. "Anything short of a dream or vision would be rejected by a body of intelligent Blackfoot as of no medicine value."[1] Through his original vision, or succeeding ones, the doctor obtains his knowledge of the curative value of plants, and the method of administering them. He also learns songs, which are to be sung as the medicine is gathered, as it is prepared, and as it is administered. These songs are as much a part of the cure as the medicines themselves. Furthermore, a doctor receives in his vision or visions instructions as to the preparation of his medicine bundle, which contains not only those plants and other objects used to make up a drink, or plaster, but also various

objects, such as an eagle feather, or a bear's claw, which have some magical value. It is readily seen that the power of any medicines administered comes not from their natural inherent curative power, whether they be plants or other medicines, but from their parallel form with the supernatural. A doctor does not transfer his songs or power which he has received directly from the spirit world, either by sale or gift. When a great doctor dies, however, his songs and rituals may be transferred by his ghost in a dream or vision to another person.

Treating diseases is not limited to a few individuals in the tribe, but is widely diffused, more especially among the men. Nor does each doctor possess power over any large number of diseases or ailments. The members of the tribe know that for some ailments a certain doctor must be obtained, and that for other ills, different doctors should be called. The power of curing possessed by any one medicine-man is, as has been said, the result of a supernatural revelation of the cure, the formula or ritual part being preserved in the song. One song will be used for a particular disease, and another song will have the power to alleviate another ailment.

The importance of these ritualistic songs in other walks of life as well as in medicine, is clearly brought out in the following quotation from Wissler:

> All Blackfoot songs, except those learned from other tribes, are said to have been obtained through dreams or visions. There seems to be no idea that one could deliberately compose a song. A man may be walking along and hear a bird, insect, stone, or something else singing; he remembers the song and claims it as especially given to him. A man may get songs from a ghost in the same way. . . . One never gets power without a song to go with it; hence, there is no medicine-man but has his own songs. . . Anyone may dream of songs, however, but the owner of a bundle is almost certain to do so. . . . All good warriors never enter battle without first giving their war songs and even during the fight they sing because the songs are supposed to protect them from all dangers.[1]

The significance of the medicine bundles is not confined to the cure of disease. They are the material objects representing the rituals obtained from supernatural beings, and indicating success

in war, hunting, gaming, love, and other pursuits for which a vision was sought.

Whenever the need arises for the use of a medicine bundle of the last-mentioned type, as at the time of the preparation of a raiding party, or a buffalo hunt, a shaman is called. He is the leader in the ceremonies pertaining to the handling of these medicine bundles, but his power is obtained by mere possession and ownership of the bundles.

By medicine bundle we mean any object or objects, kept in wrappings when not in use, guarded by the owner according to definite rules and associated with a ritual containing one or more songs. To the Blackfoot this is a definite term denoting an array of such associations, ranging from the simplest war charm to the huge complex beaver bundle. Single or individual ownership is the rule and though the tribe may in a sense have an interest in any large bundle, and relatives may have a property or investment relation to it, the fact remains that all the associations treated in this paper are considered by the Blackfoot as examples of rituals of individual ownership.[1]

The largest bundle of all, the beaver bundle, has a number of ceremonies connected with it. The basic ceremony perhaps was the small "beaver bundle" which was used during the harvesting and planting of tobacco. The Sun Dance ceremony of the beaver bundle is used for general purposes. During the period of the big buffalo hunt this bundle is used for the calling of the buffalo.

It is a peculiarity of Blackfoot culture that these bundles are freely bought and sold. Purchase of a bundle carries with it the songs and rituals connected with the bundle. Economic position and social prestige are determined largely by the possession of bundles. Ownership brings not only the benefits to be derived from close communion with the spiritual world, but also many "obligations, responsibilities, and restrictions to freedom that cannot be escaped. Among these are many curious restrictions to freedom not unlike taboos. The penalties for disregarding these injunctions are usually some kind of illness. Sore mouth, sore eyes, blindness, boils, etc., are generally regarded as resulting from such, and for any one to be so afflicted is of itself evidence of such violation."[1] The

power of the bundles is utilized at a regular ceremony during which the songs are sung and the rituals performed, in order that the possessor may benefit from the good offices of the protecting spirits.

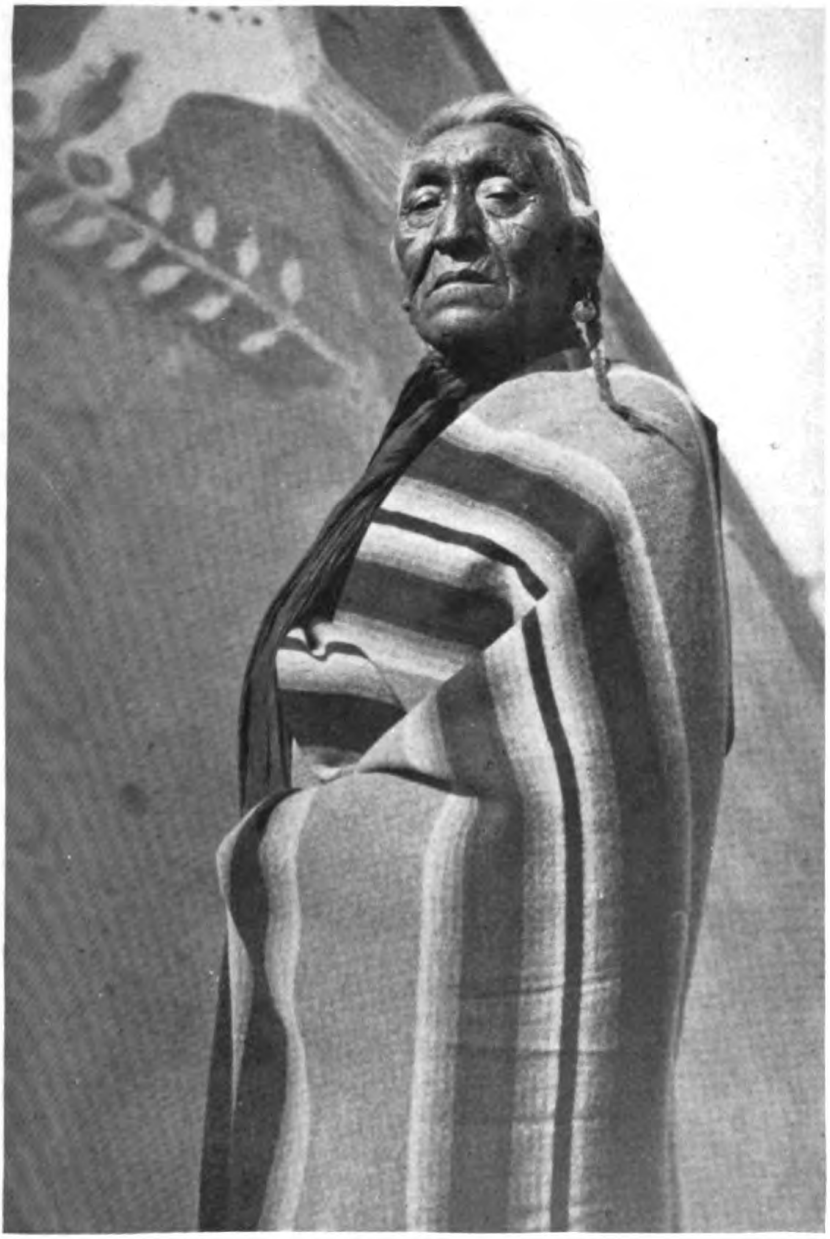
A man who lives to a ripe old age does so because of his personal power, which he has received either directly through a vision or by the acquisition of various bundles.

As a Blackfoot boy changes into a youth he becomes more and more conscious of the ceremonial and religious life of his people, and by the time he has reached the age at which many of his tribe seek their first visions, he is fully prepared mentally for supernatural experiences. The young man is very often carefully instructed by an individual recognized as an authority in spiritual matters in the correct manner of fasting and praying. But the vision quest is conducted alone in an out-of-the-way place, and continued fasting and praying, if the youth has the courage to remain, brings success in the shape of a guardian spirit.

A typical vision experience, as given to Wissler follows:

When I was about fifteen years old my people were camped near the Sweet Grass Hills. My father was a chief and very rich. My mother was a good provider. Both my parents were good natured. So I thought that my father having been a good man and of some importance, it would be well for me to go out somewhere and sleep and get some power. This was after my parents died. Both of them had advised me to do this. So I went down to the Sweet Grass Hills. Before I went I filled a pipe, took it to a medicine-man, telling him that I was poor and that I was going to sleep. The medicine-man told me that I would be a great chief some day and that I should have a dream and get some power. So he took some yellow paint, and something for a smudge, sang a song, and began to fix me up. His song was: "The man above hears me. The ground hears me. It is my medicine." Then this man prayed to the sun saying, "Look down upon this boy. He is poor. Give him some power, and help him to become a great man. Help him to become a great chief."

Then the man took the paint, painted me, naming all the different animals as he did so. He named all that fly, all that swim, and all that walk, etc. "Of these, one will come to you. Now when you go out to sleep you must stay with it. You must not be scared



Wolf Head, a noted medicine-man of the Blackfoot Tribe, 85 years old; the Sydenham of his race. (Courtesy of Cosmopolitan Book Corporation)

away. If you run away you will not get power to become a great man." Then while the man was painting me he sang this song: "He hears me. The wind is my medicine. The rain is my medicine." He rubbed the paint upon the front and the back of my head and on my back, and on my shoulders. As he did so, he sang, "Now this man has the sun power."

Then I went up on the hills and made a shelter in which to sleep. Looking down I could just see the camp below. As it grew dark I began to think of bears and was frightened. I thought of how they might come in and eat me. Then I thought that the Assiniboine might come and kill me, but worst of all, I thought that a ghost might come and twist my mouth. [Piegan-Blackfoot have the belief that ghosts have the power to twist mouths out of shape and to affect the speech.] When I thought of all this, I became greatly afraid, and thought it would be best for me to go home, but when I thought of what the man had told me and of how I should be ridiculed if I failed to stay my time, I thought it would be better to be killed than to endure this. So I thought I would try to sleep, but I could not. All night I imagined I heard people coming, people coughing, etc. I was in great fear all night. The next day I stood on my feet all day, and by night I was so tired that I had to sleep. Now of course I was not afraid. I stayed there seven days and nights and at last had a dream. In this dream I saw a raven flying toward me and heard him sing. This was in the daytime but I was asleep. Then a person appeared to me and said, "There is a hill down by the river and a man invites you." Now the raven was a messenger and told me that this man had the power of eating. He said, "He knows all about eating. No matter what happens he will never be killed. He will always get food. I am going to call on someone else, but this man will help you out." When we came to the man, the raven asked him to help his son [referring to the narrator] as he was a very poor boy. Now the man said "Raven, you give him power first, then I will fix him up."

So the raven put some red paint down and made a smudge of sweet pine. Then he sang a song, took up the paint and prayed for me. Then he sang another song and made the sound of a raven. Then the raven said, "You must not jump or try to dodge bullets, for they will not hit you. But you must let no one throw a moccasin at you or hit you with it you will lose your power."

Now it was the man's turn. He wore a coyote skin for a cap and

this he gave to me. He made a smudge out of sage grass. [This is seldom used by the Piegan.] Then he sang a song, "I want to eat a person," and made the sound of a coyote. Then he took up some white paint, rubbed it on my body and painted my nose and mouth red, and my head, breast, and back yellow. "Now," said the man, "I give you power to doctor men shot by bullets. Power to take out the bullets. Power to take out things sticking in the throat as when people are choked." Now I have this power.[1]

A somewhat later account which differs from the above has recently been published. In describing the manner of acquiring medicinal knowledge, it gives certain features which were taken over from the Central Algonkian groups, but the whole procedure is still strongly tinged with the sturdy individualism of the Blackfoot culture.

According to Long Lance[2]* there are seven "tents" of medicine and the medicine man is often chosen in boyhood at about the age of twelve or thirteen years by the medicine-man of the tribe to become his understudy and finally his successor. The course of study is long and arduous, often extending over ten to fifteen years. He is chosen because of some extraordinary qualities of mind and body: ". . . a boy who is a leader among his playmates and has a keen understanding of human nature." His parents readily give their consent because this is about the highest honor that can come to an Indian boy and they are only too proud to give him up.

Then comes the first lap of his career. The medicine-man takes him to some wilderness in the Rocky Mountains, or out in the vast expanse of the plains where he remains for many months instructing the youth in the primary secrets of his mysterious calling. His first precept is to make the mind stronger than the body, that it may always have dominion over the physical. To accomplish this he remains for days without food and undergoes physical torture without flinching or complaint. On the return from his first absence it is remarked that he is changed, and the first "tent" of his cult is attained.

On succeeding trips into wild untrodden places the medicine-man continues his course of mental strengthening and adds to it

* *Long Lance* by Chief Buffalo Child Long Lance. Cosmopolitan Book Corporation. Courtesy of Farrar and Rinehart, Inc.



From a painting by Leon Gordon. From *Long Lance* by Chief Buffalo Child Long Lance (Cosmopolitan Book Corporation). Courtesy of Farrar and Rinehart, Inc.

Buffalo Child Long Lance (*Einiu Pokau Inno Stoan*), of the Blackfoot Tribe, an author of distinction. A face of power with high intellectuality; a born leader of men in trying times.

severer feats of physical endurance, for according to the standard in most tribes a strong body is a prerequisite to a strong mind—*mens sana in corpore sano.*

This training of the will power, according to this authority, lasts for about three years. The boy's body has now become as hard as the hickory which grows in the forest, and knows no reaction to surrounding objects. The severest suffering may now be borne without apparent pain, and like his preceptor's, his body is a thing apart. The various annoying sensations are to be ignored and he begins to practice the greatest feat of all, that of controlling the body by force of the mind alone. When this has been attained it is thought he will be able to control the bodily reactions of others. But before he is fitted to do this he must go through a long course in the real handicraft of his art, that of learning the secrets of conjuration, of interpreting and revealing future events, the healing power of various herbs and other substances which constitute his "medicine" and his aptitude in mastering an intimate knowledge of these determines his "power" among his people. For the "spirits" are supposed to reveal to the medicine-man their hidden secrets concerning the future and to be influenced by his incantations, his songs, and his prayers (dances).

Chief Long Lance further says that each of the seven "tents" of medicine, which the aspirant to medical honors must go through, lasts a year, and each deals with a different subject, although all relate to the medicine-man's art.

At the end of each year, for five years, he "goes through the tent" in the form of an examination of the year's work. In this the medicine-man erects a medicine lodge, places the paraphernalia used in "making good medicine" before his pupil, and for days silently watches him go through all the tenets of his art. Chief Long Lance remarks that as a boy he used to "surreptitiously approach the medicine lodge where strange sounds emanated and they filled us youngsters with awe."

The medicine-man must not only know the means of influencing the good spirits to do his will, but he must also have an harmonious understanding with the powers of evil who dwell in the realms of darkness below. For this, two additional "tents" or years are devoted to acquiring a knowledge of propitiating "bad medicine,"

or the forces of evil. In this connection let us all hope that the neophyte to the "medicine shirt" does not come into too friendly relations with this phase of the curriculum, as it has been alleged some do. According to this authority "bad medicine to the point of death is seldom used by medicine-men unless to rid the tribe of someone whom the medicine-man deems best removed for the general welfare of the tribe." He continues that "the casting of spells" as once was done in the good old town of Salem, "is still practiced by the Indians" of the great Northwest.

After this course and the seven "tents" of medicine have been completed, the young man may act as one of the lesser medicine-men until death or other cause advances him to the chief medicine-man of the tribe.

The causes of disease among the Blackfoot are the breaking of a taboo connected with a medicine bundle, sorcery, and evil spirits. The cure for these consists in the elimination of the evil spirits causing the disease, who in many cases are represented in the body by disease objects which are removed by the doctor. An early description of a Blackfoot medicine-man portrays gividly the colorful activities which accompanied the curing ceremonies.

I saw for the first time a "medicine-man" performing his mysteries over a dying man; the man who had been shot was still living, though two bullets had passed through the center of his body, about two inches apart from each other; he was lying on the ground in the agonies of death, and no one could indulge the slightest hope of his recovery; yet the medicine-man must needs be called (for such a personage they had in their party), and hocus pocus applied to him, as the *dernier ressort,* when all drugs and all specifics were useless, and after all possibility of recovery was extinct.

I have mentioned that all tribes have their physicians, who are also medicine- (or mystery-) men. These professional gentlemen are worthies of the highest order in all tribes. They are regularly called and paid as physicians, to prescribe for the sick; and many of them acquire great skill in the medicinal world, and gain much celebrity in their nation. Their first prescriptions are roots and herbs, of which they have a great variety of species; and when these have all failed, their last resort is to "medicine" or mystery; and for this purpose, each one of them has a strange and accounta-

ble dress, conjured up and constructed during a life-time of practice, in the wildest fancy imaginable, in which he arrays himself, and makes his last visit to the dying patient, dancing over him, shaking his frightful rattles, and singing songs of incantation, hoping to cure him by a charm. There are some instances of course, where the exhausted patient unaccountably recovers, under the applications of these absurd forms; and in such cases, this ingenious son of Indian Æsculapius will be seen for several days often on the top of a wigwam, with his right arm extended, and waving over the gaping multitude, to whom he is vaunting forth, without modesty, the surprising skill he has acquired in his art, and the undoubted efficacy of his medicine or mystery. But if, on the contrary, the patient dies, he soon changes his dress, and joins in doleful lamentations with the mourners; and easily, with his craft, and the ignorance and superstition of his people, protects his reputation and maintains his influence over them by assuring them that it was the will of the Great Spirit that his patient should die, and when sent for, his feeble efforts must cease.

Such was the case, and such the extraordinary means resorted to in an instance I will now relate. Several hundred spectators, including Indians and traders, were assembled around a dying man, when it was announced that the "medicine-man" was coming; we were required to "form a ring," leaving a space of some thirty or



A medicine-man dressed in the garb of his art treating a patient. (After Catlin)

forty feet in diameter around the dying man, in which the doctor could perform his wonderful operations; and a space was also opened to allow him free room to pass through the crowd without touching anyone. This being done, in a few moments his arrival was announced by the death-like "hush-sh" through the crowd; and nothing was to be heard save the light and casual tinkling of the rattles upon his dress, which was scarcely perceptible to the ear, as he cautiously and slowly moved through the avenue left for him; which at length brought him into the ring, in view of the pitiable object over whom his mysteries were to be performed. . . .

His entrée and his garb were somewhat thus: he approached the ring with his body in a crouching position, with a slow and tilting step—his body and head were entirely covered with the skin of a yellow bear, the head of which (his own head being inside of it) served as a mask; the huge claws of which also, were dangling on his wrists and ankles; in one hand he shook a frightful rattle, and in the other brandished his medicine spear or magic wand; to the rattling din and discord of all of which, he added the wild and startling jumps and yelps of the Indian, and the horrid and appalling grunts, and snarls, and growls of the grizzly bear, in ejaculatory and gutteral incantations to the good and bad spirits, in behalf of his patient; who was rolling and groaning in the agonies of death, whilst he was dancing around him, jumping over him, and pawing him about, and rolling him in every direction.

In this wise, this strange operation proceeded, for half an hour, to the surprise of a numerous and silent audience, until the man died; and the medicine-man danced off to his quarters with his mystery dress and equipments.

This dress, in all its parts, is one of the greatest curiosities in the whole collection of Indian manufactures which I have yet obtained in the Indian country. It is the strangest medley and mixture, perhaps, of the mysteries of the animal and vegetable kingdoms that ever was seen. Besides the skin of the yellow bear (which being almost an anomaly in that country, is out of the regular order of nature, and, of course, great medicine, and converted to a medicinal use), there are attached to it the skins of many animals, which are also anomalies or possess deformities, which render them, in their estimation, medicine; and there are also the skins of snakes, and frogs, and bats, beaks and toes and tails of birds, hoofs of deer, goats, and antelopes; and in fact, the "odds and ends" and fag

ends, and tails, and tips of almost everything that swims, flies, or runs, in this part of the wide world.

Such is the medicine-man or physician, and such is one of his wild and ridiculous maneuvers which I have just witnessed in this country.

These men, as I before remarked, are valued as dignitaries in the tribe, and the greatest respect is paid to them by the whole community; not only for their skill in their "materia medica," but more especially for their tact in magic and mysteries, in which they all deal to a very great extent. . . . In all tribes their doctors are conjurors, magicians, and soothsayers, and I might say, high priests, inasmuch as they are looked upon by all, as oracles of the nation.[5]

THE ASSINIBOINE

The Assiniboine, living in northeastern Montana, are a Siouan-speaking tribe. The animal seen by the Assiniboine in their vision is taboo and they must neither kill it nor eat it, or they will be sick. Curing of the sick by means of herbs and roots is not limited to any special class, but is widely diffused throughout the tribe and those who are most successful are obviously the best doctors. The particular roots and prescriptions used are kept a secret by the owner, since a successful doctor can gain a very good living by his knowledge. The knowledge of these remedies is not inherited. In cases of serious sickness a holy man or shaman is consulted and upon his diagnosis will depend the hiring of an ordinary herb doctor, or the use of special magical practices and formulas. If a holy man is disobeyed, the transgressor will become sick, but if the holy man abuses his powers and punishes a personal enemy, then disease will strike back and either the shaman or a near relative will be smitten.

The Indian conception of disease and the methods of treating it often result in their laying themselves open to the most disastrous results. "The Indians have no faith in vaccination. They believe that 'smallpox has eyes, and sees who is afraid of it.' Hence it is best to stay near those smitten with smallpox, to use the same pipe, eat from the same dish, wrap oneself in the same blanket, and to show in other ways that one is not afraid of the disease."[6]

The doctor's fees fluctuate with the economic position of his

patients. Women as well as men are practitioners. In the various methods of curing, the use of the drum is important, as well as a gourd rattle, and a horn cupping apparatus. In case the horn cupping is used, the medicine-man keeps concealed about his person or in his mouth the various objects, such as worms or a wolf



A Dakota medicine-man treating a patient. (From Schoolcraft)

hair, which are ostensibly withdrawn from the body of the patient by sucking, and proudly displayed as the cause of the illness. "Cupping is done with a part of the upper end of a buffalo horn, about two and a half inches long, and a vacuum produced by suction with the mouth, which with their powerful muscles and exertions is of course double force. It is said to be useful in drawing out the poison of snake bites and is also used for pains and cramps in the stomach, as well as for extracting worms, bugs and snakes, from the body."[5]

For bleeding, a sharpened arrow point or piece of pointed iron is wrapped with sinew, so that only that portion which is to penetrate the skin protrudes from the wrapping. This is then tied with more sinew into a split stick. Upon being placed upon a vein it is suddenly struck with the thumb and middle finger. The blood is allowed to flow until natural coagulation sets in. Scarification is not used in cupping except for snake bites. In cases of wounds, cobwebs, dried pulpy fungus, or very fine inner bark of trees, is used to stop the blood. Bandages are often too tight and are allowed to remain on the wound too long, and sometimes result in gangrene. Amputation is rarely if ever practiced. Splints and bark are used in fractures and lacerated tissues, but their setting of fractured bones is, of course, dependent on manipulation, so that a bad union is often inevitable.

In the event that a patient fails to rally and dies after all the treatment given to him, "it is then the doctor who is in danger, and runs great risk of losing his life, by the parents or relatives of the deceased."[5]

The importance of the medicine-men is brought out in the story of an Assiniboine, dealing with his youth and the dangers arising from bad or unsuitable company. The story, of which I shall attempt a synopsis, is entitled, Tchatka, The Stony Usurper.[6]

Tchatka was a bad boy. At an early age he felt the lure of the white men's ways, who were coming into the prairies from the land of the rising sun. He disregarded the dictates of ancient wisdom, and delighted to loiter about the trading posts, and listen to the imperfectly understood tales of fur-traders and idlers who taught him the wonders of the pale face. His craving for new things on sale at the post persisted as he grew older, and his daydreams were of massive log houses in palisades, of flashy garments, powder and gun, knife and dagger, and firewater in plenty.

The fur-traders could not fail to notice his unusual attentions to all that concerned them, and with cleverness he ingratiated himself into their favor. The French voyageurs laughed encouragingly at his attempts to conquer their vernacular and poked fun at his naïve pursuits and persistent queries.

His natural abilities soon marked him as a leader of men. His family, besides, was a large and influential one among the eastern

Stonies, whose hunting-grounds in those days—around 1770—extended west of Lake Winnipeg. His uncles wanted to train him in the wilds, according to custom. The only careers contemplated were those of a hunter and a warrior. Privations and toil made a man a successful hunter; courage was the warrior's own virtue. But they found him to be lazy and cowardly. So they shook their heads disapprovingly. His uncle Walking-Bow dismissed him with a threat.

The truth is that he cared little for the life of his people; pelts and scalps, the ruling ambition of the time, were to him but the stepping stones to power. His imagination was ablaze with the new ways of life that he had seen—the ways of the white strangers.

By sheer persistence he managed to learn many truths, many lies, and to unravel many puzzles. He finally penetrated the mysteries of the gun casting death at a distance, of powder tearing things to bits when it explodes, and of poison slowly bringing death when it is consumed with foods. It dawned upon him after many disappointments that the trail to the home of the mighty was long, almost endless, and strewn with pitfalls. He could not entertain the hope of becoming a white man himself, or even of living like a white man. Indians, it was easy to see, were not really wanted at the forts, except to procure furs, fish, and buffalo meat from their own hunting grounds. And his services as messenger and guide did not seem sufficiently appreciated. He finally gambled on his last chance.

A chief's daughter in his own country always married a chief's son. That was the custom. He himself was of good lineage, the nephew of Walking-Bow, whose fame as a powerful warrior had spread from the lakes to the mountains. And the chief-trader's daughter, he knew well, was still unwed. More than once he had seen her, watched her; he had gazed lovingly at her as she smiled to him. That is why he made up his mind. She would be his bride and thereafter he would live at the post, with the white men. So he came with presents for the would-be father-in-law. His proposal was listened to according to etiquette. But the bridal presents were returned before the morrow, to his utter dismay. He had thus courted defeat.

In the face of humiliation he managed to curb his wounded pride; he stayed on at the post for a while. So deep had been his childish hope that it could be smothered only by stages. Then a

feeling of revenge crept into his heart, only to be silenced. An Indian is never in a hurry.

He turned away at last from the land of promise, slowly, very slowly. His uncles were still waiting for him on the prairies. To them would he return. He started off at night, unseen, disheartened. The heavy bundle on his back contained what was left of his former hopes, rich possessions for his life to come—tobacco, a beaver hat, a red sash, a bright calico shirt, pills of slow and deadly poison, a double-bladed knife in a sheath; gunpowder in buffalo horns and a prayer-book full of magic signs.

Failure had not crushed Tchatka's ambitions; it had only sharpened his faculties. He was no longer an inexperienced youth. The cunning exploitation of his new knowledge and strange crafts helped to enhance his prestige among his nomadic folk. Shrewdness was his supreme gift, if ever it was in an Indian. He possessed the white man's "power," every one could see. Charms and amulets worked miracles in his hands. He muttered incantations at night and communed with the spirits above, the powerful manitous from the east. The potency of his magic bundle in itself was enough to inspire respect to friend and foe alike.

Prophecy had always induced timid believers to submit in advance to the dictates of fate. No one dared resist the supernatural powers. To Tchatka it appealed as the easiest means for him to achieve domination. So he became a seer and a sorcerer. To further his ends he resorted alone to secret spots, had visions, associated with jugglers and medicine-men and sought young men who were willing to serve him blindly as disciples. To these he would often say, "My power is in my medicine." And indeed he was a great sorcerer. Every day added to his growing fame. Future events he could foretell as if reading them out of his prayer-book. His uncanny wisdom knew no bounds. He could see far away beyond the skyline. What the others failed to detect were at his command—the young spies who served him as secret messengers to get wind of news.

The rigid customs that regulated the choice of civil and war chiefs at first baffled his ingenuity. Scalps and wounds from the battlefields alone recommended the new elects to the tribal councils. And he could show none. His black arts would not serve as substitutes. But the obstacle was overcome. Walking-Bow, his uncle, had enough influence to help him in defiance of all precedents.

So that he was finally admitted to sit among the brave and wise men of the nation.

The road to higher dignities seemed too uncertain for him. Others, young and old, excelled him in the ancient pursuits of war and peace. Their authority was so entrenched that it could not be disputed. What should he do? The reply was not long in coming. He would avail himself of his gift of foretelling the future and his power of destroying life with poison for his own advancement. Thus it came about that in prophetic spells he would say, "This chief has not long to live; so my manitou has told me." And the unfortunate leader whose name had been uttered would fall the victim of a mysterious ailment after weeks, sometimes months, of mental agony. All his rivals disappeared in the same way, one after another. Suspicion and the desire for retaliation more than once brought peril near him. Anger smouldered in many breasts. But he inspired fear, as one who could dispose of life. Many were they who thought it best to propitiate him by the offer of presents, buffalo-meat, horses, and trophies.

Walking-Bow, the head-chief, at times had to shield him against rivals and foes at home. He used his influence to help him in his rapid rise to power. No one dared oppose Walking-Bow's will, for his lofty stature, his bravery and violence defied resistance. Scalps taken from the enemy adorned his headdress, his robe, his spear, and the saddle of his steed. Tchatka more than any other feared his anger. But he finally won the friendship of his powerful uncle. They often traveled together, and gave one another feasts and banquets in which the greatest harmony prevailed. Jealous as Tchatka was of Walking-Bow's rank, he could not dispense with him until all of those opposing his march to the supreme power in the tribe had been removed.

His emissaries sighted a camp of Blackfoot hunters one day. From their description he knew that the warriors of his own tribe could surprise them and win a decisive victory. The moment had arrived for him to foretell the event and to strike a supreme blow. He invited his uncle to a feast and presented him with a poisoned dish of buffalo tongues. The fatal meal having been consumed to the last mouthful according to the custom, it could not fail to produce its effects after a few hours. Thus would be removed the last obstacle left in his path.

Walking-Bow had no sooner departed after the banquet than

his nephew summoned all the leading warriors to his lodge in great haste. Word went around that grave events impended, for the manitous had given warning. Tchatka appeared before them attired for the first time with all his finery—the flowing calico shirt, the red sash around his waist, the tall beaver hat upon his head, and the open prayer-book in his hand. His manitou, the Thunder, stood in the center of the lodge near the fire, in the shape of a magic stone painted red and surrounded by a fence of short sticks. At the sight of these strange objects the assembly sat dumb with awe, and the inspired seer delivered his prophecy as if under a spell. He could see far away and tell what was to happen. A camp of the enemy stood near a river at a few day's journey. The Stonies could take it by surprise and capture many scalps. Time had come for them at last to avenge previous defeats. But that was not all. A most valiant brave present at the assembly would fall this very night, never to rise again, and at the very moment of his death the Thunder manitou would blow up to pieces with a dreadful noise, to accompany the departing soul into the world of spirits. Another chief, more favored by the manitous, would step into his place for the good of all the nation.

A dismal silence greeted these prophetic words. Victory and revenge naturally aroused their expectations, but in spite of it all, dread appeared on every countenance. Who was to fall that very night? No one could tell, as many leaders were almost the equals of the head-chief. Not even Walking-Bow had any clear idea of his own doom. But no doubt could be entertained as to the prophecy; too many others had already proved true. The warriors withdrew in silence and gloom. Dark apprehensions invaded the camp with the shades of night.

At midnight a messenger came running to Tchatka's lodge, "Come, come! Walking-Bow is ill, very ill." But the wily seer could not so easily be induced to affront danger. His uncle, he knew, now suspected his treachery. He would stretch him dead at his feet while he still possessed enough strength. So he replied, "Go and tell him that my visit would not help him. And I could not at this moment leave my manitou alone."

The prey of terrible convulsions, Walking-Bow declared to the friends and relatives surrounding him, "I suspect him, my nephew." Consternation and tumult spread to every lodge. Some warriors uttered frightful yells, vowed speedy revenge and resorted to

Tchatka's quarters. The seer, still attired in his finery, stood alone near the fire, facing his Thunder Manitou. At the news of his uncle's illness he pretended real sorrow, and trembling at the sight of uplifted tomahawks, he advised the avengers to stay their arms and listen once more to his words.

"Relatives and friends," he said, "Walking-Bow is my uncle and my friend; we are of the same blood and eat from the same dish. How could I injure him who has always given me his help and confidence? He was the strongest of warriors at sunset and now is grappling with death. This shows how powerful are the manitous. What could I do? If I predicted his death it was because the very spirit of Thunder was speaking through my mouth." As the tomahawks were still threatening him, he pleaded again, "You disbelieve my words? If you do, look at my manitou, the red stone; look at it closely, for what I have predicted will happen. It will blow up in bits with a terrible noise when the great warrior dies. And when it has happened, will you again lift your arms against me? Will you distrust me as you do now?"

The sullen warriors drew inside the lodge hesitatingly, one by one. Like mute sentinels they sat around the mysterious red stone. As they waited in dread for its disappearance, the fire grew dim and the feeble light shivered on their sinister faces. Ghost-like shadows danced on the sloping sides of the lodge. Runners from Walking-Bow's tent came by at intervals, shouting, "The chief utters naught but shrieks of rage against his nephew . . . he is in convulsions . . . he is growing more feeble; his speech is gone . . . he is in agony."

Cries of despair responded to the last message: "He is dead!" And the red stone by the fire burst into a thousand fragments with the noise of thunder. It filled the lodge with fire and cinders, severely wounding those who sat near, and frightening the others into a wild stampede. Tchatka's powers once more stood vindicated in the eyes of all. The feeling of revenge gave way to one of terror and reverence. No one approached him but with respect. His manitou being the Thunder, he now received the name of "Great Medicine."

Simple though his deceits would have appeared to any white man, they meant witchcraft to his unspoiled folk. The powers of gun-powder were still a mystery to them. Even if they had known how Tchatka had drilled a hole in the stone, filling it with nearly a

pound of powder and fired the train from a safe distance in the dark, his prestige would not have been much lessened in their eyes. To them he was the greatest sorcerer ever known. His second sight encompassed both the future and the past, and his incantations reached beyond the world of the living into that of the dead.

THE CROW

Among the Crow Indians,[7] there are various methods of inducing visions. Some of the men go to a lonely spot in the mountains and fast, and during this time they generally dream of guns, coups and horses. Those fortunate individuals who dream in their lodges usually become rich, acquiring many horses. The poorer people receive their visions when they are very tired and fall asleep. The tobacco garden is the location of some of those who fast, as a part of a dream-producing ritual. The individuals who suspend themselves from poles, by means of skewers in the skin, in the Sun Dance, receive a vision before they allow themselves to be cut down. Or a man may pull a buffalo or bear skull behind him, or lead a horse, by means of a rope fastened to the pierced skin of his back. In other words, supernatural favor may descend upon one without any effort, or in times of difficulty, or an individual may directly seek a vision, in which case some sort of self torture is called for. The "sought" visions are the most numerous and are usually attempted by young men who are eager to get supernatural power to that they may take their places in the raiding parties, thus gaining prestige. Shamans differ from their brothers only in the power of their visions, and not because they receive revelations of a different kind. They can not be separated as a definite group from the rest of the community.

Those individuals among the Crow who cure by means of roots and herbs are called by a term which can best be translated "doctor," as it is also applied to white physicians. The shamans are those who, whether operating as healers, or as the makers of charms and divinations, obtain their power from a supernatural source. However, some medicines used by a special group of doctors who treat wounds are traced to revelation in a vision. The supernatural power which appears to the dreamer in a vision in the shape of a bird or animal is rarely attributed to the animal

itself. They are considered as merely the mouthpieces of the potent spirits.

The primary and most important cause of sickness among the Crow is the result of breaking a taboo, either in connection with the prohibitions laid down at the time of the reception of the vision, or from violating other rules. Those who violate the ban against social contact with a menstruating woman are liable to bleed from the nose, or to have headaches; and if a man goes into battle after so doing, he will surely be killed. Sorcery does not play a very important part as a cause of disease. Insanity is induced by the soul of a dead person inserting a tooth or lock of hair from the dead body into a living individual. In case this occurs, a doctor attempts to extract the disease-object by means of suction applied to a pipe stem placed on the head.

Shamans among the Crow, besides treating disease, engage in prophecy and divination, make special medicines and charms for war, and are able to furnish hunting charms, or love charms. They also indulge in sleight-of-hand, and engage in shamanistic contests.

THE OMAHA[3]

In the Omaha tribe there are shamanistic societies and membership is determined by the type of vision which one obtains. Torture is rarely used in obtaining a vision, but the guardian spirit is usually acquired during the vision which comes to one at puberty. Knowledge of medicines and power are inherited if the youth's dream corresponds or is similar to that of his father, and hence there is much parental instruction. Animals can bestow only the lowest degree of power.

The causes of disease are more or less indefinite, and in using the herbs, the medicine-men employ definite formulas which call upon the spirits of the herbs to become curatively active. Treatment of disease is specialized and fees are always expected by the doctor. An individual who breaks social taboos is subject to a special disease. Magical practices are thought sometimes to cause illness, and if a disease object has entered the patient's body, it is removed by sucking. Bleeding is very common, the gashes being made between the eyebrows.

Among the medicine societies the Bear Society is one of the most prominent from a medical point of view. All its members are not practitioners, but they are interested, and on occasion may be called on to perform some medical or surgical duty.



A Sioux medicine-man in consultation with the cosmos concerning the nature of the disease and treatment of the patient. (From Schoolcraft)

The Buffalo Society is one in which its members treat only surgical cases. The treatment of a case is so vividly described by Francis La Fleche that it will be given in his own language. The story begins with La Fleche playing in a gambling game, and suddenly hearing three shots. On arriving at the scene of the shooting, he finds a boy (one of his playmates) shot through the head, the bullet coming out just below the eye. He goes on as follows:

A man just then ordered the women to stop wailing, and the people to stand back. Soon there was an opening in the crowd, and I saw a tall man come up the hill, wrapped in a buffalo robe, and pass through the opening to where the boy lay; he stooped

over the child, felt of his wrist, then of his breast. "He is alive," the man said, "set up a tent and take him in there." The little body was lifted in a robe, and carried by two men into a large tent which was hastily erected. A young man was sent in haste to call the buffalo medicine-men of another village. It was not long before the medicine-men came galloping over the hills on their horses, one or two at a time, their long hair streaming over their naked backs. They dismounted before the tent, and went in one by one, where they joined the buffalo doctors of our village, who had already been called. A short consultation was held, and soon the sides of the tent were thrown open to let in the fresh air, and also that the people might witness the operation. Then began a scene rarely if ever witnessed by a white man.

All the medicine-men sat around the boy, their eyes gleaming out of their wrinkled faces. The man who was first to try his charms and medicines on the patient began by telling in a loud voice how he became possessed of them; how in a vision he had seen the buffalo which had revealed to him the mysterious secrets of the medicine, and of the charm song he was taught to sing when using the medicine. At the end of every sentence of this narrative the boy's father thanked the doctor in terms of relationship. When he had recited his story from beginning to end, and had compounded the roots he had taken from his skin pouch, he started his song at the top of his voice, which the other doctors, twenty or thirty in number, picked up and sang in unison, with such volume that one would imagine it could have been heard many miles. In the midst of the chorus of voices rose the shrill sound of the bone whistle accompaniment, imitating the call of an eagle. After the doctor had started the song, he put the bits of root into his mouth, grinding them with his teeth, and, taking a mouthful of water, he slowly approached the boy, bellowing and pawing the earth, after the manner of an angry buffalo at bay. All eyes were upon him with an admiring gaze. When within a few feet of the boy's head, he paused for a moment, drew a long breath, and with a whizzing noise forced the water from his mouth into the wound. The boy spread out his hands, and winced as though he was again hit by a ball. The man uttered a series of short exclamations to give an additional charm to the medicine. It was a successful operation, and the father and the man who had wounded the boy, lifted their spread hands towards the doctor to signify their thanks. During this performance all of the medicine-men sang with energy

the song which had been started by the operator. There were two women who sang, as they belonged to the corps of doctors.

Although there were twenty or thirty doctors, only four of them operated upon the patient in the manner above described. In a severe case like this one, all of the medicine-men unite in consultation, and each man is entitled to his share of the fees. When the case is not so severe, the relatives of the patient select one or two of the doctors to attend the wounded patient. The buffalo doctors are organized into a society, and treat nothing but wounds. It is seldom that they lose a patient, but, when called to a person in a critical condition, they declare the hopelessness of the case, so that no blame may be attached to them should the sufferer die. All night the doctors stayed with the patient, the four men taking turns in applying their medicines, and dressing the wound.

Four days the boy was treated in this strange manner. On the evening of the third day the doctors said that he was out of danger, and that in the morning he would be made to rise to meet the rising sun and to greet the return of life.

I went to bed early, so that I could be up in time to see the great ceremony. In the morning I was awakened by the singing, and approached the tent, where already a great crowd had assembled, for the people had come from the other villages to witness the scene of recovery. There was a mist in the air, as the medicine-men had foretold there would be; but as the dawn grew brighter and brighter, the fog slowly disappeared, as if to unveil the great red sun that was just visible over the horizon. Slowly it grew larger and larger, while the boy was gently lifted by two strong men, and when up on his feet, he was told to take four steps toward the east. The medicine-man sang with a good will the mystery song appropriate to the occasion as the boy attempted this feeble walk. The two men by his side began to count, as the lad moved eastward, "One, two, three": slower grew the steps; it did not seem as if he could be able to take the fourth; slowly the boy dragged his foot and made the last step; as he set his foot down, the men cried, "Four," and it was done. Then was sung the song of triumph and thus ended the first medicine incantation I witnessed among the Omahas.[9]

THE PAWNEE

Upon examining the Pawnee tribe, a Caddoan speaking people, of Nebraska, one receives an entirely different view of medicine practices in the Plains area. They possess organized societies with

a fixed hierarchical class and where a vision alone does not give the right of entrance. A shaman was not made by any momentary experience, but by long training, theoretically by the spirits' instruction, but actually by the shaman or priest.[10] This priestly class is also divided with the keepers of the sacred tribal bundles outranking the chiefs in power and importance. These priests pray to the gods in the heavens, receiving their powers from them and the "medicine bundles," "have no relation to drugs or charms for healing the sick. They are in fact symbolic of a series of rituals in which is crystallized the Pawnee philosophy of the universe."[11]

The medicine-men are also formed into esoteric societies and obtain their powers from the animal gods who dwell below. The members of one society have all received their power from the same guardian spirit. If a man has received a supernatural experience direct from his guardian, he may be admitted to the society; but usually when a man knows who his guardian spirit is, he applies to a medicine-man of that society for instruction, and, if accepted, he is received into the lodge upon payment of gifts, and instructed in its mysteries. A man knows his guardian spirit because at birth he passes under the influence of some supernatural being which makes itself known later in his career. For instance, the medicine-man who is able to cure a sick child has the same supernatural guardian as the child.

The powers bestowed by the supernatural beings are[12] power to cure the sick, to perform feats of magic, and to hypnotize to some degree the patient who is being treated. Of these, the most important is the curative power. Medicine ceremonies are held at regular intervals to renew the power of the medicine bags, to drive disease from the village, and, by means of conjuring and other magical tricks, to convince the uninitiated that the medicine-men are really as powerful as they claim to be.

The medicine-men each possess a medicine bag made from an animal skin and containing his medicines and other paraphernalia, such as roots, paints, white clay, deer tails, leg bones and claws of eagles, dried fingers, and very often the maw bone of a buffalo, "as it was supposed to contain the life or soul of the buffalo." These bags are often handed down from father to son. Witchcraft



Chief Poolaw (meaning a leader of a pack of wolves), who is a medicine-man of many generations, dressed in a native garb of buckskin with his war bonnet trimmed with ermine, the badge of royalty, which hangs from the sides. He is 69 years old and his firm but kindly face proclaims him a great medicine-man as well as a leader of men. Chief Poolaw says, "Koy Kei goudle dah hei Kei ah dah," meaning "I am a full-blooded Indian of the Kiowa Tribe," or as you might say, "I am one hundred per cent American."

is usually cured by sucking the offending feather, or other object, from the patient's body. Roots and herbs are usually administered as a tea or in a powdered form.

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From this survey of Plains medicine we have seen that over practically the whole area the vision plays an important part in the concept of disease cure, as well as in other connections. The vision in this area is not confined to the adolescent period, but is often sought throughout life, especially in case of some powerful disease which refuses to yield to treatment. But this idea of the vision is about the only practice which is used generally in the area. Although in most cases in the Plains there is little distinction between the laity and the medicine-men, among the Sioux, where the medicine lodges from the Central Algonkian tribes have been established, a sharp distinction is made between the laity and the shamans. Benedict says, "their personal experiences, special knowledge, and relations to the supernatural were all differentiated. The shamans posessed an esoteric vocabulary; they were organized in cults where initiation was wholly on the basis of supernatural experience; they alone had guardian spirits won by fasting and visions."[10] As explained above, the Pawnee are divided into various classes, of which the most powerful and influential are the priests, with the warriors and medicine-men of lesser importance. The Blackfoot idea of purchase or transfer of the medicine bundle is foreign to the other groups. Certain other tribes, such as the Hidatsa and the Omaha, emphasize the idea of inheritance of power, and the Pawnee and Arikara practice an excessive development of slight-of-hand performances and other examples of supposed magical power. Although herbs are used throughout the area, the use of the same herb may vary from one tribe to another, or be mixed with other medicines. Amputation is all but unknown; bleeding is general, but the reasons for bleeding vary. The sweat-house is used throughout the Plains, but in this, again, the reasons for its use vary from tribe to tribe. In short, we cannot speak of Plains medicine or medicine-men with any degree of accuracy; to do so one must describe the medical practices of the individual tribes.

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CHAPTER VI

THE NORTHERN WOODLAND AREA

THE OJIBWA (OR CHIPPEWA)

THE Central Algonkian tribes are distinguished by the development of an extremely interesting secret society called the Midéwiwin. This group exists not for the purpose of worshipping the spirits from whom come medical powers, but to preserve those remedies which are used to prolong life. Those individuals who follow the rules of conduct, and who take the herbs prescribed by the society, are assured of a long, happy life. This most desirable extension of earthly existence results from adherence to certain medical beliefs, from leading a good social life, and from shunning evil practices. In this way the Midéwiwin not only fosters the continued use of tribal herbal knowledge, but also perpetuates tribal ideals of right living and serves as a moral force of great value.

This development of the Midéwiwin may be observed not only in the Central Algonkian area, but it has also spread to the eastern tribes of the Plains area and has penetrated to the north among some of the Algonkian tribes such as the Cree and Salteaux. In these last-named groups the ceremonies are less complex, the development of "degrees" is not so high, as among the Central Algonkian; and other evidences as well show that these esoteric societies are intrusive from the Central Algonkian peoples, where the Ojibwa or Chippewa show the highest development in this respect.

Before giving a description of the Midéwiwin, it will be well to note first that there is a certain amount of medical lore which is common property in the tribe, and the application of which does not require a special medical practitioner. Besides the members of the Midéwiwin, or the "medicine-men," who are specialists in the administration of magic remedies, mostly compounded from herbs, there are three other divisions of medical healing. The juggler is able to prophesy, and acts also as a diagnostician. The "daylight man" is a specialist in all-night seances, in preparing potent charms for the lover, and in assuring the hunter of success. Finally we

have the "herbalist," who is a specialist in the use of herbs. These three groups usually practice individually, and do not hold regular meetings to initiate novices into the mysteries of their profession.

It is a great honor to belong to the Midéwiwin, and fortunate indeed is the boy whose parents are willing to begin paying and sacrificing for his admittance when he is still but a youth. When the ceremony at which a boy is given a name is held, a member of the Midéwiwin (upon payment) will act as a godfather, and begin early to instruct the youth in the tribal lore and more particularly in the rites and ceremonies of the medicine lodge. These payments, of skins and other goods, continue to be paid to the lad's teacher and to the four individuals helping in the initiation until that ceremony is finished. These payments frequently entail great sacrifice on the part of the parents, but prestige and power are of the utmost value, in any society, and it is well known that appreciation rises in ratio to the price and effort involved.

It is not always necessary to go through a long period of training before admittance. Sometimes an individual can apply for membership, and upon payment of the required amount and the learning of the required information, the applicant is initiated. If the youth who has been in training for membership and whose payments have been made in full dies, his father or mother may take his place and receive initiation. Furthermore, membership is not limited in regard to sex or number of members.

The initiation ceremonies are held in a long, rectangular brush structure which is open to the sky. Only members are admitted by the guards, and individuals are stationed at each side of the entrance, and by jeers and taunts try to dissuade the novice from joining the society. The first part of the ceremony is given over to the instruction of the novice in the meaning of the objects used in the ceremony, the songs which are sung, and also in various methods of healing. The ritual serves to infuse into the applicant that vital "spirit power" which has been handed down from Mi'nabo'zho, and is here reproduced. Annual attendance at these ceremonies serves to keep this power fully charged. Each of the four priests, who are officiating at the ceremony, approaches the initiate, opens the mouth of his medicine bag, and by magical means

shoots a little white shell possessing mystical powers into the initiate's body. On receiving the last shot the novice falls to the ground as though dead. The chief priest then revives the unconscious man and a shell is taken from his mouth. He then is a member, and takes part in the rest of the ceremony.

But this is only the first degree, and an ambitious individual, who aspires to great power, may advance himself by taking further degrees.



A Chippewa medicine-man treating a patient with pneumonia by cupping.

Even though the Midéwiwin acts as a "repository of knowledge of herbs, it does not have a pharmacopeia accessible to every member. The remedies are individual and not general. . . . Different people have different names and uses for the same plant."[1] In the old days a medicine-man specialized in one disease and devoted all of his power to treating it successfully. But now such specialization is not practiced.

The Ojibwa use a small pointed blade for bleeding and remove about a cup of blood from a slight cut made into a vein of the forearm or ankle. For sprains, small gashes are made in various parts of the body, and a small amount of blood removed. Headaches are cured by incisions on the forehead and the use of the cupping horn to draw the blood to the surface. When a sufficient quantity

of blood is removed a healing medicine or a moist compress is spread over the incisions. This treatment often results in permanent marks. "An instrument for applying medicine beneath the skin consisted of several needles fastened to the end of a wooden handle. . . . In giving the treatment the medicine was worked in with the needles. . . . The dark spots seen on the temples of many Indians are left by the charcoal in this medicine."[1]

In case of toothache the gums may be lanced by a splinter from a tree which has been struck by lightning, or an awl or some other metal instrument is heated red hot and placed in the offending cavity. If it is thought that the tooth should come out, it is either knocked out, or pulled out by means of sinew tied around the base and attached to some firm object from which the sufferer jerks backwards.

The power that the workers of evil magic still possess over the mind of the Indian is shown in the following anecdote by A. C. J. Farrel of Montana, and Washington, D.C.

There was an old witch doctor in a Montana Cree band, who was hated and feared by all. He was what might be called a bad Indian. Like the devil incarnate he went up and down seeking whom he might devour with his withering, blighting magic. Now there was in this band an Indian maiden, Wa-Nee-Tta "Laughing Eyes," who was beloved by A-Agee-sen of the Mecko-riog Ojibway band. The father of the girl had encouraged the betrothal by extending to the young aspirant the hand of welcome. Both tribes were pleased, the young man had remained single a long time, declining the blandishments of the fair daughters of his tribe. He possessed not only the bravery so essential to the reputation of an Indian, but also good looks and manly bearing. Worldly goods, too, he had, horses and equipment for the proper maintenance of a tepee with wife and children. All seemed propitious, until the witch doctor noted the frequency of the young man's visits. He evidently had not been consulted or propitiated as he deemed his right. By authority of his rank as a medicine-man he forbade the young man to appear again at the tepee of his betrothed, saying that if he did so he would cause the whole family to die of "the black death"—which means hydrophobia. Now Mush-kee-niny, for this was his name, was a surly, sour, silent beast and

looked like a devil, or what one would expect a devil to look like.

Consternation was let loose. I happened to hear of the situation, and knowing the young people well, I saw them, asked the young girl if she wished to marry A-gee-sen. She said yes, and I arranged a place of meeting where they should come prepared to fly to remote parts where they might dwell in peace. The young man showed signs of fear. "What of the witch doctor," he asked, "who has threatened such dread things to come to pass?" "Nonsense," I said, "have I not stood before Mush-kee-niny with outstretched arms and said to him, 'I give you permission to kill me or hurt me by your magic'? And nothing happened. He can do you nor your tribe no harm." I added parenthetically, "If you do not meet him unprepared in the dark. So go and think no further of him." I saw that my words had a good effect, and it was settled that the young girl should sleep with one foot extended outside the tepee, and when the time and night were propitious I would notify her by tapping on her foot. At length, with several backslidings on the part of the prospective bridegroom, the night arrived for their meeting and departure in accordance with Indian custom. I tapped her small, extended moccasined foot; she stole stealthily from her tepee, mounted behind me and we rode at first cautiously, then galloped to the place of meeting. Alas! no one was there. We could see that horses' and human foot prints had been left recently. The situation was indeed critical, the reputation of the maiden stealing forth with a white man, the disappointment and the pang of blighted hopes—for even an Indian maiden has pangs much like her white sister, though she may not show them to the world. She said, "A-gee-sen has been frightened away by Mush-kee-niny. I will go home." I offered to take her back. No! it would not be in accordance with the proprieties of the tribe. "I will steal in unperceived" she said, "and all will be as before." With this she noiselessly departed into the darkness, and thus the story ends.

"Years later," relates Mr. Farrel, " I was in Belcourt, hundreds of miles from the Cree Ranges, when I saw an elderly Indian approach silently, as their custom is, and stand beside me. Finally I asked him if he knew me. "Sure," he replied, "I am A-gee-sen." Then it all came back to me, and I said, "What, you are not that white-livered reprobate who was frightened away by that old fraud Mush-kee-niny and did not marry Wa-Nee-Ta?" "Yes," he said,

"and it is well I did not. I was sick—yes, awful sick—for a whole year after that. The Mush-kee-niny was very mad. He nearly killed me." Thus superstition, the heritage of the American Indian, will endure while ages are passing away.

THE MENOMINI

The Menomini tribe, like the Ojibwa, have as their most outstanding medical development the organization known as the Mitawit. Originally the society posessed four degrees, but now most of the Menomini know of only two. Formerly the members subjected themselves to a sweatbath before entering the lodge, but that practice has been abandoned. As with the Ojibwa, membership requires the payment of presents to the instructor-shamans, and for membership in the lodge. Here too, the aim of the society is to prolong human life. The remedies are not owned by the society, but each individual has his own pet prescriptions. Should a member hit upon a powerful new remedy it is kept a secret until paid for.

It is this stress upon the payment for remedies and the fact that the shamans seem to be a bit more avaricious in their payment demands, which marks one of the differences between the Menomini and the Chippewa. The medicine bags (to be described later) may be purchased, as among the Blackfoot, but contrary to Blackfoot practice, they may be legitimately purchased only at one time, following the final memorial celebration of the owner's death. The Menomini seem to place more insistance upon the rôle played by dreams in the revelation of medicinal remedies. This is not only true in so far as the simpler remedies are concerned, but the more elaborate medical tricks are the result of instructions which are received by a like method. "A man's dream prescribed every phase of his performance and he impressed this upon beholders as a guaranty of his success."[2]

Membership is obtained in one of three usual ways. The most common method is similar to that described for the Ojibwa; or, if a member dies, his place may be taken by an individual who is adopted into the lodge by a living member; and finally, if a child is sick and all other methods of healing have failed, the child is taken to the lodge by a member, who then receives the instructions as a proxy for the child. If the patient recovers, he is considered a

member, and receives subsequent instruction so as to understand better the workings of the society.

Sacred bundles seem to play a more important rôle in the Menomini life than in that of the Ojibwa. All of these bundles whether for hunting, war, or witchcraft, have been derived from the intermediation of some minor power. They are the property of one individual, and the knowledge of the total contents is kept secret. Whenever the bundles are opened, songs are sung which serve to renew or exert the power inherent in the bundle. Furthermore, most of the herbs which are used also have their own little ceremonial ditty which serves to draw out their medicinal properties. Any medicine bundle or fetish is powerful because it has been associated with those powerful beings who revealed its use, because its contents were revealed in a dream, and because of the animating power of the medicine songs. The medicine bag of a new member should, according to Skinner,[3] contain these four medicines: the badge of the Mitawit and the so-called arrow of the bag with which the shooting is done; blue paint; clam shell and medicine containing the small lithosperm seed which is swallowed in the initiation; and the medicine for reviving the novice after he has been ceremonially shot. The nostrils of every medicine bag (they are made from a small animal skin) are stuffed with feathers to show its purpose. As an individual acquires more "medicines," they are placed in the bag and a song for each is added to the repertoire of the owner. The famous medicine bag of the well-known Chief Oshkosh contained sixty different "medicines."

A knowledge of herbs is one of the most important teachings of the lodge. With advancement in the lodge one receives more knowledge and more power, and is then qualified for general practice, helped and guided by the revelation of one's personal dreams.

There is a good deal of specialization of function in Menomini medical and magical treatment. The following information summarized from Skinner[4] and Hoffman[5] makes this clear. The prophets are the seers of the tribe. They can see everything that is lost, and can foresee what is going to happen four years in advance. Their power is received from dreaming of the Morning Star or the sun. Another group of practitioners receive their powers from

the guardian of the dead. Their function is similar to that of mediums, and they obtain aid for the sick from ghosts. If the patient's soul leaves him it is sucked into a reed whistle, which is plugged with cattail down, and then placed on the patient's chest. It takes four days for the soul to return to the sick man. The doctors themselves have the power to remove disease sent by sorcerers, by means of a bone-sucking tube. Sometimes the doctors of this class work in groups of four. One will diagnose, another provide the medicine, a third will mix it, and the fourth apply it. The magic of number four which with the symbol of the cross was quite generally distributed among the Indians of the Americas in prehistoric times, and corresponds to the sacred number seven among the ancient Hebrews.

The jugglers are common to most of the Algonkian tribes. They possess the greatest power, usually obtained by fasting at puberty, and are limited in number. They operate in a small structure called a jugglery, when they wish to have communion with supernatural powers. To invoke these powerful spirits, the juggler enters the structure and facing each of the four directions, invokes the spirit of that direction. He then lies on the ground and begins to chant. Soon, on the wings of the wind, the spirits begin to gather. Finally the personal spirit of the juggler arrives, and the performance is ready to begin. The juggler asks the most powerful spirit (that of the turtle) for information. Should the juggler become incautious, or ask too many questions, the spirit, like a warning conscience, will in the same tone of voice, warn him to be more careful. This performance is enacted because the family of the patient believe that he has been bewitched by an enemy through a sorcerer. During the ceremony the name of the conspiring sorcerer is obtained, and his shade is brought into the jugglery where the spirit of the turtle kicks it almost to death. The shade of the sorcerer is then asked to give the reasons for his malpractice, to tell how he accomplished his evil work, and to desist from such practices. If the practicer of evil magic persists in his folly, the spirit of the turtle acts as executioner and stabs him to death, whereupon the patient is supposed to recover. Thus we see that the juggler does not give material remedies, but acts as a protector from the malpractices of

others. His dream may require him to remove the cause of disease by using a sucking-tube. Whatever substance is removed, such as a pig bristle, a bit of down, a baby's fingernail, or some other object, it is destroyed as the carrier of the disease.

Densmore, in describing the use of herbs by one of the present-day medicine-women, has this to say.[3]

In preparing her liquid remedies Natawika distinguished between steeping and boiling. She also prepared some of her remedies by placing the ingredients in a saucer of water. The liquid remedies were administered both internally and externally. The former included "snuffing." An ordinary dose was a "swallow" and, as the early Indians had no clocks, the dose was repeated "now and then" or "when convenient." The external application included steaming, rubbing, and poultices which could be moistened without being removed. She recognized the fact that some physical conditions are incurable and the descriptions of her remedies show that she was guided only by observation of the effect of the medicine.

Aside from various medicinal substances, prayers and supplications to the spirit of medicine were sung or chanted. The following is an explanation of a medicine-song from the Winnebago tribe, sung and told by Nek-hu-wi-ka (South Wind, Jacob Russell):

Once long ago, before the Winnebagos left their old home by the Great Water in Wisconsin, there went a young man into the hills to fast. He fasted for twelve days, and then a spirit came to him in a vision and talked with him. Ma-o-na, the earth-maker, had sent the spirit to teach the man; and the spirit gave him knowledge and taught him wonderful words that brought health, welfare, and long life. Wise was the young man when he left the hills, for he brought with him the teachings of the spirit and the power of the holy words. When he came back to his people he sang this song, and this was the beginning of one kind of medicine ceremony. The words he had learned of the spirit were so holy that the man lived long without any sickness, nor did he die of any ill. At the last all the joints of his body fell apart from mere old age, and of old age alone he died. So the song that he made, containing the wonderful words, has always been cherished by the Winnebagos because of its great power.

All this was long ago when the language of the Winnebagos was different from what it is today. Now the people no longer use such words in common speech. Indeed, no one knows the exact meaning of the wonderful words. The song is still used in some of the medicine ceremonies, but only the medicine-men, the holy-men, understand its meaning. The medicine ceremony of the Winnebagos lasts four days and nights. The medicine ceremony used to be very solemn and sacred in the olden time, and its mysteries were known only to the initiated. The white people called it the "medicine religion of the Winnebagos."

Another medicine-song of the Winnebagos (Mun-kun Na-wan):

Ni-hai-na-wi-nu-hu	Saith the spirit,
Ha-ha-ti-hi	Dream, of, dream again,
Hi-na-wi-hi-na, etc., etc.	And tell of me,
	Dream thou, etc., etc.

The wisdom of the otter is known to the men of medicine. In pouches made of ôtter-skin, or the skin of some other emblematic animal, the men of medicine put their mystic "medicine" and charms. During a medicine-dance the medicine-men hold their skin-pouches in their hands, and suddenly shoot them out at arm's length toward some man, when the mysterious power that is inside the pouch flies out like an arrow and strikes the man dead. He falls on his face, and lies motionless until the men of medicine, through their mysterious power, bring him to life again. Women, too, are pierced by the unseen arrows.

Ma-ni-na, le-ha-no,	Let it fly—the arrow,
Ma-ni-na, le-ha-no,	Let it fly—the arrow,
Wunk-i-wi-zha-le-ha-no,	Pierce with a spell the man, oh!
Ma-ni-na, le-ha-no!	Let it fly—the arrow.

EASTERN ALGONKIAN

In contrast to the ceremonialism attached to medical treatment among the Central Algonkian tribes, is the relative lack of such procedure among the eastern and nothern Algonkians. Such northern tribes as the Cree and Salteaux, while possessing a medical lodge clearly derived from the Ojibwa, obtained most of their treatment from ordinary herbalists and magicians. The farther we go from the typical Central Algonkian tribes, and away from the

intrusive Iroquoian element in northeastern United States and lower Canada, the nearer we approach what very possibly were the ancient medical observances of the whole Northeastern Woodland area.

Over the entire two continents there will be noticed in nearly every tribal or cultural group, some practical use of herbs not encumbered with an accessory ritual. In the region now under discussion single herbs are employed and they are thought to have a direct effect on the ill for which they are used. A complex disorder will be treated by a combination of the remedies for the different ailments. Apparently a large percentage of the herbal remedies are individually acquired. Lacking a formal training school, it is perhaps inevitable that the use of plants would vary from one individual to another. It is obvious, however, that over a period of time the actual curative power of certain plants will be recognized; and therefore some of the Indian formulas hit upon the right cure. In regard to this particular area, the theory of "like influences like" is not outwardly prominent, but certain psychological influences are invoked in treating disease. Either the appearance, or other imaginary quality, such as smell, taste, or even the name of the herb is selected with this in view.

The Mohegan tribe, like many others, use the bark of the elder (*Sambucus canadensis*). If they obtain the medicine by scraping it upward from the stem, it is used as an emetic, but if scraped downward, it is administered as a physic.

The Penobscot tribe possesses an almost limitless number of remedies which utilize most of the native plants. Some of these remedies are of value. These cures are in general the property of anyone, and are not restricted to a few herbalists or even to the shamans. The practice of medicine is not limited to men and many of the older women are regarded as expert herbalists. In spite of the fact that medical knowledge is widespread and the remedies are common property, it is inevitable that if a practitioner happens to hit upon a particularly powerful remedy, he keeps it secret. The Penobscot origin myth of the first appearance of the knowledge of cures describes a mythical chief who lives in a supernatural realm in the North. Theoretically an Indian must visit him and obtain

his herbal knowledge from that source. This is accomplished by a dream.

Among the Micmac, an Indian wishing to acquire power usually goes alone into the woods and builds a shelter for two, and even provides meals for two individuals. Gradually the spirits will come to his aid, he will find his food prepared on returning after an absence from his little shelter, and slowly a spirit will actually take the shape of a human being, and, eating and living together, they strike up a friendship. From this spiritual visitor the Micmac acquires his power. He is taught the language of the animals, and those who receive the highest power can assume any shape, walk through fire, on water, and travel through the air. Furthermore, the most powerful can read the future for seven years.

The number seven plays an important part in the preparation of Micmac remedies.[6] A very powerful remedy is made from seven different plants which must be gathered in the autumn and in the prescribed order. The seven remedies are alum bark, hornbeam, beech, wild willow, wild blackberry, ground hemlock, and red spruce. The bark of the first five, and the roots of the last two, are used to make a drink. These seven herbs were brought to the attention of the tribe by the rulers of the four cardinal points and each of the seven former divisions of the tribe possessed the right to one of the plants. Also, a seventh son is a very powerful healer by virtue of his birth. Other remedies in use among the Micmac are composed of other combinations of seven herbs. Those remedies, however, which contain only seven plants, pale into insignificance before the grand cure-all, which is a mixture of seven compounds, and therefore has the curing power of forty-nine separate ingredients.

It is not to be thought that because in many cases the eastern Algonkian peoples resort to simple remedies and simple treatment that magical treatment is not in evidence. As in our own civilization, while people are treated with disease-combating remedies, the psychological factor of faith in the power of the physician is also important.

A late observer[7] of Micmac medicine after spending some time with the tribe and noting their remedies, turned them over to Wil-

son Wood, then of the University of Pennsylvania Medical School, for analysis. In his report Dr. Wood said, "Most of the practices recommended are unquestionably based on superstition and some if followed must be absolutely harmful. A few seem to be the result of favorable experience, and have their analogues in methods employed by more civilized peoples. Nearly all of these, however, are, as might be expected, extremely crude."

IROQUOIS

In considering the practice of medicine among the Iroquois, let us examine briefly some of their basic beliefs which influence not only their treatment of disease, but all other phases of their life. Throughout nature, according to the belief of the members of this powerful Indian federation,[8] there are both good and evil spirits, and man must adjust his actions so as to please the good spirits, and not offend the evil ones. The good spirits not only help man, but they are continually at war with the malevolent beings. Everything in nature lives and is conscious. A tree has being, a stone may be spoken to, and an Indian possessing "orenda" or magical power can control these spirits and make them do his bidding. Every living creature, not man alone, has a soul and it is for that reason that a hunter will first explain carefully to the soul of an animal why it is necessary that the animal be killed. That is why a great hunter is one who has treated his friends, the animals, with courtesy, and why friendly animals are glad to help man. The souls of evil animals must be bribed to leave man alone.

A ghost is the body spirit, or name, of a deceased person or animal who wanders about his former home. Individuals who, when alive, were wizards, witches, or sorcerers, and possessed an evil "orenda" are, of course, much more dangerous when dead. There are monsters who are generally evil, but they are seldom seen by man.

Dreams are the results of the wandering of the soul while an individual sleeps. If an individual has gained certain desires in a dream, it must be interpreted, and the desire satisfied. If this is not done, evil will befall, not only to the dreamer but to the interpreter as well.

Among all the Indians of this vast territory there was a common belief above all in the Great Spirit whom they did not presume, as did the Israelites, to endow with a definite personality. In the Iroquois nation after *Hä-wen-né-yu,* (the divine being), or *ongwe* (man being), came the Three Sisters, *De-o-há-ko,* which, translated, means their life, and described as beautiful maidens who presided over the destinies of the maize, the bean, and the squash, substances essential to life. Next in the hierarchy of the ethereal came the spirit of medicine, which warded off sickness and restored the ill to health. Then came lesser spirits, which presided over fire, water, and the trees of the forest, each possessing a distinct individuality. Thus there was the spirit of the oak and the hemlock, the whortleberry and the maple. The tobacco plant and its near kindred of wide distribution among all tribes, both north and south of the equator and in the islands between, were sacred and especially looked upon as possessing medicinal properties of the highest value. It was an intermediary between the material and the spiritual, possessing both substance and essence. As a substance it was dual in character, appealing to the taste and bearing its votary to the land of dreams. As an essence it bore aloft the prayers of the faithful where they might be heard by the Great Spirit. Whether this incense feature of their ritual preceded the arrival of the Christian missionaries, one may be unable to say, but it seems to be quite probable that it was an imitation of the mass, as understood by the natives. Rogers, archaeologist to the Santa Barbara Museum of Natural History, says that the Canalino Indians, a pre-Columbian tribe who inhabited the Pacific coast, traditionally blew tobacco smoke as a religious ceremony, blowing it to the four cardinal points of the compass, particularly over their dead.

With these few facts in mind we can better understand the following data on the Iroquoian medical societies, and their views on and treatment of disease. These societies have their roots in the distant past and their rituals and songs have been preserved for hundreds of years. They are esoteric organizations with permanent officers who specialize in the performance of the ritual. They have executive officers, stable and unchangeable rituals, and membership is limited to those who have undergone initiation. Each or-

ganization has a legendary origin in which the founder became involved in more or less unusual ways with animals. After various adventures, the hero, through the kindness of the animals, is allowed to return to his people. He brings with him the secrets of his benefactors, and these secrets are preserved by the society which he founds.

Such a society is that of the "Little Water Company," the most exclusive secret medical organization of the Seneca.[8] It holds four meetings a year to preserve the power given to its founder in the form of the "little-water powder." No individual, even though he is a member, is admitted to a meeting if he has had a quarrel, and of course unclean men and women are not admitted. There are no public ceremonies or dances, and the songs and rituals are never performed outside of a meeting. Visitors may hear but cannot see the mysterious processes by which the power of the medicine is preserved so that it can be used for curing.

The legend of the origin of this society may be thus summarized: Once upon a time there was a fine young chief who not only was popular with his people, but was also a great hunter who always observed the necessary proprieties when killing animals. For this reason, when the young chief was sorely wounded and left for dead on the field of battle, his friends the animals (for they are the great medicine people) gathered around him. After a council they agreed that a wonderful medicine should be made to cure their friend. All of the good animals helped in one way or another to brew this potion, some even giving up their lives that their friend might live. As the young chief regained consciousness he not only recognized his friends but also understood the charm song which the animals were singing, and this song they taught him, as well as the dance which went with it. But the young chief could not be told the various ingredients of the medicine, for he was married, and the secret could be given only to a virgin youth. Some time after this, when the chief had returned to his people, an occasion for another war party arose. Before the conflict, the group heard a mysterious voice singing, and the chief recognized this as the medicine song of the animals who had saved him. So he sent a number of youths to find the singer and learn the secret of the medicine. They located the mysterious voice as coming from a magic corn stalk whose roots spread in the four directions. After

a ceremony, the youths were given the composition of the medicine, and taught the song which makes the medicine strong and preserves it. This medicine was used after the raid was over, and was found to cure all wounds.

The procedure which is followed today by the Seneca in curing a complaint for which this society has the remedy, is described by Parker:[8]

A person who wishes to have the medicine given him for the cure of a wound, a broken bone or specific disease, must purge himself and for three days must abstain from the use of salt or grease. His food must be the flesh of white birds or animals, and only the white portions. The system of the patient is then ready to receive the medicine. The medicine-man comes to his lodge and an assistant searches the house for anything that might destroy the "life" of the medicine such as household animals, vermin, decayed meat, blood, soiled garments, etc. These things removed from the house, the patient is screened off and the guard patrols the premises warning away all infected or obnoxious persons. An attendant who has previously been dispatched to a clear-running stream enters with a bowl of water that has been dipped from the crest of the ripples as they "sang their way down the water road." Not to antagonize the forces in the water, it was dipped the way the current ran, downstream and not upward against it.

Everything now being in readiness the medicine-man takes a basket of tobacco and as he repeats the ancient formula he casts pinches of the tobacco into the flames that the sacred smoke may lift his words to the Great Spirit. The water is then poured out in a cup and the medicine packet opened. With a miniature ladle that holds as much of the powder as can be held on the top of a small penknife, the medicine man dips three times from the medicine and drops the powder on the surface of the water in three spots, the points of a triangle. If the medicine floats the omen is good, if it clouds the water the results are considered doubtful and if it sinks death may be predicted with a degree of certainty and the medicine is thrown out. In the case of severe cuts or contusions and broken bones the medicated water is sprinkled upon the affected part and an amount is taken internally. A medicine song is then chanted by the "doctor" who accompanies himself with a gourd rattle. After the ceremony of healing, the people

of the house partake of a feast of fruit, and the medicine-man departs with his fee, a pinch of sacred tobacco.

But of all therapeutic means of cure, none would better satisfy the natural craving of the ultra *risqué* than that given by Parkman in a footnote, which he very properly leaves in the original as written by the missionaries in their quaint and antiquated orthography, and which they describe in detail as a *"damnable et Malheureuse ceremonie."*

Dans le pays de nos Huron, il se faict aussi des assemblées de toutes les filles d'vn bourg auprès d'vne malade, tant à sa priere, suyuant la resuerie ou le songe qu'elle en aura eue, que par l'ordonnance de Loki (le docteur), pour sa santé et guerison. Les filles ainsi assemblées, on leur demande à toutes, les vnes apres les autres, celuy qu'elles veulent des ieunes hommes du bourg pour dormir auec elles la nuict prochaine; elles en nomment chacune vn, qui sont aussi-tost aduertis par les Maistres de la ceremonie, lesquels viennent tous au soir en la presence de la malade dormir chacun auec celle qui l'a choysi, d'vn bout à l'autre de la Cabane et passent ainsi toute la nuict, pendant que deux Capitaines aux deux bouts due logis chantent et sonnent de leur tortue du soir au lendemain matin, que la ceremonie cesse. Dieu vueille abolir vne si damnable et malheureuse ceremonie.—Sagard, *Voyage des Hurons,* 158.

Besides the medicines and cures which are intimately connected with organized societies, there are common nostrums which are familiar to the tribe as a whole. The gathering of medical plants in any case is a magical process and is done in the autumn with especial care being taken to keep evil spirits away. The Iroquois recognize the medical value of springs which contain minerals such as salt, iron, and sulphur. F. W. Waugh[10] while living with the Iroquois, secured information from a score of individuals and obtained hundreds of formulas. Unfortunately the bulk of this valuable material has not been published, but from a brief report we learn that hardly any two prescriptions are identical and that medical procedure varied from one individual to the next. It is interesting to record here the remedies which make up the powder of the "Little Water Company." "The 'small dose' medicine is

composed of the brains of various mammals, birds, fish and other animals, and the pollen and roots of various plants, trees, and vegetables. These ingredients are compounded and pulverized with certain other substances as squash seeds, corn roots, etc."[8]

Iroquois medicine and medical men, in spite of the presence of organized societies, concentrate most of their attention upon the ills of the individual. To join these various societies one must either have a dream of a fixed type, or, being sick, dream of an animal. In the latter case a prophet or diagnostician is called in and he usually recommends the proper society to effect the cure. The sick man gives a feast to the members who are to attend the ceremony before they perform the ritualistic cure. If the individual recovers he becomes a member of the society.

A hint is given by Goldenweiser of a practice which is very common among the Indians of the southeastern part of the United States, and in the case of the Iroquois is undoubtedly derived from that region.

In addition to their activities as visiting physicians, some of the societies practice ceremonial rites or exercise elaborate medicinal functions of a more generalized kind. . . . The False-faces [a medicine society], twice a year . . . drive away the disease spirits,[11] and act as do our health officers for the public good.

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CHAPTER VII

THE SOUTHERN WOODLAND AREA

THE characteristics of the Southern Woodlands area are of the type which give promise of leading toward a high development of culture. Agriculture, concentration of the population into permanent towns and villages, a high development of chieftainship, and emphasis on the ceremonial aspects of religious and social life are a few indices which reveal this tendency. We are particularly concerned with the emphasis on the ceremonial life, because it is particularly evident in the medical practices of this area, and serves to complicate the picture. As is usual in more complex societies, positions which were formerly filled by one individual are now divided and a number of individuals are needed to serve where but one formerly sufficed. It is for these reasons that we find a marked tendency for one group of medicine-men to become crystallized into a class of priests specializing in religious and social ceremonies by which the society is ritually cleansed and purified. Still other specializations take the already familiar forms of doctor, wizard, conjurer, or juggler, with further differentiations within these divisions. This is especially true of the doctors, where one individual is viewed as possessing special power over a particular disease, and his practice is often limited to that ailment.

In our discussion of this area we shall first give a general description of medical procedure as practiced in three tribes of similar culture, namely, the Creek, Choctaw, and Chickasaw. Following this will be a section devoted to the Cherokee.

CREEK, CHOCTAW, AND CHICKASAW

An individual of either sex can become a medicine-man in this area, but as in the other regions, it is usually the men who do so. The woman's share of medical practice is usually devoted to being a midwife and sometimes, especially if she is advanced in years, she is considered a witch. Acquisition of supernatural power is the only way in which one can secure success in medical treatment.

The larger part of the medicine-men are known by a collective

term which means "fasters" because in their training fasting is an important element. The training school can impart four degrees, and when a group of four young men wish to join this esoteric division of their tribe, they approach an elderly man who has taken all four degrees and request instruction. The youths partake of medicines brewed by the teacher while he instructs them first in the elements of medicine, which are the modes of treating gunshot wounds. While learning the mechanics of the treatment, the boys are taught the songs which give virtue and power to the medicine. These songs must be memorized. If the novice is quick to learn he may acquire the knowledge to cure some other ailment before the first four-day period is up. This first four-day introductory course is followed by five or six more of like duration; then an eight-day course; and the last is a twelve-day course. Very few individuals get as far as the twelve-day course because only those of high intelligence are able to master the necessary amount of information. As the youths fast during the period of instruction, they see a vision which reveals to them the type of medicine in which they will specialize.

Disease is caused by a number of different agents. According to the tribal myths and traditions, the animals, birds, fish, reptiles, and insects cause disease to afflict mankind because man killed and trampled on them. Each of these abused creatures obtained revenge by creating a certain disease to plague man. According to some tribes the same animals revealed the cure for their disease while other tribes believe that the plants came to man's assistance and disclosed the remedies. There are other causes of disease besides this classical one. A conjuror or wizard may work a spell and cause sickness. A taboo may be broken; a man's soul may be enticed from his body; or again, a man may take sick and die because he has lived his allotted time and he just dies, and nothing can be done about it.

If a case is pronounced hopeless by a doctor for the last-mentioned reason, the relatives of the sick man sometimes strangle him to cut short his suffering. The story is told of one such case in which the sick man hearing the discussion preliminary to the proposed strangling, crawled out of the village and made his way to

a neighboring town. When, after a number of months, he had regained his strength, he returned home, much to the surprise and amazement of his relatives, for they had been led to believe that he had died and been spirited away. The doctor was then sought and killed for daring to give false information which almost led to murder.

A doctor's paraphernalia consists of various roots and other medicines. These are administered along with the appropriate formulas and songs. A long, hollow tube is used through which the medicine is blown so as to increase its power. Gourd rattles, wooden drums, a horn for cupping, and flint knives or thorns for scarification form a part of the doctor's equipment. The sacred beads used in divination, as well as the gourd used to administer the medicine, and the vessel in which the potion is brewed, all have a special significance and are carried by the doctor or his assistant. Distinctive dress is worn, especially in times of crises. A doctor who can treat gunshot wounds wears a buzzard's feather; a man who can cure snake bite wears a fox skin and a tobacco pouch of opossum skin, while a graduate of medicine wears a black circle around his eyes when he goes out at night. These insignia are used because of some real or fancied connection with the cure. A gunshot wound is first cleaned with a buzzard's feather; the fox and opossum can kill and eat snakes; and a raccoon with black markings around its eyes is able to see at night. A man with a skunk pouch is a great medicine-man and able to charm any animal.

When an Indian becomes ill, he calls in a doctor, and the two are left alone so that there will be no possiblity of any evil influence upsetting the good medicines which the doctor is about to call to his aid. The doctor then sings various songs and shakes a gourd rattle over his patient, meanwhile watching very closely to see which song pleases the patient. The song which satisfies the patient determines the medicines to be used and the treatment. The plants and herbs are procured with due respect to all the ceremonial requirements. Four kinds of medicines are generally mixed and administered four times. The medicines are beneficial not only because they possess magic for a particular disease, but also because they receive power to cure from the songs and from being blown upon

after the saying of the sacred formula. The doctor visits his patient four successive days, and frequently orders a ceremonial feast which raises the spirits of the sick person, and weakens the evil spirits causing the disease.

Blood letting and sucking are common practices, especially in cases of disease-object intrusion where one is the victim of sorcery. Small incisions are made in the skin at the point beneath which the object lies, and a cow horn or often merely the mouth, is used to suck the blood and remove the offending object. Sweat baths are a prominent part of various cures and a large proportion of the deaths from smallpox can be attributed to the results of plunging in cold water immediately after having taken a sweat bath as a cure for that disease. For a nurse, "each patient is allowed only a superannuated woman to attend him, who is past the temptations of sinning with men, lest the introduction of a young one should either seduce him to folly; or she, having committed it with others, or by not observing her appointed time of living apart from the rest, might thereby defile the place and totally prevent the cure."[1] There is scarcely any practice of surgery except that the flesh around a wound may be cleaned. Amputation is never practiced as the Indians will not permit it.

Besides the various kinds of doctors which have been briefly discussed, there are wizards, conjurors and jugglers, prophets, and weather controllers. All these except the doctors, who have supernatural protection, are afraid of the wizards, for a wizard can injure and kill people. If a youth wants to become a wizard he is first warned by his instructor that he is selling his soul to the devil. If he persists in his request he learns the awful secrets of a wizard's trade and his first victim must be one of his own family. He is so filled with magical power that at a certain period of the year he is forced to kill someone. During this period he can assume any form and accomplish any evil deed. Of course, a wizard can be paid off if he is known to be operating against one, but he is a very dangerous individual.

There are but few prophets and they diagnose the cause of illness from an examination of the sufferer's clothes. The clairvoyant is able to see into the future, and the juggler is the sleight-of-hand

specialist who demonstrates that, if the primitive eye is better than our civilized eye, the savage hand is even faster. In games, the conjuror, by magical means, helps one team defeat the other; and in horse races he decides who the winner shall be. One wonders how often the "long-shot" wins. The weather controllers not only bring rain, but they can prevent it. The members of the priestly class have great power in the tribe, and the office tends to be inherited in a direct line.

The doctors are paid as they are called in, to encourage them, and also upon the completion of treatment. In general it may be said that they are looked up to by their fellow-tribesmen. Of course the wizard is hated and feared by all, but this enmity does not come to the surface except when he is actively engaging in deviltry, in which case he is liable to be killed. If the patient of an ordinary doctor dies, he must satisfy the relatives of the deceased that he did all in his power to save the dead man, otherwise a charge of malpractice is laid against him and he may be killed. If a doctor is killed because he has turned wizard, no one protests; it is the right thing to do. When he is dead, all of the medicine he has acquired leaves him in the shape of various kinds of animals, such as lizards and snakes.

CHEROKEE

Among the Cherokee, as among the other southern tribes, there is a strong tendency for the ritualistic part of medical procedure to disappear, especially that part relating to the treatment of the group as a whole, in ceremonial cleansing and purifying rites.

The ordinary way of becoming a medicine-man is to approach one and ask for instruction. This will be given, providing the applicant's character is approved, the payments are large enough, and the teacher feels there is room for another doctor. If the doctor refuses to instruct the candidate, it is on the basis that the "divining beads" revealed that the seeker could never be successful. Every beginner must learn the ordinary lore about disease, curing methods, and preparation of herbs. Following this, he may specialize and even learn love charms, hunting formulas, or learn how to become a wizard. During the lesson, the novice drinks a medicine to help him remember what he is told; he must be careful to avoid

menstruating women; he must fast and seclude himself, as part of his instruction. During the course, the importance of the songs and formulas is stressed, and everything relating to the cure is minutely described by the teacher. Once the applicant becomes a medicine-man, the news spreads quickly, and the size of his practice grows with his skill and fame. After an individual is a medicine-man, he may lose his power if he takes any part in a funeral, if he does not observe the taboos concerning women during their period of isolation, and if he does not purify himself after the death of one of his patients. The doctors, as an esoteric group, exchange ideas on cures and sell their various formulas to one another. If a prominent doctor dies, his equipment and practice are usually handed down to someone in his household who had been initiated by the dead man, or to another individual so initiated.

Disease is invisible, intangible, and passive. Its presence is made known, however, by visible evidences, such as swellings, protuberances, spots, or by the action of worms. When it thus becomes active, it is being motivated by supernatural beings or through the power of some wicked person. Other causes of disease, according to the Cherokee, may be attributed to an enemy thinking bad thoughts about one, spoiling of the saliva, or a ghost trying to steal the soul.

Of the supernatural causes of disease, the most important probably are the spirits of the animals, who thus gain revenge for slights and abuses. Disrespect toward fire, such as urinating on the ashes, or throwing offal on it, or spitting on it, will bring disaster. Insults of like nature to the river have their penalty. Human ghosts who naturally feel lonesome for their friends and relatives cause a disease, so as to provide congenial company, while an animal ghost will cause trouble if respect has not been shown to its body after it has been killed. A powerful disease-bringer is the magic used by witches to cause sickness. Other causes of disease are dreams, omens, neglected taboos, and the evil influence attributed to a woman during her catamenial period.

The medicine-men use about the same paraphernalia as was mentioned for the other southern tribes. The cure consists not so much in the actual medicinal value of the plants used as in the supernatural power of the formulas and songs, and the strict ob-

servance of the various regulations which are followed when the medicines are procured, prepared, and administered to the patient. Of any ten medicines used among the Cherokee, "one is the best that could be procured, two others help in a lesser degree owing to their soothing or tonic properties, and the other seven are worthless."[8]

The medicine-man first finds out where the patient feels ill, and then asks questions to see if any taboos have been broken, or if there have been any dreams or omens which will give him a clue. By these means the disease-causer is revealed and the medicine-man can then combat it. If, after the treatment, the patient does not rally, another medicine-man is called in and after another diagnosis he will see that there is yet another evil agency at work, and will treat for that disease-causer. The medicine is often taken as a drink, or it may be sprayed over the patient by means of the blowing tube. Sometimes it is merely sprinkled or rubbed on the patient. In the vapor bath, the medicine is poured on the hot stones, thus adding the healing power of the medicine to the relief afforded by an ordinary sweat bath. Massage is frequently used, the doctor first warming his hands and then rubbing with the right hand over the afflicted spot. The disease may be vomited into the river, and by that means carried away from the sufferer. The Cherokee also use scarification, but with subsequent sucking to remove a disease-causing object.

Very little that resembles surgery is practiced. If a tooth has decayed, a piece of tobacco may be stuffed into the cavity. If the pain becomes too great, the tooth is knocked out. This method of tooth evulsion caused a traveler to remark in 1709, "and however it may seem to the Europeans, I prefer it to the common way of drawing teeth by those instruments that endanger the Jaw, and a flux of blood often follows, which the method of a punch never is attended withal; neither is it half the pain."[8]

Since the comparison between European and Indian medical practices has been mentioned, we might further state that in most cases of disease treatment of this period, the Indian remedy was as good as that used by Europeans of that time. White men coming in contact with the Indian medicine-man marvelled at his cures, and pointed out how much more effective was the Indian's treatment of

disease. A planter in Carolina had an ulcer in his leg which he tried in vain to have cured by a white doctor. He finally obtained the services of an Indian who applied a powder made from rotted corn and the soft down from a turkey's rump, which promptly dried up the ulcer.

One of the earliest accounts of the white man's experience with an Indian medicine-man is that of Captain John Smith, in his *True Travels, Adventures and Observations*,[4] which leads one to infer that all his narratives did not possess the feature of veracity. In this he tells in quaint style of his capture by the Pamunkey tribe of Virginia in 1607, and of being taken to a "long house," where, on the following morning he was visited by a "great grim fellow," who was painted over with "coale" minkled with "oyle" and who came skipping in with most strange gestures and passions.

He began his invocation by "environing" the fire with a circle of "meale," whereupon he was joined by six others who with their rattles began a song. This being ended the "chief priest layd down five wheat cornes." This ceremony was apparently continued during the day and repeated on the two days following.

Captain Smith's reception by the medicine-men of the Virginians was also more fully described in 1735 by Picart,[5] but this description, however, is essentially the same as that already given, excepting that the grains of wheat were arranged in rows of five and that the meal was supposed to contain magical properties. Finely ground or pulverized substances seem to possess in the minds of the Indians wonderfully magic powers, as in the "hoddentin" described by Bourke.[6] The pollen of various plants, such as the common bulrush of our swamps and the cat-tails which it produces; this or some finely pulverized substance was always one of the constituents of a magic or medicine bag, and was sprinkled along the path of a war party to insure victory, or around a patient to ward off death and to hasten recovery. This, again, has its analogue in more recent times and among more sophisticated peoples in the potency ascribed to "trituration" in Hahnemann's *System of Medicine*.

Before leaving the doctor who majors in magic, one more feature deserves particular mention; that is, the *post mortem* consultant—

the croaking raven of the tribe. He is the cause of much trouble between physician and patient, or in case of death, the patient's family or friends. When it is thought the patient is not being properly treated, it is frequently the custom for the family to consult some one who is thought to be on even more familiar terms with the rulers of the Spirit World. In case of death, too, such are consulted to ascertain whether or not the case had been properly treated. In the event the treatment is reported improperly performed, the doctor has to account for someone working an adverse charm over the case, or to save his life, he must flee to parts unknown. In the case of a new and untried medicine-man, here as elsewhere, two or three deaths in his practice will cost him his life, if he is unable to satisfy the credulity of the family circle. What is thought to be justice, too, under these circumstances, falls swift and sudden which our law courts might do well to emulate.

The Indians, now, as in the past, have little regard for white men's cures, since they feel that only an Indian's medicine can cure an Indian. They believe that the white men brought many diseases among them, and in this they are, of course, correct. But they feel that this was deliberately done. The Cherokee believe that their major smallpox epidemic was caused by the whites showing two Cherokees some red fish, which upon their return to camp brought the disease with them. The word for white man among the Cherokee is equivalent to, "he is a mean man."

The medicine-man is usually paid with cloth, garments, or food; and he is usually a guest at a patient's house for a number of weeks. His position in the tribe is one of importance, and he is looked up to, not only as a doctor, but also because of his knowledge of the tribal traditions and laws, and in many cases, his intellectual superiority.

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CHAPTER VIII

THE SOUTHWEST AREA

THE Southwest area is the region where the highest cultural development in North America took place. Just as the material side of this culture is richest and most interesting, so is the ceremonial life the most complex and the most highly organized.

Some authorities divide the peoples of this region into three sub-divisions: (1) The Pueblo dwellers, (as the Hopi, the Zuñi, and the Acoma Indians); (2) the nomads (Apache and Navajo Indians); and (3) the village dwellers (Pima and Papago Indians).

The Pueblo Indians live in terraced, stone houses, some of which are three or four stories high. These pueblo villages are permanent, and some of them are centuries old.

The nomads, although restricted somewhat today, tend to move their camps at frequent intervals.

The village dwellers live in brush houses which are more or less permanent. Each house is a separate unit and is therefore different from the pueblo houses.

The Southwest area, in addition to possessing a higher culture and a richer ceremonial organization, is peculiar in still another respect. As I have pointed out from time to time, the shamans or medicine-men of the various areas reviewed, either seek or receive spirit helpers, visions, or aid from the supernatural world. Such aid, however, whether sought after or not, is granted to individuals as such, and not collectively to a group.

The Pueblo area, however, is entirely different in this respect. This is the one great area in North America where visions and supernatural powers have no important place in the lives of individuals, or in the ceremonies. Approach to the gods must be made by the group.

Why is this? On every side of the Pueblo area are groups in which an individual guardian spirit or spirit-helper is a dominant feature. Trances, orgies, dreams, drunkenness, and other excesses find no place in the Pueblo Indians' sober, calculated pursuit of life. This is not due to the fact that the Indians of the Southwest area are cut off geographically from other peoples and cultures.

Some groups are even associated with Plains Indians hunters; others with Indians to the south; yet there is no mixing. The Pueblo Indians seem to live on a kind of cultural island, cut off from many alien influences. This isolation is due to cultural resistance, that is, an unconscious, but powerful balking or stubborness on the part of these Indians, and a will to resist influences or traits from other neighboring cultures.

The various groups are communally organized. The whole culture is formalized and the individual loses his entity. Because of this a man may not function as a medicine-man, even though he may acquire power from the supernatural, *unless* he has joined a curing society or a medicine society. Therefore, it is with the medicine societies that we shall deal, for they diagnose and cure the sick.

I have selected, therefore, two representative groups, and shall concern myself only with these. They are the Acoma Indians of New Mexico, pueblo dwellers, and the nomadic Navajo Indians of Arizona and New Mexico.

ACOMA MEDICINE SOCIETIES[1]

There are four medicine societies at Acoma; the Fire, the Flint, the Thundercloud, and the Kabina (there is no translation of this last word). These four societies do not specialize in any particular diseases, but any one of them may be called in for any kind of sickness. It is merely a matter of the patient's preference, just as we are free to select any doctor we wish to consult.

Membership is gained in various ways; but the most common method is to join one of the societies after being cured of an illness. That is, if the Fire society cures a man of any illness, he is supposed later to join the Fire society. This rule applies to women as well as men, although women never participate in curing. If certain ceremonial regulations are broken, the violator has to join a society. If a person hands an unlighted cigarette to a medicine-man, the medicine-man touches the giver and thus forces him to join the medicine society to which the shaman belongs. One may join a medicine society by requesting to be made a member. This method is rarely used.

How different this is from the Eskimo society, where, before one may become a medicine-man, one must have a dream or acquire supernatural power by seeking it, or by accomplishing tricks! In the Southwest one becomes a member of a medicine society after he has been ill and cured, has broken a taboo, or has requested membership.

It should be made clear that the members of the Southwest medicine societies do not themselves possess the power to diagnose and to cure disease. This power is obtained from certain animals, such as the bear, mountain lion, or the eagle. The bear is considered the most powerful medicine animal.

The Acoma Indians, like many others, have much common sense. They know that some illnesses are due to natural causes. Thus exposure to extremes of heat or cold, or overeating of green fruit is recognized as being unwise, and an ailment resulting from these or like causes is not attributed to supernatural forces. Certain medicines are employed for such causes.

If the cause of an illness is unknown, or if complications arise, it is believed that the trouble may be due to one of two causes: either the presence in the body of a disease-causing object (as a stone, a thorn, a stick, or a bit of string); or to witches, sorcerers, or bad spirits.

Supposing a man falls ill, what would be the procedure of diagnosis and cure? If the illness is slight, only one medicine-man will be called; but if it is serious, the whole medicine society may be called. Medicine-men must respond to all sick calls; they dare not refuse treatment to one who calls for help. The patient may be treated at his home or in the ceremonial chamber of the medicine society.

If the patient wishes a particular medicine society to cure him and intends, when well, to join this curing society, he sends his father to inform the medicine society of this fact. The father and relatives make some feather brushes or prayer sticks. The father takes one stick and prays that his son may recover. Then the patient takes the same stick and prays that he may recover. The father now takes this prayer stick and others to the headman of the chosen curing society, and begs that he will come and cure his child. The headman of the society calls together all the other doctors of the

society, distributes the prayer sticks among them, and informs them of the father's request.

At an appointed time, the whole curing society comes to the house of the sick man. An altar is set up in one of the rooms of the house, and the curing paraphernalia put in order. These paraphernalia include corn-ear fetishes, medicine bowls, animal effigies, bear paws, a bowl of water, a gourd dipper, a bowl for waste, and a quartz crystal.

The patient is brought in and laid on the floor. The headman then mixes a medicine, which consists of a mixture of water and herb medicines. Now the headman takes the quartz crystal and looks at the patient through it. This crystal enables the doctor to see any objects which may have been injected into the patient's body, or to note the presence of witches. Of course it is important to know whether the illness has been caused by witches or by some disease-causing object which has been "shot" into the body. After the headman has examined the patient by means of the crystal, and has made his diagnosis, the other doctors, in turn, also examine the patient by means of the same crystal. Each medicine-man makes his own diagnosis without consulting the others.

The curing ceremony performed by each doctor according to his own diagnosis, consists in massaging, whipping away the disease with eagle feathers, and sucking out the foreign body. The sucking is performed by the lips without the aid of any sucking tube. If any foreign, disease-causing object is brought forth by suction, it is spat into the refuse bowl. When all the doctors have assisted in some part of the ceremony, they wash their hands and gargle their throats. The headman then administers the medicine to the patient, either internally or externally. If there is any of the mixture left, the patient's family drinks it.

The altar is permitted to remain in the sick man's house for four days. Two of the doctors of the curing society stay with the patient, until he becomes well or until he dies. If the patient recovers, he must, according to custom, join the medicine society which cured him. Initiation and payment take place some time later. Payment consists of corn meal, flour, bread, blankets, meat, wool, or other articles of value.

In addition to curing individuals, the medicine societies have

another important duty, namely, that of effecting a general or communal curing ceremony. This event generally occurs in the spring, at which time there are numerous colds, fevers, and other ailments due, in the main, to the winter inactivity of the people. It is also an auspicious occasion to rid the village of any accumulated bad influences and to expel the witches who may have taken up secret abodes in the village.

The chief of the village notifies the war chief that the time is ripe for a communal purging. The war chief then makes the proper preparations, after which the headmen of the curing societies are notified of the coming event, and a date is agreed upon.

When the proper day arrives, the villages are divided into two groups, each group proceeding to the proper ceremonial chamber, where they remain all night. The ceremonies held in each division are the same. The medicine-men pray to the heavenly bodies and to certain powerful animals for aid. Then one person is selected to be cured. Disease-causing objects are removed from this victim by massage or sucking. Then four or five medicine-men rush up out of the ceremonial chamber to fight and chase witches. Disease and witches are whipped away with eagle plumes. Even the animals are included in this general curing ceremony. Just before dawn and the departure of the people, everyone is given a swallow of a powerful medicine. The head doctor thanks everyone and hopes that all sickness has been dispelled and all witches dispersed. Thus the village is given its "spring cleaning" and the people are healthy and ready to take up the duties of the summer season.

Sometimes, in order to impress critics, the medicine-men perform other magical feats in addition to those of curing disease and exorcising witches. For example, one night, one of the more powerful medicine-men took a skeptic to the edge of the mesa. The moon shone brightly and the landscape was well illuminated. At the edge of the mesa, the medicine-man pointed to a pinnacle of rock, which was forty feet away from the mesa edge. The ground at this point was more than three hundred feet below. The medicine-man then backed away from the mesa edge and started running at full tilt towards this distant pinnacle of rock. Just before reaching the edge of the mesa, he threw a piece of rock to the ground, and then he

flew through the air, landing on the distant pinnacle. In the same way he jumped back again—and the sceptic believed it.

I cannot leave the house dwellers without speaking further of one of their subdivisions, the Hopi tribe. The purification of the village here assumes a more gruesome form in the snake dance, which is held under the auspices of the snake clan or society. At the appointed time, in August, runners are sent out to gather the snakes. Rattlesnakes are sought. These are grabbed up and thrust into a bag, then thrown into a dark box or large earthen jar, and placed in the ceremony room or kiva. After the lapse of two days, the dance begins. The performers thrust their hands into the jar and grab the snake as near the head as possible, so that the reptile cannot coil and strike them. After the dance is over the snakes are liberated and allowed to go at large, carrying, as it is supposed, the evil influences that otherwise would affect the health and well being of the community. The performers then take a strong emetic to purify themselves, and the ceremony is complete. Two or three days are usually occupied in this ceremony.

For years, as opportunity offered, I have tried to find out the truth about the apparent immunity enjoyed by the Hopi tribe to the bites of poisonous snakes. It has been explained to me that the snakes are put into a dark receptacle for two days where they bite each others and thus exhaust their supply of venom and are harmless when brought out for the snake dance ceremony. Another explanation is that their fangs have been removed. Again, that the snake clans are hereditary, and from infancy they are exposed to and bitten by young snakes until they acquire immunity. None of these explanations fully satisfied, and I have been assured by competent men that the fangs are not removed. The best explanation I have had was given by Professor Cummings to this effect that there are, among the Hopi tribe, snake clans, membership to which is often hereditary and begins at an early age. They believe that the snakes are their fathers or elder brothers and treat them with great veneration and acquire considerable skill in handling them. To illustrate the importance of fear, there were two small boys of about six and eight years of age, of whom the mother said, "little boy tend Kiva, he no fraid, big boy fraid, he no handle snakes,"

and both boys belonged to the snake clan. They are seldom bitten. Professor Cummings further related that he spent two days at a Hopi snake dance, that he had seen two instances of an Indian being bitten, neither of the wounds were deep, although they drew blood and he thought that there had not been sufficient force in the strike to cause the virus to escape. The rattlesnakes were grasped too far away from the head but not far enough to enable the snake to coil. In neither case did ill effects ensue. When the snakes are finally disposed of and allowed to escape, they are dumped in a heap and covered with meal (sacred) which gets into their eyes and thus allows time for the participants in the dance to climb out of the way of their departing brothers, carrying with them the ills of the tribe. This to me is the true explanation of the immunity of the Hopi Indians to the bite of the rattlesnake.

The medicine-men do not assist at childbirth. But after the child is born, the father requests a medicine-man to take the baby out to see the sun and to name him. The child is carried out to the east edge of the mesa just before sunrise. As the sun rises, the infant is held out towards the east. The medicine-man then gives the baby the breath of life by blowing towards it all the air which he has collected in his lungs from the four cardinal points. The child is then named.

Naming a child is a sacred rite, and according to the ritual of most tribes should be performed only by a shaman or medicine-man. The following was told me by a Plains Indian, Young Chief Poolaw: "Big Tree of the Kiowa tribe had been unfortunate in not having a son who could survive infancy, all his children having died soon after birth. A medicine-man was appealed to who said, 'Let me name the next child and it will live.' In due time a son was born and the medicine-man named him *Am-Kea-ah-ha.* This child grew to become a great warrior and counted ninety acquisitions to his scalp-pole." The narrator vouched for the truth and considered it a proof of the importance and sacredness of a name. It was not a trivial subject to the narrator.

It is plain that among the Pueblo Indians of the Southwest communal doctoring, both for the individual as well as for the group, is the proper and approved method. Individually, the medicine-men have little or no power or standing; united, they are all-powerful.

THE NAVAJO*

The Navajos are nomads, whose life and customs contrast vividly with those of their sedentary, pueblo-dwelling neighbors, the Acoma Indians.

When Europeans first penetrated the Southwest, they found scattered groups of Navajos living in what now is known as northeastern Arizona, and northwestern New Mexico. They were warlike and were continually harassing the more peaceful Pueblo Indians.

At the present time, the Navajos have become peaceful, pastoral people, who tend their sheep, practice some agriculture, weave blankets, and make silver jewelry. Their life is still nomadic, however, because of their heritage and partly because their flocks from time to time require fresh grass lands.

Physically and linguistically the Navajos are different from their Pueblo neighbors, being a branch of the great Athapascan linguistic stock which inhabits a large portion of northern Canada.*

The Navajo Indian medicine-men are unlike those of the Pueblo Indians in that they are never organized into curing societies. Each medicine-man functions as an individual, and not as a member of a group.

If a young Navajo wants to become a medicine-man, he decides which medicine-man he wishes to imitate, and then asks him to become his teacher. If the doctor consents to instruct the young man, he is given a fee for his labors. When the older man has taught the novice all that a medicine-man should know, a ceremony is held, and the young man is formally and publicly approved.

The young medicine-man finds it just as difficult at first to obtain patients as do the young doctors who are graduated yearly from our medical schools. In contrast to the Acoma medicine-men, who have to respond to any sick-call, the Navajo medicine-men do not. They may, instead, refer such cases as they do not wish to treat, to their pupils, who are glad to make contacts in this manner. A young, practically unknown and untried medicine-man may also be called in to perform a curing ceremony by a patient who is too poor to be able to pay the larger fees received and demanded by the old medicine-men. Thus a clientele is gradually acquired.

* At the present time it is estimated that there are 40,000 Navajo Indians.

Each medicine-man, known sometimes as a "singer," acts as an individual, as previously explained, and has charge of a certain curing ceremony, which he, alone, may perform. Conversely, he may not perform any other ceremony. There are among the Navajo a number of medicine-men who may perform the *same* ceremony. Any medicine-man may request the assistance of other medicine-men, whenever he deems it wise and proper. Illness may result from an unpleasant experience, such as: a bad dream, fright caused by a corpse, a thunder-storm, a wild animal, or by cooking with wood taken from a house in which someone has died. Witches, too, may cause sickness by shooting bones, sticks, stones, hair, or charcoal into people's bodies. In addition to these causes, sickness will eventuate if certain taboos or injunctions are violated. One must not spit on an ant hill, or his throat will close up; one must not play with frogs, throw a kernel of corn away, or throw melon rind into water.

The curious and interesting fact about the Navajos' ideas concerning cures is that ceremonies are held not so much for curing disease as for *averting* it. That is to say, if a person experiences a bad, troublous dream, he consults a medicine-man at once in order to arrange to have a curing or averting ceremony held over him.

Many are too poor to afford the usual curing ceremony, which covers a period of several days, because it is expensive. In such instances, a few minor ceremonies may be performed by the medicine-man. This is a precautionary measure which does not entirely remove the possibility of future sickness, but postpones it for a time.

A full-length curing ceremony is very expensive, for such ceremonies are great social occasions. Families and relatives come from miles around. The ceremony may last nine days. During all this time, the patient has also to act as host and must supply and pay for all the food which is consumed by the gathering. In addition, he must pay the fee demanded by the medicine-man and bear the entire expense of having sand-painting-altars set up. While the patient-host is being cured, the visitors are having a glorious time of gossiping, dancing, watching magic displays, renewing acquaintances, and feasting.

There are nine principal curing ceremonies. Six of these and the diseases which they cure or avert, are listed:[1] (1) "To live"; for

healing bruises; (2) "One who sings to the snake"; for treating people afraid of lightning; (3) "Wind"; for helping those who are afraid of the wind or for aiding sickness due to whirlwinds; (4) "On top of a mountain" (sometimes called the "mountain chant"); for averting the illness which will befall one who kills, touches, eats or walks in the track of a bear; (5) "Night Chant"; for preventing blindness and curing sore eyes; (6) "Feather"; for curing "deer disease," which may develop from the kick, scratch, or sneeze of a hunted deer.

A curing ceremony is never held in an ordinary dwelling, a special hut or hogan which always faces the east being built. Before the ceremony begins, a financial agreement between the medicine-man and the patient must be concluded. The long, nine-day ceremony is complicated and charged with many symbolic expressions. It may include the application of corn pollen to the patient's body, prayers, sweat-baths, herb medicines, vomiting, and a long chant. If a single mistake is made during the singing of this chant, the whole ceremony is considered worthless and a new one must be held.

These songs are usually accompanied by dances in which a group of medicine-men dance around the patient keeping time with the music. In cases of grave illness, these songs are frequently led by a chief medicine-man.

Equally effective, although weird and most appalling is the Navajos' night chant, led in like manner by the medicine-men of the tribe. Another of this tribe's dances, which has attracted the attention of physicists is the Feather Dance, which seems as mystifying as it is weird. In this it is the Eagle Feather placed in a bowl-shaped basket that gradually assumes an erect position and dances in harmony with the vibrations produced by the beating of a medicine-drum and the swaying of the semi-circle of medicine-men. This phenomenon corresponds to the starting of a dynamo by the synchronous vibration of a shrill whistle, which I once saw performed. The curative effect produced is supposed to correspond with the vigor of the dancing feather. The selection of the eagle's feather likewise is of importance as typifying its lofty source.

Again there are public medical dances or more properly festivals,

as the *Entali,* or healing ceremony of the mud bath, at certain seasons of the year, for the general health of the people. They are supposed to act not only as a prophylactic against disease, but to have a curative effect on those already afflicted.

The medicine-men among the Navajo Indians, who are also skilled artists, seem to have well nigh passed away. Sand pictures are usually made on the floor of a house or hogan, which must be new, otherwise the picture may be unclean and not acceptable to the gods. There are purely ceremonial or religious sand pictures, and others for the cure of disease. They are about four feet square and require great skill in their construction. They are made after sunrise and must be destroyed before the sun goes down. This, to the Navajo Indian, is the high altar of his faith, his "medicine." It is the holy of holies, his Bible, that none but the most devout may touch or even look upon without some ill befalling him.

Sam Chief was growing old, his eyesight had begun to fail, and he thought the Great Spirit was offended with him for some evil he had done, some taboo he had broken. He had a white brother, a friend at Tucson; he would go to him, "mebbe white chief help me." He came to Byron Cummings, dean of the Archaeological Department of the University of Arizona, and presented him with a blanket of rare design as an offering of good will. Professor Cummings took him to an oculist; his sight improved, and so grateful did he feel that he consented to make a sand picture. Sand was gathered, rocks of different colors (white, blue, yellow, black and red, the sacred colors of the Navajo mythology) were ground into a powder and without design to follow, he made with his thumb and finger one of the most beautiful sand pictures of artistic merit and perfect in alignment and architectural design. Each line and figure had its meaning, and each color had its sacred significance. But it must be destroyed before the sun went down, else the gods would be angry and he would be stricken blind—such was the sacred tradition and such must be true—his fathers for ever so many generations had said so. "You are growing old," said Professor Cummings, "there is none to follow in your tribe that can make one like this. The gift is being withheld from your people. See what a benefit it would be to others of your people and even to your white

brothers could they come here and look upon this holy picture, this sacred shrine that would cure disease, as you have been cured of your blindness." The missionary spirit was kindled in this American Indian and he consented to allow the sand picture to remain the permanent property of the University. By a clever application of collodion and alcohol applied drop by drop, the surface was made firm, so that it remains probably the best and only one perfect in design and color extant.

Frank Mead, who has lived long with the Indians of the western states, and who speaks the language of the Navajo, gave the following account of a short ceremony:

Hearing that Eagle Cliff, a young Navajo, was seriously ill, I visited the medicine lodge where I found him lying on a blanket on the floor of the hogan apparently very ill, for I could readily see that he had a fever and was in great pain. Around the lodge were seated the women of the tribe, friends and relatives of the patient, who were moaning and softly wailing in sorrowful sympathy. As I entered I glanced at the prostrate figure, smiled and nodded to him without speaking, as is the usage among Indians, and seated myself at some distance away. It was about eight o'clock in the evening. Soon a medicine man arrayed in the fantastic garb of his calling, with feathers, skins, and claws, much in evidence, came softly into the lodge, followed by an assistant with a medicine-drum or tom-tom. The medicine-man had in his hand a gourd filled with pebbles. They squatted down beside the patient and the medicine-man began to chant a song, *"yai yai-hi ya hi ya,"* at first soft and soothing; the drum beats too gave a muffled sound. These soon drowned the low, mournful wail from the women. Gradually the chant became louder and the drum beats accentuated the end of each measure. This was continued hour after hour with increasing violence, the medicine-man vigorously shaking his rattle, and jumping to his feet, he danced around the patient, while the increasing excitement was reflected in the agitated face of the sufferer whose glistening eyes watched every movement. It was now nearing one o'clock in the morning; the emotional influence had been gradually increasing as the hours passed and the climax seemed approaching, when suddenly in the heightened commotion which was participated in by the looks of the patient, the medicine-man gave a shout, the drum beat a crescendo, and with a cry, "there he goes!" the medicine-man

leaped upward, his arms outstretched endeavoring to reach the top of the hogan, open for the escape of smoke, but in this instance evidently to allow the devil to escape, which he did, greatly to the joy of all present including the patient, who immediately said that he felt better, and he looked it. All sorrow was suddenly banished as if by magic, and joy beamed from the faces of the erstwhile wailing women, thus wreathed in smiles and with joyous exclamations, for had not many professed to having seen "the black object" which could be none other than the evil spirit, the devil, shoot upward and escape through the top of the hogan? The disease had departed and Eagle Cliff was cured, and the medicine-man received as his fee twelve head of sheep. The next day, I saw Eagle Cliff walking about. On inquiring how he felt, he replied, "Why, I am well"—and so he seemed to be.

Such is the "power" in stimulating the emotions of these people. It has always been recognized by medical men of the white race and scientifically studied by Charcot and others, but has never, except possibly by certain cults where "faith cures" are greatly exalted, been systematically employed as it is by the American Indian.

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CHAPTER IX

CENTRAL AMERICA

THE AZTECS

In endeavoring to lift the veil which obscures the early history of the medicine or mystery-man of the Indians of Central America, to obtain a true picture we must, while granting that his medicine and religion were often identical, aside from his religious beliefs, not lose sight of his surroundings, his standing in the general culture of the time, and the influence the coming of the European had on his actions and his mentality. In this latter I think we will discern from time to time the influence, however slight, of the Christian missionaries, and particularly in their accounts of the various rites of the natives. Then again, there soon developed in the Indian a reserve and stealth which the greed and duplicity of the invader soon taught him to maintain.

On the narrow neck of land connecting North and South America were found, on the discovery of the country, the most advanced in civilization of the peoples of the New World. In this region lay Yucatan and Mexico, and here lived the highly developed people ruled by the Mayas, the Quichés, and the Toltecs with their usurpers, the Aztecs who are supposed to have migrated from the north and acknowledged by some to be the most virile, although not the most civilized, of all the primitive nations of the twin continents.

Our knowledge of medicine and medicine-men in ancient Mexico is very largely based on the writings of Hernando Ruiz de Alarcon, whose manuscript of 1629 was not published until some two hundred and seventy years later; and Jacinto de la Serna, whose *Manual de Ministros* was written in 1656 and published in 1892. Serna had access to Alarcon's manuscript, and quotes from it extensively. Sahagun, that great ethnologist of the sixteenth century, has little to say about the Aztec medicine-men, although he devotes several chapters to cures for various complaints. It is clear that our knowledge of Mexican medicine and its practitioners is to a large extent based on what was in vogue about a hundred years after the Spanish

Conquest. Nevertheless, Spanish influence at this date was not marked. Statements of fact in this section on Mexico, which are not otherwise attributed, are taken from the writings of Serna and Alarcon. We must bear in mind that the accounts available are influenced to some extent by the bearers of the Crosier and the Cross, who regarded all the rites of the natives as idolatrous and thought that the Indians appropriated to their use such of the ritual as best appealed to them.

In view of the higher civilization of Central and Southern Mexico, one would expect to encounter more advanced concepts of disease, its causes and cures, than have been recorded in previous chapters dealing with the area north of the Rio Grande. In all probability the Mexican medicine-man had a more advanced pharmacology, owing partly to the greater range in climate and partly it may be to the denser population. In looking at the presumed causes of disease we shall find that a new element for the first time makes its appearance as a serious rival to sorcery. This is the attribution of sickness to the intervention of an irate deity. Such a belief was undoubtedly an outcome of the spread of organized religion with a full-time priesthood.

There were several classes of individuals engaged in medical practice, of which the astrologer-priests were the most important, both from the Mexican and European viewpoint. In the eyes of the Mexicans the astrologers ranked above other medicine-men because they, as priests, were in closer touch with the divine powers. Their instrument of divination, the 260-day sacred almanac or Tonalamatl, was the hub of Mexican religion and daily life. Since only astrologer-priests had sufficient knowledge of the mutations of luck reached by the combinations of its numbers, day names, patron deities of the days, nights, and thirteen-day weeks, its interpretation represented an awesome mysticism to the Aztec peasant, the counterpart of our modern "man in the street." The reverence for the sacred almanac and, by extension, for anyone with the knowledge to use it as an instrument of divination, gave the priest-astrologer a strong advantage over his rivals.

In modern eyes, the Aztec priest-astrologer is of paramount importance as a representative of the professional whole-time medicine-man. Unlike the other classes of Aztec medicine-men, or those

of tribes on a lower cultural scale, he was not primarily an agriculturalist or hunter practicing medicine in his spare time, but a full-time professional, whose whole life was dedicated to his dual profession of priest-astrologer and medicine-man.

In contrast, the other types of medicine-men among the Mexicans pursued their ordinary avocations, practicing medicine as a side line. Not having a sufficient knowledge of the sacred almanac, they received guidance in peyote or *Datura* inspired dreams, or by simple methods of divination. They were known as Tizitl, Payni, or Nahualli.

The astrologer-priest, as the aristrocrat of medicine-men, was consulted by the aristocracy, or rather that incipient aristrocracy which appeared among the Aztecs in the last decades of the Aztec confederation. The ordinary medicine-man was consulted by the agricultural workers, the incipient proletariat. The astrologer-priest was born with a silver spoon in his mouth, qualifying for training in his career by his birth; the medicine-man was, to a large extent, self-made.

Priest-astrologers were recruited from the ranks of the upper classes during this last period of Aztec society, when we find this incipient division into classes accompanied by the early stages of the capitalist state. The decision to become a priest-astrologer was, as a rule, not made by the young man, but was reached by the parents during the future priest's boyhood. Frequently a boy was dedicated to the priesthood by his parents as a thanks-offering for a recovery from an illness. He was taken to a special college reserved for the sons of the nobility, where he was educated under a very strict system. The head of this college, known as the *Calmecac,* held the second highest position in the Aztec hierarchy. From the *Calmecac,* where he lived with other youths destined for the warrior ranks, the future priest graduated to a temple, where after a further period of education, he became a junior priest, eventually qualifying as a full priest-astrologer. It is not possible within the limits of this book to deal with the full training of a priest or the involved calculations used in *Tonalamatl* divination. The reader who wishes to study this subject more thoroughly is referred to the works of J. Eric Thompson and T. A. Joyce, given in the bibliography.

Medicine-men, a term which is here used to the exclusion of the

priest-astrologers, qualified in a less arduous manner. They were believed to die, and during the period, usually three days, when they were dead, they were said to be visited by a deity or their deceased parents, who instructed them in their medical knowledge. Usually medical knowledge was thus passed down in the same family from generation to generation, although an individual could "break in" by receiving a visit during his period of death from a deity. Medicine-women equally received knowledge by dying, acquiring the same powers of divination as the men.

One medicine-woman, questioned by Serna, stated that when a young girl she had died. While dead she passed three days below the water near open country at the edge of the town. There she had met all her dead relatives. Her parents, who during their lives had been medicine-men, had given her the power to cure sickness. At the same time, they had presented her with a needle to prick the affected parts of the patient and a half-calabash to be used in divining the illnesses, their causes and whether the patient in question would recover. Subsequently she had returned to life. She explained that one filled the half-calabash cup with water after placing it at the patient's head. If the water turned yellow, it was a sign that the illness was a divine punishment for wrong-doing. If the water began to circulate in the cup, the patient would not recover. Were the water to turn the color of blood, she knew that the illness was a result of sorcery.

Similarly, by passing temporarily out of the land of the living, medicine-men had learned to divine by the use of peyote and other herbs and to cure by herbs and bleeding. One medicine-man claimed that while dead, the Blessed Virgin Mary had come to him and taught him how to be a medicine-man. This naïve mingling of pagan practice with Catholicism must have caused the good father a considerable amount of worry.

In this belief that the novice died before the mysteries were revealed to him, one sees a connection with the Maya belief, given elsewhere, that the initiate was swallowed by a snake or dragon and then returned to earth a qualified medicine-man. Sometimes, however, the medicine-man received the vision without dying.

When a patient suffered from a disease which was not easily

curable, he consulted a medicine-man of the kind known as Payni, who specialized in the use of Ololiuhqui. This is a drink made from the seed of a *Datura,* which causes a drunken frenzy accompanied by visions. The *Daturas* are a family of solanaceous plants which includes the Jimson weed. The medicine-man, who had some knowledge of the sacred almanac, consulted it to discover a propitious day and hour for the ceremonial draught. At the same time, he questioned the patient as to any suspicions he might have as to who might bear him a grudge or might be likely to have employed sorcery against him. Should the patient name a suspect, this individual was given an opportunity of denying the charge.

At the time indicated as suitable by the sacred almanac, the medicine-man would drink the Ololiuhqui, shutting himself up for this purpose. The effects of the drug lasted two days. During this period the medicine-man was visited by the Ololiuhqui god in the form of an old man, who told him who was causing the sorcery or the reason of the illness, if it were not due to sorcery.

On recovering from the effects of the narcotic, the medicine-man recounted his vision to the patient. The peyote was employed in a similar manner. Frequently the medicine-man himself would not take the Ololiuhqui, presumably because of its bad effects, bidding either the patient or a friend of his take the narcotic. In that case the medicine-man set the date for the drink to be taken, charging his fee for this service.

There was a regular cult of the sacred Ololiuhqui. The headman of a village or family was the guardian of the cult. The seeds were placed in a little packet together with the copal gum used by the Aztecs as incense, embroidered cloths, obsidian flakes, and other offerings. No one dared open this basket, which was placed on the altar of the guardian's house. It was handed down from father to son, being guarded with great veneration, and never moved from its resting place. The reverence paid these bundles is reminiscent of the holiness attributed to the medicine bundle among the North American Plains Indians.

The most frequent method of divining the cause of a sickness was by measuring the arm with the hand. The medicine-man, on being summoned, questioned the sick man about his illness and about

any suspicions of sorcery the patient might have. Concluding the questions, the medicine-man placed tobacco, with or without lime, in his left hand, and proceeded to pulverize it with his thumb. As soon as the tobacco was sufficiently pulverized, he sat down, and rubbing the tobacco or tobacco and lime between the palms of his hands, recited the following invocation:

Help thou holy one, for now is the time, thou, the nine times beaten one, the one nine times rubbed between the hands, holy green one, my father and mother, son of the Milky Way, my mother, rabbit with mouth facing upward, who art resplendent, smoking mirror: I warn thee let no one fail to do his duty, let no one resist my command with murmurs of complaint as I am now kissing the five sun-like ones which I brought for this purpose. [Here the medicine-man kisses his two thumbs, arranged cross-ways while the hands are placed together as though in prayer]. Lo, come here my brothers, the five sun-like ones, ye who all look in the same direction with your faces toward one side, ye, who end in pearl-shells, come and let us inquire of our enchanted mirror [here he begins to measure the right fore-arm with his left hand] so that we may see that god, so powerful (who) now is breaking, now destroying and in every way consuming our precious stone, our jewel, our fine jade, our beautiful plume. Lo, come and let us climb up the wonderful ladder, for it is not a question of leaving it until tomorrow or some other day, but immediately we must see who it is that is killing the son of the gods. Take warning that it is I, the medicine-man, who is ordering you.

The prayer is a mass of allegory. Indeed, there was a special Aztec word, *nahualtocaitl*, to cover the metaphorical and allegorical speech of the medicine-men. Frequently the patients themselves did not understand it. The nine times beaten, nine times rubbed holy green one is the tobacco; the rabbit with mouth upward is the earth, as too is the smoking mirror; the five sun-like ones are the five fingers of the medicine-men with pearl-shells (nails) at the points. Naturally they all face in the same direction; the precious stone, jade, feather, etc., are the patient; finally, the climbing up of the sacred ladder is the measuring of the arm.

The divination consists of measuring the right forearm with the left hand, using the palm's breadth as the measure, and spacing

off up the arm. If the arm was exactly divisible by this measure the patient would die. The same method was employed to find out if the disease was caused by sorcery or was a punishment from one of the gods for some neglect on the part of the patient. It was also used to divine the most suitable medicine to be used in connection with the cure, in each case with a slight alteration of words. The method employed in this form of divination, as in all others, was to mention a particular name of a possible sorcerer, god, or medicine, and see if the measure came out even.

The medicine-men claimed that without their interference their hands were guided so that the length of the measure became short or long according to the dictates of the controlling divine power. This divine spirit was, apparently, the tobacco spirit. All plants, in the opinion of the Mexicans, were possessed of an animate spirit. That of the tobacco was very powerful in medicine, and was considered a deity of great importance, just as we have seen that the spirit of the Ololiuhqui was the center of a highly developed cult. Indeed, practically all pre-Aztec religion was a form of animism.

The next most important form of divination was made with the aid of maize, and was employed for exactly the same purposes as the measuring of the arm. The medicine-man picked out an ear of well-formed maize with the most regular and best developed grain he could find. From this he removed nineteen, or twenty-five, or thirty-nine of the grains. After biting off their points with his teeth, he placed a cloth on the ground, double and with all the creases carefully smoothed out. Next, if he had taken twenty-five grains, he placed four in each corner of the cloth, and kept the other nine in his hand. If the number of grains were thirty-nine, seven were arranged in each corner, two were thrown down haphazard, and nine remained in the hand. In the event of only nineteen grains being used, eight were placed in two rows down the right side of the cloth with the bitten-off points facing inwards, four were thrown down haphazard in front of the medicine-man, while the remaining seven remained in his hand.

As soon as everything was arranged to his satisfaction, the medicine-man passed his hand with the grains of maize in it over those laid out on the cloth. At the same time he invoked Chicomecoatl,

goddess of maize, and his fingers to indicate the cause of the sickness, or the medicine to be employed. As soon as this invocation was concluded, he threw the grains in his hand upon the cloth. If the grains fell face upward the suggested remedy or cause of the disease was correct. Should the grains fall face downwards, the divination continued with fresh questions.

Maize was employed in another form of divination. In this case, grains were thrown into a deep bowl of water, while the water deity's help was invoked. An affirmative response was given by the grains sinking to the bottom of the water. The medicine-man could easily control this divination by a careful selection of the grains. New maize sinks rapidly in water, while old, worm-eaten maize floats.

A typical invocation used with these divinations to find out what particular god is causing a sickness is given by Serna as follows:

Who is it that is angry? Is it the Lords of the Earth or the angels of the sky [the clouds]? Let us know if the gods of the forests are the angry ones, or (if) he fell in their hands. Or if it is the rabbit with the mouth facing upwards [the earth] or is it he that is my father and mother, the four sticks that give forth sparks [the fire]?

If one wished to know whether the patient would die, Mictlantecutli, god of the underworld, was invoked.

Children who were sick were frequently believed to have lost their good luck. To test for this, the sick child was held over water by a member of a group of medicine-men who specialized in such work. If the reflection was blurred, the child had lost his luck. This could usually be restored to him by censing him with copal incense. Otherwise an elaborate ceremony was held. This concluded with the medicine-man filling his mouth with water and then squirting it over the child. At the moment the child jumped with surprise, the luck returned to him.

From this short summary it is clear that there were many ways of diagnosing the causes of sickness. With the cause diagnosed and half his battle thereby won, let us now follow the medicine-man in his cures.

Sorcery frequently took the form of "sending" foreign bodies into the victim's body. This was counteracted by the medicine-men

drawing these objects out of the patient's body. To do this he sucked at the stomach or chest, or rubbed the arms and legs of the sick man. By these means such diverse objects as stones, bones, or hair were removed, permitting the patient to recover. A man divined to have caused a sorcery was denounced in the village council, and this was frequently the cause of family feuds that were handed down from father to son.

Copal incense, cotton mantles, beeswax candles, food, drink, and branches of trees were among the offerings made to a deity who was indicated as having caused a sickness. Sometimes the medicine-man himself repaired to the temple or shrine of the offended god to make the offering, were the patient too ill to make the journey himself. Such acts of penitence often involved quite a pilgrimage, since the Tlalocs (rain gods) were the deities who most frequently took umbrage, and a pilgrimage to one of their shrines usually involved climbing to the top of the highest mountain in the surrounding country.

Adultery or, for that matter, any form of sexual lasciviousness or over-indulgence, was the cause of a number of complaints. Persons who had led upright lives might also suffer from these diseases by having been in the company of some evil doer. The illnesses were epilepsy and kindred disorders. Persons who became very wasted were also believed to belong to this category, as well as those who had continued bad luck with their crops or general business. These troubles were cured by a ceremonial bath.

The medicine-man first spread a mat on the ground, and over it a cloth, while the patient stood close by. A fire was made close by and water was at hand. The medicine-man then threw copal on the fire, invoking at the same time the smoke and fire, the water, the copal, and Tlazolteotl (a goddess of sexual indulgence) together with other deities of love, that they cure the patient. The patient was then censed with copal and bathed in the water. Next the patient stepped onto the cloth, while the priest, on concluding another invocation, took a cloak and flapped it four times in front of the patient. It was believed that the evil winds which were in the patient were thereby driven out of his body.

In this connection one should mention the important part played

by the sweat-bath in Mexican medicine. Although its therapeutic value was well recognized, the "sweating out" of evil by means of steam was the underlying idea behind the sweat-house. Small structures, used as sweat-baths, were found in association with nearly every house in the center and south of Mexico, and continue to be used in purely Indian villages to the present time.

Nuttall writes on this subject:

It is well known that the ancient Mexicans placed the highest value on the *temazcalli* or sweat-house as a curative agent, and it is prescribed for all kinds of illnesses. It was resorted to by mothers immediately before childbirth, a custom still adhered to by Indian women in various parts of Mexico. The sweat-house was associated with the cult of the "earth-mother" and "grandmother of all" and many superstitious rites were associated with its use. The disapproval with which it was consequently regarded by the Spanish missionaries gradually restricted its hygienic usefulness. Its employment was accompanied by an intelligent use of massage, and we find that various forms of massage treatment were prescribed after the sweat-bath. Thus: A swollen neck or sore throat is to be rubbed with the hand. A stiff neck or shoulder is to be pinched and squeezed. For a cough, however, the throat is to be rubbed with a finger only. Sprains are to be treated by rubbing very gently with the hand.

The list of medicinal plants used by the Aztecs is lengthy. Hernandez mentions over one hundred varieties of trees and shrubs, the bark, leaves, or roots of which were used in medicine. Actually Hermandez lists only a small proportion of the total. Early Spanish writers repeatedly refer to the remarkable knowledge of the medicinal properties of native plants possessed by the ancient Mexicans.

Bad headaches were cured by the medicine-man pressing the patient's temples, and then breathing on the patient's head as he invoked the Aztec gods of medicine, Quato and Cacoch, and his own fingers. If this treatment had no effect, the medicine-man sprinkled the sick man's head with water, invoking the aid of Chalchicue, a water goddess. The smoke of burnt amaranth was also applied to cure headaches, while tobacco mixed with an herb called *chalaltli,* was applied to cure a swollen head. The medicine-

man invoked the winds to aid the cure, concluding the ceremony by breathing four puffs of breath on the patient's head.

Pains in the eyes were cured by bathing with cold water and an invocation to Chalchicue, the water goddess. Alternatively the sap of the Mezquite bark was applied to the eyes after they had been scratched until blood appeared. Next, the eyelids and eyebrows were rubbed with tobacco, and the blood from the roots of a cock's feathers was rubbed on the eyes. Indeed a heroic cure. Others applied copal after scratching the eyes until they bled.

Toothache was treated in a drastic fashion, for a drop of burning copal was allowed to fall on the offending tooth and surrounding gum. Alternatively a certain kind of maggot was ground with some resin from the fir tree, and the mixture applied to the gum. Then a red-pepper or capsicum pod was heated and pressed with a grain of salt as tightly as possible upon the painful spot. If this failed, the gum was lanced and a certain herb applied. If these remedies did not suffice, the tooth was drawn and a little salt inserted into the cavity.

It is interesting to note that the Aztecs were as keen as a modern dentist on the removal of tartar from the teeth. This was accomplished by rubbing the teeth with powdered carbon and washing with salt water. Tartar was also chipped off and the teeth subsequently rubbed with a mixture of alum, cochineal, salt and red pepper. Blisters on the tongue were similarly treated with alum.

In treating a swollen throat, the medicine-man anointed the first two fingers of his hand with the fruit of the mahogany tree, or with the juice of tomatoes and salt. He inserted these two fingers down the patient's throat, until the sore spot was reached, proceeding then to squeeze the affected part as hard as possible. Annatto might be employed as a substitute.

The treatment for pains in the back was peculiar. The medicine-man, after heating a large stone or the griddle used in preparing tortillas, laid the patient face downwards on the ground, and dampening one foot thoroughly, placed it on the heated stone or griddle. He did not remove it till the heat, penetrating the thick calloused coating caused by walking bare-foot, reached the live flesh. Then he planted it on the patient's back, pressing down with

all his weight, and at the same time invoking the aid of the fire god.

Lip cuts were sewn up with a human hair and then bathed in the juice of the maguey. Should a scar remain after the wound had healed, the cut was reopened and cauterized, sewn up again with a hair, and covered with the juice of the rubber tree.

Prickly heat was treated by an application of a yellow earth called axin, while intermittent fever was cured either by driving a needle into the back, or by censing the patient with amaranth incense.

Aches in the bones were treated by pricking with a needle or a snake's tooth. A broken bone, on the other hand, was treated with the application of a poultice made from a plant called *Poztecpatli.* The bone was then set in splints, which, addressed as "Ye whose happiness is the rains" were bidden to do their work. The whole was then bound up. If the bone did not heal properly, the blame was placed on the patient because he did not remain quiet while the bone was knitting, or the medicine-man claimed that sorcery had been directed against its cure.

General listlessness and pains all over the body were considered as due to bowel trouble. The usual treatment was to give the patient an enema with the aid of a clyster. It is interesting to note that tourniquets were employed to localize poison. Thus a scorpion bite was rubbed with tobacco or earth, while the flesh round the wound was tied as tightly as possible to stop the poison spreading.

Copal incense, which itself possessed a sacredness in the eyes of the ancient Mexicans, was used in many cures in addition to those already mentioned. It was applied, for instance, in curing hemorrhoids, a kind of eczema, snakebites, or swellings. Fevers were frequently treated with decoctions of Ololiuhqui or peyote. The form of intermittent malaria that strikes every third day was treated by bleeding with a needle and rubbing with tobacco, or censing the patient with amaranth incense.

It must be understood that in all these treatments, the medicine employed was invariably invoked to aid in the cure, as well as the associated god, and in the case of massage, the fingers of the medicine-man. Thus in Mexican medicine we see that there was an inex-

tricable mixture of divination, religious ritual, and sound medical methods, such as the bone-setting described, massage, the use of salt as a disinfectant, the employment of the clyster, the prescription of sweat-baths, and the use of drugs, such as alum.

The medicine-men of Mexico were, in some cases, also conjurers and tricksters. Those of the Huaxteca region of North East Mexico were credited with marked ability in such matters. It was said that they were able to cause one to see a fire burning where no fire existed, or to cause a spring of water to burst forth in the middle of barren territory. Their star turn consisted in killing and resurrecting one another.

Medicine-men were also believed to have the power of associating themselves with animals more readily than the rank and file. When a child was born his parents associated him with some animal, known as *nagual,* with which he was forever afterwards leagued. If the animal were killed, the individual would die at that same time. The animals embraced by nagualism included jaguars, dogs, pumas, foxes, bats, etc. The early padres believed this association was the work of the devil, and firmly believed in it, as did all Spaniards. Alarcon tells several stories about *nagualism,* and all of these he believed to be true. For example, he tells of an Indian who, as he was sitting in his house, began to cry out, "They are killing me in the river!" On going to the river those present found an alligator that had been killed, and returning to the house they found that the Indian had died in the same manner. The connection between nagualism and the medicine-men is not clear, but undoubtedly existed.

Little can be said of the payments to astrologer-priests and medicine-men. One can assume that they took the form of contributions of food and clothing. Priest-astrologers, whose food and raiment were already a charge on the community, may have been given presents of precious stones, such as jade, or jewelry of gold and copper. Cacao beans, which constituted a kind of currency throughout Middle America, were undoubtedly a frequent form of payment. Debased coinage, with the kernel carefully hollowed out and filled with earth, was in circulation, but one doubts if anyone would dare

to offer these in payment to a qualified medicine-man, who, in all probabality had more than a nodding acquaintance with the black side of primitive medicine-sorcery.

The nearest approach to a state-licensed body of medical practitioners was in connection with the army, for we are told that medicine-men accompanied the armies into the field. During a battle the wounded were taken to the rear, where their wounds were treated by these forerunners of an Army Medical Corps. In this connection it is necessary to correct an error of the historian Prescott. He states that there were hospitals in the principal Aztec cities with surgeons in charge. The sources he quotes make no mention of hospitals in our sense of the word, and there is little doubt that none existed.

Finally it is apparent that in common with other peoples of the western hemisphere and of all primitive races, the practice of medicine was largely directed by their religious beliefs and the rites practiced by the priesthood.

Ceremonies in which human sacrifices were performed present the darkest picture of the early religion of the Toltecs as it was of the Aztecs who succeeded them. The victims were either prisoners taken in war or an unsuspecting youth was elected for this gruesome rite. The young man thus selected had but recently arrived at the state of maturity, was sequestered and clothed in fine apparel. He dwelt in luxurious quarters and was feasted on the choicest and most delectable of foods. As the time of his ascension drew near, for he was thought to ascend to the god in whose honor he was sacrificed, beautiful maidens were assigned to him, that he might approach the divinity in the highest state of happy contentment. When the day at length arrived he was conducted to a high altar facing a great concourse of people. Thus seated, the priest in lieu of placing on his brow the laurel wreath or the crown of gold, deftly with a few strokes of a stone knife exposed and extirpated the heart of the victim and held it dripping with blood aloft to the delight of the assembled people who burst forth in peals of rejoicing. Thus in Mexico was the art of surgery born—not with the object of the cure of disease, but as a religious rite.

All this is quite in accord with the progress of the Caucasian race in other parts of the world. In Mexico at this time the symbolism of

today had scarcely emerged from the realistic. The well-known hymn of Cowper (1779) which forms a part of the devotional services in some churches at the present time does not seem to us especially symbolic of the religious rites of savagery. The human mind has progressed, and happily it prefers the symbolic to the real.

> There is a fountain fill'd with blood
> Drawn from Immanuel's veins
> And sinners plung'd beneath that flood
> Lose all their guilty stains.

To this shadow on their history there were gleams of a brighter future, for in the most advanced parts of Mexico there was a reaction to these savage customs. Games pleasing to those who participated in them were introduced in religious festivals. One called *tachtli,* somewhat like our basketball, was especially popular and extended far and wide under the Toltec regime.

THE MAYAS

In contrast to the profuse writings on medical lore among the Aztecs, early Spanish writers supply very little information on the practice of medicine among the Mayas prior to the Spanish conquest. Bishop Landa, the best authority of the sixteenth century on Maya customs and beliefs, tells us that the Maya medicine-men cured by bleeding and divination, and that they had a feast in the month of August—perhaps America's first medical convention. He also mentions the names of several deities associated with medicine, and gives us to understand that there was no hard and fast line dividing priests from medicine-men.

This meager information is supplemented by a number of medical books dating from the eighteenth century, but incorporating much material of a considerably earlier date. These books are written in the Maya language, but with European script. Although containing a little interpolated European matter, they are for the most part genuinely native. Observations among the modern Mayas of Yucatan and British Honduras supplement their information, permitting a partial reconstruction of Maya medical methods of the pre-Columbian period.

Unfortunately nothing is known of the status and training of

medicine-men in pre-Spanish times, but in view of their confusion in Spanish eyes with the civically important members of the priesthood, one may infer that they held a position of considerable importance in the community. Among the modern Mayas of British Honduras a young man, who feels so inclined, can become a medicine-man provided he can find a willing teacher. He must first make a small payment to his instructor, who is usually a relative or close friend, and, of course, himself a trained medicine-man.

According to one account, the instructor and novice retire to a hut in the forest at some distance from the village, where there is no danger of eavesdroppers. During their residence here the novice is taught the incantations and medical recipes necessary to cure different diseases. When sufficiently instructed, the novice is sent alone into the forest. There he is said to encounter a boa-constrictor, which, rearing up on its tail, places its tongue in the initiate's mouth. In this way the young man is believed to acquire the final knowledge necessary to make him a qualified medicine-man.[1]

Among the Mayas of Central British Honduras a similar idea as to the confirmation of a candidate exists, carefully fathered by the medicine-men to enhance their renown. Accompanied by his pupil, the instructor is believed to visit an ant's nest. On tapping three times on the outside, a serpent issues forth. This serpent, which is believed to be the lord of the ants, proceeds to lick the instructor over, after which it swallows him, passing him out *per anum* after a short interval.[1]

Nuñez de la Vega, Bishop of Chiapas at the close of the seventeenth century, writes that among the Tzeltal Mayas of that region, novices were initiated as medicine-men three at a time. A novice was placed on the top of an ant's nest, upon which one large snake and a number of small ones issued forth from the nest. The small snakes, entering the youth's body by the joints of the left hand, issued forth from the nose, eyes or the joints of the right hand. The large snake, passing through the initiate's body, was expelled *per anum*. Subsequently the novice was taken to a place where he encountered a dragon-like serpent, which proceeded to swallow him, expelling him after an interval in the same way as described above. These final ceremonies lasted thirteen days, after which the young man was pronounced a qualified medicine-man.[2]

The incident of the novice being devoured suggests the broken-down ritual of some regular initiation ceremony common to the different branches of the Maya people. Indeed, a human head in the jaws of a snake is a common Maya art motif.

From present evidence, dreams or trances do not appear to have played any part in deciding a man to enter the profession, nor in the initiation ceremonies. Nevertheless, it is quite possible that the absence of the dream or vision element may be due to the scantiness of the available evidence on the whole subject.

The Maya name for a malevolent sorcerer was *Ah pulyaah,* which means "Disease Hurler," for it was, and still is, believed that he was capable of injecting diseases and pain into his victim. The belief that sickness was caused by sorcery was so strong that there existed different names for classes of sorcerers who were believed to cause different diseases—an interesting reversal of modern medical specialization.

Disease or pain was injected into the patient by means of incantations or the use of wax dolls and similar magical props. A cord, smeared with chili pepper and lime, was wrapped round the doll in the vicinity of the heart. The victim consequently suffered from burning pains in that region which eventually caused his death. Sometimes, among the modern Mopan Mayas, the doll is set up on the lintel of the intended victim's hut. If obtainable, nail pairings and hair of the target of the sorcery are placed in one of the doll's hands, while in the other is placed a stone. Night after night the doll hurls the stone at the victim until he dies.[1] This method clearly symbolizes the Maya belief that sickness is hurled into the patient.

The Mopan Mayas also believe that sorcerers cause sickness by introducing red-headed toads or, more rarely, rats, into the victim's body. Among the Tzeltal Mayas of Chiapas, toads, snakes, small snakes, and even centipedes were believed to be injected into the victim by means of a sending charm. Tzeltal sorcerers also caused sickness by saying an incantation over a stick, plants, or a feather. These were placed so that they would be stepped on by the victim, thereby setting their power in motion. Even indirect contact of this nature between sorcerer and victim was not considered necessary, for the incantation, on being recited by the sorcerer, could be sent on its baleful mission by a puff of breath.[2] Yellow fever, children's

diseases and tapeworms were among the diseases which were believed by the Yucatecan Mayas to have been sent by those who specialized in one line of sorcery.

Evil winds were another potent cause of sickness. These, apparently, were sent either by evilly disposed, disembodied spirits, by sorcerers capable of controlling the wind, or were considered to have powers of their own enabling them to enter persons, causing sickness. All sickness, apart from natural accidents, appears to have been considered as due to evil "thrown" by sorcerers or by evil winds entering the sufferer's body. Among modern Mayas the belief exists that sickness may be sent by divine beings as a punishment for wrong doing. This may be the result of Christian teaching, although the analogous Aztec beliefs would suggest a native origin.

In curing disease the first step taken by the medicine-man was to assure himself that the patient desired his ministrations—which applies also to modern medicine as we of the white race know it. Next it was necessary to find the cause of the sickness, whether it were due to evil winds or sorcery. In the latter case the identity of the evilly disposed sorcerer must also be learnt. This was apparently achieved by means of divination, the medicine-man having first been primed with liquor supplied by the sufferer or his family as part of the fee. This aided the doctor in his divination. It is also very probable that, as in Mexico, liquor was supplemented by tobacco and other more potent narcotics, but of this there is no definite information.

The material aid of the modern medicine-man in the Yucatan peninsula is a crystal or piece of glass, or, when obtainable, a jade ball. These serve him as the crystal ball serves the modern fortune teller of our own country. It is possible that the concept of crystal gazing among the Maya medicine-men is entirely of European origin, but the former use of jade, a most precious possession of the Mayas, argues against such an attribution.

The usual method of divination was carried out with the aid of grains of maize or other seeds, which were thrown on the ground and then counted. The various methods of number divination doubtlessly did not differ from those practised in ancient Mexico, and which have already been described.

Among the modern Mopan Mayas of southern British Honduras, the disease and its cause are divined by an examination of the victim's veins and pulse rate. This, apparently, is an aid to the inspiration received by the medicine-man from the liquor he has drunk. There is little doubt that among the ancient Mayas the 260-day sacred almanac played a very important part in the preliminaries, indicating the days suitable for a cure, supplying a lucky combination with the day and number of the patient's birth that would insure the patient's rapid recovery if carefully adhered to. Divination with the aid of the sacred almanac may even have indicated the medicine to be prescribed.

Were the evil intangible, it was drawn out of the patient's body by means of prayers and the burning of copal incense to the gods of medicine, of whom Cit Bolon Tun appears to have been the most important. One method of drawing out the evil as practiced among the modern Mopan Mayas is described by Thompson:

> Seven tiny tortillas are made of ground maize mixed with ground cacao beans, copal incense, and blood. If the patient is a man, the blood is that of a hen; if a woman, the blood is drawn from a cock. The medicine-man places these miniature tortillas on the patient's body, distributing them as follows: one each on the heart, the forehead, the small of the back, each wrist, and each ankle. They are allowed to remain there for some time absorbing the evil that is in the patient's body. Later they are removed by the medicine-man, who takes them some distance from the village before throwing them away.
>
> The tortillas, seven or nine in number, may be passed over and under the patient's body to draw out the evil before being cast away. Sometimes a fox or carrion crow or some other animal is seen close to the place where the evil-infested tortillas are cast away. Such an animal is believed to be the spirit of the sickness come to receive it back.[1]

A purification ceremony of a somewhat similar nature is described by Bishop Landa as preceding certain religious ceremonies in ancient Yucatan. The utensils used in sanctifying the scene of the ceremony were carried out of the village to be thrown away. It was similarly believed that with their removal evil was cast out.

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Another treatment among the Mopan Mayas described by Thompson was given to cure a boy of some bad sores near his knee which had caused the whole leg almost to wither away.

The medicine-man arrived at sundown, but until midnight no treatment was attempted. Then a lighted candle was placed in the patient's left hand. The medicine-man proceeded to hold lightly and in turn the boy's ankles, his legs, both above and below the knees, his wrists and, finally, his temples. All this time he kept up a low mumbling of incantations and prayers. Next, after making what appeared to be the sign of the cross (the Mopan Mayas are nominal Christians), he placed a lighted copal censer below the hammock in which the boy rested.

After sprinkling the sores with water, small live fish were held for some minutes on the infected leg, above and below the sores. Subsequently the fish were replaced by pieces of the charred copal-soaked wood from the censer. If these were still hot, the patient showed no evidence of pain at their contact. During all this time the medicine-man continued to mumble incantations. Finally, removing the charred wood, the medicine-man took the wood, the copal, fishes, and water and left the hut, throwing them away, it was said, at the outskirts of the village.

Clearly this again marks a casting out of the evil.

Toads and other animals that have been injected into a patient's body are removed by appropriate incantations and sucking. One can surmise sleight of hand and trickery in connection with these manifestations of the medicine-man's power.

Bleeding is reported to have been used by the medicine-men in pre-Spanish times. An early eighteenth-century Maya manuscript from Yucatan lists various parts of the body where bleeding is efficacious for curing certain diseases. Thus bleeding two veins in the right leg below the knee cured dysentery and abdominal pains. Complaints of the gums were righted by bleeding the patient's left arm on a level with the heart, while bleeding of the thumb or big toe was a sovereign cure for women suffering from excessive menstruation.*

The modern Mopan Mayas cure headaches by bleeding. Small pointed fragments of glass are obtained from a broken bottle for this purpose. These undoubtedly replace the obsidian points of

ancient times. The glass is rested against the flesh just above the bridge of the nose and driven in with a flip of the finger. Bleeding the temples to cure headaches is also a common Maya custom.

Most sicknesses were, and still are among the modern Mayas, cured by concoctions of herbs. A first-class knowledge of these is a requisite of any medicine-man, since he seeks out his own supplies, collecting what he needs when he needs it. In fact every Maya medicine-man was a first-rate botanist. Ralph Roys has translated into English a large number of medical recipes from Maya manuscripts of the eighteenth century, but, as already noted, these books are undoubtedly compilations from earlier sources with only a small intrusian of Spanish elements. Over four hundred of these cures are listed in the translation, ranging from recipes for nose-bleed to cures for cancer.

Botany is the basis of most of these medicines, but there are a certain number which depend on contributions from the animal kingdom. In a large number of cases the choice of the requisite plant points to an acquired knowledge based on careful and extended observation of the effects of certain plants on the human system. On the other hand a certain number of the texts depend for their efficacy on the old magical belief that like cures like.

A number of examples of such sympathetic magic can be culled from the texts. A skin eruption resembling the stings of wasps was treated with a poultice made from the crushed nests of wasps and other stinging insects. Vines bearing a certain resemblance to snakes were employed to cure snake bite; jaundice was cured by decoctions of yellow grubs, seeds, or plants, while the vomiting of blood was treated with preparations based on plants or seeds of a red color.

It would be tedious to describe typical botanical cures taken from these old manuscripts, but a few recipes drawn from the animal kingdom might be cited. Granulation of the eyelids was treated by scratching them until blood flowed, and then applying the gall of a large iguana. A cure for gum trouble was to pierce the gums with the bill of a woodpecker, thirteen times if the patient was a man; nine times if a woman. Baldness was prevented by anointing the head with the blood of a frog or a bat.

Boys suffering from gas in the stomach were treated by adminis-

tering a purge by means of an enema. It is not known if the ancient Mayas made use of a rubber clyster, but this is very probable. The rubber clyster was used in South America, and among the Mexicans intoxicants were injected into participants at certain ceremonies by means of clysters at certain religious orgies.

In many cases the sacred numbers nine and thirteen enter into the remedies. Thus among the Mayas of Socotz, British Honduras, a form of eczema common in children is cured by a poultice made of nine of the small stinging ants. Many treatments are made only on Fridays—a probable survival from the time when the days of the 260-day almanac played an important part in cures. Frequently a cure will be practiced on nine successive Fridays. It is possible that the number nine plays such an important part in Maya medicine because the deity who was considered the special patron of medicine was called "Father Nine Precious Stone."

Among the Jacalteca Mayas of western Guatemala colds are treated with snake-fats applied hot, wrapped in tobacco leaves, while among the same people snake-fat is used in massage.[4] A peculiar remedy for the retention of urine is listed by Roys. The tip of a porcupine's tail is dried, ground up, and given the patient to drink in water. If the patient is a man, the tail should be that of a female porcupine, while for a woman the tail of a male porcupine is employed. This reversal of sex resembles that noted in the cures of the Mopan Mayas already given.

It is clear that such remedies and others, not listed because they contain no feature of outstanding interest, supplement the casting out of evil by means of incantations, Generally speaking they did not cure disease, but, once the evil had been cast out, they remedied the damage already done.

All in all Maya medicine-men achieved a very fair balance between the practical and the magical. In the Maya medical texts of Yucatan occur plants such as *Euphorbia hirta* and *Bursera sinaruba* which have been incorporated into the United States pharmacopoeia, while others, less well known in this country, are vouched for and used by Mexican and Central American doctors.[5] Karl Sapper, the well-known geologist and ethnologist, is one of the many witnesses to the efficacy of the remedies used by the Tzeltal Mayas of Chiapas.

There is no information as to the practice of surgery among the ancient Mayas, but human sacrifice must have taught them a considerable knowledge of human anatomy. Among the modern Yucatecan Mayas there exists a class of individuals known as bone-binders. They cure fractures, dislocations, sprains and contusions, aiding the healing processes with expert massages and manipulation. Similar knowledge of osteology seems to be fairly widespread over the Maya area. It is more than possible that such knowledge has been handed down from pre-Spanish times.

Medicine-men had a considerable number of tricks to impress the layman. The range of such tricks among the Jacalteca Mayas is wide. It is claimed that their medicine-men will cause leaves, flowers, greens, corn, larvae, bits of cloth, and other objects to issue from the ears and noses of individuals who are suffering from sorcery. It is also claimed that they have the power to cause stones to fall at night inside the houses of individual who have merited their displeasure.[4]

Among the ancient Mayas certain individuals, presumably medicine-men, were believed to be able to cause flowers to open before their time. They were also credited with the gift of snake charming. The fascinating custom of fire-walking, widely spread in the East Indies and the Pacific, was also practiced by the Mayas of Yucatan. It is probable that this was partially connected with the shaman cult, although it also had a calendarial significance, since it was performed at regular intervals in the 260-day sacred almanac.

It is highly probable that Maya medicine-men, like their colleagues in Mexico, were credited with the power of raising the dead. In the Quiche sacred book, called the Popol Vuh, the heroes exhibit their skill by permitting themselves to be killed and chopped in pieces, and then returning to life. This is the grand finale in a series of conjuring tricks performed in competition with the lords of Xibalba, the legendary Maya underworld.[5]

A peculiar adjunct of shamanism in Central America was the belief in *naguals* (pronounced nawals). Each person was believed to have companion spirit which resided in some animal, which was his nagual. The nagual might be a jaguar, lion, rabbit, bird or some other animal, but only one individual animal was a man's nagual, not a whole species. Thus it is said that among the modern

Tzeltal Mayas if a man has a quarrel with another, he will deliberately shoot all the animals he can of the species of his enemy's nagual, in the hope of shooting the one that is actually the nagual of his enemy, and thereby kill his enemy, for it is believed that when a man's nagual dies, the man himself dies.[6]

For this reason a man carefully conceals the nature of his nagual. In the seventeenth century the shaman assigned a nagual to each individual according to the day in the 260-day calendar on which the individual was born. Later the child was caused to see his nagual, which by magic was made to appear very tame and friendly even were it a jaguar or puma.[7] Among the modern Tzeltal the belief exists that one's nagual is seen in a dream.

A story of this modern belief was told to two visiting ethnologists by an educated Mexican resident. Among many persons of this class nagualism is accepted as an undeniable fact. The author of the story entered the house of a Tzeltal Maya. Two dogs were fighting furiously on the floor, while two old men sat back to back close by. On being asked why they did not separate the dogs, one of them replied, "Our naguals are in those dogs and my friend (*sic*) and I are fighting." The man went on to relate that at the conclusion of the dogs' fight, the faces of the two old men were covered with black and blue marks.[8]

Similar beliefs exist among the Mayas of the Highlands of Guatemala. The Jacalteca Mayas believe that the medicine-men have the power of turning themselves into their naguals, but the ordinary layman, although he possesses a nagual, does not know what species of animal it occupies. In the case of an illness attributable to something wrong with the patient's nagual, the aid is sought of a member of a class of medicine-men who specialize in nagualism. This individual proceeds to "look and see" what is the nagual of the patient in question and find out what is wrong with it. When this has been discovered, the shaman, who may even be a woman, burns a candle in the church and then proceeds to seek out the patient's nagual and cure it of the sickness which is affecting the patient.[9]

Similar beliefs with regard to nagualism have been reported by several of the early Spanish missionaries in Guatemala.[10]

No information exists as to the paraphernalia of the medicine-men among the Mayas of the pre-conquest period except that in Yucatan they attended their annual feast bringing with them their small idols of the deities of medicine.

Although so little is known of the medicine-man's trinkets, every writer emphasizes the ceremonial importance of the drinking of an intoxicant before performing a cure. In this connection we may quote La Farge, who writes of the modern Tzeltal medicine-men as follows:

A shaman will not perform unless he is more or less inebriated, not from greediness, but because it is a ceremonial necessity for him to be in that condition when dealing with the sacred things. Drunkenness was a requisite of certain functions among the old Maya, and with the present-day Lacandones [a Maya people living in the Usumacintla Valley], the Chontal shamans similarly will not perform unless drunk.

Sebastian Guzman, a Bachajon (Tzeltal) at El Encanto, a specialist on snakebite cases, would not treat a friend for snake-bite, although he carried him on his back for two hours to get treatment from us, because the friend could not buy him any rum. It probably would be considered very dangerous to deal with the supernatural healing powers when sober.

From this brief survey it is clear that there existed a close similarity between Mexican and Maya ideas of the causes of sickness and the methods of curing it. Unfortunately the material from the latter region is all too scanty. If we equate the death of the Aztec initiate with the swallowing of the Maya initiate, we see that the only major difference is the apparent absence among the Mayas of divination by means of narcotics. Even in this there is not such a wide difference as would at first appear to exist. The Aztec medicine-man received his inspiration from the *datura* narcotic or peyote; the Maya from the drinking of an alcoholic stimulant. It is possible that datura narcotic was also used by the ancient Maya medicine-man, although there is no direct evidence of such a custom. The fact that different species of daturas were used in aboriginal ceremonies from Peru to New Mexico would argue in favor of the custom having once existed among the Highland Mayas, if

not among the more remote Mayas of the lowlands. It must be remembered in this connection that there is practically no information on the religious or medical concepts of the Highland Mayas. It is true that the species of datura varies in different regions, but it is extremely unlikely that these species represent independent inventions. Hence one may assume that at some time the Mayas were acquainted with the narcotic effects of daturas, and therefore used a medical technique that differed little from that of the Aztecs.

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CHAPTER X

THE WEST INDIES

IN the islands of the West Indies, among the Caribs, the priests were also medicine-men and one of their chief functions was that of healing the sick. They were expert herbalists, and many of their remedies were considered at the time of real value, but they relied for the most part upon trickery to gain the confidence of their patients.

There were local variations in treatment, but the principal features were the use of tobacco and the application of massage. Sickness was regarded for the most part as due to the anger of some *zemi*, to whom the sufferer had, perhaps unwittingly, given offense, and who had shown his displeasure by miraculously inserting some foreign substance in the body of his victim. It was first necessary to ascertain the cause of the malady. For this the patient was brought to the doctor, who endeavored to produce a sort of physical sympathy with him by adopting the same diet and by dressing as far as possible like him. Both doctor and patient were freely dosed with tobacco, and the priest during his state of ecstacy was supposed to hold converse with the *zemi* and ascertain the cause of the sickness. In serious cases the priest would visit the invalid, having prepared himself by blacking his face and concealing in his mouth a pebble or small bone wrapped in flesh. All children and unnecessary individuals were turned out of the hut, and strict silence was preserved. The priest purified himself by taking an emetic, prepared from a certain herb wrapped in the skin of an onion, and then seated himself in the middle of the hut with the patient, and proceeded to massage his limbs in a downward direction, as if forcing something from his body. Then pretending to hold something in his hands, he ran to the door and cast it out, exclaiming, "Begone to the mountains or the sea." Returning to the sufferer, he proceeded to suck at certain parts of his body, finally producing the object which he had concealed in his mouth, and which he triumphantly displayed as the cause of the trouble. If it were a stone, it was believed to be a charm of great value, especially serviceable in childbirth, and was

kept wrapped in cotton and given portions of the owner's food, like the other household *zemi.*

Should the patient die, it was sometimes a serious matter for the doctor, especially if the deceased had powerful relations. There was a highly interesting magical ceremony by means of which it was believed possible to discover whether the doctor was to blame. Parings of the deceased's nails and hair cut from his forehead were pounded together with the juice of a certain herb, and the mixture poured down the mouth and nostrils of the corpse. The body was then returned to the grave, or laid upon the embers of a large fire, and covered with earth. By the virtue of the magical draught, he was then supposed to come to life, and would answer ten questions from the grave or fire. If he incriminated the doctor, confirmation of his words was supposed to be given by the smoke of the fire when it was uncovered, since it was believed to rise to the sky and then, turning downwards, to enter the hut of the culprit and afflict him with a skin disease. If the guilt of a priest or doctor was thus proved, he would be kidnaped by the relatives and beaten, but he could not be killed unless he were mutilated in a certain way because it was thought that snakes would come and lick his wounds so that he would recover after two or three days.

But sickness was often attributed to a spirit invoked by an enemy, and the patient had recourse to his own guardian spirit to discover the offender. This custom frequently gave rise to bitter feuds. To invoke the spirit, the hut was cleaned, and the table was made ready with its offerings of cassava and wine (these offerings were termed *anakri*). At the other end were seats for the participants in the ceremony. At night the fire was extinguished, and the boye, or medicine-man arrived, finding his place by the light of his cigar. He muttered charms, stamped several times with his left foot, blew five or six puffs of smoke, and then rubbed the cigar between his hands and scattered it. Upon this, the spirit appeared with a great noise, and replied to the questions put to it. If the illness was declared to be curable, the patient was massaged, as among the Taian, and a stone was apparently extracted from his body. After this he was rubbed with juniper-fruit which stained his skin brown, the color of health, and the cure was supposed to be complete.

According to Coreal,* the West Indian doctor treated his patient by sucking that part of the body which caused the patient the greatest pain. Sometimes he made an incision near a vein. Then he uttered some words supposed to possess magic power. His behavior was part of his professional art. Usually the patient was caused to vomit. When remedies were exhausted, he placed the patient in the door of the wigwam, exposed to the rising sun. He then implored the sun to effect a cure which human agencies were unable to accomplish.

The treatment most in vogue was sucking, making incisions after bathing and sweating, together with the making of strange gestures, and as a last resort heliotherapy which in the white race is so much used today.

I have spoken of these Indians in the Islands of the Blest as they were before the preponderating influx of the invader and their amalgamation with the Caucasian and the Negro.

* Coreal in Jones, 1873, p. 29.

CHAPTER XI

COLOMBIA AREA

FROM the dawn of history, as we have seen, human existence has called for leaders to fill such office as priest, shaman, and doctor. In remote times and among primitive people these offices have been interwoven and have never been definitely separated. Egypt seems to have progressed farther than we have found in the Western Hemisphere, for in her early dynastic times there were two co-existing systems; the one, religious with well-defined ideas of ethics, deities, and a future life; the other, a code of procedures with formulae for the cure of disease, the evil eye, and what seemed most important of all, the control and expulsion of demons from the human body.

Assuming the point of view of the American Indian, there is in the Western Hemisphere no absolute ethical differentiation between the two offices, nor definition that will always hold true. A medicine-man may also be a priest; a priest may also possess healing powers; again, the two offices may be widely separated. Nevertheless, there is one important distinction. Regardless of whether the two offices are invested in one individual or in several, the part of priest is essentially that of the keeper and demonstrator of rituals, his right to do so arising from his supposed call and later from his knowledge of the subject; while the medicine-man *per se* is the superhuman of the Indian who alone can fight off the demons of disease and death.

In Colombia there were a large number of tribes, such as the Chibchas and the Colimas sharing a fairly homogeneous culture, based on an advanced agricultural and a well-developed metallurgy. A number of these tribes possessed a regular priesthood, but there also existed a large body of medicine-men who travelled from town to town to practice their skill. To become one of these peripatetic doctors, one had to be either venerable with years or to have a miraculous experience with the forces of the gods. A narrow escape from lightning endowed the subject with a great knowledge of herbs and disease treatment. This knowledge was substantiated by an initia-

tion into the rites that pertained to the practices of the shaman. To the novice then, the initiation must have been a godsend, for this ceremony provided him with much necessary knowledge.

The information that has reached us from early sources is meager, and the account of medical methods must necessarily be rather incomplete. However, we know some interesting things that enable us to visualize this ancient doctor and as he exists in inaccessible regions in the hinterland today. He used narcotics, such as datura, coca, and tobacco for divination purposes in a manner very similar to the Mexican methods described in Chapter IX. Herbs, extracts from the sap of trees, and selected parts of animals helped fill the medical kit of the travelling shaman. An ancient account[1] tells of the paraphernalia found in the medicine bag of a Chibcha shaman. There was a small calabash of powder called *yopa* snuff and some other, unground leaves of the same plant. There was also a small piece of mirror set in a stick, a small brush, and a thickly painted deer bone grooved diagonally across the middle. All of this apparatus was used in divination.

When a native would inquire about the whereabouts of some lost or stolen goods, the following procedure was used:

The lip of the native was shaved assiduously so that no obstacles would be in the way of the secretions from the nose soon to follow. In order to start this secretion the shaman would force some of the snuff up into the nostrils with the aid of the deer bone. As the snuff was a strong irritant, a counteracting flow of mucus would result. This viscous liquid would soon hang down as far as the mouth and then the shaman would look at it through his mirror and determine whether it was a good omen for his divinations. If it hung in a straight line it was a good sign, but if it hung twisted, the contrary was true. After the determination, the upper lip of the subject was scrupulously cleaned with the small brush and the hair was combed. Of course, if the first divination proved false by this method, it might be used over and over again as a test for subsequent divinations by the shaman.

If these divinations proved fruitless, even after substantiation by irritation of the nose, the problem of the stolen goods could be approached by another method. The shaman would trace ten paths in the form of spokes of a wheel and therefore radiating in all direc-

tions from where he was sitting or standing. A path was assigned to each of his ten fingers and then he would swallow a small quantity of the datura, known as *tyhyquy,* and he would carefully watch his fingers to see which one was the first to twitch. In the direction of the path of the twitching finger the stolen goods and the criminal would be found.

A somewhat similar method was followed in deciding whether some undertaking would be successful or not. The shaman would eat a concoction of two herbs, one being the strong snuff used in irritating the nose, and then he would watch his body to see where twitching occured. The twitching of some joints indicated success and others indicated failure.

Another link in our chain of closely correlated divination processes leads us to the savage Colimas, who had possibly migrated from Ecuador and were in possession of much Chibcha territory at the time of the arrival of the Spaniards. They would swallow a drug concoction that would cause a twitching of the eyelids and answers, in the negative or affirmative to pertinent questions regarding the future, were given in result to this nervous reaction. They did not use this method alone, however, for the weird call of a tropical bird in the lush forest could rouse the medicine-man from his divinations and make him completely over-rule an affirmative decision reached by watching the twitching of the eyelids.

There were many ideas as to the cause of disease among these tribes. The Colimas thought that illness could be caused by the presence of some small object such as a worm, spider, stone, or shell in the body. To combat this they employed the widely distributed practice of sucking at the belly or the affected parts of the patient and producing a small animal or stone that they had concealed in their mouths. At least we can say that this would probably have a beneficial effect psychologically. To explain more serious illnesses or mental lapses, they thought that the soul had been lost. To remedy this regrettable situation the shaman would enter into incantations and divinations that would strike fear into the hearts of the watchers. After a dignified period of this mysticism the shaman would be able to say whether the soul had been won back again from the very evil and also very powerful person or shaman who

had taken it. Incidentally, the shaman only won when he thought the patient had a good chance to live. The soul might not only be lost, but an evil spirit could be intruded in its place or with it. The shaman would then carry on loud and frightening ceremonies to make the evil spirit depart. In this case the medicine-man was usually successful, for if the patient died after the spirit was gone, his death could be explained by the weakened condition the ominous shade had left him in.

The Colimas also believed that the sorcery of certain powerful people, usually the enemies of the attending shaman, could cause disease without tampering with the soul. As before, the medicine-man would work his powerful charms and try to counteract the work of the said powerful people. In case of the death of the subject, the shaman could do his enemies great harm in telling the relatives of the deceased who had caused this tragedy. Their anger could easily prove fatal to some perfectly innocent person.

A sin against tribal taboo was the sure cause of many sicknesses and could only be cured by the familiar treatment that we see here and elsewhere in South America. A full confession to the shaman was necessary and during the confession the shaman would cannily watch his patient to see whether he was getting the truth, the whole truth, and nothing but the truth. All of the sins confessed would be considered and then the shaman would decide whether the patient would live or not.

These beliefs of the Colimas were accepted generally throughout Colombia and the medicine-men of the various tribes had similar treatments to offer the sick and troubled. To show how much alike treatments and ideas were, we can give some interesting examples extracted from elsewhere in this region.

The Aurohuacas of the Sierra Nevadas of Santa Marta believed that *all* sickness is a punishment for sin. A sick man sent for a medicine-man who first would ask if the patient wished to confess. In case the patient were unwilling, the medicine-man would leave without ado; but if he were willing to tell his sins, all others present in the hut were sent away while the confession was made. The shaman would decide if the sins were mortal or sufficiently light to permit the patient's recovery. In the latter case the medicine-man in-

structed the relatives to collect stones and shells. These artifacts were carried to a conspicuous point on some not-distant mountain where the morning sun would not fail to strike. Here a rough stone was set up and the pebbles placed before it. Since the sin was believed to be resting in the stones, the sun would drive them away and the man would recover to enjoy good health once more.[7] Here is an interesting ramification in that we can see a connection with sun worship, for among the Chibchas the bodies of children were sacrificed to the sun and similarly carried to the tops of mountains to be exposed to the sun. This belief was somewhat similar to that of the Mayas of British Honduras.

It was a common practice among the medicine-men to give love potions and interpret dreams, and they were skilled at causing abortions. As in Mexico there was a belief that the medicine-men were closely associated with certain animals, for medicine-men of great power were thought to have the ability to turn themselves into jaguars or pumas. Such a thought might scurry any recalcitrant patient into paying the fees due the medicine-man. These beliefs also accentuated the importance of the shaman.

A most bizarre function was performed by the shamans of the Santa Marta area of Northern Colombia. Although these people were on a lower cultural plane than those of the Cauca and Magdalena valleys, their medicine-men had taken a stride forward in daring and importance. Their shamans were fearless in handling poisonous snakes. They believed that they acquired immunity to snake bites by a special process lasting several days in which burns were made in various parts of the body and into these were rubbed certain powders, while the initiate drank some decoctions of herbs. After this treatment was completed, the medicine-man could pick up a dangerous snake with impunity. Since we have no record of any fatalities, we might believe they might have found [doubtful] some snake-venom antitoxin.

As our knowledge of the ancient medicine-men of Colombia becomes exhausted, it is pleasant to remember yet another thing about them. They must have been aesthetics, for their patron deity was the colorful rainbow. This same association of medicine, particularly childbirth, with the rainbow is found among the Mayas, where

it may have spread from northern South America. As a poignant memory we can picture to ourselves a part of the green-choked jungle just after a heavy shower with the bright sun and a rainbow spanning the small patch of sky to be seen. If our imaginations permit us, we can see two shamans walking through the undergrowth and nodding to each other. Yes, theirs had been a wise choice of patron deities, for the rainbow implies a new beginning, with hope, knowledge, and promise such as the medicine-man could offer. During the researches leading to the writing of this book, I have often likened the medicine-man of the American Indian to a rainbow. Both distinct and well-defined at a distance, but vanishing into obscurity as you approach.

The position and prestige of the shaman suffered by the coming of the priest or missionary. A church in each little village, with its priest, has lessened the attention paid to the medicine-man, although he is still very powerful and is paid on occasions to drive evil away from a village, much to the disgust of the priest. The Spaniards are not the only foreign people that have penetrated this country, for there are several large and prosperous settlements of negroes in the jungle. These natives of Africa were originally intended for the slave trade, but have either escaped or been freed and then settled their to mix to some extent with the Indians.

Since the Indian is quick to adapt himself to new conditions that meet his eye, it has occurred to the writer that the mass and the confessional of the early Padres were taken cognizance of by the Indians and adopted into some of their tribal rites, without the signifigance originally attached to them. Their polyglot philosophy of religion has introduced some new ideas from Christianity as well as crystallized their own particular views. The Cayapas have an idea of a lower, middle, and upper worlds. The lower world contains what are considered as "true" spirits or in other words spirits that never had and never will have bodies. Some of these are good and some are bad. The middle world is this one and the upper is a confusion in their minds and contains a people about which ideas are rather scarce. Possibly the upper world is a result of the teachings of Christianity about heaven and the lower a quasi-purgatory or hell.

The shaman of today is usually a venerable fellow who has come into his profession through dreams or experiences assigned to the supernatural. The requirements for being a medicine-man are practically the same as they were long ago. This also is true of the utensils used by the shaman, with the addition to the kit of a crucifix or rosary.

They still believe, as their forefathers did, that disease is caused by sinning. The confessional treatment of disease used by the Cayapas is also practiced by several other South American tribes. The Ijca Indians of Columbia believe that disease may be cured both by the more usual magical treatment and the treatment by confession. It is believed that the task of the medicine-man (*mama*), knowing that the sickness has been caused by evilly disposed spirits, is to discover the reason for their displeasure. Accordingly he procures some mysterious object to serve as a carrier for their elimination and the consequent cure of the disease. He exhorts the patient to confess his wrong-doing. During the time the patient is trying to bring the sins that will bear the light back to his memory, the *mama* manipulates his medicine-bag. By this method he is able to divine as to whether the sufferer has confessed everything. When the confession has been satisfactorily completed and the manipulation of the magical materials has brought about its object, the patient is given a pennance to do and the illness is considered as expelled.[3]

Disease might not only be caused by sinning, but also by an angry shaman, who could cause either a spirit to enter the body or the soul to leave, or by some small object lodging in the body, or by an evil spirit entering the body through an abrasion. Certain places around each village are regarded as taboo, as in these spots the spirits are believed to be exceptionally populous and are sure to enter the body.

Precious stones and crystals are among the commonest charms used. Wonderful properties are ascribed to them and they belong to the special equipment of most sorcerers. An attempt to buy one of these by a white person[4] usually meets with severe opposition and defeat, with the explanation that the spirits in the stone are angry and would go back, stone and all, to the original owner if ever carried away. There is no taboo against any one's handling these stones. Evidently this does not upset the spirits and it is only

when the stone is used by some novice in a ceremony to cure a disease that the spirits are aroused. In his studies of the Indians of Eduador, Karsten[5] noticed a widespread use of charm stones and their especial importance to the medicine-men. The sorcerers of the Napo Indians, for example, availed themselves of certain stones and crystals when they cast spells upon their enemies. Any Indian that happened to be hit by one of these objects was regarded as irremediably lost and would be given up by all medicine-men. Similarly the sorcerers of the Colorado Indians in northwest Eduador use charms of small black stones, which have been thrown out by volcanic action. They do not admit that these stones came from the volcanoes, but pretend to have gained possession of them in some mysterious way. They claim that the volcanic spirits, who are also sorcerers, have revealed them in a dream. The marvelous power of these stones is supposedly due to this unique origin.

According to the conception of the Uitoto, a cannibal tribe of east Colombia, the organization of man consists of a lifeless material body, with which presumably they are on familiar terms, and a soul, which later flies away when the body dies and continues to exist independently in an underworld. Sickness of the body is the result of supernatural beings, conceived as the souls of ancestors, who introduce strange objects into the body. These strange objects may consist of images of the souls, or of material things such as a maggot, an arrow, a bug or a splinter. These personified supernatural beings are looked upon as the direct or indirect cause of all illness in this locality.

So credulous are they that they believe only a medicine-man is capable of removing these strange objects from a sick person's body. In doing this the medicine-man generally puts himself into a trance, during which, naturally, he sees visions. These visions, instigated by spirits possibly of ancestors who have in their malevolence caused the sickness, enable him to learn the nature of the ailment. The treatment which naturally follows consists in the medicine-man's removing the foreign object, either imaginary or real. He may, however, if evil-minded, place the blame upon some enemy medicine-man and show by the fact that he can cure the patient, that he is more powerful than his colleague of the opposition.[6]

The Cayapa Indians have some remedies for minor cuts and

bruises that are really very good. Wounds are sealed with beeswax which seems to have a very good effect and many times open sores are covered with soft green leaves that lessen exposure to the air. In more serious wounds no further precaution is taken except to bathe and bandage the abrasion. If a temperature occurs the infection is laid to spirits and magical methods are resorted to.

Today the Cayapa shaman seems almost always to have three types of instruments in his possession: a lance-shape wand, a bottle of rum, and curious black stones picked up by the rivers. With these objects he can treat disease, divine, and drive spirits away from towns or houses. The Cayapa medicine-man enters his profession by asking one of the accredited medicine-men to instruct him in the incantations of songs of the class for a stipulated sum. These lessons occur each night until the novice has satisfied the older man. As the novice gains in experience and confidence he no longer relies on the spirits of his teacher, but adds others of his own origin. Each individual shaman not only has his own special spirits, but also his own method of treatment. He can call the spirits by whistling and singing, or after they have arrived he can then suck the affected part of the body which is made more palatable by a liberal dousing with rum.

Since after a person dies the Cayapas believe that his soul returns to his house to infect or hurt in some way the people still living there, the shaman has the job of forcing these spirits into the jungle or ocean. For this purpose he waves his wand before him and with all the residents of the household he advances into the jungle or down to the sea. After this ceremony the spirit comes back to harm his relatives no more and if any sickness occurs it is not due to him.

The medicine-man of the Cayapas can be malevolent as well as benevolent. If he desires the death of enemies he calls his spirits and bids them to harm the object of his hatred. These same spirits who one day kill an enemy, may the next, cure a friend. Since there are many spirits and they have an infinite number of abodes, the shaman can carry out both operations at once. It would be lamentable if the shaman were ever to get his thoughts mixed and be faced with a dead friend and a live and healthy enemy.

As a whole, we may safely say the development of the various

medical practices in this region and the Peruvian highlands of South America was superior to those of North America, with the possible exception of Mexico. While the supernatural element, infinitely interwoven with useful curative principles abounds, we may also say that the medicine-man of the southern continent was useful to his people, and as the centuries rolled on might have progressed in usefulness as the slow process of evolution seems to work elsewhere in nature.

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CHAPTER XII

TROPICAL FOREST OR AMAZON REGION

THE tropical culture area alone of South America is twice as big as the entire United States. Consequently, in such a vast area, one expects to find at least as many different ideas regarding medicine-men, disease, and treatments, as one would find in the various areas described in North America.

Therefore, since this book is not intended to be an exhaustive treatise, but, rather a briefer account of medicine-men, and since but little intensive work on the various tribes of this large area has been done, discussion of them is confined to a few groups of Indians in the northern or Guiana, the western or upper Amazon river, and the Paraguayan Chaco regions.

THE GUIANA REGION

This region comprises the northern portion of South America bounded by the Atlantic Ocean, the Orinoco River, the northern limits of Rio Negro drainage, and the lower Amazon.

Within this great tract are many small tribes, some of which most people and even some anthropologists have never heard of. It seems better, then, to take up a few of the better-known groups, such as the Arawaks, the Caribs, and the Warraus.[1]

The office of the medicine-man is usually hereditary and passes to the eldest son; if the medicine-man has no son, he may choose a friend for his successor. Sometimes, the secrets of the profession may be purchased for a proper fee. Now and then a woman becomes a doctor and is permitted to practice within her tribe.

An interesting legend concerning the origin of the first medicine-man is as follows:

Three young boys, through their parents' neglect, became lost and wandered afar. The parents searched for several days for the lost children, Finally the second and third couples abandoned the search, leaving only the first couple. The children had wandered on and on and had made friends with the wasps, who in those days talked but did not sting. The children told the black wasps to sting



Material of which a medicine-man is made in the Amazonian basin.

people and the red ones to give people fever. Finally the first pair of parents found the children on the seashore, but by now they were no longer children but were young men. The parents begged them to return home, a request which was at first refused. Finally, the boy who had first became lost promised to return if his parents would build him a proper "Spirit-house" and would "call" him with tobacco .The boys then crossed the seas and the parents returned home to carry out their promise. A proper "Spirit-house" was built, and then papaia, cotton, and coffee leaves were burned. But there was no "strength" in any of these and the boys failed to return. Only tobacco would serve the purpose. But in those days no tobacco grew in that land, but grew on an island far away. The father finally obtained the help of a crane and a humming bird, who with rare cunning succeeding in stealing some tobacco seeds from under the very nose of the island watch-woman. The precious seeds were planted and grew very quickly. The father then made a rattle from a calabash; with this he started singing. Soon the three boys, who were now spirits, came in answer to the song and asked and received the tobacco. Thus, this poor, bereaved father became the first medicine-man, and the three boy-spirits always answer, even today, when called by the medicine-man's rattle.

The apprentice of the medicine-man has many difficult tests to undergo and many esoteric things to learn before he becomes a full-fledged medicine-man. He practices self-denial for many months and forgoes luxuries. He learns to experience pain without a murmur by having his body cut and by letting ants bite him. He must learn all about the instincts and habits of the animals; the properties of plants, and the seasons for flowering and bearing, for a medicine-man is often consulted as to when and where game is to be found. He should commit to memory the orthodox grouping of the stars into constellations and all the legends connected with them and his people. He likewise must know all the means of invoking the spirits, such as chants and formulas, and be able to imitate various animal and human voices. Finally, he is forced to run the chance of dying by drinking a decoction composed of tobacco and the drippings from an exposed dead body, in repeated and increasing doses; after which, if he lives, he slowly recovers with a confused mind, firmly convinced that while in his death-trance he

was admitted into the company of and conversed with the spirits. Thus, he is consecrated to the office of medicine-man.

Disease or sickness is supposed to be due to one of four causes: soul loss; the intrusion into the body of a disease-causing object; the intrusion of a bad spirit; or sorcery.

For the purpose of making the method of diagnosis and treatment clear, let us take an actual case as told to me and follow it through.

Whenever possible, the sick person comes to the medicine-man. If he is too ill to be moved, the medicine-man makes a "house call." In either case, the method followed is much the same. It is first necessary to give the medicine-man a down-payment, a sort of advance fee. This, at least, insures a diagnosis.

The patient is then put into a special hammock. Nothing, however, can be done until sundown. Then a new fire is kindled, and a cigarette is rolled, after which the medicine-man starts his examination, and, at the same time, asks the patient what the pain is like and where it is located. After ascertaining the seat of trouble, the medicine-man talks to his manikin, part of his equipment, to find out from it whether or not the patient will recover. Next, the medicine-man seats himself upon his special stool, which he always uses, lights and smokes his cigarette, and at the same time massages and blows tobacco-smoke upon the sore spot. This part of the proceedings may be watched by the public. The next portion of the treatment may not be viewed by women, and even men must stay at a respectable distance. There must be absolute quiet and all fires extinguished. The medicine-man now begins to sing, pulls a gourd rattle out of his bag, and after polishing and blowing smoke on it, places it on the tender or painful spot. His voice changes from soprano to bass according to the voice of the spirit which is talking with him. Since it is not yet known what caused the illness, each spirit has to be questioned separately. After two to five hours of this procedure, the rattle and manikin are put back in the bag, and the medicine-man seats himself again on his divining stool, smokes and finally dreams until he discovers what caused the illness, and what treatment should be adopted.

In the morning, provided another fee is paid, which may be cloth, money, or beads, the medicine-man will tell the patient or his friends the nature of the illness and what treatment is necessary. This may consist of sucking on the afflicted spot, to remove the disease-causing object (perhaps a stone, a bit of hair, or a snake's fang), or of permitting the spirits alone to effect a cure. At other times—especially if no fee is forthcoming—restricting the diet is all that is necessary. If the medicine-man thinks that the patient will not die, he always tells him that he will recover. If the patient should die, it is indeed unfortunate, but then again it is always due to failure of carrying out the medicine-man's orders.

Brett,[2] a missionary for many years in British Guiana, speaks of the medicine-man as follows:

When an Indian of the Warraus tribe has made up his mind to become a sorcerer, or "doctor," he applies to some professor of that art, who takes him into a small hut prepared for the purpose. After certain preliminaries, including solitude and spare diet, a quantity of water, containing about ten leaves of cured tobacco, is boiled down to about a fourth. This horribly nauseous and emetic dose he must swallow, and, in the death-like state of sickness to which it reduces him, his spirit is supposed to leave the body, and to visit and receive power from the yauhahu, or *hebo,* as the Warraus call the dreaded beings under whose influence he is believed to remain ever after.

Meanwhile, his death is loudly proclaimed, and his countrymen are called to witness his state. Recovery is slow, and about the tenth day he comes forth from the sacred hut in a most emaciated condition. For ten months after, the new sorcerer must abstain from the flesh of birds and beasts, and only the smallest kinds of fish are allowed him. Even cassava bread is to be eaten sparingly, and intoxicating drinks avoided during this period.

Meats and food not indigenous to the country are especially tabooed. I have known one of these men to refuse to pick up some North American salt fish which had fallen on the ground, lest by touching it he should neutralize the power of his enchantment. And among the Indian paddlers attached, under Mr. M'Clintock, to the military expedition to Pirara, was one who, being unable to procure his set diet, was obliged to eat the rations served out, or starve. He preferred the former, but thereby lost his spiritual power and in-

fluence, his countrymen alleging that the forbidden food had "spoiled his mouth" for incantation.

M'Clintock states that "the above rules are common to the Caribs as well as the Warraus, but that the former are allowed during their period of abstinence to take a little meat—the flesh of the Acouri. The Acawois differ in some respects from the other tribes, inasmuch as not less than four, and frequently more, become medicine-men at the same time. Each contributes as much tobacco as would fill both hands, and this is boiled down to a quantity which gives about half a pint to each person, a beverage stronger than that of the Warraus, but less in quantity.

They are then each furnished with a large gourd or calabash, which has been emptied of its seeds and spongy contents, and has a round stick run through the middle of it by means of two holes. The ends of this stick project—one forms the handle of the instrument, and the other has a long string to which beautiful feathers are attached, wound round it in spiral circles. Within the calabash are a few small white stones, which rattle when it is shaken or turned round. The calabash itself is usually painted red. It is regarded with great awe by the heathen Indians, who fear to touch it, or even to approach the place where it is kept.

When attacked by sickness, the Indians cause themselves to be conveyed to some friendly sorcerer, to whom a present of more or less value must be made. Death is sometimes occasioned by those removals, cold being taken from wet or the damp of the river. If the patient cannot be removed, the sorcerer is sent for to visit him. The females are all sent away from the place, and the men must keep at a respectful distance, as he does not like his proceedings to be closely inspected. He then commences his exorcisms, turning and shaking his *maraca* or rattle, and chanting an address to the yauhahu. This is continued for hours, until about midnight the spirit is supposed to be present, and a conversation to take place, which is unintelligible to the Indians who may overhear it. These ceremonies are kept up for successive nights.

If the patient be strong enough to endure the disease, the excitement, the noise, and the fumes of tobacco in which he is at times enveloped, and the sorcerer observes signs of recovery, he will pretend to extract the cause of the complaint by sucking the part affected. After many ceremonies he will produce from his mouth some strange substance, such as a thorn or gravel-stone, a fish-bone

or bird's claw, a snake's tooth, or a piece of wire, which some malicious yauhahu is supposed to have inserted into the affected part. As soon as the patient fancies himself rid of this cause of his illness his recovery is generally rapid, and the fame of the sorcerer greatly increased. Should death ensue, the blame is laid upon the evil spirit whose power and malignity have prevailed over the counteracting charm of the medicine-man. Some rival sorcerer will at times come in for a share of the blame, whom the sufferer has unhappily made his enemy, and who is supposed to have employed the yauhahu in destroying him. The sorcerers, being supposed to have the power of causing as well as of curing diseases, are much dreaded by the common people, who never wilfully offend them. So deeply rooted in the Indian's bosom is this belief concerning the origin of disease, that he has little idea of sickness arising from other causes. Death may arise from a wound or a contusion, or be brought on by want of food, but in other cases it is the work of the yauhahu.

I once came upon a Warrau practising his art upon a woman afflicted with a severe internal complaint. He was, when I first saw him, blowing violently into his hands and rubbing them upon the affected part. He very candidly acknowledged his imposture when I taxed him with it, put up his implements and went away. The fate of the poor woman, as it was related to me some time afterwards, was very sad. Though a Venezuelan half-breed, and of the Church of Rome, she was wedded to the Indian superstitions, and after trying the most noted sorcerers without relief, she inflicted on herself a mortal wound with a razor in the vain attempt to cut out the imaginary cause of her internal pain.

Some have imagined that these men have faith in the power of their own incantations from their performing them over their sick and even causing them to be acted over themselves, when sick. This practice it is indeed difficult to account for. The juggling part of their business is such a gross imposture as could only succeed with a very ignorant and credulous people; but it is perhaps in their case, as in some others, difficult to tell the precise point where credulity ends and imposture begins. It is certain that they are excited during their incantations in a most extraordinary way, and positively affirm that they hold intercourse with spirits; nor will allow themselves to be laughed out of the assertion however ridiculous it may appear to us.

The Warraus, in many points the most degraded of the tribes,

are the most renowned as sorcerers. The huts which they set apart for the performance of their superstitious rites are regarded with great veneration.

An Englishman, on visiting a Warrau settlement, entered one of those huts, not being aware of the offense he was committing, and found it perfectly empty, with the exception of the gourd, or "mataro," as it is called by that tribe. There was in the centre of the hut a small raised place about eighteen inches high, on which the fire had been made for burning tobacco. The sorcerer being asked to give up the gourd, preemptorily refused, saying that if he did so his "two children would die the same night."

Among the Makusi and many other Carib and Arawak forest tribes, certain fixed beliefs about disease and death exist. All incurable diseases are attributed to the *Kenaimas,* a group of little people living in the forest depths, who, coming out at night to attack people, kill them outright or inflict some punishment upon them which will eventually cause death.

They may be hiding in lonely places awaiting an opportunity to spring upon a passing victim. They are real men, not spirits, but they can do things that other men cannot do. No man ever saw one of these *kenaimas;* they are known only by what they accomplish. They never attack a man except when he is alone. Therefore a man never travels alone, hunts alone, nor even goes out of his house alone at night for any purpose. The reason the *kenaimas* will not attack two people is because they must not be seen, not because they are afraid.

Another peculiarity about the *kenaima,* a very significant one, is that he never draws blood nor leaves visible sign of his attack. The victim always dies in three days. There is no cure. The things the *kenaima* does, or is supposed to do, to his victim are very interesting. He catches him, throws him down and pierces his tongue with a poisoned stick, which causes it to swell up so he cannot speak plainly. The victim goes home and dies in three days. Or, he throws his victim down, presses over the abdomen and causes intestinal obstruction; or he may simply wrestle with the victim causing an irritation of the skin. In every case the victim dies in three days. . .[a]

and thus the story ends.

Among these people no man ever dies a natural death; he is

either killed by the *kenaimas,* over whom no medicine-man (*piazong*) has any power, or the evil spirits sent by an enemy medicine-man attack him. The medicine-man is, among these tribes, the religious head and the controller of all spirits. Non-fatal sickness and disability is under his jurisdiction. The medicine-men of this region seem to have a monopoly on all evil spirits. His methods of procedure vary with the illness of the patient. Farabee tells of a performance in which Christopher Davis, his informant, was treated for fever by the medicine-man of Tirka.[8]

The work must be done in absolute darkness and quiet so that the patient may hear the spirit depart. Only two things are necessary in the preparation: First, some leaf tobacco must be soaked for a time in water and then the juice squeezed out by hand into a calabash; then, two large bunches of the leaves of a shrub called *teipuyeyare* must be brought in and placed on the ground near the calabash of tobacco juice. The first sound Davis heard was that of the *piazong* (medicine-man) gurgling the tobacco juice and spitting it out. Then began a series of discordant yells and calls and the flutter of the leaves high up toward the roof, when they were brought down hard with a thump on the ground. The *piazong* stamped his foot and said the spirit of the bird had come. He questioned the bird but could get no information, so with a rush and flutter of the leaves again high up toward the roof, it went away. The gurgling of tobacco juice and the yells and calls were repeated and other birds and animals came, were questioned and sent away. After some hours, the right spirit was found and persuaded to leave the man and allow him to get well. While shaking the leaves to represent the coming of the spirit the *piazong* sang a song asking the spirit to come and tell him the cause of the trouble. When it was all over the *piazong* told Davis that he would get well very soon.

From the foregoing the conclusion might readily be drawn that the medicine-man is an unadulterated fake. This is not altogether so. While he has no specific for fever, which the more advanced Indians possess in cinchona bark, yet he does not depend upon magic alone to perform his cures, for he uses herbs and practical methods whenever possible. The success of the medicine-man's treatment depends largely on his diagnosis. For a child with worms he prepares a tea, called *ronai,* made of the bark of a tree by the

same name. As a specific for a pain in the stomach he scrapes the seeds of the kamara and uses this also as a tea. Bleeding is used for headache, using the spine of the sting-ray as a cutting instrument. The pulp of the kartama seed serves for cuts, bruises, and sores. By giving a woman a secret drug, the medicine-man is able to produce abortion.

In Brazil, the dominant race appears to have been the Caraibes, known as Caribs. Their medicine-man is called *pagè;* he is likewise a sorcerer. The dual function seems to the American Indian well-nigh synonymous. Franz Keller, quoted by Church,[4] who, as a civil engineer, was in the service of the Brazilian Government, has given a lifelike account of a *pagè* whom he entertained at luncheon. This one, Cuyabá, was chief of the Cayowá Indians and is described as a fine specimen of physical perfection, with bold, well-defined features, and a thick shock of black hair which made an appropriate framework for his face. His only clothing consisted of a number of strings of black and white beads which were suspended around his neck and well-nigh covered his chest, and a girdle from which depended an apron, fringed with rich woven ornaments. Although he had never before seen a white man, he bore himself with dignity and apparently without the least concern. After the luncheon, Keller had an opportunity to see the treatment of a case of rheumatism. The *pagè* sang aloud his exorcisms, and shaking a gourd rattle, the sound of which is especially disagreeable to the bad spirit *Jurupari*, danced round his patient, a young Indian (probably a neophyte), the while smoking a cigar of immense size and of peculiarly miraculous potency. The smoke of the cigar he blew into the sufferer's face and over his naked body. Presently, the *pagè* began to stroke and shampoo his patient from top to toe with such wild energy that, in a short time, the perspiration poured in streams down his own and the patient's limbs. After he had by a steady course of stroking from the middle to the extremities, pretended to concentrate the disease in his fingers and toes, like one of our jugglers, he pulled it out with a sudden wrench, put it into his own mouth and swallowed it with fearful grimaces. He then declared the sick man to be cured, and as the latter, without any doubt, felt some relief after all that kneading and perspiring, the Indian public at large was more than ever convinced of the efficacy of the huge

cigar, the rattle, the magical words, and of Cuyabá's power over diseases and evil spirits.*

De Lery, as quoted by Church, tells us that the Carios, among whom he lived in southern Brazil for a considerable period of time during the first half of the sixteenth century, "were a people of nobler mien than their neighbours. Among them were certain leaders called Cara-ibes (Caribs) who were held in the greatest reverence and esteem as *pagès*."

The influence of the Caraibes over the people was paramount. They were medicine-men, wise-men, astrologers, prophets, sorcerers, and devil-propitiators; for the Caraios firmly believed in the all-pervading power of the evil spirit, *Aygnan*, who took many shapes. The sun, moon and stars obeyed their orders; they let loose the winds and the storms, for they possessed all the power of the "cloud-compelling Jove"; the most ferocious beasts of the forests were submissive to them; they settled the boundaries of hunting-grounds, interpreted dreams and omens, were entrusted with all secrets, were father confessors in all private matters and exercised all the power of a sacred priesthood. They held life and death at their disposal. But at times, if many of the sick died, the Indians killed the *pagè*. In general, however, as Yves d'Evreaux says, they exercised a prodigious influence from the mouth of the Orinoco to that of the Rio de la Plata. Wherever they appeared they were treated magnificently, and the best of everything was given to them. They went from village to village decorated with the richest plumage, and three or four of them were to be seen at all dances and reunions sumptuously clad and with head-dresses and bracelets made of brilliant feathers of different colors. In each hand they held a rattle, the *maraca*, to which they attributed a certain sanctity, saying that it contained a spirit that spoke to them. They often used a reed, at the end of which they had the dry herb *petun* (tobacco) which was lighted. From this they blew the smoke in all directions upon the other savages, saying to them, "So that you may overcome your enemies, receive all the spirit of force"; and thus these master Caraibes did several times in succession.*

This corresponds to the bishop's blessing at Holy Communion and the Pope's blessing in the Vatican at Rome today.

* *Aborigines of South America* by G. E. Church. Courtesy of Chapman & Hall.

In addition to his duties of treating disease, the medicine-man, along with others of the tribe, assists in other bizarre tribal rites.

It is to be deplored that where nature has done so much for the comfort and happiness of man that his "beliefs" should render his life one of constant fear and periodic torture, that he should be haunted by phantom fears of his own making and that he should think it necessary to resort to the infliction of torture on himself and others in order to exorcise these demons of his dreams. Such was and still is the condition in the tropical lowlands of South America where bloom in profusion the bougainvillea, and where towering "fire-flower" trees shed beauty over the land; where the combretum with its large blossoms of red and gold climbs huge trees, covering them with a mantle of bloom gorgeous beyond description; where the banana, sugar cane, coffee, and other nourishing foods grow in plenty, and where the banyan tree, a grove in itself, affords a refreshing shade to its people. In these low-lying regions the hardening process of colder and less hospitable regions where life is maintained with greater toil is replaced by "fiestas" or rites to propitiate the demons that it is believed cause all calamities as well as the ills of the flesh. These phantoms of the brain, starting at childhood it is believed, gain entrance to the body and thrive as adolescence approaches. The blood being the source of life is the favorite seat of their abode.

These people recognize that at the period of adolescence a great physical change takes place, that it is the most propitious time to cleanse the body from the domination of evil and to start it on its way to motherhood and fatherhood purified by torture and often the shedding of blood. These consist in scarification and mutilations of the body, blood-letting, lashing with whips, and circumcision.

Among primitive people and especially among our aborigines, the onset of puberty is generally accompanied by more or less ceremonial activity. Accordingly, many varied means are resorted to in different tribes, but all have this in common, that some physical injury must be inflicted on the child in this warfare against the demon.

Thus among the Macus of Guiana, the girl, at the period of adolescence, is lashed with whips after she has been isolated for a week or ten days. This ceremony takes place during the night and this the girl is supposed and almost forced to endure without showing signs of pain.[5] The Piaroas have similar practices. They seclude the girl and make her fast for a few days, after which several old women tie her to a pole and bind her eyes. The women then leave her, for if they are present when the evil demon is chased out of the girl, he may enter one of them. A group of men armed with whips and blowing on windpipes complete the ceremony. They begin by striking the girl gently on the thighs, then harder, until the blood begins to flow in streams. Thereupon she is left in the care of a medicine-man who stops the flow of blood. A large fire is then made around the pole and the evil spirit is supposed to be burned.[6]

Wallace relates that the Indian girls of the Uaupés also undergo a terrible ordeal. Here the girl is secluded in a dark house with only a small amount of bread and water on which to subsist. After this she is brought out and surrounded by all the relatives and friends of her parents. Each person present lashes her several times severely across the back and breast until she falls down either senseless or dead. If she recovers she is given a rest of six hours and the ordeal is repeated. This repetition may be continued for for some time. The final act consists of dipping the whips or lashes into pots of prepared meat, after which the novice licks off the liquid. In this way is a woman made marriageable.[7]

A peculiar ceremony is described by d'Orbigny in reference to the Yurucares of Bolivia. Among these Indians, when a girl approaches adolescence, her father shuts her up in a dark cabin built for the purpose. There she fasts for four days. When this time has elapsed, the neighbors are summoned and a quantity of *chicha* (maize beer) is prepared. The maiden is then seated on a stone, and every guest cuts off a lock of her hair and hides it in the trunk of a tree. When all the guests have so done, they seat themselves around her, whereupon she offers to each a calabash full of *chicha*. When the gathering begins to become a wassail, each father pres-

ent performs a peculiar operation on his son, who is seated beside him. This consists in piercing the son's arm through and through with a sharp monkey-bone which has been rubbed with spices. This operation takes place again and again until the young men have their arms riddled with holes. The motive for this operation is to make the young men skillful hunters and the arms and legs of the girls are also perforated in order that they may be brave and strong. For six months after this ceremony girls cover their heads with bark and refrain from speaking to men.*

Another custom is that of scarification. Among the Caribs the hair of the girl is cut off with a sharp fish-bone. She is then placed on a flat stone and her flesh scarified with sharp agouti teeth from the top of the shoulders down the back. The incised marks generally consist of oblique crosses. In order that the scars may be permanent, ashes are sprinkled over the open wounds. Evidently the girls of this tribe take pride in their scars as much as do the students in a German university.

Similar to these ceremonies, although not so severe, are the puberty trials of the boys. Often the youths are scarified or otherwise mutilated in their initiation ceremonies and generally they are not admitted among the company of full-grown men until such rites have been performed. Among the Indians of Chaco the boys are rigorously dealt with: sacrification, tattooing, piercing of the lips for the insertion of ornaments, cutting and piercing of the ear lobes and flagellation, are required before they are given the title of man. While the boys were quite young, they were previously mutilated by sorcerers of the tribe.

Such were some of the ordeals through which many aboriginal boys and girls passed. The mutilations and accompanying ceremonies were essentially due to the belief in demons and spirits. In addition to these beliefs, the factor of hardening also entered, but even this hardening procss was rather against evil spirits than against vicious man or beast. The constitution of the male was not weakened by physiological processes as in menstruation and childbirth, but men likewise had to acquire through mutilation, the ability to deal successfully with demons in various forms. Even today these customs prevail.

THE JIVARO INDIANS

Among the notorious head-hunting Jivaro Indians, who inhabit eastern Ecuador, disease is supposed to be due to sorcery or to breach of taboo.

For example, the Indians say that disease enters the village in the shape of a man, knocks at the door of a hut, and "catches" the person who opens to him. This person then becomes ill. During severe epidemics, the inhabitants of the afflicted village feel that disease in human form is right there in their midst, and the only way to get rid of this most unwelcome guest is to desert the village and build another one elsewhere. When this drastic action is taken, the people are in the habit of blocking the path by means of sticks, stones, and tree-trunks.

Likewise, if a Jivaro Indian should eat the flesh of the deer or the tapir, sickness and perhaps death would certainly result. This curious attitude is due to these Indians' belief that the spirits of people dreaded in life reappear in the shapes of deer or tapirs.

The Jivaro medicine-man is omnipotent but short-lived. He lives comfortably just as long as his predictions are correct or nearly so. Should he make a bad guess, he is put to death at once.

The qualifications for the office of medicine-man are few: he must either be a good liar or he must have a vivid imagination. A person desiring to become a healer takes a reed-flute and in the night absents himself some distance from his village. In the morning he returns and announces that he was able to make the anacondas come to him and dance for him!

He has various duties. He is the official weather prophet and astrologer; he tells the people when to plant; he is the only one who is able to mix up deadly poisons; and he cures ills.

The following gives a vivid account of the experiences of one who has visited these Indians:*

Several times we had occasion to call in Pitacunca himself and he made speedy and efficacious cures, albeit with a great deal of hocus-pocus on the side. Once Morse [a friend] was suffering from an ulcerated tooth, and "Pete" volunteered to cure it in a few minutes. We had much ado to persuade the patient to allow the treatment

* *Head Hunters of the Amazon* by F. W. Up de Graf. Used by permission of the publishers, Dodd, Mead & Company, Inc.

to commence, and still more to allow it to go on. Morse was stretched on his back on the sand, and the "doctor" sat down by his head and commenced a chant. At the end of each verse he sucked his patient's cheek noisily, and proceeded to produce from his own mouth an ant, a shell, a good-sized spider, a snail, or a small crab, after which he would show us what he had "extracted" and go into a fit of violent vomiting. Then another verse commenced with the same result; and so on, until he had produced a hatful of insects, dead or alive, after chanting some twenty verses. Meanwhile it was all we could do to keep Morse down. Finally the "doctor" took a live coal from the fire, blew it to a red head, and asked Morse to open his mouth. The latter took one look at the offer and jumped to his feet. After it had been carefully explained to him that he was not expected to swallow the burning ember, but only allow it to be held, in a mussel shell in his open mouth, he assented. Then came the real cure. Pitacunca broke up into powder some fine leaves (I didn't learn what plant it was) and scattering them on the hot charcoal, held the latter in Morse's mouth so that the fumes from the leaf powder passed around the bad tooth. The pain left him within five minutes and never returned. If it was a coincidence, it was a remarkable one.

On another occasion, I myself had been bitten by a fly which deposits an egg under the skin which grows into a fat worm. I was suffering from the repeated attacks of the grub, which was embedded in my back. Once more Pitacunca volunteered assistance, which I gladly accepted. He asked for a cigarette, which I rolled and proffered him. He smoked it and blew the smoke through a fluff of cotton causing the nicotine to condense. The usual incantations commenced, and continued for about ten minutes. . . . With his mouth close to the spot where the worm lay, he made a funny indescribable noise understood by the worm to be the only tune worth coming out to hear, applying the cotton at the same time. Well, out he came, sure enough (driven out, no doubt, by the nicotine, to whose cleansing qualities I have referred before).

In times of war, the medicine-man accompanies the fighting men (he fights himself, too) to cast spells on the enemy, to foretell victory (invariably), and to render his comrades-in-arms immune from hostile influences. Finally, he alone can make the pots in which the fruits of battle, the heads of the enemy slain, must be treated.[8]

THE NORTHWEST AMAZON REGION[28]

Among the tribes of the upper Amazon region (Andoke, Orejone, Karahone, Bororo), the post of tribal medicine-man is also hereditary. It is not the oldest son who is chosen to succeed his father, but the son who is most hairy. If the medicine-man has no son, a hairy boy is adopted and taught the secrets of the profession. The training that a probationer receives is arduous and exhausting, and often includes torture, in order to test the strength of the novice.

Death is not believed to be due to natural causes, but is the result of poison, sorcery, or breach of taboo. Sickness may result from these causes and from the intrusion of a disease-causing object.

The medicine-man has at his disposal a number of drugs which may both cure or kill. The following drugs are used: curare poison, tobacco juice, coca, a white snuff, lichen, purges, and many other herbs from which ointments and drinks are made by means of secret formulas.

Even more effective than the drug, is the breath of the doctor. He has only to breathe on a sore place to remove pain, and to breathe on the sick to bring about complete recovery. Suction is employed if breathing does not aid the patient. By this, the medicine-man can draw out the disease-causing object, and as tangible proof, produce, after a time, a fish-bone, a thorn, or some other material object.

When a person falls ill, the medicine-man is sent for. The patient's house is darkened, and so kept until recovery is assured, because the bad spirits find it more difficult to move about in such obscurity. Before making a professional call, the doctor drugs himself, to more easily see and converse with his friendly spirits. The initial part of the ceremony consists in dancing, singing, shouting, and in cleverly imitating the birds and beasts of the forest. The more noise and excitement, the greater the potency of the doctor's magic. Finally, exhausted, the medicine-man runs away and falls into a deep slumber. While in this state, he further converses with the spirits and, when he awakens, makes a diagnosis of the disease and prescribes treatment.

If the medicine-man considers that the patient cannot possibly recover, he quietly administers a lethal dose of poison. This he does, because after announcing that recovery is impossible, it is more important for his prestige that the patient die than recover!

The medicine-man has other important functions in addition to those of diagnosing, curing, and killing. He is held responsible for whatever happens to the tribe, be it a hurricane, a surprise attack of the enemy, or an epidemic.

If a child is killed by a tiger, it is his duty to ascertain what tribe sent the tiger on such an evil errand. If a house is blown down, the medicine-man holds a ceremony and finds out what enemy caused this catastrophe. War is never made without his consent and counsel.

THE PARAGUAYAN CHACO REGION[11]

The medical practices of the Lengua Indians, who inhabit the jungles along the River Paraguay, differ but little from those of other tribes in the area.

The office of medicine-man among the Lengua is generally hereditary. The training consists, in the main, of long fasts and abstention from fluids. It is said that fasting is carried to such an extreme stage that the brain and general nervous condition of the probationer are affected. Live toads and snakes are supposed to be eaten; and certain small birds are plucked and devoured while yet living. The major part of the training is secret and is not generally known, but we can almost certainly surmise that the novice is taught to use certain herbs for particular ills and to observe natural phenomena well enough to be able to prognosticate weather conditions.

Sickness is believed to be caused by loss of one's soul and by intrusion of some disease-causing object.

If illness is caused by soul-loss, it is the duty of the medicine-man to find the lost soul and to help it back to the proper person. This is done by chanting, dreams, and actually faring forth from the village to look for the soul.

If disease is due to the presence of a disease-causing object in

the body, then sucking is the recognized cure. It is reported that through long practice, the medicine-man can suck so hard as to draw blood.

The common people have implicit belief in the ability of their medicine-men. Grubb,[11] a missionary, who spent many years among the Lengua Indians, relates:

I was once told by the Indians that a very celebrated wizard had arrived. They recounted many of his wonderful deeds, one of which was that he could, by striking his head, produce a number of small creeping things, such as live slugs, caterpillars, and beetles. When I doubted their statements, they solemnly assured me that they had seen it done. I said: "Well, go to the village and tell him to come to me, and if he can do as you say I will give him a handsome present." Jealous for the reputation of their wizard, and fully believing that he could do what they had described, they hastened off.

I was somewhat surprised to see him appear. I asked him, before the crowd which had eagerly gathered round to witness the overthrow of my scepticism, if he could perform this wonderful feat. Without hesitation he replied in the affirmative, and I bade him proceed. Striking an attitude, he smote his head two or three times with one hand, with the other compressing his stomach and working upwards. He then put his hand to his mouth, ejected quite openly several live things into his palm, and held them out for us to see. There lay the creeping, wriggling insects, and a look of triumph was clearly distinguishable upon his face. The onlookers were filled with mixed feelings of pleasure, satisfaction, and fear. All looked expectantly at me. Rising, I clapped him on the back, told him he was a clever fellow, and gave him the present I had promised. He was delighted.

I then insisted on his sharing some of my food, which he did not seem too keen to do; but I persisted, and in the midst of the admiring throng he had no alternative but to consent. He took a large mouthful, and while he was endeavoring to masticate the food, looking at him straight in the face, I said presently: "That was a clever thing you did just now, you must really show me it again"; but he only turned on his heel and went away. It was plain that he had some more live insects in his mouth, and they had evidently become mixed with the food. He would have had to swallow it or

otherwise have been discourteous to me. Swallowing the food would have meant swallowing the insects and slugs as well, so he assumed offended dignity and strode away.

This reminds me of an interview I had with another wizard. Curious to know how they actually did their tricks, I feigned having a pain in my arm, and sent for "Old Red Head." Believing me to be in earnest, he proceeded to spit upon and then suck my arm. After a time he produced three small fish-bones, and, showing them to me and those around, asserted that these were the cause of my trouble, adding that they had been caused to enter there by some unfriendly wizard who disliked me. "They are not nice people in the West," he said. "Quite different from us, who love you and are your friends." He then asked for a handful of beads as his fee. Taking him rather unawares, I examined his mouth. He did not seem to realize at first what I was after; but as I pulled out a few more fish-bones, his face lowered, and began to wear a threatening look. I simply showed the bones to the onlookers, and this, with a look conveyed all that was required; but that witch-doctor hated me for several years afterwards.

We find many specialists in the profession. One witch-doctor of my acquaintance practiced as his specialty the extraction of small needles from afflicted Indians. This, of course, was the result of contact with foreigners, and shows that Indian witchcraft is not too rigidly conservative, but advances with the times. This adaptability, however, to changed circumstances often gives rise to serious difficulties. Foreign bodies are extracted by the wizards, but when, for purposes of their own, they desire to afflict their victims with the presence in their bodies of such things as beetles, fish-bones, etc., they can only do so through the aid of the *kilyikhama* (a spirit). The insertion of needles (made in England) was quite a new development of wizardry, and the question which naturally arose was how this wizard prevailed upon the *kilyikhama* to adopt such a new method of inflicting suffering. I don't suppose, however, that he troubled much about the matter, and his credulous fellow-countrymen evidently raised no critical questions. They suffered pain; he extracted needles. The cause and effect were plain. What need was there for further argument or speculation?

We had remarked for some time that this particular wizard frequently requested us, as a personal favor, to obtain for him several packets of the smallest needles obtainable. He was an ingenious

fellow to have invented this new line of business, but our suspicions were aroused. What possible use could an Indian have for such very small needles? These suspicions were strengthened when, shortly afterwards, a new epidemic, as it were, broke out among the people. "Needles" became the fashionable disease. But we determined to stamp it out. The supply of needles was cut off, and, as no more were obtainable, the malady ceased, and the wizard's lucrative occupation with it.

There is a root, about the size of a large apple, found in the forests, which is supposed by the natives to be a virulent poison, and to cause almost instant death. But the wizards are credited with the faculty of eating it with impunity. "Old Red Head" was one of those reputed to be able to eat this deadly root, so I demanded proof of his power. The root was brought and handed to me. I passed it round to the Indians present and requested them to eat a bit, but no one would do so. Furthermore, they scoffed at me for imagining that they would be so foolish as to try. I then handed it to "Red Head." He instantly took a large bite without a qualm, chewed, and swallowed it, the Indians looking on with interested awe. I then took it from him, and after reasoning with myself, came to the conclusion that what he could eat with impunity I could eat also. However, there was just the possibility that it might be poisonous, and that he possessed an antidote. I therefore scanned his face keenly while I prepared to take a bite. Had he thought that it was really deadly, he would have shown signs of alarm, for I knew full well at that time that it was not convenient to the Indians that I should die under such circumstances. But I saw no such sign nor even a trace of jealous apprehension. I therefore ate a piece. No evil effects followed, beyond the disagreeable flavor of the root, and no sign of annoyance even was evinced by the wizard, such as he certainly would have shown had he feared that my action would damage his reputation.

I was surprised at this, but later, in the presence of a number of Indians, I referred to the incident, and said: "You have all feared this root, and have believed that only a witch-doctor could eat of it, and not die; but you saw me eat it, and no harm has come of it." I thought I had scored a great point, but "Old Red Head," who was present, quietly said: "We were not surprised because you yourself are a witch-doctor."

Some considerable time after this I heard from the lads a story

to the effect that their wizards could, in the presence of a crowd of people, spit pumpkin seeds out of their mouths to a distance, and immediately full-grown pumpkins could be picked up. The trick is of the simplest. The witch-doctor's assistants have a few pumpkins secreted beneath their blankets. The attention of the crowd is, of course, fixed upon the performing wizard, and when he spits out the seeds, which of course are never seen again, being lost in the dirt and refuse which is always to be found in abundance in the vicinity of their shelters, the crowd at once begin to look on the ground for the expected pumpkins, which are presently discovered, having been dropped by the confederates, who had intermingled with the people.*

Judging from the foregoing one would be led to believe that the practice of medicine among these Indians likewise consists of charlatanism and quackery. This is not wholly the case, for in spite of all the superstition and trickery connected with the witchcraft, the medicine-men, even of this tribe, possess a certain amount of practical knowledge, and make use of it. They are familiar with many herbs and, although they use some for improper purposes, most are utilized specifically to relieve suffering. Thus the bitter bark of a tree allays fever and the *malva* or mallow plant, together with several other herbs, are used in cleansing wounds. One of their plants is very good in relieving toothache, while others are more or less efficacious for specific diseases. They often succeed in curing snakebite by suction and by tying a ligature between the wound and the heart. They inoculate for the poison, using the fangs of the snake, scratching the body of the patient. Their massaging methods meet with considerable success and they practice them frequently. Saliva is freely used on wounds and to stop bleeding they apply clay or earth. In foretelling the probabilities of recovery or death, they judge principally from the appearance of the eyes, which proves to be a very accurate method.

* *An Unknown People in an Unknown Land* by W. Barbrooke Grubb. Courtesy of J. B. Lippincott Company.

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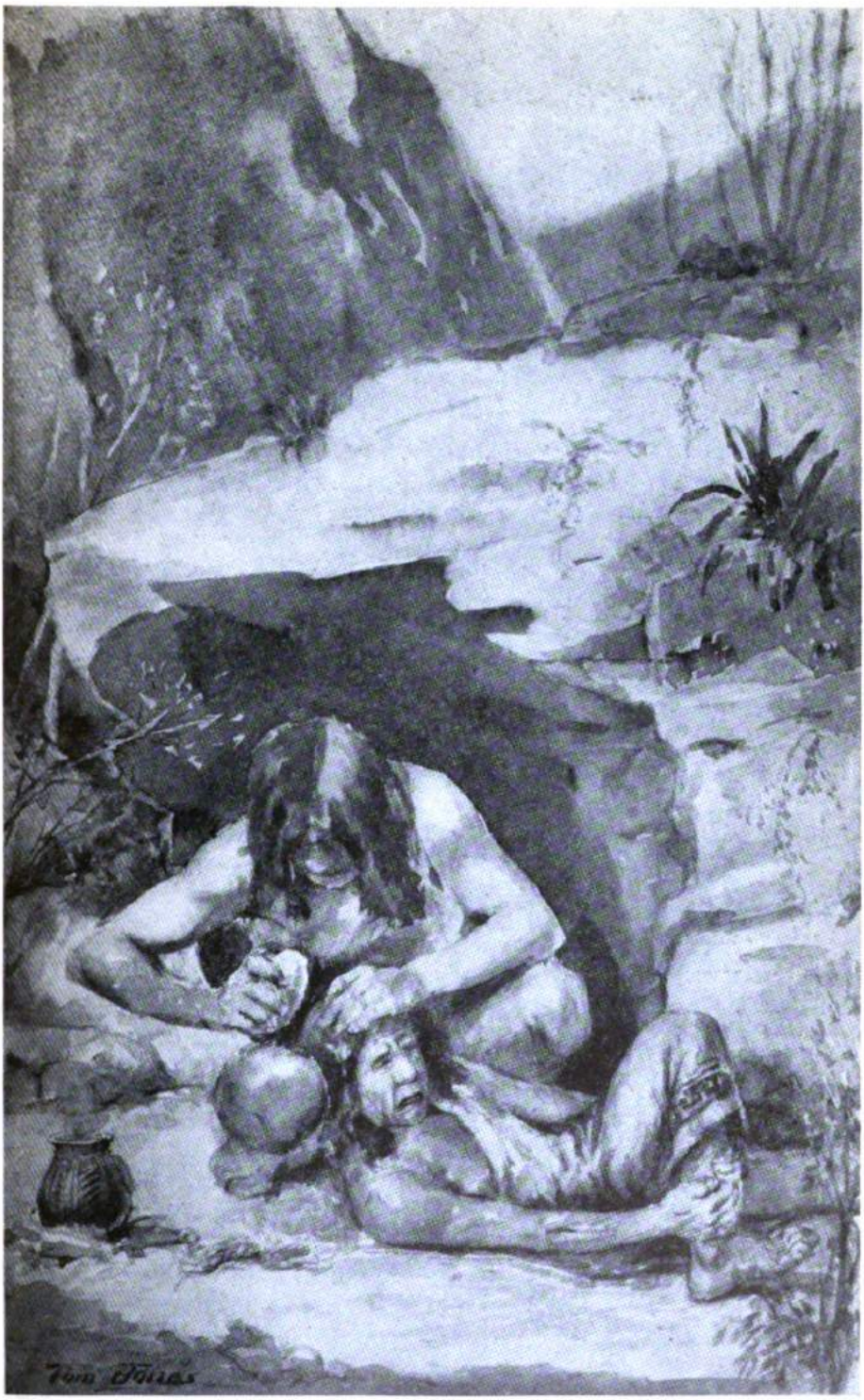
CHAPTER XIII

THE PERUVIAN OR INCA AREA

THE new-world medical man, unlike the old, did not come into being as a well-defined personality. There was no Æsculapius, nor any specific god of medicine among the aborigines of America. He did appear, however, through the haze of antiquity in the court of the Inca as an *ampioc* (sorcerer), or as an *amauta* (wise man, astronomer). These classes were third in the hierarchy of the priesthood. He corresponded more closely to Imhotep, member of one of the early Egyptian dynasties, who was honored by his generation with the titles of Master of Secrets and Consoler of the Afflicted. In Peru his duties were to care for the health and physical well-being of the chieftain or sovereign and others usually referred to as the royal family.

While the king and nobles of the Inca Court were treated by men educated in the schools of Cuzco, the common people relied more on itinerant venders of herbs, soothsayers, and others who assumed the perogatives of healing. There were many classes of these peripatetic doctors. The *Calparicu* were a large class and their specific functions were to bring luck, success, and other things desired. With this end in view they would kill some animal, inflate the lungs, and by careful examination of a vein, tell the future. The *Virapiricu* burnt parts of animals or plants and by careful watching of the flame of the fire they could foretell the future. Their clientele was a small and shifting one, for they were believed to be great liars. There were *Achiocs,* who told fortunes with maize and the not so aesthetic dung of sheep. They also had a numerological system in which answers to questions depended on odd and even numbers. The *Camascas* were composed of people who had been in great danger, such as a narrow escape from lightning. As a result of their harrowing experiences, they were believed to be possessed of great knowledge in regard to herbs, both healing and poisonous.

The most feared group was composed of people from a part of Peru known as Huaro. Their name was *Yacarcaes* and they talked to gods who appeared in charcoal fires, which they blew



A prehistoric medicine-man trepanning the skull of a woman. (After Moodie)

on through metal tubings. They asked questions of the gods regarding adultery, murder, and thievery; the Inca took them with him wherever he went, not only because he, too, was afraid of them, but because he wanted to know all that went on in his provinces.[1] Not infrequently certain women who had, like the men, wide experience or some other real or imaginary gift or adaptability, where chosen as the medicine-men of the tribe. Women assisted during childbirth, except in difficult cases, at which time a conjurer might be called to propitiate the forces of evil and thus facilitate delivery.

To understand the Peruvian's theories of disease-cause, we must realize that they had an abstract theology that involved constant warring between forces of good and evil. The demons of the dark were on one side; and the sun, thunder and lightning, the moon, and the embalmed corpses of the dead Inca ancestors were on the other side of this eternal strife. This high spiritual and moral plane involved sin as an offense against divine or human laws. If a person were to sin, he would be visited with sickness and he would not recover until he had confessed to the medicine-man. We can just imagine a very sick, but puritanical Peruvian, casting about in his fever-clogged mind for some sin that would be bad enough and that he could safely tell to explain the illness to the medicine-man.

There were at least four other things that would cause disease. One's soul could be stolen by an evilly disposed person. This soul-loss fear was the father of a rigorously followed custom never to mention the name of a new-born child, since such knowledge would enable a person to steal the soul. The parings of the finger- and toe-nails of a child or a dead person were burnt as they might be another means of gaining control over the soul. The Peruvians also believed in transmigration of the soul to maize or the llama after death; hence the llama was regarded as a sacred beast and not to be killed.[2]

A disease-object might intrude into the body and cause illness. This had to be sucked out by the medicine-man and in this process he would place a hollow tube or his mouth to the body and ceremoniously suck. Often he would conceal some small thing, such as a pebble, worm, or spider, in his mouth before the sucking and

with a cry of exultation he would then produce the object. This probably had a great psychological effect on the patient.

By means of a cut in the skin, or even by food, an evil spirit could force its way into the body and there reside, wreaking havoc on the individual. To rid oneself of this spirit, the medicine-man had to be called to frighten or exhort him out. The ceremony might last for hours and not have good effects for several days.

Sometimes, if a sorcerer were sufficiently evil or cantankerous, he could actually (or so it was believed) cause an evil spirit to enter into a person. In these cases, the medicine-man would see that it was not accidential spirit intrusion, and then he would set out to find who could have done the evil deed. If this evil person were found, he might be forced to take out the spirit, if the medicine-man were influential enough, both physically and spiritually.

The paraphernalia of these medicine-men contained many devices that are used today in the modern world. Their lancets of finely pointed flint were thought to be less painful than ours of today, and their obsidian instruments for trephining were exceedingly sharp. They also used splints for broken bones, so that the bones would heal correctly and without pain (sometimes). There were many herbs, roots, and the sap of trees which were applied to wounds. Some of the poultices were really very beneficial. Probably pulverized marine animals were applied directly to the wounded and pained parts of the body. Now, strange to say, tobacco was never smoked and was known and used only as a sedative for the sufferer. It was either swallowed or applied as snuff.[3]

A peculiar duty of these Peruvian medicine-men was to receive the confessions of those afflicted with disease. It may be that this method of treatment had a salient ethical aspect, for it took place in the privacy of the family and, as Father Cobo näively relates, "They did not confess other sins than those which were thought sufficient to afford relief." Had the ceremony been purely ethical it would have been public, as were other ancient Peruvian rites. Confessions, according to this writer,[4] which aimed at the welfare of the community were seldom of a private nature. In other words, the Peruvian who sinned so that the whole community would be affected, was in an embarrassing position, for his private life was in danger

of being brought to light when he was asked to confess in public the sins that had brought disaster.

Let us suppose that we had found a Peruvian, sufficiently sick and frightened, who had made a confession satisfactory to the medicine-man. The patient's friends were then dispatched to find odd stones or shells to which the doctor could transfer the sins by placing them on parts of the body and waving his hands in mysterious ways while exhorting in a sepulchral voice. The sin-laden stones were then carried high into the mountains and laid in an open place where the first rays of a morning sun might strike them and drive the sin away. Then the patient would become well and free of the confessed sins.[4]

In all the Indian tribes of America the belief that the priest, shaman, or medicine-man was a medium through which the Divine First Cause or Great Spirit acted seems to be well established. Thus Balboa[5] records that some of the medicine-men became drunk before they would divine. This we can all appreciate and understand. The serious view of this is that the personality of the diviner should be obliterated, just as the so-called "spiritual medium" of today among the Caucasian race "goes into a trance" or cataleptic state, before she reveals the "manifestations" of the spirit of whom she is supposed to be the means of communication. In some Indian tribes, particularly within the tropics, tobacco is used to produce this desired psychical and physical state which was supposed to facilitate the communication between the spiritual and terrestial worlds. Depending on the nature of the disease, in some cases it was necessary, as has been stated, for the medicine-man to become intoxicated so that he might inquire in a somewhat thick and loudish voice as to the nature of the sickness troubling his patient. Treatment would be refused if intoxicants were not forthcoming, simply because it was impossible, if one were not drunk, to find out from the god just what was wrong.

In Cuzco, the ancient capital of Peru, the urban medicine-man (see jacket cover to this volume) held consultations in the entrances leading to the temples; while his itinerant brother with his sack of herbs and other medicaments traversed the hills and valleys from village to village, healing the sick, or telling fortunes, as the need

arose. Corrigan,* who as a medical officer lived several years in the Andean region of South America, tells that the modern "bone setter" of North America has his counterpart in the *curandero* who is found in nearly all the communities of South America and as such has been known since the reign of the Incas and still longer in their traditions. This traveling doctor-apothecary and soothsayer treated his patients in their mud homes and bound poultices to painful parts and adjusted and bound splints to broken bones. In some regions, dislocations were reduced by first giving the powdered tobacco either as snuff or swallowed as pellets to cause relaxation; then the joint was manipulated until it slipped back into place. Scarification and local blood-letting were common antidotes for a surprising number of sicknesses. These medicine-men were not distinguished by dress in any way, the only special kind of dress was that of the wisemen in the court of the Inca.

They made no pretense to differentiate fevers, regarding them as a disease *per se* rather than as symptoms of some more definite morbid process. Regions of the body were considered of prime importance. The various sensory phenomena received attention, but without definite or logical interpretation. Infections of the chest, of the abdomen, pains in the back, headaches, earaches, inflammation of the eyes, pains in the joints, goitre and other general regions of the body involved, received some empirical attention directed to the part rather than the disease. Dysentery discharges from the various mucosa and hemmorhages from the nose and lungs were regarded as diseases rather than symptoms; nor were their causes sought by the Indian, and in a modern sense not until a later date even by the European. They had to cope with some very serious diseases, as is exemplified by the disease already described called *verrugas,* that terrified both the natives and the Spaniards. The soldiers contracted the disease from the mattresses made of a tree native to the country. If the unlucky soldier happened to double his legs up while sleeping, he would suffer great pain in straightening them out. Sores would come out all over the body and they would be as large as eggs and full of pus and blood. The disease might also strike by causing a myriad of smaller sores that would swell the whole body and would

* F. P. Corrigan, M.D., Cleveland, Personal Interview.

many times result in death. The only method of treatment known or used was to cut the boils out and disinfect them with herbs known only to the medicine-men.[6] During the treatment the medicine-men would smear himself and the patient with maize, mercury, colored earth, and the blood of sheep. Since the basic idea was to eliminate the evil, purgatives and venesection were popular.

The medicine-men of Peru were most famed for their treatment of certain diseases by trephining. The distinguished paleopathologist, Moodie,[7] in commenting on the use of heat as a means of exorcising the demon of disease, gives an intense picture of an operation by trephining. He says:*

By the use of our powers of imagination we see in a secluded spot in the highlands of Peru, a primitive blanket- or skin-clad shaman holding the head of this demented woman on his knee while he very roughly cuts her scalp with a flint knife, first a long anteroposterior incision, then transversely across the obelion in the form of a Latin cross. Nearby on a slow, wood fire is an earthen pot containing the fat of a llama. As soon as the incisions are made the surgeon tenses the scalp so as to make the wound gape, then with the wisp of vegetable fiber he applies some of the bubbling oil to the wound. The application of boiling oil to the wound would result in an instant and hearty response, and the patient would have an instant, though possibly temporary relief from the demon of insanity. The shaman, still holding the patient's head, urging her to control her wild yells of pain, applies to the cauterized wound a quid of coca, which he had been quietly chewing during the operation, and binds it in place with cooling leaves by means of dirty strips of blanket or other cloth. The riotous infection which followed gave rise to the pathology which is present on the skull, but the woman recovered and lived many years after the healing of her surgical wound. There is no indication that she ever had another attack of melancholia. The memory of the boiling oil was too vivid.

From the earliest times, as revealed by excavations that have been made, the pre-historic surgeons of South America, while they did not understand the principle involved, did know the importance of giving free vent to the products of suppuration and to establish

* *The Antiquity of Disease* by Roy L. Moodie, M.D. By permission of the University of Chicago Press.

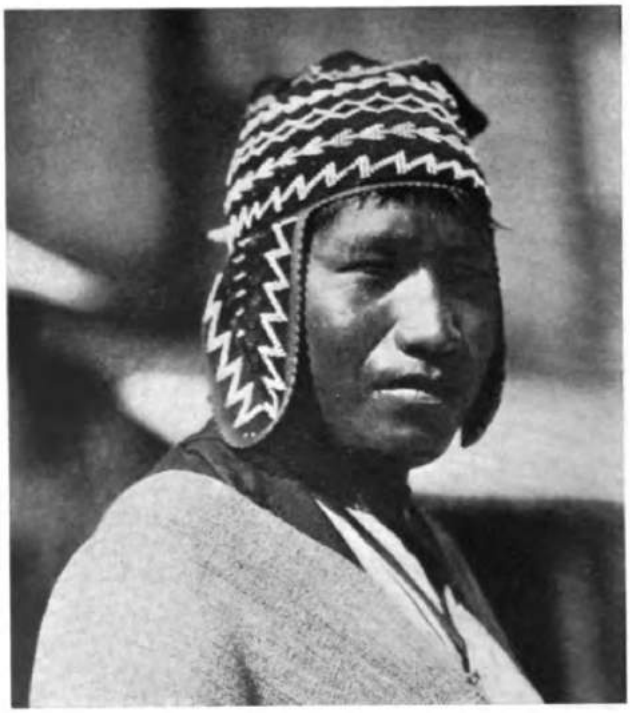
open drainage in accumulations of pus. Thus in one of the skulls in the Museum of Anthropology at San Diego, there is an example showing what is supposed to be a destructive process in the left frontal sinus which has been operated on by cutting away the frontal table of the bone, allowing free drainage just as would be done today by the surgeons of the dominant race. This shows that although the technique needed improvement, the underlying principle was understood or at least brought into action. It is safe to assume that the Peruvians were the first on the western hemisphere to practice a primitive surgery, which is more distinguished for boldness of design than for skill and delicacy in execution.

Other surgical operations were practiced regularly. The Peruvians were plagued by a sand flea, that burrowed into the sole of the foot and laid its eggs there. The egg deposits had to be dug out of the foot and if they were ruptured in the process an infection of the whole foot was inevitable. When the whole foot was infected, an amputation became necessary. Pottery figures show individuals that have had one or both feet amputated. The skin seems to have been drawn over the stump in a skillful manner and cup-shaped extensions were used to replace the lost member. This amputation did not seem to hinder movements, for the painting on a piece of pottery depicts a dancing group of people and one of the little figures, moving with as much grace and swing as any of the others, is standing on an artificial foot.

A more gruesome aspect comes to light on some of these effigy bowls. The ancient penal code of Peru provided that certain of the worst of criminals, revolutionists, and enemies should have certain indignities practiced on them that should make them living examples of the reward of evil doings. Some of the bowls were evidently modeled after these men. One shows an individual with the front part of the nose, the upper lip, and upper teeth, cut out. In this case the left foot has also been removed. Another shows the whole upper lip removed and part of the nose gone. Still another shows both lips removed, so that the unfortunate person has an eternal, ghastly grimace. Possibly the medicine-man performed the mutilations in conjunction with the laws of the state. We must remember, that the ferocity here shown is only akin to that of the Spaniards of the



Prehistoric Peruvian skull, in which death took place after an injury and the body buried with the dressings on. Showing method of dressing wounds with vacuña woolen fabric. (Courtesy of Dr. Aleš Hrdlička, Smithsonian Institution)



E. M. Newman from Wide World Photos, Inc.

A modern Inca facial type which has survived unchanged since ancient Inca times.

time, who, in describing a revolt against them, declare in a pious way that some of the revolutionists were killed, while the rest were allowed to go with mere amputation of the hands. Or, in describing the death of the Inca, they say that he was burned at noon with his people looking on, and that before the faggots were lighted he exhorted the people to turn to Christianity. The Peruvians, for the most part, were quite humane.

Human sacrifice was a rather common occurrence, and was done to lengthen the life of a wavering Inca, or to augment the powers of the deities propitious to mankind. This was never engaged in to appease an angry god. They believed that the power of life could be transferred from one person to another and that in some way the death quota for the year would then be filled and someone else, of great importance, would not have to die. These sacrifices were not engaged in to satiate a blood-lust, but they were of high religious significance, especially so when done for the Inca's sake as the people believed their future to be mystically bound up with his.

For all of his work in magic and the curing of disease, the medicine-man's pay came mostly from the position of respect that he enjoyed in the community. To be sure, the wealthier patients paid well for their recovery, but often the doctor had to be satisfied with the admiration and respect paid him when he saved the life of some poor person. This is in accord with the modern physician, who cannot collect his bills and, in some cases, probably prefers not to do so.

The medicine-man's position might be one of peril also; if he were to lose too many patients he would be regarded as an evil-doer and killed. If he were to lose one influential person, his life might very easily be forfeited. The doctors around the Inca were in great peril if the Inca were to die, for the wrath and grief of the people might prove fatal.

It is to be deplored that the *quipus* replaced the written page, and skeletal remains and pottery form the *memoria technica* from which our knowledge of the Quichua race thus far is largely obtained. From these and from the memory of those who later learned to write, we are told that the class from which the highest type of medical man was obtained was of smaller stature than the mass of the people occupying the Andean Plateau; that their foreheads were

high, faces round, noses aquiline, eyes dark, the mouth and chin firm and the whole bearing that of a noble race. This is quite unlike their descendants whom we see about the ruins of Cuzco and La Paz today. Doubtless from this ideal many variations were found, such as we find among the white race which dominates this whole region at the present time. Whether their being of another physical type or not is a fable or true, they are to be admired for their daring in surgery and their faith in their cures, something which is all important to the doctor, wherever he may practice.

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CHAPTER XIV

PATAGONIA

IN spite of the cannibalistic tendency among some of these Indians, they are entirely ignorant of the morphology and physiology of the human body and are incapable of appreciating the real causes of disease as we understand them. Yet they are endowed with the rudiments of the type of thinking common to all mankind. Led by their thinking processes they conclude that this cause must be an active being, and since they themselves are unable to create disease, the being, so capable, must be supernatural. Therefore, they place the blame either on an enemy medicine-man or on an evil spirit, and believe the cure to be in the hands of those who are stronger than these powers; namely, the most potent medicine-men. Dobrizhoffer[1] shows this when speaking of the Abipones as follows: "Though a man dies covered with wounds, with broken bones, or wasted away by old age, no Abipone Indian will admit that those wounds and that wasting away of the vital power were the cause of death. He will do his best to find out the wizard and the means by which the wizard killed the man." It may be remembered that the pathology of the New Testament is also demonic, as in the case of Simon's wife and numerous other instances.

In this connection Singer[2] says:

The pathology of the New Testament is mainly demonic and many of the miracles of healing are exorcisms. There were devils of blindness, dumbness, madness, and epilepsy, and Luke the physician regarded the great fever of Simon's wife's mother in the light of a demon, for Jesus, he says, stood over and rebuked the fever; and it left her, . . . and Peter considered that all those whom Jesus healed had been oppressed of the devil.*

It is for this reason that in South America the medicine-man is always girded with an armor best suited to his combat with evil spirits. The power and skill of the sorcerer are often shown by such contests as Falkner[3] describes in speaking of the Patagonians.

* *From Magic to Medicine* by Charles J. Singer (1928). Courtesy of Liveright Publishing Corporation.

The wizard, . . . has a small drum, one or two round calabashes, containing small sea shells, together with square bags of painted hide, in which he keeps his spells. He begins the ceremony by making a strange noise with his drums and rattle box, after which he feigns a fit or struggles with the devil, who is then supposed to enter him, whereupon he keeps his eyes staring upward, distorts the features of his face, foams at the mouth, screws up his joints, and, after many violent and other distorting motions, remains stiff and motionless, as in catalepsy or an epileptic fit. After some time he comes to himself, having got the better of the demon, and feigns to produce within his body a faint, shrill, mournful voice, supposedly of the evil spirit, who by this dismal cry is believed to acknowledge himself subdued.

All of these people have definite ideas as to the causes of disease. The Araucanos have two convictions; namely, that foreign objects can be forced into the body of the patient through a wound or small cut, or that an evil spirit can enter the body of a sleeping person. The differentiation between a case of illness caused by disease-object intrusion and one of spirit intrusion is a fine art and requires the skill of a medicine-man.

The Patagonians, on the other hand, believe that the intrusion of an evil spirit is the only cause of disease and therefore is responsible for all the maladies this tribe ever is unfortunate enough to be afflicted with.

The tribe most prolific in its ideas as to disease cause is the Onas. They believe in disease-object intrusion, spirit intrusion, and sorcery as well. The sorcery is a ramification of spirit intrusion as they are both concerned with the forcing of evil spirits into the bodies of unsuspecting people.

The Yahgans entertain views that are practically identical with those of the Araucanos. They think of soul loss and disease-object intrusion as the only methods of causing disease.

If we were to entertain the idea that these causal theories are complex, we would be amazed by the myriad details that attend the performing of ceremonies over a sick person. It was common, if some part of the rite is done incorrectly, to repeat the entire performance, since the incorrect form will be disregarded by the omnipotent and exacting supernatural. To perform these ceremonies, the

Araucanos have three classes of medicine-men,[4] who are as different, in the minds of the people, as night is from day.

First and most important of all are the sorcerers, who inspire respect and fear by their curious habits. Living as anchorites in caves remote from the villages and wearing a costume bizarre in that it is peculiar to women, their approach on any occasion causes such mixed emotions among the people as dread, fear, and respect. Appearing only at times of grave local crisis, such as war, famine, or pestilence, they decide the tribal policy and receive a large remuneration for their trouble. All of their mysterious incantations are practiced in the utmost secrecy and are only matters of conjecture to the common people. A rigorous training is involved in order to become a sorcerer and the long, ardent apprenticeship is terminated with a clandestine initiation ceremony.

More given to displaying their clairvoyant powers are the diviners, who are accomplished in ventriloquism and stand outside their huts and talk to the spirits inside. Although not so powerful as the sorcerers, they exert considerable influence, being consulted about everyday events, such as indicating the perpetrator of a robbery or preparing an effective love potion. Their services are well and promptly paid for, thus making them among the wealthiest of the villagers.

By far the most popular and most consulted of medicine-men are the witch doctors, who are recruited from both sexes and are dextrous in their mastery of conjuring and ventriloquism, as well as professing a profound knowledge of medicinal herbs and a passing acquaintance with surgery.

Their collections of surgical instruments are formidable in size and usually contain the following: a lancet, or small pointed flint; a *troquitue*, which is a three cornered stone that they skillfully pretend to pass through the body of the patient and bring out stained with blood if they consider the case hopeless; a stone pipe, which plays an important part in any cure; a wooden spitting bowl into which the objects sucked from the body of the patient are placed; an ordinary household dish of baked clay in which the remedies for the cure are prepared; a syringe, which consists of a bone tube and a bladder, thus making an instrument for administering enemas;

and last, but most important of all, a drum in which are placed small white stones believed to aid in curing.

A healing performance staged by one of these witch doctors must have been and still is a confusing and riotous babble of sound, for in addition to the monotonous chant of the medicine-men, there are helpers who constantly play on shrill reed pipes. As a background of more ominous noise, the spectators shout until hoarse in order to frighten optimistic evil spirits who have come for the soul of the sick.

Since the principal belief is that disease is caused by disease-object intrusion, the witch doctor invariably pretends to remove some object from the patient's body during the course of the ceremony. If the patient dies after treatment, the doctor saves his reputation by saying the patient had been poisoned. In his so-called search for the poisoner he draws circles in the sand or ground and by mysterious examination of them obtains potent clues as to the plotter. This is followed by seemingly endless dances that tax the limit of the endurance of the medicine-man and leave him lying exhausted on the sand. After recovering, he proceeds directly to the culprit.

The treatment of the poor victim of the doctor's malice is barbarous and cruel. Tied into a sitting position between three stakes, a confession is demanded of him. Whether it is forthcoming or not, a fire is lighted between the culprit's thighs and allowed to burn his legs, vitals, breast, and face until merciful death or unconsciousness rescue him.

Fortunately, the blame is usually cast upon the feared sorcerers, who were believed to have come out of seclusion and metamorphosed themselves in order to enter the hut in the presence of everybody without exciting suspicion during the poisoning. As the sorcerers are so powerful, no one ever dares to take vengeance for the poisoning. This adds to the prestige of the sorcerer and holds the position of the witch doctor secure in the community.

All of these ceremonies practiced are by no means fixed, but can be varied according to the whim of the doctor in charge. When he decides on a course of action, a mistake would be fatal and a new ceremony is required. Their superstitions in regard to bird cries, thunder, and unusual circumstances are inexhaustable and many

times entirely interrupt an evening's exhibition of shamanistic powers. Several societies of these witch doctors exist with various claims over powers of evil and good. Evidently their claims are not well substantiated, as these societies are poorly organized and there is practically no cohesive force between the members.

The witch doctors are recognized as such only after a training at the hands of their elders in the field and their position in the minds of their tribal brethren depends on their cures or miraculous events that can be attributed to them.

Among the Indians of Tierra del Fuego[5] both the men and the women can become medicine-men. They claim their supernatural powers to be due to their command over the spirits of departed witchdoctors. Guilty of the usual extravagant gestures, they claim ability to kill or cure, and boast great powers over the elements, such as rain, winds, lightning, and so on. In the school for medicine-men I was told the apprentices learn to walk bare-footed over hot coals, a feat which wins the admiration of a susceptible populace. No women are admitted to this school and what they do learn about the practices of medicine-men has to be learned surreptitiously, although they are permitted to practice after they know the ceremonies. Only men who have had a divine call ever enter the school, as it is not open as a means to a profession, but rather as a co-operation between this world and the supernatural, as explained to me. This limitation of members naturally gains greater respect for the society, although their position was never secure because they have no excuse such as that of the Araucanos for the death of a patient, but have to assume full responsibility.

Strangely enough, they attribute disease to wounds. This apparently rational thought is destroyed by the fact that they believe some palpable foreign object enters the body when the abrasion was exposed to the air. Thus the medicine-man here, as usual, often extracts a foreign object in his curative methods and very often a harpoon shank or piece of bone or stone is supposed to be the immediate cause of the disease.[6] The Reverend Mr. Bridges once observed a witch-doctor of these Yahgans dancing barefoot on hot coals while making incantations. This seems to be an original method of curing diseases, with no counterpart among other

peoples of South America.[7] Again, according to Dr. Cojazzi,[8] the Ona doctors, of whom there is one in each clan, sometimes make a cloak of human hair, which they use as a potent instrument for bullying and laying under tribute the members of the tribe. These wizards are often clever prestidigitators. In addition to these regular practices they are present, of course, among the Fuegians, as among others, the usual curative processes such as massage, friction, anointing, sweating, and bathing. Heron-plumes, kelp-goose down, and white paint add greatly to the dignity of the position of the medicine-man during a ceremony.

The Onas Indians for various reasons accept certain men supposed to have the power to prophesy, control the spirits, and to kill or cure people. This power is acquired by an association friendly with the spirits of the departed masters. As the association waxes, more and more spirits and powers are assigned to the living recipient.

The novelty of their views lies in the fact that they think the moon, as well as malevolent shamans, have the power to intrude disease-objects into the body. When a cure is in progress the shaman paints himself grotesquely before he examines the sufferer. Any sore spot is usually massaged and sucked. After a short period of this treatment the medicine-man vomits up the supposed cause of the disease. If one treatment does not suffice, the ceremony is repeated until the patient is cured or dies.

In what might seem to us vain attempts to control the elements, they shoot blazing arrows at the ominous thunder clouds. This is no more bizarre than Darius' attempts to chasten the Hellespont for being rough during an attempted crossing, by throwing chains into it in front of an assembled multitude.

In these ceremonies, as in most of the other practices of the South American Indians, the controlling ideas seem to be that of the formula, *similia similibus curantur* (like cures like). The demons are supposed to be adorned with facial paintings and feather ornaments and it is for this reason that the Indian medicine-men array themselves in the same way during their ceremonies.

Again we have the following vivid description from J. Pelleschi[9] of a conjuration for disease:

In the midst of the tolderia, in a sort of open square, I saw a circle of black figures, lighted up here and there by the flames. These were women and men sitting on their heels silently smoking. Within the circle four robust men were running backwards and forwards in a space of about eight yards. Ostrich feathers and little bells were fastened to their ankles, wrists, heads and waists. In their hands, which were always lifted up in gesticulation, they held small gourds, half-filled with grains, and these being shaken added to the din. They rushed about, shouting and yelling, panting and sweating, thrusting out their legs, stamping hard upon the ground, shaking their heads rapidly from left to right, backwards and forwards, groaning, blowing and spitting on the back, legs, head and face of two sick persons who had been placed in their midst. The spectators remained to do honor to the treatment and increase its efficacy, but not without fear that the *ahot* (spirit) on quitting the body of the sick man might enter into theirs.

The Patagonians have an unusual method of selecting their medicine-men. Children are watched carefully and if any marked eccentricities appear in them, they are regarded as wizards. An older colleague instructs them in the ceremonies used in curing diseases and they are then sent to procure curious stones that act as their fetishes and protectors. They are given a real and useful knowledge of herbs, but this is not as important as it might seem, for other people outside of their society have also a good training in the collection and use of herbs.

Honored in position, they are enriched by the people. In preparation for a ceremony they bleed themselves carefully so that no evil spirit can enter their bodies from the diseased. Guinnard,[10] who lived three years among the Patagonians does not speak highly of their medicine-men. He says that individuals especially practicing medicine are not found among the Indians, because they have not sufficient confidence in their fellow-creatures. Like some of the lower animals, nature seems to have almost supplied them with an instinct that enables them to treat themselves by using the plants which surround them.

Guinnard further says:

So used are they to suffering that even in grave cases they seldom utter a sound of distress. They dress their own wounds with the

greatest coolness. If they have a broken leg, they stretch themselves flat upon the ground, so that the limb may have something to rest upon. They replace the bones; then with keenly sharpened stones make a number of deep cuts around the injured part. A poultice of herbs moistened with putrified urine—which serves them instead of an alkali—is then applied and the limb is placed in splints of water-rushes until a union takes place.

He also speaks of the curious treatment of a sick child in which the poor infant is daubed with clay and spittle from head to foot. During the entire performance the medicine-man eyed the child intently, as though trying to hypnotize it. The child recovered in short time.

Even as Guinnard dislikes the medicine-men of Patagonia, Dobrizhoffer[1] does not think highly of the shamans among the Abipones, preferring to think of them as the most malignant sort of fakers with one and the same cure for all diseases. This treatment is the well-known sucking of disease-objects from the body. The only variation in the monotony of treatment is in the place selected for the performance. Each disease has its own part of the body for the sucking purposes.

The Abipones are troubled with a form of maggot that burrows into the head and becomes encysted there. After a short time they start to worm their way out again. Their presence is recognized by a red blotch on the skin over the cyst. The medicine-man treats this trouble by sucking the inflamed spot and then liberally applies tiger fat, which is singularly evil smelling. The maggots soon make their appearance and after they are gone, leave only a small scar on the skin. This is one disease in which the medicine-men seem to have hit on an actual cure. In the treatment of toothache they grind the rattles of a poisonous serpent (rattle-snake) to a fine powder and insert it into the cavity of an aching tooth. After a few days it is said the tooth drops out and the pain vanishes.

Dobrizhoffer[1] describes a horrifying incident in which an Abipone woman is suspected of evil sorcery. The infuriated father of the child she was supposed to have killed pierced her shoulder with a spear. While the woman was lying on the ground, covered with her own blood and milk, a juggler stepped forward with a horn

that he ordered her husband to urinate in. The woman drank the revolting liquid at the doctor's order, and soon vomited. He then liberally applied hen's fat and cabbage leaves to the great wound. After a few days of this treatment the wound healed and the victim recovered to enjoy good health once more.

While Dobrizhoffer[1] was staying among certain of the Abipones, known specifically as Nakaiketergehes, a great number pretended to go insane. By this they satisfied their primitive love for display in that they were pointed at with fear by their fellow villages. However, their chief Cacique was a foxy old fellow and ordered that if anyone were to go berserk or remain in such a condition, he would straightway be killed. As a part of his ultimatum, the Cacique also said that all of the female medicine-men would be put to death too, if this insanity were to keep on. Overnight the trouble ceased and the village returned to peace and quiet.

The primitive savagery of the medicine-men in their treatments is really best shown by an incident that Bougainville[11] recounts of the Indians whom he called the Pecherais, but who are now known as the Alikulufs. One of the children ate some glass that the Europeans had given him as a plaything. In Bougainville's own words the description of the child is given:

(He) was all at once seized with spitting of blood, and violent convulsions. . . . His lips, gums, and palate were cut in several places, and be bled continually. The medicine-man spread the child out on the ground and pressed his stomach with all the force that he cauld apply. With a dismal moan the doctor would now and then get to his feet and, pretending to hold the disease in his hands, would suddenly open them and blow. All of this time an old woman was kneeling by the child's head and howling in his ear to frighten away the evil spirits.

As the child grew worse and worse, the juggler went to get his ceremonial costume and then repeated his rites, but with no greater success. After several hours of this the poor child was covered with large welts and bruises, occasioned by the great zeal of the medicine-man. At nightfall the boy seemed to be suffering less, although his body was wracked by severe attacks of vomiting. The next morning the Indians fled the spot, since the boy had died during the night.

A similar type of medicine-man may be found among the Mapuches. These doctors, known as *machis,* really possess considerable skill in the treatment of disease and are well acquainted with the proper use of emetics, cathartics, and sudorifics, as well as blistering and bleeding. They perform the latter with a small piece of flint or obsidian. For the purpose of injection they make use of a bladder. Although they administer many compounds of animal matter, their principal remedies are vegetable in character. Among the latter may be found some of the medicines of our *materia medica,* such as *sarsaparilla* and *canchalagua.*

According to the Abbeé Molina there are besides the *machis,* two other kinds of doctors—the *ampives* and the *vileus.* The *ampives* confine themselves to the empirical study of botanical medicines. The *vileus,* on the other hand, are a cult that believes all diseases are caused by insects, and corresponds to our hydropaths, electropaths, or similar sects of today.[12] It is possible that these three types of doctors were not quite as distinct from each other as Molina represents them, for Febres, who had unusual opportunities to study these people, seems to consider the three terms synonymous.[13] We do know, however, that whatever the divisions of the medical profession may have been among them, their knowledge is far more elaborate than that of most of our aborigines in North America. By frequent amputations their doctors have acquired a knowledge of anatomy extraordinary in a barbarous people. This knowledge, however, is handicapped by the absence of a written language and by the supernatural and mysterious beliefs that are associated with all things medical. With this practical knowledge they combined and practiced sleight-of-hand tricks and other feats of magic and divination.

Edmond Reuel Smith, who made extensive studies among the Mapuches, relates:

When the doctor is called upon to administer to a sick person, he comes in the evening, which is the time most favorable for his proceedings, and having first stripped and made himself as horrible as possible with paint, he commences his *machitun* (treatment).

The patient is laid upon his back in the middle of the hut, and

all the family are turned out of doors, or made to sit with their faces toward the wall. Having examined the patient, the machi begins a long incantation, which consists of a monotonous song, accompanied by the beating of a small drum, formed by straining a sheepskin tightly over a wooden bowl. With contortions and violent gestures the singer becomes more and more excited, until, working himself up to the proper pitch, he falls backward upon the ground, with rolling eyes, foaming mouth, and spasmodic convulsions, and remains for some time in an apparent trance.

At this signal young men, naked and hideously painted, mount their horses, bare-backed, rush frantically around the house, screaming, shouting, waving torches over their heads, and brandishing their long lances to frighten away the evil spirits that are supposed to hover round, seeking to injure the sick man.

Recovering from his trance, the medicine-man declares the nature and seat of the malady, and proceeds to dose the patient, whom he also manipulates about the part afflicted until he succeeds in extracting the cause of the disease which he exhibits in triumph. This is generally a spider, a toad, or some reptile which he has had carefully concealed about his person. The medicines are then left with the patient to do their work; and if the sick man recovers, the cure is considered miraculous—as it well may be; if he dies, his death is deemed in accordance with the will of God, or else it is attributed to the machinations of some secret enemy.

Nor is this all. After death the services of the *machi* are again required, especially if the deceased be a person of distinction. The body is dissected and examined. If the liver be found in a healthy state, the death is attributed to natural causes; but if the liver prove to be inflamed, it is supposed to indicate the machinations of some evil-intentioned persons, and it rests with the medicine-man to discover the conspirator. This is accomplished by much the same means that were used to find out the nature of the disease. The gall is extracted, put into the magic drum, and after various incantations, taken out and placed over the fire in a pot carefully covered; if, after subjecting the gall to a certain amount of roasting, a stone is found in the bottom of the pot, it is declared to be the means by which death was produced.

These stones, as well as the frogs, spiders, arrows, or whatever else may be extracted from the sick man, are called huecuva (the

"Evil One"). By aid of the *huecuva* the *machi* throws himself into a trance, in which state he discovers and announces the person guilty of the death, and describes the manner in which it was produced.[14]

Another form of medicine-man among the Mapuches is a woman. She is the witch-doctress, generally a shrewd, mysterious old woman, of hideous personal appearance and a coarse, harsh, masculine voice. This doctress is seldom seen in public and when present is always in male attire. She has her own supposedly infallible remedies for ordinary complaints, and generally the more absurd and disgusting their composition, the greater the faith accorded to them. As most complaints among these Indians come from repletion, the relief following the ingestion of these nauseous nostrums is often quite marked, especially when they produce vomiting.

It was such haphazard and dangerous treatments as these that the simple and savage people believed in and relied on. And as we leave them and their ways, far behind in years and miles, our imaginations can picture the ferocity of their hope in the cure, or their depths of despair, reached when it had not lived up to its reputation, or the utter joy at the successful treatment which therefore promised good health for them all.

SUMMARY OF MEDICINE-MEN

We have now passed in review the ideas concerning disease-origin and the medical practises of many of the tribes of the American Indians ranging from Alaska to Tierra del Fuego.

It might be interesting to note that the theory of disease-cause which is most universal and popular in the New World is that of disease-object intrusion. This is the theory which holds that sickness is due to the presence in the body of some foreign object, such as a fish-bone, a stick, a stone, or a bit of hair. After that, the following causes for illness, given in the descending order of their importance, may be listed: soul-loss, sorcery, spirit-intrusion, and finally, breach of taboo.

Every tribe has its healers, who have to undergo various kinds of training before receiving recognition as medicine-men. Much

of this "pre-medical" training is useless, but some of it possesses intrinsic value.

As has been pointed out from time to time, the supernatural of course plays a major part in all the Indian's healing ceremonies. But the medicine-man's job is to inspire faith on the part of his patient, and to use some common sense in his treatment. Then, as we have seen, cures are often effected. Even today, we still have with us many charlatans who know little or nothing about modern medicine and who play on the fears and gullibility of the ignorant. The treatment of many of these charlatans is often just as harmful and horrible as is that of the Indian medicine-man, and perhaps more so, because advanced medical knowledge was non-existent and therefore unavailable to the medicine-man; whereas the charlatan need not be ignorant if he take the trouble to acquire medical knowledge.

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PART THREE

CHAPTER XV

CHILDBEARING

"UNTO the woman He said, I will greatly multiply thy sorrow . . . and in sorrow thou shalt bring forth children."

But the penalty for indiscretion was not restricted to Eve, nor to any race or region. Neither was the high estate from which man



Terra cotta figure from the Indians of ancient Peru, showing accouchement.

has fallen, according to the same legend, confined to the white man, for the American Indian, according to most tribes, has also fallen from some high pedestal for offending the Great Spirit. However contrary to the prevailing thought among the learned this may be, the lower one descends in the scale of civilization, the

higher will be found the claims of ancient grandeur. Childbearing is thought to be a much simpler process among the aborigines of America than among the more civilized races, particularly the Caucasian. This, in the main, is true, but the curse of Eve, although attenuated, extended to the western world and still lingers in the banab, the igloo, and the tepee of the American Indian.

THE HIGHLANDS OF PERU

While there is much to be learned about the medical customs of the ancient Peruvians, sufficient has been written by Garcilasso de la Vega, Oviedo, Rivero, and other contemporaries of the Conquest, to enable one to form a fair conception of the midwifery of the race and time. The process of procreation and childbearing we know were inextricably associated with religious observances, and in the latter, when natural measures failed, the priesthood was resorted to as a final source of relief. In this there was much in common with other races in better known parts of the globe. The vestal virgins of antiquity were duplicated by the Daughters of the Sun, whose lives were consecrated to the Inca Nobles. In pre-Columbian Peru, women whose experience enabled them to be of service, attended ordinary cases of confinement both among the nobility and the lower orders of society. Only when difficulties arose were the Amautas, or learned doctors consulted. They, too, like their brothers of the cloth in older civilizations, were supposed to obtain their magic skill more from their knowledge of the astral bodies than of the various processes of parturition. Their participation, therefore, consisted in various ritualistic observances rather than in any manual assistance.

Ploss[1] gives the earliest description of parturition among the Peruvians that I have found. It follows: In the graves excavated in Peru some years ago, an urn was found depicting the process of childbirth. In this representation, which antiquarians have pronounced to be very old, the parturient woman sits between the thighs of a midwife or other assistant. Whether this assistant is a man or woman, husband, or other relative, cannot be determined. The assistant is represented as sitting on a low stool or bench, and her hands indicate that she intends to grasp the head of the foetus

as soon as it appears. In another place, she is represented with her arms around the parturient woman, evidently to press downward on the fundus of the uterus.

Of interest and as a corollary, Coates found a fragment of pottery on which was depicted the act of parturition, somewhat similar to the latter in character, which Engelmann[3] on examination believed to belong to the Inca period. Engelmann also states that this representation corresponds to what he has witnessed in Peru in modern times. From Baumgarten[5] we know that during the reign of the late Incas, the umbilical cord after birth was severed a finger's length from the navel. This seemed to be the custom, as many men and women in adult life, according to this observer, had a long navel. Azara attributes this to the women acting as their own midwives, and not knowing how better to cut the cord.[4]

The following is taken from Farabee's *The Central Caribs.*[6]

The women among the Arawak Indians apparently suffer little during parturition. In 1908, during the month of March, I witnessed an Indian woman give birth to her first child. Two families were living in the same house on the Maturiata River near our camp, which gave us an opportunity to observe the various stages of parturition in a primipara. Early in the morning the men went into the hills across the river to hunt. At about ten o'clock the woman about to be confined went into a clearing a short distance from the house and threw some banana leaves on the ground and there alone gave birth to a child. She then called to the women in the house who brought her warm water to wash the baby. Before doing so, however, they scraped it all over with a split bamboo. The umbilical cord was tied twice on the side of the mother and once on the side of the child, after which it was cut with a split bamboo knife. The cord was not touched with the hands but held between pieces of bamboo. The placenta was buried nearby.

In about an hour after leaving the house, wrapping the baby in a cloth, the mother returned and deposited it in a comfortable position on a mat on the earth floor. She then went into the river for a bath, built a fire, and, as usual, prepared the mid-day meal. This, Dr. Farabee understood from the natives, was not an unusual occurrence. In this tribe the families are said to be small, seldom exceeding three or four in a family. The reasons given for this were

that women have children early; that the children are nursed until they are three years old because of a lack of other proper nourishment, and that the women work in the field like men. Birth control does not seem to prevail, nor does there seem to be a large infant mortality. The largest family seen with one mother consisted of four sons and two daughters.

In the Tupian Tribe (Tiatinagua) on the approach of labor, the expectant mother, accompanied by two other women who act as assistants, retires into the forest and, after selecting a suitable place, one of the assistants sits down with her back against the tree. Taking the parturient woman on her lap, she locks her arms around the patient's abdomen, and by tightening her grasp, assists in her expulsive efforts. The other assistant attends to the child after delivery. Practically the same procedure obtained in the Witoto and other tribes studied.

In a village of two thousand pure-blooded Indians and half-breeds in the eastern border of Peru, I am told there are two midwives who attend most of the cases of confinement, although there are two physicians in the place. The midwife is usually sent for some days or weeks in advance, examines the expectant mother and pretends to ascertain the position of the foetus and, if a malposition is suspected, external manipulation is practiced in the endeavor to correct it. The observer is of the opinion that occasionally some good may have been accomplished by such methods for, in a residence of several years, he never heard of a case in which instruments were required to extract the child, nor of a death due to prolonged labor.

Among the lower tribes of this region, particularly the Ucayale, there is a custom of visiting the death penalty on the newborn babe should a child die who is still nursing at the time. They reason that the unborn babe was in some mysterious way the cause of the death of the nursing child.

This observer had never seen a deformity in Indian children, nor had Padre Ignacio, the parish priest, during a residence of nine years.

Bennett's[6] observations at Santos show that the females are very prolific, bearing children at the age of thirteen. Fecundity ceases at about thirty.

Enoch[7] speaks of the splendid types of barbarous womanhood among the Cholo Indians of the Cordillera. The women are exceedingly hardy and very prolific. They seldom require assistance during childbirth and are accustomed to attend to their daily routine work undisturbed. This writer says that the population of the Peruvian uplands ought really to increase instead of remaining stationary. He attributes present conditions to the high mortality among infants and cites a native medical man who gave a death rate of 40 per cent of all births.

In the Amazonian region of Peru, among the Campas, Aguarunas, and other tribes, childbearing is considered a simple procedure. The older women, sometimes assisted by a man, perform the necessary duties. In some tribes, the parturient woman is suspended in a vertical position by cords attached to a beam, or other firm object. Nordenskiöld[8] states that, in the district between Peru and Bolivia, the Indians have small families consisting of from one to three children. The largest family observed by him consisted of four children. On the other hand, the Indians of Colombia, according to Posado-Avanqo,[9] are very prolific. The aborigines had families of from ten to fifteen, and twins were not uncommon. He cites an instance of a man marying three women who bore him fifty-one children. In this region, women both rich and poor suckle their children, who are born about eighteen months apart.

In Chile, according to Guevara,[10] when the Araucanian Indian woman feels delivery approaching, she, with a midwife, leaves her home and goes into the forest, if possible near some river or stream. Here the midwife builds a hut or lean-to. After the baby is born, it is bathed by the mother, who then plunges into the water herself. All then return home where the mother rests eight days. On the eighth day friends and relatives come and celebrate the birth of the new-born babe by getting drunk.

The Araucanians assumed the knee position or knee-elbow position. The parturient woman sometimes holds on to a strap fastened to a firm support overhead. At times this strap is fastened to her belt to better aid in her expulsive efforts. It was also the custom for the men to gather around the hut in the meantime and at the first sound made by the child to set the forest ringing with gleeful laughter.

Little care is given to the rearing of children by these Indians and the death rate is high. After birth, they are wrapped in woolen cloth and a box bedded with the same material forms their crib. This the mother slings on her back.

The mortality among women here is greater than among the men.

After the Araucanian women began to bear children, their breasts became flabby and pendulous.

While the foregoing corresponds to what the present writer found in 1915 in some out-of-the-way places, in the cities of this central Andean region to the coast, at the present time, and in the vicinity of the large industrial plants where educated medical men are available, the natives when in distress and primitive means failing, seek the aid of modern medicine. Corrigan, previously cited, states that for this service they are fully appreciative and the poorest will bring with them kids, chickens, or whatever they may possess in payment for services. In the remote parts where only midwives and shamans are relied on, malpositions and other complications are sometimes encountered and not infrequently are fatal to both mother and child.

That the fatality attending childbearing in pre-Columbian times was by no means a negligible one, is evidenced by the researches of Julio Tello, Aleš Hrdlička, Moodie, and others, who have found numerous skeletal remains of very young women among the burying grounds of Peru.

Among all the tribes or nations of which we have record in ancient Peru, the midwife or some experienced woman was first called; that is, when the ordinary processes of nature seemed to require it. This failing, recourse was had to someone possessing higher "power," one allied to the priesthood. In the Peruvian region, the moon, the wife of the sun, was worshipped as the patron deity presiding over childbirth; and the expectant mother on the first appearance of its silver crescent in the evening sky knew that she was under the guardianship of this heavenly power. As it waxed and waned, so she would increase in size and in due time return again to her normal girth.

It is of interest to note that in what seems to us the infant civiliza-

tion of the Western Hemisphere, there was a tendency to break away from what may be called the spiritual and to turn to the manual as the primitive surgeon and midwife gained in dexterity and by experience gained in knowledge. Today, as we have seen, while vestiges of the foregoing obtain among the people, the ancient grandeur of the Island of the Moon in Lake Titicaca has departed and its temple is now the shrine of the antiquarian and the anthropologist who seek in its keeping a story of the past.

MEXICO

In Mexico customs, well nigh immutable, handed down from a remote past, may be studied today. From these we may obtain some insight concerning the subject of childbearing in pre-Columbian times.

In the century preceding the discovery of America, the wise King Nytloc Nezahualcoyotl had abolished human sacrifices; but marrying in his old age and no heir to the throne being born after a considerable period, the people clamored for a return to their ancient rites that an heir to Acolhuacan might be assured. But the King, wiser than they, would not yield to their entreaties. Finally, at the end of six years a son and heir was born, and this civilizing influence went steadily but slowly on.

From these meagre bits of information of prehistoric America and from post-Columbian observations extending down to the present, we may assume that the customs pertaining to midwifery were much the same as they are at the present time; first the mother, or some female relative or friend, then the midwife, and finally, all other means failing, the priesthood and the supernatural. As we proceed in this study it will be found that there is a close similarity in customs between the various sections of the country occupied by the American Indian. There are local customs, however, which are of interest, and these vary according to the grade of intelligence more than to any physical difference in those who inhabit the various parts of the country. Only those of special interest or of unusual circumstances, therefore, will be considered in this narrative.

One of the Mexican customs of the Tarahumare Indians related

by Lumholtz,[11] is first to procure a supply of beer. This the expectant mother invariably does, at times calling on her relatives and friends to help her. As the period of confinement approaches, the husband seeks out the most available shaman or medicine-man to call in case of need. When parturition begins, the woman retires to some secluded place, as she naturally dislikes to be the subject of observation by others while it lasts. Frequently, no assistance is required. The woman tightens her girdle around her waist and in a sitting posture, holding to something above her, such as the branch of a tree or other object, gives birth to the child. The husband now appears bearing a jar of warm water from which she occasionally drinks. The umbilical cord is cut with a sharp reed or a sharpened edge of an obsidian stone, never with a steel knife, for in that case the child would become a murderer and could never be a shaman. The husband now digs a hole in the ground and after he has gone the mother buries the placenta, placing stones on the top that dogs may not molest it. After all has gone well, a feast is given and the beer consumed.

According to the same observer, few fathers are present among the Huichol Indians when their children are born. This does not apply in the case of shamans, who are of a superior class and are supposed to assist by their presence their wives in labor. In this tribe, too, the parturient woman encircles her abdomen with a girdle and remains standing or walking about until labor begins. Then she squats down in a semi-sitting posture, tightening her girdle as labor proceeds until the child is born. She, too, assists her expulsive efforts by holding on to some firm object within her grasp above her. Another woman is always present to take up the baby and to cut the umbilical cord, which is done with a sharpened stone. After the placenta comes away the mother bathes herself without removing her clothes, allowing them to dry on her body.

There is no restriction of diet, but the mother is allowed to eat of whatever is available and goes about her work as usual. The child is nursed until the next pregnancy and besides partakes of food prepared for the mother. The most common mortality among young children is from diarrhoea caused by eating unripe fruit. The mortality among children of this tribe is high, and much higher than observed in adults.



Position assumed during childbirth. Author's Collection (1895)

Another custom among the Huichol Indians, according to this observer, is that if the husband of a pregnant woman is not a medicine-man, one must be called in to "compose the stomach," as they express it, that the child may be born right. It is not difficult for him to do this since, in their opinion if not in his own, he sees everything as if she were "transparent like a bottle" (again using his own expression).

In 1895, in strolling through the market at Guadalajara, I procured what I took to be an Indian idol. It is a crude representation of an Indian in a sitting posture with what seems to be the child's face emerging from the vulva. The age of this figure has not been determined, but as it represents in a crude way the act of parturition in comparatively recent times, it seems at least plausible that it was a fetish to assist in childbirth.*

According to Batista,[12] the Indian women of modern times in Mexico, known as *Mochas* or *Tapatias,* who follow the army both in peace and war, show remarkable physical endurance. If labor pains come on while the troops are moving, the parturient woman seeks a stream of water and with the aid of another woman of her class is delivered, washes the baby and slinging it on her shoulder overtakes the troops within six hours and resumes her duties as before.

CENTRAL AMERICA

What took place in Central America in prehistoric times we can only conjecture. The cultural status of the Mayas we infer must have been high at the zenith of their civilization in the third to the sixth century. Research studies in anthropology conducted by scientists in Mexico and the United States are slowly bringing to light knowledge concerning the art of medicine among this people. At present, however, we may assume that midwifery was conducted on the same lines as in adjacent countries, and as practiced among the natives at the present time.

Gann[13] states:

Confinements usually take place either in a hammock or on the floor, and the dorsal position is invariably assumed. A mid-wife is usually in attendance. Massage and kneading the abdomen is often

* Presented to the Museum of the Cleveland Medical Library.

practiced, and, if the desired results are not obtained, the parturient woman is made to vomit by thrusting a long coil of hair down the throat. Often a woman of exceptional lung power is sent for to blow this into the patient's mouth. The object of this procedure is to hasten delivery.

Jones,[14] who practiced medicine in Yuscaron, Honduras, does not give a glowing account of the natives at the present time. On account of the considerable fee the priest requires, comparatively few Indians avail themselves of the marital rites of the church. When the time of delivery approaches it is the custom for as many elderly women as possible to crowd into the parturient chamber, which usually is a mud-plastered hut of about twelve feet square. The most unsanitary conditions prevail, and the use of water for cleansing purposes is never thought of. All the women are smoking, and occasionally as labor progresses, one, then another of the onlookers squeezes the patient's abdomen to assist her expulsive efforts. After the child is born, a red-hot piece of iron is used to burn and sever the cord. A mixture with supposedly magic properties, although consisting mainly of oil and dirt, is thrust into the child's mouth.

Among this people labor is not always the easy function attributed to the Indians in general. In one village during a period of two months, the following four cases were attended by this observer: A forceps case in which the patient had been in labor sixty hours before a physician was called. The case was a difficult one, with a large foetus and a small pelvis and a low physical condition. Another case was similar to the above, although the woman had not been in labor so long. In a third case the pains had ceased and the patient was unconscious, presumably from shock. She recovered slowly. In a fourth case, the labor had lasted thirty-six hours and would have lasted longer had not the patient's struggles against the violent pains been overcome with chloroform. That these women recover more rapidly is true in the main, but they frequently get up before they have really recovered, which brings its penalty. The observer continues that he has examined few women of the country who have not some disorders or displacement of the uterus.

Gabb's[15] report of the customs pertaining to childbearing in Costa

Rica not only confirms what we have seen elsewhere, but shows that the usages of today have been modified but little by the lapse of time. Thus, in the Tirribi, Bribri, Cabecar, and other minor tribes of Costa Rica, the customs pertaining to parturition are practically the same as given above.

As the time of parturition approaches, the father of the expectant child goes into the bush and builds a small shed at a short distance from the house. Here the woman retires as soon as labor sets in and, with no assistance, is delivered of her child. Difficult labor, this author says, is as seldom observed as it is in the lower animals. After delivery, the mother of the parturient woman, or in her absence some other old woman, approaches and with great circumspection, to avoid "defilement," places within her reach a piece of wild cane so split as to make a rude knife. The mother, after tying a fiber around the umbilical cord, cuts it with this knife. No other implement is permitted, showing that it is a procedure that has come down from a time when the cortical part of the bamboo cane was the substance of which cutting instruments were made. In Peru, the obsidian stone was used generation after generation until from its antiquity alone it became sacred. In the same circumspect manner, she is then given some tepid water carried in a folded plantain leaf with which she washes the child. The mother then collects the placenta, buries it, and goes to the nearest water and bathes herself. Now comes the most important part of the procedure; at least, so it is thought, for an "*Awa*" or medicine-man appears on the scene. He causes the mother to wash herself thoroughly again by dipping her fingers into a calabash of water, which he then drinks. Lighting a pipe of tobacco, he blows the smoke over the patient and after washing his hands, and presumably receiving his fee, he departs. The mother, knowing that all has been done according to ancient ritual, rests in serene state, and an uneventful recovery and a living child are the *Awa's* claim to magic power.

While this indicates a low standard of medical ethics, it is outclassed in human depravity by a custom prevalent among some of the tribes of the low equatorial regions, in relegating the "lying in" associated with the parturient state to the male or father of the child. Thus Brett,[16] who as a missionary lived long in this region,

relates of the husband's being compelled to share his wife's confinement by lying in a hammock and pretending illness. He is nursed by the women while in this presumably unpleasant condition. In British Guiana, according to this observer, some of the men of the Acawoi and Carib nations, when they believe their wives to be *enceinte,* consider themselves to be bound to abstain from certain kinds of meat, lest the expected child should in some mysterious way be injured by their partaking of such meats. The *Acouri* is thus tabooed lest like that little animal the child should be meagre; the *Haimara* lest it should be blind—the outer coating of the eye of that fish suggesting a film or cataract. Other tribes abstain from venison after their wives become pregnant lest the child be wanting in speed, as the female deer goes slowly when the young fawn is at her feet.

Thomas Whiffen[17] has written entertainingly of the food customs during parturition among some of the Indian tribes of the northwest Amazon region. These Indians share the belief that food partaken during gestation not only determines the well-being of the foetus, but that the various characteristics of the food will be reproduced in the child. In some tribes the father is also subjected to these restrictions, it being thought that in some mysterious way the father may influence the various characteristics of the child after birth and in some tribes, during the whole first year. He, therefore, as well as his wife, must abstain from the family hot-pot when all animal food is forbidden. Among the tribes of the Tikie tapir flesh is prohibited, not on account of its unhealthfulness, but because it is thought if a pregnant woman partakes of it the visible characteristics of the animal will be transmitted to the unborn child. In like manner these Indians believe that the child will have the teeth of the rodent, capybara, if its flesh is eaten during the months of gestation. It will be spotted, like a paca, should the mother partake of the flesh of that beast. Peccary is also tabooed among many tribes, and among the Witoto tribe, during the last month of pregnancy, the parturient woman's food is limited to one kind of small fish, cassava, and fruits. These laws are strictly adhered to by people who believe in this food transmission of physical appearances to the offspring. Bush-deer is tabooed to all women after

marriage among the Kuretu-language group, because they believe it would make the infant deformed, and no greater disgrace could befall to a Kuretu woman than to be the mother of a deformed child. Even twins, which are not in good form among them, can be condoned, but a deformed child cannot be disposed of without exciting gossip. The accidental death of one of the twins is regulated by good usage. Thus the second child, if of the same sex, is considered an interloper with no right to live. Among the Kuretu, if a boy and a girl are born, the girl is sacrificed, regardless of which is born first. Since these births for the most part take place in the bush with but one trusted female attendant, it is not difficult to cleanse hands thus steeped in human blood. In many cases the expectant mother, as among the Boro and the Witoto Indians, retires to the forest alone and unassisted gives birth to her child. In other tribes, particularly those north of the Japura, the parturient woman is accompanied by other matrons who, in honor of the occasion or for other tribal reason, paint their faces red. No man is permitted to be present, whatever the circumstances. No accouchement is ever permitted within the house, regardless of weather. Labor is usually not difficult, and the sitting position is usually taken. After delivery the umbilical cord is tied with a fiber string, then bitten with the teeth until severed, or cut with a wooden knife should one be accessible. The mother then goes to the nearest water and bathes, after which she returns to the house. She wears no covering or bandage, according to this authority. In the meantime, the child has also been bathed in the river, if one be present, and if it be still viable after this more or less rough usage, it is covered with what they call *hittagei,* a rubber latex substance over which a brown or red clay is smeared. It seems needless to add that the death rate is unusually high among children.

This same observer states, and from the foregoing we can readily believe, that these Indians do not care to have large families. The reason is chiefly that life is not maintained as easily in this region as in some of the more productive localities, and to support a large family might be a real hardship. Added to this, a husband is not the constant companion one might wish to see and not infrequently leaves home and fireside for some new partner his fancy may

select, leaving the mother of his children to shift as she can. At the same time, foeticide is not known to be practiced and methods of producing abortion are known only to the medicine-man who does it for reasons over which the veil may well be drawn. As stated elsewhere, medicine in the region of the Amazon had not emerged from the low estate of the sooth-sayer and the "Awa."

One of the lowest in the cultural scale of the American Indian is the Chucunaque tribe on the unchartered San Blas Island. Here, according to Lady Brown's[16] report, "In their breeding they are on an animal level. No sexual intercourse takes place within their dwelling, and is indeed strictly forbidden throughout the whole area of the village." At a certain period the husband and wife go off together into the bush, leaving in the morning they return at night, and regularly once a year the woman gives birth to a child. When the time of her accouchement draws near, she leaves her home and goes quite alone into the jungle, taking nothing with her —apparently not even food. She returns in a day or two, carrying the infant in her arms. Little attention is given to it by either parent, whether it lives or dies apparently gives little concern. The women nurse their children at the breast until they are six years old. This observer says she has seen many of them suckle in turn children of various ages. Their abdomens are prominent and the breasts of a middle aged woman after she has borne numerous children are enormous in size.

THE WEST INDIES

One of the chief characteristics of early American surgery among the aborigines was its boldness of design. In the report of Mosley cited by Ploss,[1] the surgeon and the patient were the same. One does hear occasionally of a surgeon operating on himself, but the major operation of caesarian section is one taxing the skill of the modern surgeon and, to a greater degree, taxing the physical endurance of the patient. But in the West Indies and in tribes of some other regions, according to this writer, a woman when she cannot give birth, cuts her own abdomen with a curved sharp knife given to her for the purpose. The report says that the operation is generally successful and when the woman again becomes pregnant, she repeats the operation. This statement may well tax the credulity even of an Indian.

This is in keeping with MacCurdy's[19] report of surgery among the ancient Peruvians in which Reutter[20] in making an analysis of embalming mixtures from Peru, found certain antispetic substances such as balsam of Peru, menthol, salt, tannin, alkaloids, saponins, and undetermined resins, similar to those used by ancient Egyptians and Carthaginians, and concludes that the prehistoric surgeons of America may have had some knowledge of antiseptic substances which they used in their major operations. Otherwise, it is claimed the operations could not have gone on to such a favorable termination as skeletal remains indicate that they sometimes did.

The native Indians in the interior of some of the West Indian Islands are, according to Ploss, very prolific. Many mothers have twelve children, while from twenty to twenty-six are not unusual. The mothers usually nurse the children, and as in other tropical regions the girls marry young. It is not unusual to see a mother at the age of thirteen nursing her child at the breast.

THE LOWLANDS OF SOUTH AMERICA

Domville-Fife[21] in his report of the Naupé Indians on the Naupé River in the Amazon basin, says that the women are little inconvenienced by childbirth because of some operative procedure which they claim to have undergone during childhood.

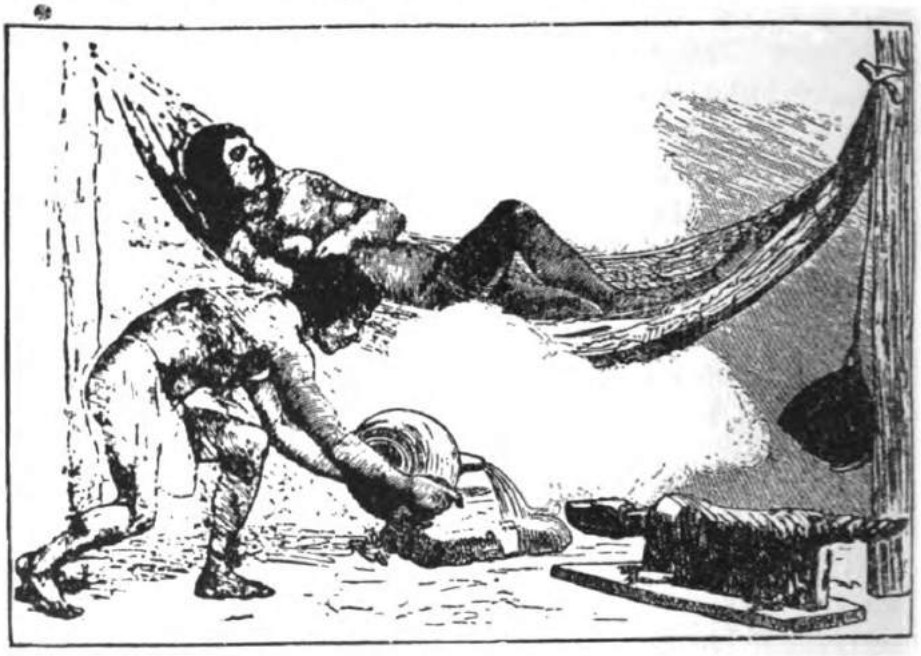
The only preparation for this ordeal that he was able to find was among the head-hunting Huambisa on the Peruvian side of the Amazon. Here depilation was performed about the vulva by twisting the hairs around a piece of split cane. This, with a series of exercises imposed on young children, it was said, rendered childbearing painless and without danger. The above makes a pleasing tale, but their free and open-air life doubtless contributes more to this boon than do the devices of the native medicine-man.

Abortion is common, according to Azara, among Guana women on the Paraguay River. They say this is because they do not like to be deprived of their husbands for long periods of time, and this is doubtless the reason they do not begin to bear children until they are thirty years of age. At this age, among these people, beauty's charms begin to fade.

Ploss further cites Spix and Martius to the effect that the Roucouyenne Indians on the River Jary take a steam bath immediately

after delivery. For this purpose, the woman lies in a hammock under which stones heated to redness are placed. An attendant throws water on the stones, thus producing a copious uprising of hot vapor which envelops the patient in the hammock above.

The same observers report that a woman in childbed is covered



A vapor bath during confinement.

with tobacco smoke by the priest as a votive offering that all may go well in the process of delivery. This is observed only in some of the more highly ritualized tribes.

PARAGUAY

Azara, according to Ploss, once asked a woman of the Mbayá tribe in Paraguay how abortions were produced. She replied, "Wait and you will see." Thereupon she disrobed and lay on the ground. Two old women then began to give her powerful jabs in the abdomen until blood oozed from the external genitalia. This was to them a sign that the embryo had been killed. He also ascertained that these women suffer the after-effects of this brutal handling all the rest of their lives, and that sometimes the procedure is fatal, both of which are what might reasonably be expected. Rengger,

quoted by the same writer, says that among the Payaguas of Paraguay when more children are not wanted, it is not uncommon to see a woman inflict blows against her abdomen and to call the aid of other women if she is unsuccessful.

After the birth of the child, various methods of caring for the umbilical cord are practiced by the Indians of the whole Brazilian area. Some, like the Indians in the vicinity of Rio de Janeiro, cut the cord with a sharpened stone, some with a crystal, and in other tribes, the father raises the new-born from the ground and severs the cord with his teeth. Two factors seem to enter into this procedure, one utilitarian, the other ritualistic. Both of these one encounters in different tribes of this region. As an example of the former, the Caripunas and Urein Indians of Brazil, employ a stone knife or a mussel or seashell sharpened at the edge, while the Roucouyenne Indians use a bamboo knife for the same purpose. In most of these tribes the umbilical cord is not ligated, and the child not infrequently bleeds to death. Among the Karaya Indians on the Araquya River in Brazil, the cord is compressed, cut with a knife and hot ashes are smeared over the bleeding end. As an example of the ritualistic observed in the Macuni Indians of Brazil, the mother, after cutting the cord, encircles the child's neck with it. Why this is done is not clear to the uninitiated. Judging from the size of the families one sees among the Indians of this region, the death rate among infants must be high, for they are prolific in bearing children, although one seldom sees more than three or four in one family.

TIERRA DEL FUEGO

In Tierra del Fuego and the region adjoining the Straits of Magellan, occupied as it is by a hardy race of Indians, some of fine physique, one sees mothers of a somewhat older age than in the torrid zone to the north. Girls marry at about the same age as do the North American Indians; that is, seldom under seventeen or eighteen years of age. As a rule, they are prolific, but on account of the severe hardening methods practiced few families are larger than seven or eight. In visiting this region, one sometimes wonders how the race can be propagated under the inhospitable climatic

conditions which even ships approach with trepidation. But centuries of acclimatization have produced a race unequalled in stature and boldness of demeanor even by the Iroquoian type of the Great Lake Region of North America.

Gallardo in speaking of the Onas says that no special care is observed among the women during the term of gestation. Spontaneous miscarriages are almost wholly unknown, and voluntary abortion is not practiced. It is true in moments of pain or anger, a pregnant woman may inflict injuries with fatal consequences to the embryo. Again the husband has been known to mistreat a pregnant wife when he believes that another man is the child's father. Otherwise, according to this observer, the husband is kind and considerate to his wife during the term of pregnancy, and never refers to her condition, as a matter of delicacy. In his ingenuousness he is made aware of the approach of parturition, it is said, by the frequent visits of some of the old women of the tribe who are to act as midwives.

Further delicacy on the part of the husband is not infrequently observed, for when the time of delivery is near at hand, he goes away and sleeps in the mountains or in some place remote from home. It sometimes happens, too, that the woman thinks it improper to be confined in her home, doubtless disliking to be the object of derision by other inmates, so, with the woman who is to act as midwife, she goes out into the forest or to some secluded place and there with little preparation gives birth to her child. This, too, regardless of the weather, which at best is not conducive to comfort, nor to the well-being of the new-born babe, for the thermometer seldom rises above 50 degrees Fahrenheit in the warmest weather. Fortunately parturition is usually easy and no assistance on the part of the midwife is required until after delivery, when she cuts the umbilical cord with a bamboo knife and ligates it with a fibrous string prepared for the purpose. It is not customary for the Ona Indians to bathe immediately after delivery, as their ritual does not require it as does that of the Yahgan tribe. However, if near the sea or a river, for personal comfort, the newly delivered mother plunges into the water, sometimes with the child in her arms. After this, the child is placed between the breasts of the

mother and covered with fine skins which have previously been especially prepared.

This is in accord with Ratzel,[24] who says that the Fuegian woman has easy and frequent confinements, and to toughen the newborn to withstand the rigors of the climate, when near the coast, it is immediately dipped into the sea. At other times, and for the same purpose, the mother performs some strenuous physical exertion, as carrying a load of earth or wood into the house immediately before delivery. An unusual custom obtains, according to Guinnard,[25] among some of the tribes in Patagonia, in the choice of a wife. Among them an expectant mother is placed at no disadvantage with her virgin companions in securing a husband. Once married, however, she observes a life of strict propriety. Any lapse after marriage would be followed by harsh treatment by the husband. As a consequence women are attentive to their home duties.

When the time of confinement approaches, the parturient woman goes to the waterside alone and there gives birth to her child. After this she bathes herself and the new-born, and resumes her usual daily duties. This observer failed to see any ill effects following this primitive mode of life. The mortality among infants, all agree, is high. Not alone is death due to what might with some semblance of verity be called natural causes, but the fate of each new-born child is determined by the judgment of the father and mother. Birth control is unknown, but the life of the child is often cut short by this court of last appeal. If it is desirable that the child should live, it is placed on a sheepskin covering a ladder-like structure which serves as a crib and to which it is bound. The undressed sheepskin lining offers a soft surface against the child's body. It is customary to nurse the child until it is three years of age.

It may be seen that observers differ in some details concerning medical subjects in Tierra del Fuego; this is due to the difficulty of obtaining from the natives precise information on subjects connected with their religion as well as that pertaining to their intimate mode of life. Then again, the early explorers were not versed in, nor were they concerned with, medical matters; hence the dearth of and at times divergent accounts one encounters.

Samuel Kirtland Lothrop, connected with the mission among the

Valigan and Ona Indians, believes that abortion and the abandonment of children among these tribes was of not infrequent occurrence. How the former was accomplished, he was unable to learn. He does confirm the practice, which he says was generally observed, of the Yahgan mother bathing in the sea and the newborn babe immersed in order to toughen it—a trying ordeal, at least, for the infant, where the water ranges in temperature from 40 to 50 degrees Fahrenheit throughout the year.

Another custom observed elsewhere is that of the incipient "couvade," in which not only the mother, but the father as well, is expected to rest for a week or more after the birth of a child.

The Ona mother in lieu of soap and when water is not at hand covers and massages the child with white earth. The placenta is burned. According to Bridges,[34] after the birth of a child, certain foods are forbidden the mother, and among the Yahgans both parents must abstain from "food taboos." In the latter tribe the mother is considered "unclean" after delivery and must abstain from marital intercouse for a period of five or six months. A similar obligation is enjoined on the husband, but the report says this is not always rigorously enforced.

NORTH AMERICA

In crossing the Rio Grande from the South, one feels like the traveller of British blood crossing the Channel from the Continent of Europe. There is a home-like feeling in both instances, for he enters the land as did Indian culture centuries ago, with a feeling that he is in more intimate touch with the pre-historic past. For here from boyhood, relics of Indian occupancy have been turned up by the spade, while the great mounds of Alabama, Illinois, Ohio, and Kentucky conceal within their inclosure chapters unwritten concerning the more intimate life of the American Indian. The "settlers" of the United States and Canada followed on the heels of the red men who left an occasional derelict to mingle with the usurpers of the soil of their ancestors. This more intimate touch should give us greater facility in depicting the medical customs with which we are engaged.

In treating of the subject of childbearing among the North

American Indians, the customs attending this process are here, too, so varied that one is at a loss to know how to proceed. The act itself is in the great majority of instances a comparatively simple process, but in some localities and among some tribes it furnishes an occasion for much complicated ritual. This differs with the tribe and in the main may be regarded as non-essential. A few only, therefore, of these practices will be given.

Complications occur, the same as are met with in the white race. On account of the life of the Indian women and because of the general hardihood of the race previously dwelt upon, less pain and fewer complications occur than among the general run of cases among the whites.

The American Indians on the frontier of Mexico follow the same traditional procedures during childbirth that we have previously observed in Mexico; that is, the parturient woman sits with the knees flexed and just clearing the ground, while she grasps a rope suspended from the ceiling or rafter of the house. This rope is wrapped with cloth to protect the hands and hangs at the side of the bed, thereby giving the patient greater freedom of movement and allowing her to sit, stand, or recline during the intervals of pain. These Indians of the southwest are *pueblo* dwellers and for the most part live in villages. There is usually, too, an apartment set aside in some more or less crude fashion for the parturient woman to lie in. The midwife is in attendance and in case of difficulty the medicine-man is called.

What might be called the philosophy of childbearing varies with the tribe and the degree of culture possessed.

Among the Paiutes, according to Engelmann,[2] the approaching event is recognized and appropriate preparations are made for an addition to the household and tribe. They consider the parturient process as a voluntary action on the part of the child. Thus, after a given period, after nine moons have passed, or after the lapse of certain seasons of the year, the child, like the woodchuck and other hibernating animals, is to be starved out of its maternal home. They not only attempt to do this, but at the same time to make its sojourn from its hiding place as easy and quick as possible and with the least possible pain to the mother. For this purpose they with-

hold food from the expectant mother for several weeks before the event and as the time of exit draws nigh food is almost wholly withheld. Strange, is it not, that after the lapse of three or more centuries the same practice is advocated by some of the leading obstetricians in one of the highest cultural centers of the dominant race of North America? As might be expected, however, the reasons for abstaining from food are wholly different, while the result is the same in both instances. True, the Indian almost adopted the white man's viewpoint, when he said that this fasting reduces the maternal tissues of the maternal passage and thus opens a wider door for the foetal exit. These Indians recognized that the child is nourished by ingestion from the mother, but failed to grasp the fact that in cutting off the maternal supply of nourishment the foetus *in utero* would likewise and to a greater extent be affected and fail to grow to its natural size. After this prenatal preparation, when labor has actually begun, they look upon parturition as the voluntary effort of the child to escape from its inhospitable quarters and to enter a new world with its plentiful supply of milk and honey.

Kroeber[25] has observed among the Yurok Indians of California that mothers desired small babies and to favor this they worked hard, slept little, and ate sparingly.

A more advanced technique than we have thus far seen is reported by Adair.[26] Among the Indians of southern California, he says, the patient assumes a kneeling posture during parturition and grasps a rope suspended from the ceiling. She is often assisted by two midwives, or as they say, a *tendera* and a *partera*. The *tendera* holds the knees firmly and grasps the upper portion of the trunk as in a vice. The pelvis is then pulled forward to overcome the dip in the plane of the superior strait, thus straightening the passage. The *partera* introduces her hand underneath the clothing and during the pains makes steady pressure on the perineum, at the same time jolting the patient up and down, imagining that she is shaking out the child. Centuries of experience have taught these Indians many practical things, although their train of reasoning does not always run parallel with the Caucasian mind.

Among the Coyotera Apaches a similar position is taken, but in

difficult cases a rope or lariat is tied around the patient's chest just beneath the arms and the other end is thrown over a stout limb of a tree, two or three squaws pull on this until the parturient's knees barely touch the ground. Others, generally two in number, encircle the abdomen with their arms and work downward, "stripping down," with considerable force. This "all pull together," the observer says, usually suffices for prompt uterine contraction.

The Sante tribe, following the Mexican custom, are also delivered in a kneeling position on the floor with a chair or bench in front on which they rest their arms. A rope, too, is usually grasped as with other Indians already described. These tribes seem to have no method of extracing the placenta other than by traction, and deaths sometimes occur from retention of the placenta.

In gaining a knowledge of the medical customs of the American Indians, the reports of frontier surgeons in the army offer a fruitful field; particularly is this true when competent observers like Engelmann* are available.

In 1869 [he relates], while stationed at Fort Sill in what was then the Indian Territory, I was called by a few men and squaws of the Comanche tribe to see a squaw who had experienced difficulty in two previous confinements. They anticipated difficulty again and as an adventuresome experiment, asked me to see the case. On approaching their village I found their lodges pitched on a wide circle on high ground near a stream of water. A short distance outside the camp in the rear of the patient's family lodge, arrangements had been made for the accommodation of the patient during her confinement. There was first a shelter constructed of green boughs six or seven feet high, supported by brush and bushes with their leaves on, forming a circle about eight feet in diameter. An entrance was provided by breaking the circle and overlapping the two unjoined ends. In a line outside the entrance were three stakes, ten paces apart, set firmly in the ground. They were about four feet high and made from saplings with the bark left on. Inside this shelter two pits were dug in the ground, one for the reception of refuse associated with the delivery, and the other for steaming the pudenda, should it be thought necessary. Three stakes were also driven some distance away which the patient might grasp for support and kneel down should the pains come on while she was

walking around. When I arrived, my patient, aged about twenty, was walking about with a female attendant and as pains came on she grasped a stake and kneeled down, the assistant standing or kneeling behind, seized her about the waist and kneaded and compressed the abdomen. The patient had not removed any of her clothing, which consisted of a body, a skirt, and two leg pieces made of deer-skin and nicely ornamented with beads and silver shells. The body was of one skin with a hole in the middle for the head, the ends hanging down in front and behind, and fastened at the sides under the arms, making a sort of flowing sleeve. I go thus into detail since women's dress at the time of this writing is a serious if not absorbing problem. This above described had been in vogue for generations and was as unchangeable as the ethnological changes of her race.

Thus far, no digital examination had been made. To this she submitted, however, after much persuasion and with an evident feeling of disgust. The membranes were found ruptured and the amniotic fluid escaped; the parts were rather dry but the head was favorably located and the pains were now moderately strong. Labor, therefore, was thought to be progressing favorably and delivery was expected to take place within a reasonable length of time. Without making any further suggestions or interference, I sat down to "make medicine" as they thought, but really to improve the opportunity for observation. The patient was assisted by a woman of middle age and apparently of considerable experience in such cases. In addition a number of other squaws of all ages thronged around, making suggestions, talking, singing, groaning, and gesticulating. No men came near.

The patient never assumed a recumbent position, nor did the assistant make any attempt at vaginal examination. Somewhat to my surprise no effort was made on the part of the patient to restrain her feelings nor to submit patiently to suffering, while the throng of women inside the inclosure and out kept up a continuous noise and clatter. Above this, however, I could hear that as a safe anchor "cast to windward" which ages had engrafted in times of distress, the chief medicine-man of the tribe was also "making medicine" in a nearby medicine lodge. This was thought to be magic and dealing with higher powers than the white man could summon to his aid.

As the crisis was evidently approaching, another examination

was made, this time with the patient lying on her back on a robe, and the child was soon born with the placenta following a few minutes later. Immediately, the greatest excitement prevailed, the monotonous songs and doleful cries were changed to sounds of rejoicing, and while the din was louder, it was far more pleasing to the ear. The moment the placenta escaped, the patient sprang to her feet, buckled a leather belt around her and mingled with the crowd. She soon disappeared, taking no notice of the new-born babe. I took up the child and offered it to first one then another of the women, but each shrank back and would not even touch it. Presently a woman whom I had not seen before appeared and took charge of it. She, I was told, was assigned the duty of receiving and having the little stranger initiated into the world with proper ceremonies befitting the rank and sex of the new arrival.

Hrdlička,[27] who as a medical man has given a detailed account of his inquiries and observations among the Indians of the Southwest, says that parturition is accompanied by the same inconveniences and discomforts that are met with in the white race of a like mode of life. Thus among the Apaches, the duration of labor was from one to two hours in 28.6 per cent and from twenty-four hours to seven days in 17.1 per cent of cases observed. According to Engelmann's[2] observations, the duration of labor varied from forty-five minutes to three hours, the average being two hours:

When labor was about to occur, a tent or tepee was constructed with boughs of trees making a screened inclosure where the parturient woman retired on the commencement of labor pains. Her medical attendant was usually an elderly squaw who had had much experience in midwifery and who was especially esteemed for her practical skill. The method consisted in external manipulations to secure a proper presentation, in directing the assistants in prolonged or more difficult cases, and in removing the placenta by grasping and kneading the uterus over the abdominal walls, and in traction on the cord until the afterbirth was expelled.

More or less of an erect position is assumed during the labor, the knee-elbow being the favorite among many tribes, and after delivery the parturient is directed to stand and to walk about a few hours each day, to insure the free flow of the lochia.

To assist in the expulsion of the foetus, an assistant sitting be-

hind the parturient grasps the upper part of the abdomen in her arms and by a downward pressure during the periods of contraction endeavors to hasten delivery.

Malposition that cannot be corrected is always fatal to mother and child, although fortunately this seldom occurs among the Indians. When such cases do occur the medicine-man is called. In an old print the parturient is represented in a sitting posture, with the thighs wide apart, and the doctor sitting in front, with a gourd rattle in one hand which it is said he agitated, and a long-stemmed pipe in the other, the smoke of which was blown under the blanket which covered the parturient woman. More frequently, however, according to some observers, the medicine-man repairs to the medicine lodge, dons his ceremonial robes, and with strange noises and grotesque gestures and dancing works a charm which is supposed to assist in delivery.

The Indians are very imitative and this may be the result of seeing priests don ceremonial robes in the offices of the church or on account of their supernatural beliefs and of the credulous nature of the people.

This is an authentic and carefully reported case of a moderately difficult parturition among the Indians of the Southwest, and gives their reaction at a critical time to the newly arrived dominant Anglo-Saxon race. The endurance of this patient and the apparent ease with which she underwent the event of childbirth, considering the handicap of ruptured membranes, is not unusual among her people.

Engelmann writes entertainingly on this as follows:

What little fear exists as to the occurrence of this event, which is so much dreaded by many of our delicately constituted women, may be judged from the instances of speedy and unexpected delivery so often related by those in contact with the Indians. Dr. Faulkner, who spent some years among the Sioux tribes, tells me that he has known a squaw to go for a pack of wood in midwinter, have a child while gone, wrap it up, place it on the wood and bring both to the lodge, miles distant, without injury. Dr. Choquette says, that two or three years ago, an Indian party of Flat Heads and Kootenais, men, women, and children, set out for a hunting trip; on a severely cold winter's day, one of the women,

allowing the party to proceed, dismounted from her horse, spread an old buffalo robe upon the snow, and gave birth to a child which was immediately followed by the placenta. Having attended to everything as well as the circumstances permitted, she wrapped up the young one in a blanket, mounted her horse, and overtook the party before they had noticed her absence.

In general there is very little physical preparation for childbirth among the North American aborigines, and recuperation is also allowed to take place as best it may during the usual daily activities. A very good instance of this is an experience of a physician among the North Dakota Indians, which he calls "a Confinement that Didn't Confine."

At one time he saw several women coming toward the only store at the agency, across a wide open space in front, each carrying on her back a bundle of sticks. Suddenly one stopped short, looked a little wild, dropped her bundle of sticks, spread her feet apart, strained a moment, and then stooping, made a pass toward the ground with her knife that she drew from its sheath, picked up something which she wrapped up in her shawl, and leaving her bundle of sticks for someone else to pick up, passed on into the village.

That was a confinement and the child was born then and there.[98] This and the aforementioned experiences of Falkner and Choquette show that whether or not the Indian woman suffered as much as civilized mothers do, she at least was better able to bear her pains and regain her former strength. It should be added, that all members of aboriginal societies are not alike; differences fully as great as in our own society occur. It is not tenable that every Indian woman has an easy time in childbirth. Nor can we say that there is no mortality aming the Indians at this critical period.

These women do sometimes have trouble and, when they do, it is usually of a severe nature. Treon, among the Sioux Indians, tells of several cases in which his assistance was necessary. He was called three times to deliver a retained placenta, once an impaction, and once a shoulder presentation. In a later case, to which he was called in great haste, he found a large plethoric-looking squaw who had had a convulsion. The woman was a multipara, this being her

fourth confinement. She was found in an unconscious state, the muscles undergoing violent clonic contractions, with eyes upturned, and a frothy saliva oozing from the mouth. He gave chloroform with carbonate of ammonia, followed after the convulsion had subsided by a saline cathartic. The convulsion did not recur.[29]

Only a small percentage of the difficult cases among the Indians is reported. Yet, on the whole, the Indian woman undergoes childbirth with comparative ease. Hrdlicka[27] accounts for this by the fact that the Indian women are well built, that most of them are used to outdoor life, and are healthy, strong, and very patient, and that, as compared with the whites, a larger proportion of the children are normal.

After a study of the case histories available I am of the opinion that parturition is not always the simple process attributed to it among the aborigines of America.

Among the Santee, Crees, Muscogees, and Assiniboins the following ceremonies attend the birth of a child. When the time approaches the mother erects a small hut at a short distance from the tent in which she usually lives and, at the approach of labor, sends invitations to several neighboring women to come to her assistance. As soon as the child is born it is washed in water that has been prepared before, by boiling a sweet-scented root with a pleasing odor. One of the pre-natal duties is for the expectant mother to order a feast to be prepared. When this feast is ready, the oldest woman takes a little of the dish, throws it in the fire, then helps the whole company, including the mother who is usually able to eat. The old woman now offers up a prayer in order that life may be spared and that the child may grow up and be handsome. The mother usually stays in the hut for thirty days. No man comes near during this time. Then the woman returns to her tent and neighbors are invited to come and welcome the stranger from a far-off country.[30] According to this observer Indian women appear to suffer less pain than civilized women. They rarely take medicine; sometimes they drink water in which a rattle of the rattlesnake has been boiled. In labor they place their knees on the floor or ground and lean forward over something raised about two feet. Labor is usually over in fifteen minutes although from two to three days have been known to be

required in some difficult cases. The mothers are soon as strong as ever and seldom die in childbirth. Children deformed or blemished after delivery are killed or receive a special name for their peculiar feature. Other children are generally named for some beast or bird which is often their patron saint or, as they express it, their good medicine.

In this connection we are again fortunate in securing the maternal point of view from one of the race. Tradition attributes certain characteristic traits to the American Indian, such as having a stoical endurance to suffering, and as being in other ways different from civilized peoples. No one has yet been able to note their internal emotions, especially in a woman giving birth to a child. The nearest approach is that obtained by Michelson directly from an Indian woman is follows:[81]

We women have a hard time at childbirth. Some are killed by the babies. But we are not afraid of it, as we have been made to be that way. That is probably the reason why we are not afraid of it. Oh, if we were all afraid of it, when we all become old, that is as far as we would go. We would not be able to branch out [to a new generation]. So at childbirth we should do only what we are told. The ones who do not do as they are told are the ones who are injured by their children.

Soon I became sick in the evening. I did not tell of it. I was told "You might be sick?" "Yes," I answered, "I am sick and have a little pain in the small of my back." "Oh ho," she said, "now is the time when you are to have a child. I shall summon her" [meaning the midwife]. In a little while after she came she said to me, "Come go to the little wickiup." Blankets were spread for me. When I sat down comfortably a strap was fastened from above. "You are to hold on to this when you begin to feel intense pain." After a while I was told, "Lie down. When you begin to suffer acute pain you are to try to sit up. You are to sit on your knees and you are to sit erect." I did so. I would hold on to the strap. The child could not be born.

After midnight I was nearly unable to get up. The women who were attending me became frightened. Then they said among themselves, "We shall pray for help." My mother-in-law took Indian tobacco and went to a woman skilled in obstetrics for help. And

when that woman came, she at once boiled some medicine. After she had boiled it she said, "Let her in any case sit up for a while. You must hold her so that she will not fall over." After I was made to sit up she spat upon my head, and she gave me the medicine to drink. After she had given me the medicine to drink she began singing. When she danced by where I was, she knocked on the side. "Come out if you are a girl," she would say again. After she sang four times in a circle she entered the wickiup. And she gave me medicine to drink. "Now it will be born. She may lie down, only lay her down carefully. You must hold her knees straight up," she said. Lo, sure enough, a little boy was born.

Then I knew how painful childbirth was. After I had borne the child I was not in pain in any spot. I was well.

One of the most characteristic and widespread things associated with childbirth is the prevalence of theurgic beliefs. Similar beliefs exist among ourselves although to us they are less noticeable. Much of the superstition of the aborigines is like to our own. Thus our abhorrence of walking under a ladder, breaking a mirror, sitting thirteen at the table, or viewing the new moon over our left shoulder, are just as ungrounded as some of their taboos and has even less basis for observance.

THE ESKIMO

While many of the Eskimos seem in appearance more like Mongolians than American Indians, ethnologists place them among the latter class. More primitive than most Indians, their wants are few and their means of supplying them are simple. Medicine has not attained a very high position and midwifery is usually left to the midwife or elderly woman of the tribe.

Childbearing in the far north is much like that of other Indian tribes. In this most inhospitable country, if possible more so than Tierra del Fuego, childbearing is fraught with difficulties. In the igloo sometimes a partition is constructed for the lying-in chamber. Frequently a separate igloo or hut of snow is constructed a short distance from the home of the parturient woman. Here a midwife or experienced woman is usually in attendance. There is much ceremony and superstition in severing the umbilical cord; the shell, bone, or other cutting instrument used, certain incantations which

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vary with the tribe, are not particularly of further interest. The child is washed in snow and is thus early in life, as in Tierra del Fuego, subjected to the most trying ordeals of nature. In spite of these hardships, the race survives, although in many of the northern countries it is gradually diminishing.

While it is difficult to obtain an intimate account of the midwifery of the Indians, it is particularly so of the Eskimos. The following is of interest in this connection.

While spending the winter in northwestern Alaska I had the good fortune of witnessing an Eskimo woman giving birth to a child. It is seldom that a "Cablona" [white-man] doctor is permitted to witness this trying ordeal. However, as I had treated different members of the family, and had gained their confidence, I was permitted on this occasion to be present.

It is the custom among the Eskimos not to be confined in an "igloo" or house. The woman must go into the woods or brush alone—no one, not even the husband, being allowed to be present—and remain there with no food except a piece of dried fish for "five sleeps," when she is permitted to return to the igloo, no doubt that being the time required for the lochial discharge to cease. Whereupon, she and her husband take a bath and change their undergarments, when they are fortunate enough to have a change. They are then supposed to be clean until the next confinement.

In January, 1899, during a long winter night and in the midst of an Arctic blizzard, a messenger, a little Eskimo boy, came to my "igloo" and announced that "Mama speak catchem mickaninny by and by," "speak" being a term in universal use. I arose, dressed myself in fur clothing and started for the scene a short distance away, the thermometer ranging from 30 to 40 degrees Fahrenheit below zero, where I found the woman out in the brush in a snow pit, oval in shape, about two feet deep and six feet across, with a few spruce boughs thrown around the margin as a windbreak, together with a smoky fire of twigs. The parturient chamber had been prepared by the woman herself, by scattering a thin layer of dried grass prepared by her for this occasion, upon which was spread a reindeer skin, with no covering of any kind.

On my arrival I found the woman in labor, on her knees, with buttocks resting on her heels, and having severe bearing-down

pains, which came faster and faster and more severe until almost continuous, when the amniotic fluid ruptured. The mother of the woman and my interpreter, the little boy, who were near by, began to exclaim, "Mama muckey, mama muckey," "muckey" meaning to die. I asked the boy what was the matter with mama. He answered that she couldn't see; her blindness, no doubt, being due to syncope. I assured them that mama would soon be all right, and not to be frightened. She soon rallied, and labor progressed naturally through the second stage, and after an interval of one-half to three-fourths of an hour the pains returned. She again had syncope, no doubt due to hemorrhage. She soon rallied again and expelled the placenta, whereupon she took a piece of sinew, which had been previously prepared from the hock of a caribou, and ligated the cord as close to the umbilicus as possible, then severed the cord close to the ligature with a piece of serrated flint. She washed the babe in snow, although it rebelled by kicking and squalling lustily at such a cold reception. Not withstanding the rigorous conditions surrounding the Eskimo mother in childbirth, the rate of mortality of both mother and child will compare favorably with our own death-rate.

The woman wore a belt or a piece of thong to confine her "parka" around the waist and to it was fastened by short deerskin thongs bits of ivory, buttons, leather bags in which she kept tobacco, matches, and other small articles of value. After the snow-bath she placed her babe underneath the folds of her "parka" and proceeded in a bent-over position, with staff in hand for support, stepping slowly and laboriously, leaving a trail of blood, to another snow pit about fifty feet away which had been prepared. The place of birth was considered unclean and must be left.[82]

Simpson, who lived several years in Alaska, gives the following:

When a woman arrives at full term a tent or hunt is erected at some distance from the Indian village. A hole about two feet deep is dug in the ground inside the hut, and is lined with moss. A stake is driven into the ground a few inches from the hole. When labor begins the woman is made to sit over this excavation in a squatting position. She grasps the stake with both hands. One squaw sits behind with arms clasped around the patient's abdomen, and another sits at each knee to act as a brace or support. They make no digital examinations. When the pain comes the patient holds on

to the stake; the midwife clasps her arms more firmly about the abdomen, and the other two women press firmly against the knees of the patient with their shoulders. This is repeated with every pain until labor is concluded. When the child is born it drops into the hole. Sometimes the child is seriously injured by the fall, and bones are occasionally broken. In case of fracture no treatment is followed, the bone being allowed to unite as it will. The umbilical cord is divided about four inches from the navel. They do not cut it, but taking hold with their fingers partly twist it and partly pinch it off with their nails. They do not tie it, as the torsion prevents hemorrhage.

The third stage is managed the same as the second, the women supporting the patient and assisting her as before. The placenta is generally burned or cremated and the ashes preserved until the child dies.

After the placenta is removed a binder is applied. This consists of a number of pieces of bark about a foot long and two or three inches wide, placed parallel to each other and quilted between two pieces of cloth or skin, like the bones of a pair of corsets. This, when applied, resembles a very coarse set of stays. The binder is left on ten days, during which time the woman is never washed. The blood and discharge become encrusted about the genitalia and thighs, and, as it is moistened daily by the urine and lochia, her condition may be better imagined than described. Strange to say, I have never seen nor heard of a case of puerperal fever among them, although there have been about two hundred births in this neighborhood since I came here. During labor, and for ten days after, the woman is not allowed to eat or drink anything cold. Primiparae remain in bed in the hut in which they were confined, for ten days, but many multiparae get up and go about their work the first or second day.[38]

In the Central Eskimo, Franz Boas reports:

Before the child is born, a small hut or snow-house is built for the mother, in which she awaits her delivery. Sick persons are isolated in the same way, the reason being that in case of death everything that had been in contact with the deceased must be destroyed. According to Kumlien, the woman is left with only one attendant, a young girl appointed by the head angekok of the encampment. She may be visited by her friends, who, however, must leave her

when parturition takes place. She must cut the navel string herself, and in Davis Strait, this is done by tying it through with deer sinews; in Iglulik, by cutting it with a stone spear head. The child is cleaned with a birdskin and clothed in a small gown of the same material. According to Lyon the Iglulirmiut swathe it with the dried intestines of some animal.[24]

Kumlien describes in the above report a remarkable custom:

As soon as the mother with her new-born babe is able to get up and go out, usually in a few hours, they are taken in charge by an aged female angekok, who seems to have some particular mission to perform in such cases. She conducts them to some level spot on the ice, if near the sea, and begins a sort of march in circles on the ice, the mother following with the child on her back; this maneuver is kept up for some time, the old woman going through a number of performances, the nature of which we could not learn, and continually muttering something equally unintelligible to us. The next act is to wade through snow drifts, the aged angekok leading the way. We have been informed that it is customary for the mother to wade thus bare-legged. After a few days, or according to the fancy of the parents, an angekok, who by relationship or long acquaintance is a friend of the family, makes use of some vessel, and with the urine the mother washes the infant, while all the gossips around pour forth their good wishes for the little one to prove an active man, if a boy, or if a girl, the mother of plenty of children. This ceremony, I believe, is never omitted, and is called qoqsiuariva.

A few days after birth the first dress of the child is exchanged for another. A small hood made from the skin of a hare's head is fitted snugly upon the head; a jacket for the upper part of the body is made of the skin of a fawn, and two small boots made of the same kind of a skin, the left one being wreathed with sea-weed (*Fucus*), to cover the legs. While the child wears this clothing, that which was first worn is fastened to a pole which is secured to the roof of the hut.

As long as any portion of the navel string remains a strip of seal-skin is worn around the body.

After the birth of her child the mother must observe a great number of regulations, referring particularly to food and work. She

is not allowed for a whole year to eat raw meat or a part of any animal killed by being shot through the heart. In Cumberland Sound, she must not eat for five days anything except meat of an animal killed by her husband or by a boy on his first hunting expedition. This custom seems to be observed more strictly, however, and for a longer period if the new-born child dies. Two months after delivery she must make a call at every hut, while before that time she is not allowed to enter any but her own. At the end of this period she must also throw away her old clothing. On the western shore of Hudson Bay, she is permitted to re-enter the hut a few days after delivery, but must pass in by a separate entrance. An opening is cut for the purpose through the snow wall. She must keep a little skin bag hung up near her, into which she puts a little of her food after each meal, having first put it up to her mouth. This is called laying up food for the infant, although none is given to it. The parents are not allowed in the first year after the birth of a child to take part in the Sedna feast. Nelson[88] comments on the hardihood of the Eskimo in the region of Bering Strait:

During childbirth old women, reputed to have skill in such matters, act as midwives. Formerly, among the Unalit, when a woman was confined with her first child she was considered unclean and put out in a tent or other shelter by herself for a certain period. This custom is now becoming obsolete, but it is still observed by the Eskimo of Kaviak peninsula, by the Malemut, and by other remote tribes. In one case a young Malemut woman was confined with her first child at a village on the lower Yukon. It was midwinter, but she was put outside in a small brush hut covered with snow and her food handed her by her husband through a small opening. Despite the intensely cold weather, she was kept there for about two months.

In March, 1880, while on a journey to Sledge Island, just south of Bering Strait, we were accompanied for the last seventy-five miles by the wife of our Eskimo interpreter, who was a fine-looking woman of about thirty years and was heavy with child. She went in order that her confinement might take place among her own people, who lived on the island. Notwithstanding her condition, she tramped steadily through the snow day after day, and on the morning of our arrival at the island she was in the room talking and

laughing when she became suddenly ill, went to her mother's house, and was delivered of a fine boy in less than half an hour. Directly after the birth a shaman came in and borrowed from me a drum and a small ivory carving of white whale, which I had purchased on the road. The father explained that the image of the whale was borrowed to put in the child's mouth so as to feed him upon something that would make him grow up a fine hunter. The shaman beat the drum and sang for half an hour over the boy to make him stout-hearted and manly. The woman remained at this village a few days and then walked back the seventy-five miles to her home, carrying the child on her back.

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PART FOUR

CHAPTER XVI

FOOD. THE VARIOUS ACCESSORIES IN TREATING DISEASE. THE MATERIA MEDICA OF THE INDIAN

THAT food played an important part in the distribution and culture of the Indian tribes of both South and North America has been clearly shown by Morgan,[1] Renaud,[2] and others. Man is omnivorous, but can thrive on a restricted diet of either animal or vegetable food. Within the tropical and semi-tropical regions of America, including what is now the southern states of North America to the northern part of Chile and the Argentine Republic, fruits and vegetables, including maize, marrioc or cassava, potatoes, sweet potatoes, tomatoes, beans and squash, were plentiful or easily grown and on these the aborigines lived largely. While fruits and vegetables formed wholly or in part the food of the natives, game and fish were also used where they could be procured. In the Andean region, deer, llama, and guinea pigs were abundant and the last-named formed, as they do today, a prolific source of food; again, water fowl along the coast was plentiful. In this region in favorable locations, we have seen that there were found the most advanced and cultured races of the South American continent. Here, too, the art of medicine made its greatest progress.

Concerning the food supply of the high plateau around Lake Titicaca in Bolivia we are not so fully informed. This region bears evidence of having been thickly populated. It cannot be due to any terrestrial change in this region, for it has remained as now at 13,000 to 14,000 feet above the sea for at least 2000 years and in comparatively recent times was able to support a large population and at the same time to be conducive to a high state of intellectual development. I one time asked the celebrated ethnologist, Walter Hough, to what he attributed this superior attainment. His laconic answer was *corn*. And to maize or its equivalent it undoubtedly was. We know that maize and the wild potato were indigenous in Peru, and by intelligent cultivation later were grown over nearly the entire continent, and especially in north and central America. Maize

soon became the most universally used of all vegetable substances. It was pounded in mortars of stone or baked clay and baked in ovens or in hot ashes, or exposed directly to fire. Later when bronze and iron were procured, kettles were used in which meats and vegetables were boiled until they were tender and the water in which they were boiled partaken of as soup. Even today, as they have for centuries, the long-distance runners of the Andean region are known to subsist for long periods of time and over long distances on a small pouch of parched maize which they carry fastened to their girdle. This with a quid of coca leaves* of which they carry a supply, and water, when it can be found, is all the food they require. They claim that coca leaves sustain them more than food. In some of the lowlands of the interior of the continent, it is known that they even resorted to human flesh, particularly in their religious feasts.

In tropical parts of both continents, fermented liquors were drunk, that were made from maize in Peru, the cassava in tropical America and the West Indies, and the fermented juice of the agave and corn or maize in Mexico. Latterly the Peruvians discovered some kind of distilling process, and made a spirit called *uinapu* or *sora*. One of the first trials of prohibiting the drinking of alcoholic beverages was that of an edict made by one of the Incas of Peru, that *sora*, a strong alcoholic liquid made by distillation from maize, should not be partaken of by the common people. The nobles were a privileged class and the Inca and his numerous family were considered above the law. But, according to both Markham and Prescott, the edict was not strictly observed. Science, as well as complete liberty, according to the Inca dictum, was only for those of generous blood. Drinking to excess prevailed at all the festivals, while the man who drank much and kept his head was held in high esteem. This prevalence led to other excesses, and was the most debilitating habit they indulged in.[8]

What the Spaniards called *chicha*, but the natives *acca*, was made, according to Markham, in the following manner: Kernels of what is commonly called Indian corn or maize were first either

* Moodie says packets of coca leaves have been found in mummies of great antiquity.

crushed in a mortar, or more commonly chewed into a pulp by women and girls because it was recognized even at this time that the saliva contained medicinal or digestive properties, but this remained for the physiological chemist to elucidate more fully and establish on a scientific basis centuries later. This masticated and partially digested maize was then boiled and passed through a sieve, usually of cloth, and allowed to remain until fermentation took place. This beverage was sometimes flavored, if the taste of the consumer thought it necessary, with the juice of berries or some other substance to give it piquancy or otherwise to improve its flavor. Far be it from me to say that thus came physiological chemistry, from small beginnings and from the Indian race.

In North America at the time of the discovery the Indians were most thickly distributed on the Atlantic seaboard, particularly in what is now New England, in the region of the Great Lakes and, according to Morgan,[4] in the region of the Puget Sound, the Columbia River and its tributaries, and California. Here, over this wide range of forest, fresh water lakes, and sea-coast, fish were plentiful and easily obtained, as well as game, water fowl, shellfish, together with maize and wild rice. Berries in season, certain edible roots and nuts gave an abundant supply of nutritious food. They represented the highest type of physical development of the American Indian, most frequently referred to as the "noble Red Man," who with his descendants will doubtless live longest in literature and art.

Such culture as existed north of the Rio Grande came from the south and was most highly developed in what is known as the great southwest or the San Juan region, comprising the present states of Arizona, southern California, and New Mexico. In this vast region maize was introduced from Central America and Mexico, where for centuries it had been cultivated. To this staple article of food is ascribed the high culture attained by the Indians of this region, transforming them during the centuries preceding the discovery of America from nomadic hunters, subsisting on a precarious supply of food, to house dwellers in towns and with granaries replete with maize. With these luxuries came also house dwellers and certain debilitating influences affecting their physical well-being to be spoken of as we proceed.

Thus, from food supply, is contributed another culture to the world, for as the culture of the Orient was founded on rice, and that of Europe on wheat and other cereals which collectively they call corn, so must the civilization of America, as shown above, be founded on the growth and cultivation of maize, more commonly known as Indian corn.

The food of the North American Indian varied not only with the region inhabited but with the season of the year, and according to the preference of individual tribes. In entering this field of research one will find a wide range existed in both the animal and the vegetable kingdoms from which substances capable of sustaining human life were obtained. Hrdlička in his reports[5] gave this subject close attention. From this and other sources, we know that the American Indian subsisted on almost everything from animal parasites and larvae to buffaloes on land, and from periwinkles to whales from the sea. In the vegetable kingdom his choice was equally varied, and in times of stress even the inner bark of trees was consumed as food.

Nearly all parts of the animal were eaten. In North America buffalo kidneys eaten raw were considered by the Blackfeet tribe a delectable luxury. The carnivorous Indian was indifferent to the use of salt, obtaining sufficient amount in the meat he ate, while among tribes living on fruits and vegetables, salt was a great luxury and eagerly sought. Sugar from the cane or maple tree was also a part of his dietary. He slaked his thirst with water, nor was he as a rule particular concerning its purity or even cleanliness. Ages of indifference to microbes had evidently rendered him immune to the less virulent.

Recently it was my good fortune and pleasure to eat luncheon with the late Roy Lee Moodie, the well-known paleopathologist, on the prehistoric site of one of the shell mounds of the Pacific coast where six hundred or more years ago the Indians gathered for a like purpose. It was at the mouth of the Solstice cañon in southern California, where a limpid stream flows into the Pacific Ocean. Here, explained my host, the Indians clad in fur skins or naked, as weather conditions dictated, gathered and encamped, for the reason that wood for fuel and fresh water were plentiful, and here they

feasted on all things from the boundless deep that could be caught with hook and line, made from bone and sinew, or otherwise entrapped, for the partially enclosed bay or bayou offered a favorable place to retain shellfish of various kinds and even whales, as evidenced by their bones left in the debris which the high seas had washed over the barrier. Here for centuries and centuries, estimated from one to three thousand years, the nomadic tribes came, built fires, and ate the feasts which the bounteous sea provided. Whence came they and why they departed or to be succeeded by other tribes still remains one of the scientific riddles.

In this spot the dredging for a roadway brought to light an accumulation of ashes many yards deep, in which were found shells innumerable and bones of animals used for food, together with hundreds of human skeletons, some evidently buried and many others carelessly strewn about as if a pestilence had swept away, in spite of the incantations of the medicine-men, the last vestige of the race that for the last time had inhabited this site.

While the Indians are known to be indifferent to what the white race regards as cleanliness, yet some of the foods partaken of by the white race were at first distasteful to the Indians. Long Lance as a boy tells most naïvely of his first seeing a pale face and partaking of his food:

We boys had never seen a white man and were interested in what our chief told us about them. We were given some of the white man's *minne-seeha,* black water that they call tea. It was bitter and we did not like it, but some of our old people were fond of it. The chief also told us to beware of the white man's food, as it would make our teeth come out. He told us about the bread and the sweets which the white man ate, and pulled up his upper lip and said: "*Wambadahka*—behold, my teeth are good, and so are the teeth of all our people; . . . our people used to live until they were over a hundred years. Now, since we began to eat the white man's food, we are sick all the time," and pulling up the lip of a young boy said: "Behold, his teeth are not good; he eats white man's food; it will kill us all." [Verily a prophet of his race.] And then the chief reached up and took hold of a shock of his hair at the top of his head and said: "Payheeh—hair—the white man has none of this on the top of his head. The crown of his head is as slick as the

nose of a buffalo. Every time an Indian eats he wipes grease into his hair. White man wash it all out with "bad medicine"—soap—take all grease out and make all of his hair drop off. Swap your buffalo robes for the white man's blankets and gunpowder, but take not of his food," said the chief, "nor of his 'bad medicine' for washing your hair."

We had never before been around cows, and passing the stables where they were kept, the smell of them made us sick. We all had to hold our hands over our noses as we rode by this stable. We youngsters had always thought that a cow would smell strong like the buffalo, but they smelled sweet, like milk, and that made us want to vomit. . . . We boys had never been close to white people before; so while they were talking with our fathers, we and some of our braves walked up behind them and smelled of them to see what they smelled like. They smelled different from the Indians; they smelled like those cattle, and it made us sick. Then they invited us to have a big "feast" with them. They brought out a lot of food. But we could not eat it. Everything they had, tasted as those cows smelled. Their tea had cow's milk in it; cow's butter was on their bread, and its cream covered their cakes; and the meat they gave us to eat was cow's meat. Everything cow! Some of our braves got very sick and went into a bush. . . . We remembered what the Sukssiseoketuc Chief had told us about keeping away from the white man's food, and we thought at that moment that it was the taste which killed the Indians. It turned our stomachs up and we could not keep it down. After the "feast," which did not last long, the white people started to bring out their wares to trade with us for our buffalo robes and ermine. They brought out a lot of things we had never seen before—flour, molasses, bread, and so on. Our chief thought that the molasses was grease, and when a barrel was rolled out in front of him he reached down into it and brought up two handfuls and rubbed it into his hair, saying it would make good grease for the hair. We thought that the flour was snow and the bread was tree-kanker; we did not care to trade robes for these.[*]

While we are on the subject of food, I recall an account of a dinner a lady gave for Sitting Bull and his braves and the difficulty the white people at the table had in controlling laughter and

[*] *Long Lance* by Chief Buffalo Child Long Lance. Cosmopolitan Book Corporation. Courtesy of Farrar and Rinehart, Inc.

of showing unduly that they were amused by the strange behavior of their guests.

As I remember it [said the narrator], the Indians had arrived at our army post and the commanding officer, my husband, told me that we must show them every possible courtesy for this great Indian warrior had already caused heavy losses in our ranks and at the time had at his command a well-disciplined band of six thousand braves ready to strike at a moment's notice. Consequently, the small army post bestirred itself to give the chief with the half dozen braves who accompanied him a "feast." In preparation for this the Indians had arrayed themselves in the cast-off uniforms of some of the soldiers, but Sitting Bull could find nothing that would fit him. The clothing was all too small, and Sitting Bull refused point blank to attend the dinner which they were preparing for him without proper clothing befitting his rank as a warrior and as the guest of the white man. He insisted, too, on white man's clothing. We all knew that our safety depended on the discretion with which the situation was handled. The main difficulty was that all the cast-off uniforms as well as those in our limited commissary were too small and the trouser legs too short. Finally, a long Prince Albert coat was found in an old trunk and one of the women of the post not having black cloth to match the coat inserted a ten inch section of red flannel down the back, and elongated a pair of trouser legs with white cloth. Another produced a high silk hat of ancient vintage which greatly pleased Sitting Bull and he insisted on wearing it during the dinner. The red flannel insert also pleased his fancy, as did the white extension to his trouser legs. A young clergyman was asked to "say grace." Sitting Bull regarded this with suspicion and refused to eat, thinking as the young clergyman had looked upward with hand upraised in his supplication, that he had "cast a spell" on the food. Being a medicine-man himself, he was not going to be thus easily taken in with any white man's magic. After it was explained to him he began to eat, using only his hands, unless he wished to use his fork or his knife to get something beyond reach. The difficulty in keeping from laughter during the whole meal, and especially when Sitting Bull entered in his grotesque garb, followed by his band, was a feat I could not have accomplished had I not known how sensitive to ridicule the Indian is. This with their complacency added to the effect. At the end of the dinner, the young

clergyman again rose to return thanks, when Sitting Bull raised his hand and in a commanding tone said, "No!" He would take no chances and left the room, greatly to our relief. The next morning before we were up Sitting Bull and his chosen band of braves were on their way to visit the Great White Father in his big white house at Washington.

Two meals a day was the rule with the Indians, the principal one at night, although when hungry they partook of food at any time. They seemed to have the faculty, like many of the lower animals, of abstaining from both food and drink for days without suffering any ill effect. This irregularity—gorging when food was plentiful and fasting when it was scarce, did contribute to the ailments to which they were most liable.

The diet of the Eskimo is much more restricted than that of other Indians. He lives mostly on fish and other game that he can procure. Practically all parts of the animal are eaten, including the stomach and upper intestines, thus somewhat balancing the diet of the Eskimo. To a limited extent vegetables are available during the summer months. To maintain animal heat in a land where such a low temperature prevails, the Indians of these far north regions consume large quantities of fat. A missionary who combined medicine in his varied duties once told me that, when he first took charge of the post on the border of Alaska, the demand for castor oil was so great that his supply was soon exhausted. They came with tin cans, cups, or anything that could hold a supply of oil. Finally, his supply being exhausted and the Indians growing impatient, he put a few drops of croton oil on the tongue—the prompt effect was such that henceforth he was regarded as a magic doctor, an angekok, and all went well.

THE INDIAN'S MATERIA MEDICA

While superstition is the offspring of ignorance, yet experience is a wise teacher. This latter the American Indian had and to this must be attributed the good that is found in his application of the various means to repair injury and to cure disease. Slight as was their anatomical knowledge, they had names for the principal organs of the body and were aware that medicines given to the mother

would affect her sucking babe. They also had appliances which are still in use among civilized people, splints for broken bones, bandages of various kinds to support parts injured by violence and disease.

Close to nature as the Indian is, he has an investigating disposition; nothing evades his close scrutiny. Curiosity prompts him to examine herbs and plants, and hunger at times compels him to partake of them. In this way their varied virtues became familiar to him. As has been said, if the frog was "good medicine" to the physiologist, no less beneficent to the therapeutist was the Indian's stomach, for it was the primitive laboratory in which was demonstrated the action of most of the vegetable substances in use.

What we would call the true type of medicine-man gathered, prepared, and administered powders and decoctions made from various indigenous barks, roots, and herbs, together with other material means of cure. Many of these have come down to modern times and are used and held in high repute among the Caucasian race. Some of these, too, have been refined by modern processes and their active or medicinal properties secured in concentrated form, are in common use. From the esteem in which these vegetable substances were held among the early white settlers of North America, arose, too, certain sects or so-called schools of medicine, such as the Eclectic, the Thompsonian, the Herbalist and other less developed cults.

Speck[7] maintains that the primitive Indians were less ritualistic than we have found to obtain among them since the landing of the European. He says:

The widespread use of herbs as medicines apart from the practice of magic, in eastern America, and certain similarities in the properties attributed to the herbs, show that, while the details of practice and belief may have changed in the course of time and become somewhat specialized in different tribes of the same group, the practical use of herbs is a fundamentally primitive idea that has survived in this region devoid of the complexities of ritual. A ritual associated with the practice of herb medicines denotes a higher stage in the development of folklore thought. Among the ethnic groups south and west of the northeast area of North Amer-

ica, magical practices with ritual and mythical associations are the rule in curing disease. In the northeast, the farther we go from the sphere of outside influence, that is, the nearer to the North Atlantic coast, the more prominent is the quasi-practical use of herbs without ritual. To illustrate, the Penobscot seem to have more mythical associations accompanying their cures than the other members of the Wabanaki group, possibly through being nearer to Iroquois influence. Hence two things seem naturally inferable: (1) That the simple herbalism as it exists among the northeastern tribes is a more elementary institution than herbalism accompanied by or subordinated to magic and ritual, and (2) that the area in which the former has survived as characteristic is a more conservative and primitive one.

The remedies in this region consist, as can be seen, mostly of single herbs. The few mixed ingredients may, I think, be regarded as being of late origin. The simple idea that the use of each herb has a direct effect on the system is a fundamental one to these people. Where it is thought that a certain pain or disorder will be counteracted by one remedy, a double or complex disorder may be treated by simply combining the remedy for each trouble into a single medicine so that the two or more agents may work at the same time.

An examination of the remedy names themselves shows that they are primarily descriptive rather than figurative or symbolical. Among the tribes of the northeastern group, the only herbs having myth associations are those from the Penobscot. Under the conditions of cultural simplicity which prevail in this region, it is no wonder that group ritual and mythical associations are almost entirely lacking.

From an external point of view the remedies are essentially practical; the Indians have no theories for them and no magical rites enliven their preparations or application. As to origin it is generally supposed that they were discovered by accident, or more often through deliberate experimentation in ancient times. One method of test, at least, which may illustrate how the herb values are ascertained, is by taste. For example, an herb which produces an astringent effect when put in the mouth is thought to do the same to the stomach when taken inwardly. Should it give relief, the application of the herb naturally becomes an established practice in at least one case, and later it develops into a general remedy should the experi-

ment prove generally helpful. The Indians are accustomed to submit many substances to the test of taste to judge of their qualities. Some of these remedies may be individual. There are, as might be expected, some women of experience with the cure-alls who have more faith in the efficacy of certain herbs than others. In the whole area women are primarily the medicators, since theirs is the province of minor agriculture and the cooking fire.

This is in keeping with the author's point of view, as has been intimated in the text. It is not, however, accepted by some with whom he has spoken.

Captain John Smith in writing of their chirurgery says:

Every spring they make themselves sicke with drinking the juice of a root they call *wighscan,* and water whereof they powre so great a quantity, that it purgeth them in a very violent manner; so that in three or foure daies after they scarce recover their former health. Some times they are troubled with dropsies, swellings, aches, and such like diseases; for cure whereof they build a stove, in the form of a Dovehouse, with mats, so close that a few coales therein covered with a pot, will make a patient sweate extreamely. For swellings also they use small peeces of touchewood, in the forme of cloves [clous], which pricking on the griefe they burne close to the flesh, and from thence draw the curruption with their mouth. With this root *wighscan* they ordinarily heale greene wounds. But to scarify a swelling or make incision, their best instruments are some splented stone. Old ulcers or putrified hurts are seldom cured amongst them.

THE SWEAT HOUSE

As we have seen, baths were associated with religious and medical procedures in Peru, so in Mexico the bath played an important rôle in the hygiene and treatment of disease. Their natural mineral springs, too, were utilized, it may be, during countless ages as they are at the present time, although among some tribes there was a superstitious dread of hot mineral springs—they were too suggestive of the realm of the regions below. Where natural means were not available they built baths and one called *temascalli* deserves special description. According to Biart,* it is usually constructed of bricks and its form is very similar to that of bakers' ovens, with the difference that the bottom is concave instead of flat.

Its diameter is generally eight feet, its height six, and its entrance is no larger than is necessary for a man to pass through it on his knees. Opposite this entrance is a furnace with a hole in its upper part intended to allow the smoke to escape. The stone which separates the gate from the oven is of a porous nature.

The bather, provided with a jar of water and a whip made of aromatic plants, enters the oven, the adjoining part of which has been previously superheated, stretches himself on a mat, and throws the water on to the porous stone. A thick vapor is immediately produced; the bather then whips his body with the aromatic herbs, and a copious sweat soon ensues. This, according to this writer, is the famous vapor-bath which we have borrowed from the Russians, who have possibly themselves borrowed it from the Aztecs.

The bath of *temascalli,* which is mentioned notably by Torquemada at the time of the Conquest, is regarded as efficacious against rheumatism, fever, and the bite of venomous animals. It is in such common use, especially for women after childbirth, that there are but few villages in Mexico which do not possess at least one.

The use of water and baths as a curative measure seems first to have been employed by the Peruvians as the followihg taken from Markham will show:

A great number of men with lances, and fully armed for war, assembled in the *Intip Pampa,* or open space in front of the temple of the sun, where the High Priest proclaimed the feast. The armed men then shouted: "O sickness, disaster and misfortune, go forth from the land!" Four hundred men assembled. They all belonged to *ayllus,* or clans, of the highest rank. Three *ayllus* of royal descent were represented, and four of those descending from the chosen followers of the Ayars. There were twenty to twenty-five selected from nineteen *ayllus.* One hundred faced to the south, one hundred to the west, one hundred to the east, and one hundred to the north. Again they shouted, "Go forth, all evils!" Then all four companies ran with great speed in the directions they were facing. Those facing south ran as far as Acoyapuncu (now called Angostura), about two leagues; finally bathing in the river at Quiquisana. Those facing west ran as far as the river Apurimac, and bathed there. Those facing east ran at full speed over the plateau of Chita and down into the Vilcamayu valley, bathing at Pissac. Those facing north ran

in that direction until they came to a stream, where they bathed. The rivers were supposed to carry the evils to the sea.[5]*

As shown elsewhere the sweat house was used in southern California in prehistoric times and in other parts of America they were mentioned by the first white explorers. To the Indian, the sweat house is his school as has also been shown; it was likewise his church, consecrated to the office of healing. Its construction differed in accordance with the country in which it was found. In the tropics saplings and broad leaves were the materials mostly used, while in Tierra del Fuego an embankment of earth and a snow igloo in Alaska. In the latter country it is used for the purpose of maintaining health. At least once during the long winter it is resorted to by both men and women. In lieu of soap urine was formerly used, as it may be at present, for cleansing purposes, being the most easily procured alkaline substance to remove the oily excretion from the surface of the skin. It is used also for the same purpose in Tierra del Fuego.

After a bath in a heated igloo of snow the Eskimo plunges into the snow outside and by friction obtains a complete reaction, his body aglow with warmth.

The sweat house or at least a sweat bath was used in the treatment of nearly all diseases. In the first year of the nineteenth century a tribe of Indians remaining near Ashtabula in northern Ohio was attacked with smallpox; they immersed the patients in mud baths heated by throwing in hot stones. It is needless to say, all died until a white doctor was called when inoculation cut short what was rapidly decimating the tribe. In the celebrated springs at Las Vegas in New Mexico, the mud baths were much resorted to by the Indians. In Monterey in northern Mexico and in the Yellowstone National Park, the hot springs were utilized by the aborigines who believed that they possessed healing properties vouchsafed them by Mother Earth.

THE NEW MEDICINE HOUSE

When the United States Government began to erect hospitals in the Indian reservations it was indeed an innovation. In one of my

* *The Incas of Peru* by Sir Clements R. Markham. Courtesy of E. P. Dutton & Co., Inc., and George Routledge & Sons, Ltd.

holidays, I spent some time on what was once known as the Pinetree reservation. A new doctor had been assigned to the post who told me the following:

On my arrival I found much commotion among the Indians of the reservation because two innovations of the white man had been installed in their midst. One was a white man's school for their children; the other was a new medicine house. The commotion I found was due to the fact that a white man, connected with the government service, had developed acute appendicitis from which he had died. The new medicine house, therefor, according to Indian custom and tradition, should be destroyed.* But it was not, hence the commotion. "What," said they, "do they want us to go in a dead house when we are sick? No, bad spirits hover around, especially at night, make worse, then he die. No!" Hoping that I might be of service in smoothing over the difficulty I told Mokuyi-Kinasi (Buffalo-Head), that I was his brother in medicine and would examine the medicine house at night with him. Together we might arrive at some understanding to their benefit. If infected with bad spirits, it should be disinfected or burned. But if the evil spirits had been killed or driven away with strong medicine—then it would be safe for the Indian to go there when sick. No! I could see that the plan did not meet with favor. "Indian like own medicine-man when sick, white medicine-man in dead house no good for Indian. Mebbe for white man, Yes, but medicine house and white medicine-man kill white man too. No! I no go in dead house. My people no go in dead house when sick. White man's medicine house and dead house same."

The winter had been cold and wet and the spring came late; there were several cases of pneumonia in the reservation, but still the new medicine house, the pride of the Department of Indian Affairs, remained vacant. The white-washed walls reflected the bright sunlight, but there was no patient to benefit by its rays. No one but the nurse, who evidently had been selected more for her ability as a disciplinarian than for her ability to soothe and to encourage the despondent. She was grimly conscientious, I found, but not lovable; nor had so far as I could ascertain, the doctor or even the agents of the reservation ever been accused of undue familiarity with

* The North American Indians, on the death of one of their number, bury or otherwise dispose of the immediate objects used by the deceased. The tepee in which he died is never used again, but is destroyed by fire.

her. The Indian read her by instinct. To them she was "bad medicine." The doctor was all that could be expected for eight hundred dollars a year, but no more.

Finally, an Indian boy, the most intelligent of the school, was taken suddenly ill. The weather being unfavorable and his tepee some miles away, he was induced to go in to the new hospital for the night. He grew rapidly worse, his temperature shot up to 104 degrees and towards morning he became delirious. He called for his mother and begged to be taken home. The doctor pronounced it pneumonia. The outlook both for the patient and hospital looked bad. Should an Indian die in the new hospital, its use as a hospital would have to be abandoned.

In the early morning the mother came. Mokuyi-Kinasi, the medicine-man came too. He asked that the boy be allowed to be carried home. "For many generations of men the Great Spirit has caused the corn to sprout and bring forth a plenteous yield. He has also given us herbs to cure the sick. We do this in our own way. We do not believe in keeping house for our people to die in. The bottles smell and let out 'bad medicine.' We do not like it, let us go." The nurse remonstrated; with her shrill strident voice, she said, "It will kill him to be moved." The doctor, evidently not hopeful as to the outcome of the boy's illness said, "The old cuss"—referring to the Indian doctor—"might do him good." And so it was arranged that the boy should go. He was tenderly wrapped in blankets by his father, mother, and grandfather, and carried to his home. Once there, the medicine-man cupped the chest by powerfully sucking different parts, gave him a draught and softly crooned a medicine-song accompanied by the gentle rattle of the medicine-che-che-quy. The boy swooned then into a sleep, from which he awakened somewhat refreshed. He was contented for he was at home among familiar objects. The odor of the bottles in the apothecaries' room was replaced by sweet-smelling grasses. His ear caught the mocking bird's morning song. There was no foreboding, sour-faced nurse, but his mother bent over him and with loving hands smoothed his brow. The kind wrinkled face of his grandfather looked down on him on his cot of furs. His heart gave a joyous throb; he felt better. A sweet languor replaced the fever which bore him farther and farther away from the white man's school and the white man's dead house. He made a rapid recovery under Mokuyi-Kinasi's care.

In commenting on this, the venerable medicine-man of the tribe, said: "White man very clever but he not know everything." Then, puffing his medicine-pipe, he continued, "Sometimes there are things they do not know."

This would indicate that the United States government expends, not always too wisely, large sums of money to uplift the Indians, without sufficiently taking into consideration the peculiar mentality of the native, and in selecting improper persons to carry out its desire to hold out a helpful hand. I have been told that medicines have been sent out by the ton, that the native will not take; and it is well known as in the case above cited that medicines alone are not always the cure for human ills, but that the sympathetic touch and the understanding mind are equally potent in relieving either sickness or distress.*

So far as I could ascertain, Mokuyi-Kinasi gave nothing more curative in the case just given than cupping, catnip, and boneset tea. The familiar surroundings, the personal influence of those in whom confidence was reposed, wrought what "the dead house" and the nurse, whose personality was "bad medicine" even to the less acute Caucasian, could not supply and were deadly when brought in contact with the intuitive Indian who read at a glance impending doom.

I once knew the son of a celebrated medicine-man of the Plains Indians who was especially intelligent and had fallen into the life of the white man to an unusual degree. Knowing that I was a medicine-man he often spoke to me of his father and the wonderful cures he was able to make. He was almost voluble for an Indian and he was asked to find out from his father the secret of his success, especially in treating pneumonia, the Indian having the reputation for many miles around of never having lost a case. After many attempts the son had little by little obtained from his father the jealously guarded secret. It was that he relied but little on internal medicines, but that his talisman, valued above all price, was a

* This paragraph was written before the passage of the Wheeler-Howell Act of 1934 which has for its purpose the complete restoration of Indian tribal rights. It is part of the "New Deal" enunciated by The Honorable John Collier, Commissioner of Indian Affairs, that the Indian be given full voice in matters that concern him. As far as practically possible Indian administration will proceed in accordance with Indian custom, tradition and viewpoint.

buffalo horn leveled at the base to fit the chest, with the point sawed off to allow a small opening. With this the medicine-man had by long practice strengthened his suction muscles of the mouth to the extent that he could cause a vacuum sufficiently strong to cause serum, blood, and "all the corruption in the chest" to collect in the hollow horn, and he continued, "the patient gets well." It seemed so simple that the variable grades of mentality and credulity of the inhabitant of the plains could grasp it without effort.

The father was much grieved that his most gifted son chose not to inherit the precious heirloom which since the disappearance of the buffalo had become a treasure that no other horn could replace.

The long bones of various animals are often used as suction tubes and for forming the nozzle of syringes, the receptacle or bag of the syringe being made of the bladder of some animal. Most medicine-men acquire strength in the muscles of the mouth sufficient to eject fluid with greater force than by a syringe. This was the favorite method in most tribes of cleansing foul ulcers.

FETISHES AND MEDICAL CHARMS

A belief in charms seems to be a common endowment to the human race, and the American Indian has inherited his full share, for fetishes and taboos play an important part in his life.

In the museum at Santa Barbara there are several stones that were used as charms by the Indians of that region. The medicine-man placed them with much ceremony, sometimes with songs and dances with rattles and boom of drums, on the affected part when a cure was supposed to follow.

Most of these stones were round or oval and came from a part far removed from the place where they were used. In this as in some other things, distance lends enchantment.

Rogers* at Escondido, California, showed me an oval soapstone that was used as a "hot water bottle" by the Indians of that region. Also, a soapstone "charm" used by the medicine-man at the onset of menstruation, to insure a normal conception and deliv-

* Malcolm Rogers, Field Archaeologist to the Museum of the American Indian, Heye Foundation, New York.

ery. It was placed with appropriate incantations over the *mons veneris.*

Other charms are used in various ways as in the following by Musters:[10]

The patient, a child of about a year and a half old, was very ill with influenza. The doctor arrived, and laying the child on its back, proceeded, after patting it lightly on the head, and murmuring an incantation, to place his mouth close to the patient's chest, and shout, as far as I could understand, to exhort the evil spirit to leave the child; after this he took it up, carefully handed it to its mother, who, under his directions, smeared it all over with gypsum. This over, it was handed back to the doctor, who had been absent a minute. He then produced a hide-bag, at the bottom of which were some charms; into this he inserted the baby's head several times, muttering incantations; after this a white mare was brought up, and after being painted with red ochre hand-marks all over, was knocked on the head, cooked, and eaten. The liver, heart, and lungs were hung on a lance, at the top of which was suspended the bag containing the charms. Whatever effect these ceremonies may have had, the child recovered.

Another fetish treatment is related by Gatschet[11] in which arrows are supposed to possess magic power for the cure of the sick. He says there are two kinds of these curing implements made by the Klamath and the Modoc Indians of southwestern Oregon, and are intended to supplement each other. Those called *hanasish* are always made in pairs, while the *tchupash* are used singly. In appearance they resemble other painted and feathered arrows, but not used as killing weapons, they are not armed with tips of iron, glass, or stone. They come under the name of arrows of play, *taldshi.* "They are from two to three feet long, consist of various wood materials, and are intended only for curing or treating patients. The spirit of the medicine-tools has to call for them through the conjurer, and the conjurer then sticks them into the ground, one on each side of the sufferer's couch. The office of the arrows is to keep the person's soul there, to scare away the disease, or to pin it down and kill it, and therefore they are given the shape of a weapon. When one or more pairs of the *hanasish* are seen sticking around a

patient's bed, the public may rest assured that the conjurer has very strong hopes of restoring the person to health. When the arrows are handled in the correct manner, the patient will recover within a short time, but pulling them up before he or she is entirely well would kill the sufferer, or make him as sick as he was before.

The *tchupash* is another feathered medicine-arrow in use among the same tribes. It is commonly longer than the *hanasish*, sometimes up to three feet, cigar-shaped, tapering off at both ends, and provided with fliers. The use of a pair of *hanasish* arrows demands the simultaneous use of a *tchupash* arrow; its purpose is to improve the medical power of the conjurer by calling up other defunct animal spirits to assist him in becoming a strong doctor. Its employment prescribed a dance lasting five days and five nights. The *tchupash*, being a weapon also, catches the disease of the patient and brings it to a deep earth pit where it is fastened and destroyed. These wide medicine-pits were formerly the dwelling places of the conjurers or medicine-men.

Drugs are sometimes used by the Indian as fetishes, especially when put up in pill or tablet form.

Dr. Hrdlička tells an amusing experience he once had while on a visit to the Indians of the Southwest. There was to be a foot-race the following day between some rival Indian runners. One of them, knowing that he was a medicine-man, came and after an appropriate period of silence said, "Mebbe I run race tomorrow." After another period of silence he continued, "You give Indian medicine, he win." Wishing to be accommodating, the doctor replied, "Yes, I'll give you some medicine that will make you run fast." He had with him some harmless tablets and giving the prospective runner three, said, "Take one before you start to run, another when half through the race, and if you think you need it, take the third." The Indian was much impressed, received the white tablets and departed. Late the next day the doctor saw the Indian coming to him with as pleased expression as he was capable of showing and said, "Heap good medicine." "What! Did you win?" asked the doctor. "Yes, I won." The doctor noticed that instead of swallowing the tablets the Indian had strung them on a thread and hung them around his neck. "Yes, heap good medicine this way," said the runner—and he

could use them again; the Indian is as canny as the Scot.

Without a knowledge of human and plant physiology, however acute the perception of the Indian might be, he was greatly handicapped, and this lack of physiological knowledge turned the switch, so to speak, of his mentality into by-paths which led him to strange conclusions. It was not the active principle which the pharmaceutical chemist obtains from plants that works the process of cure, but some mysterious power which the spirits of the forests or the fields endow which works the charm. Not the alkaloid, the sulphate of quinine, that kills the plasmodium in the blood of a malaria patient, but the bitter taste, which the invading spirit of evil, the devil if you will, does not enjoy; hence he departs from the stricken victim and he recovers.

Following this mental by-path, one of the most important means of cure and of warding off all evil influences, is the possession of the medicine-bag, the medicine-shirt, the medicine-hat, and greatest of all, the medicine-pipe.

Medicine-bag.—No self-respecting North American Indian feels his equipment complete without the possession of a medicine-bag as an accessory. At least no family of distinction can well be without one. It is made from the skin of some animal, a patron of the tribe, such as the otter, beaver, or mink. The rarer the skin and the more difficult to obtain, the more greatly is it prized and the greater its potency is supposed to be. The skin is made into a bag, curiously ornamented, and in it are placed various herbs, roots, and other sacred things, especially the pollen of plants. These bags are worn attached to the clothing or otherwise fastened to its possessor, and are supposed to have great protective and mystic properties. They correspond to the talisman stone and the reverence attached to an icon, rosary, or other object which has been blessed by priest or Pope. In fact, there are many among the white race—and who among us is wholly free?—who harbor the same superstitious reverence for such objects as the Indian does for his medicine-bag. The author has known otherwise intelligent men to wear a lead or iron ring on the finger to ward off rheumatism, others to carry in their pocket a potato for the same reason.

Medicine-hat and medicine-shirt.—These are of various designs.



Coat of the Aivilik Eskimo medicine-man. (Angekok)

They are made or at least blest by a medicine-man and worn by those claiming some prerogatives to the healing art who don them on special occasions. They are not only the emblems of magic power, but are thought to confer this property to any one wearing them—just as we delight in wearing cap and gown as an emblem of learning, or seeing the clergy in surplice and stole, which in our minds lends dignity befitting an occasion.

The medicine-pipe.—The sun dance of the northwest tribes corresponds to our Christmas holidays, for aside from the initiation of the braves into the distinctive order of warriors, as we have seen, there is on another night the medicine-pipe ceremony. This can be carried out only after midnight. The *saam okuuinuns* or medicine-pipe has been wrapped up and has not seen the light of day for hundreds of years. It is very sacred and must be touched only by the medicine-man, who guards it for a year and then smokes it on this auspicious night and passes it on to his successor. This is a high office in the tribe and corresponds roughly to the keeper of the seal in some countries.

The medicine-pipe is even more potent than the medicine-shirt, the medicine-hat, or the medicine-bag, which latter is in common use.

Maternity belt.—In this appliance both the practical and the mythological are combined. It is applied on the commencement of labor pains and by tightening as the expulsion of the foetus progresses, it is thought to hasten delivery. Because of its magic properties it is used to guard against or remove any unfavorable accidents that may ensue. The belt is made of various skins according to the location of the tribe and according to the belief that some of the properties of the animal are imparted to the skin from which it is made. Thus the black-tail deer, white-tail deer, mountain lion, snake, and the antelope are most commonly selected by some of the tribes, because these animals bring forth their young without pain or delay. While the prayers of the medicine-man are supposed to be more efficacious, those of the parturient woman or her friends are thought not to be without avail. The various spirits whose visible emblems the patient wears in the maternity belt are appealed to: "We are your children. When you gave birth to

your children, it caused you no trouble. Make me like yourself, that my child, soon to be born, may come into this world easily and quickly, without pain to me."

Another prayer is: "You came into this life with ease. Do what you can for me now, that my child may come in like manner."

Again: "Help my babe soon to be born, to come as you did quickly, easily and without pain."

It requires no vivid imagination to realize that these supplications devoutly uttered with unquestioned belief in their power to relieve, had a most salutary and comforting influence during these trying experiences.

THE ANDEAN REGION

In referring to the medicine of Peru, Rivero says:[18]

Of all the means of diagnosis used by our physicians to form an opinion, they knew but one, i.e., the state of the mucous membrane of the tongue. If this presented a white or yellow appearance, they supposed the existence of gastric difficulties, and had recourse to one of their universal medicines, i.e., the root of the Huachana, a plant belonging to the Euphorbiaceae family, whose drastic and emetic effect is very similar to that of tartar emetic. Studying the medicinal herbs which are at present used among the Indians without consulting physicians, but looking to their ailments, an accurate knowledge of the pharmacy of the ancient Peruvians may be obtained, as the medicaments, with their beneficial effects, have passed from generation to generation. Thus, in this day, as in the time of the Incas, they use the Peruvian bark, the Checasoconche, the Chenchelcome, the Chillca, the Chinapaya, the Chucumpu, the Huacrahuacra, the Huarituru *(Valeriana coarctata)*, the Llamapnahui *(Negretia inflexa)*, the Maprato or Rhatany *(Krameria triandra)*, the Masca, the Matecllu, the Mohomoho, the Mulli, the Parhataquia *(Molina prostrata)*, the Panqui, the Tasta, and many other medicinal plants. They also used balsams; also a piece of the navel string of a child, which they deemed an efficacious remedy in many of the diseases of children; the skull of the *Anta* or great beast *(Tapirus americanus)*, against the *gutta rosacea*.

Among the people ruled by the Incas in what is now Loja (also written, Loxa) Ecuador, near the border of Peru, the bark of a

tree of the Rubiaceae, growing on the western mountainous regions of South America at the headwaters of the Amazon, was used in the form of a powder or decoction for fevers. No discriminating spirit of evil or even his satanic Majesty himself could endure its lasting bitter taste; hence it was for this reason, doubtless, at first employed and extolled as a sovereign means of ridding the body from certain prevalent diseases accompanied by fever. After the arrival of the Spaniards in this region, the Corregidor of Loja was taken ill with a fever, probably of malarial origin, and one of the Indian medicine-men gave him a powder or a decoction of a bark which restored him to health. Eight years later, in 1638, the Countess of Cinchon (Chinchón), the wife of the Conde de Chincón, Viceroy of Peru, was likewise taken ill with a fever. Not obtaining relief from the physicians attached to the governor's staff at Lima, the magistrate of Loja, hearing of her illness and wishing to be of service, recalled the relief he himself had obtained from the treatment of the native medicine-man and especially the pungently bitter medicine he had taken. He related his experience to the Conde, whereupon swift runners (*Chasquis*) were dispatched to Loja in the almost impassable regions of southern Ecuador in one of the valley tributaries of the Amazon where the bark was plentifully obtained. Her physician reduced it to a fine powder in an earthen mortar as the natives had done and administered it to the Countess, who was soon relieved and made a complete recovery. Realizing the value of this remedy, the governor secured a quantity of the bark, sent it to Spain with the Condesa upon her return (1640), where in honor of the Countess whom it had cured and who had brought it to Europe, it was called Cinchona (variously spelled) bark, which name it now bears. Cinchona bark is obtained from a tree (*Cinchona succirubra* Pavon) which contains a number of alkaloids or active medicinal ingredients, the principal one being quinine (so named from the province where it is obtained), which is so highly extolled and so extensively used at the present time throughout the civilized world.

Coca (*Erythroxylon Coca* Lamarck) was extensively used in Peru at the time of the Conquest and now is employed in much the same way to produce the "sweets of a mild intoxication." To obtain this

the leaves are first sprinkled with lime or some other alkaline substance, thus setting free the alkaloid cocaine. The leaves are then chewed like tobacco, but with a more soothing effect. With a small sack of meal and a handful of coca leaves the natives of the Andean mountains today perform feats of endurance which they attribute to the sustaining effect of the coca leaves. Throughout the civilized world cocaine is extracted from the leaves and extensively used for medicinal purposes. Its value as a local anaesthetic, mydriatic and general hypnotic is well known.

In this connection:

The *Amautas* also had an extensive knowledge of the use of medicinal herbs and roots. Their advances in surgery are attested by the discovery of skulls at Yucan and elsewhere on which the trepanning operation has been performed. They used infusions of several herbs as purgatives and stomachics, as well as the root of a convolvulus; other herbs were used for colds and pulmonary complaints, and salves were used, consisting of leaves and seeds of certain plants dried, pounded, and mixed with lard, some for wounds, others for rheumatism. For fevers they used several tonics, including a gentian. The Chinchona bark was certainly used locally as a febrifuge, but not, I think, universally. In the Loja (Loxa) province the bark was used, and known as *Quina-quina.* In the forests of Caravaya an infusion of the Chinchona flowers was given for ague, and called *Yara chucchu.* The name of *calisaya,* the species richest in quinine, is derived from two Quichua words: *Ccali,* strong, and *sayay,* to stand.

From time immemorial men of a tribe called Collahuaya or Charasani, from upper Peru, have collected medicinal herbs and roots, and, as itinerant doctors, have carried them all over the empire of the Incas. . . . It is an interesting fact that many of the remedies mentioned by ancient writers are still to be found in the bags of modern itinerant doctors. . . .[14]*

Guinnard in his three years in Patagonia observed some strange procedures among the natives:[15] For violent pains in the head, an application of a steeped herb, the scent of which recalls that of the black-currant leaf, is used. The effect is also said to be instantaneous.

* *The Incas of Peru* by Sir Clements R. Markham. Courtesy of E. P. Dutton & Co., Inc., and George Routledge & Sons, Ltd.

The root named Gnimegnine or Treacherous Tickler, closely resembling dog-grass, is used in treating colds or difficulty in breathing. A single strip of this root, of the size of a pin, bruised between the teeth and mixed with saliva, superexcites the functions of the respiratory organs, and at once matures the cold, leaving on the palate an acidulated taste which makes the gums rough, the tongue and throat to itch intolerably, and produces a pain in the salival glands, the action of which it increases beyond measure. As soon as the acid portion is completely absorbed, an improvement is felt throughout the body, and an agreeable freshness in the throat; the lungs seem set free and the patient breathes easily. This root is employed in different ways in different cases; it is also used for animals. For disorders of the eyes they employ only the juice.

To provoke the maturity of abscesses or boils, they apply poultices of hot animal dung. When these boils have reached their full development, they draw out the core by the aid of a doubled hair and swallow it between two mouthfuls of meat, pretending in this way to prevent relapse.

MEXICO

During the reign of Philip II of Spain, such marvelous reports concerning the medicinal and other products of Mexico were received, that the king sent Francisco Hernandez, a naturalist, to study the natural history of the country. He remained from 1570 to 1576, and published an exhaustive treatise of sixteen volumes, in which he treats of over one hundred varieties of plants used by the native doctors in treating disease and injuries. In this he was assisted by the most able native medicine-men of the country. In his report to the king on his return to Spain, he mentioned that the Aztec physicians who accompanied him in his travels throughout the country made known to him the names and properties of twelve hundred plants.

Our materia medica owes many substances to the Aztecs, including tobacco, gum-copal, liquid amber, sarsaparilla, resin of tecamaca, jalap, and huaca. But the enumeration of the medicinal plants they used, which their descendants still employ, and among which are found purgatives, emetics, blood-purifiers, sudorifics, and vermifuges, would take us too far from our subject and would not ma-

terially add to our knowledge. Let us add that these physicians prepared infusions, decoctions, plasters, ointments, and oils, and that the commonest of these medicaments were sold and still are sold in the markets.

One *Teopatli* signifies divine medicine, a remedy for all diseases. The formula of which is as follows:*

Take of scorpions, spiders, worms, small vipers, and other repugnant or venomous animals and burn them on the hearth of the temple; then mix the resulting ashes with water, soot, tobacco, and living insects *quantum sufficit.*

Having presented this to the gods they then smeared their bodies with it. Thus covered they were prepared to face all dangers, and persuaded themselves that they were invulnerable and could brave the teeth of wild beasts and the mouths of serpents. They also made an ointment of it. Its supernatural properties are still extolled and it is in use among some of the natives to this day. Truly it must have seemed to them a *multum in parvo* and in the land and at the time of the reign of the King of Myths which the Spaniards called El Dorado.

Bleeding was also in use among the Aztec physicians, who practiced it very skillfully with the aid of lancets made of obsidian. The common people bled themselves, either with agave-thorns or with porcupine-quills.

Sarsaparilla (*Smilax sp.*).—At the time of the discovery of America the natives of the islands adjoining the tropical regions of South America employed a decoction of the bark of a thorny vine growing plentifully in these parts, for various eruptions which under the uncertain diagnoses of the time were called by the Europeans under the general and indefinite term of venereal disease. This decoction was introduced into Europe by the returning Spaniards at the middle of the sixteenth century. At that time various diseases, of which syphilis is thought to be one, wrought great havoc among the people of Europe, and sarsaparilla, derived from two Spanish words, *zarza parilla,* signifying a small vine, of which the roots and bark were used, was employed. Probably no drug introduced to Europe from the American Indians has had a wider distribution and greater use than sarsaparilla. Discarded as useless and reintro-

duced again it still forms one of the ingredients of the compound syrup of sarsaparilla which after centuries of use is thought to be of no direct medicinal value.

Guaiac resin.—A resin from the wood of a tree *Guaiacum officinale* L., commonly known as lignum vitae because at one time it was thought to contain extraordinary remedial properties. The tree is a native of the islands of the Caribbean Sea and was first called to the attention of the followers of Columbus by the natives of the Island of Haiti or what was once Hispaniola (Española). It was used by the Indians for various complaints, particularly eruptions on the skin, and was introduced into Europe as early as 1508 and long enjoyed great renown in the treatment of lues, or syphilis, as well as rheumatism, gout, scrofula, and cutaneous eruptions. In the preface of Astruc's[14] monumental work published in 1754, he says: "There appears to be wanting a more effectual method of cure, in which less regard should be had to guaiacum, sarsaparilla and sudorific medicines." From this time it began to lose its popularity as a remedial agent and is now ranked among the mildly stimulating diaphoretics—*Sic transit gloria mundi.*

Thus the Spaniards obtained a knowledge of Ipecac and Copaiba. Jalap and Sarsaparilla were for centuries household remedies of the Aztecs. The native Indians have enriched the treasuries of most countries of the world with the use of tobacco; and on the Atlantic seaboard with Veratrum Viride, Gelsemium, Lobelia, Podophyllum, Senega, Spigelia, Cimicifuga, Sanguinaria, and Gaultheria; while the Indians of the Pacific coast have contributed three of the most widely used vegetable substances of the Pharmacopoeia: Eriodictyon, growing in the foot-hills of the Rocky Mountains, was used by the Indians for affections of the respiratory tract. Its worth was so appreciated by the early missionaries that they named it *Yerba santa* or holy plant. The second, the *Rhamnus Purshiana,* gathered now for the market in northern California and in the timbered regions of Oregon and Washington, was used as a laxative, and so highly was it esteemed by the Bearers of the Cross that it was christened *Cascara sagrada,* or sacred bark.

The third, Grindelia, was used by the Indians in the treatment of pulmonary troubles and by the missionaries externally in poisoning

from *Rhus toxicodendron,* and as a topical soothing application in certain inflammatory diseases of the skin.

Yerba buena, so named by the Spaniards who could not pronounce the Indian name, a species of *Micromeria,* was used as an anthelmintic, carminative, emmenagogue and febrifuge. Yerba tarbadillo, a species of *Eupatorium,* was in use as a febrifuge and stimulant. Yerba de pasmo had a famous reputation in the treatment of tetanus, spasms, and used externally for all sorts of inflammation. Yerba de Jarazo, found on the islands adjacent to the California coast, was used in pulmonary diseases, and as an external application was regarded a specific for arrow wounds.

Yerba de la vibora, *Caucalis microcarpa,* enjoyed a wonderful reputation as a cure for the bite of the rattlesnake, and until this day the native's faith in its marvelous virtues is but little abated. "Notwithstanding its vaunted anti-dotal power," wrote Dr. Cephas L. Bard,[15] "we know that many Indians succumbed to the effects of such bites. That bitten animals have recovered when treated with this plant, I can speak of authoritatively, for I have witnessed such results. I have known of animals recovering from the effects of the bite without any treatment whatsoever. Chemical analysis has extracted no active principle from this lauded plant, and it is practically inert." Then, because of some fancied resemblance to the part affected a plant was selected as a remedial agent. Such was what the Spaniards called *Escapellota,* a shrub whose roots present a resemblance to the bifurcation of the trachea and ramifications of the bronchial tubes, which was highly esteemed in the treatment of pulmonary troubles. Estafiate, *Artemisia mexicana,* was employed as a stimulant, anthelmintic, and emmenagogue. Golondrivna, *Euphorbia maculata,* in skin diseases, and as an application to remove corneal opacities and warts. Chucupate, a very bitter root, was chewed as a tonic, and was useful in flatulence, headache, and neuralgia. Poleo, *Hedeoma pulegioides,* combined with sage, was used in suppression of menses. *Eschscholtzia,* the poppy selected as the California state flower, possesses analgesic properties and was used in colic and an hypnotic extract was made from it.

Canutillo, a species of *Ephedra,* was resorted to in renal and vesical disorders, and as an injection in gonorrhoea and leucor-

rhoea; it was also used as a styptic. The root of the peony was used in menstrual disorders. A decoction of juniper berries was used in rheumatism and genito-urinary disorders. The Indian of the Pacific coast, like his brother on the Atlantic seaboard, had implicit faith in the curative properties of Sanco (*Sambucus niger*), in colds and fevers. Yerba de los Indios, *Aristolochia foetida,* was used as a stimulating application in foul ulcers. Yerbe de golpe, *Oenothera pumila,* primrose, was applied to bruises and sprains. Yerba mausa was very useful as a wash in foul ulcers, leucorrhoea, and gonorrhoea. An oil expressed from the roasted seed of the Chilicote was used to promote the growth of hair. Sulphur and asphaltum, the latter found only on the Pacific coast at that time, were also used for various diseases.

The use of ants in the treatment of disease was in great favor. By tapping an old log, the home of the red ants, they were driven out and collected in a cloth arranged for the purpose. For dysentery they were administered internally as an infusion, the insects being alive when swallowed. Externally they were applied for the same disease to the bare abdomen, and aroused to anger, so that they would bite more freely. The application, it is said, was intensely painful, but effectual. In the treatment of rheumatism, the patient was stripped to the skin, placed upon an ant hill, and confined there until he was thoroughly bitten. The soil surrounding the ant hills, mixed with water, was given internally for the cure of diarrhea and dysentery. While formic acid, the most active principle of the ant, was much extolled by the ancients as an aphrodisiac, I have yet to find the need of such a drug among the aborigines of the Americas.

Remarkable medicinal virtues were also ascribed to lice, to the cultivation of which apparently they devoted much attention. In protracted illness they prepared a cold infusion of the living vermin, procured from the healthiest resident of the ranchería or tepee, and administered it to the patient by the mouth—a rude effort to obtain the result of modern transfusion of blood. Of all therapeutic measures, on the Pacific coast, was one which was called the temescal, or sweat bath. With the advent of the zymotic diseases introduced by the Caucasian, the fatalities following the use of the sweat bath, which was invariably followed by the cold

plunge, were so great that the early padres of the church placed a ban on its use.

Snake bites, which were comparatively frequent on the Pacific slope and Rocky Mountains, were treated by excision when possible, followed by suction with the mouth. Bard[15] whose wide experience enabled him to speak with authority says: "Their occasional cures were more due to this intelligent treatment than to the famed application of the Yerba de la Vibora." Charles Kellogg told me that salt (sodium chloride) when carried in the pocket has the power of rendering the rattlesnake innocuous, which statement in my opinion should be taken also *cum grano salis*. According to Bard, the odor of *Chucupate* is very repugnant to the rattlesnake, and it was the habit of the Indian to carry a piece of the root in his medicine bag.

On the Pacific slope, as contact with the white race progressed (according to the Indian legend—not confirmed by the paleopathologist) the teeth first showed the influence of "civilization." Teeth when painful were treated by means of applications of the *flor de guisano,* or the milk of a female dog. If this did not relieve the pain, the tooth was extracted by the aid of a string made from the fibres of plants or the sinews of some animal.

NORTH AMERICA EAST OF THE ROCKY MOUNTAINS

The Indian attributed all properties of plants to some mysterious "influence" imparted to them by one of the deities whose particular duty it was to guard over and to endow them with the "property" desired. In securing this, an elaborate ritual was essential. The spirit who guarded over the plant creation was a jealous god who vouchsafed only to the initiated and observant the boon sought for, and even then not without compensation. For the Indian, even to this day, leaves a little tobacco—the sacred coin—in the hole from which he has obtained the root, or he sprinkles tobacco powder as a votive offering over the stem of the plant from which he has obtained leaves or bark for his medicine-bag. These observances have descended from a remote past and are to a certain extent the general heritage of the tribe.

The substances used by the North American Indians are derived

chiefly from the vegetable kingdom. However, in a number of cases, drugs from the animal and mineral kingdoms are added to the materia medica of certain tribes. The majority of drugs represent roots and rhizomes, and entire plants, although barks, leaves, stems, flowers, fruits, pollen, and seeds are also used. In many cases elaborate directions are carried out in the preparation of crude drugs. The inner bark of certain species is carefully freed from wood and bark in order to obtain a drug of high order, in the same manner that the pharmacognosist employs today to secure a drug containing a high percentage of active ingredient.

Experience taught the medicine-man certain facts as unerringly as could be ascertained by the best-equipped laboratory of modern times. The season of the year when plants are to be gathered to possess their best attributes was known to the Indian and strictly observed. With this are numerous other observances which are potent only because of the influence they may have on the mind and may be likened to homeopathy, often a harmless interference, while nature effects the curative process.

By chemical and biological methods we are able, today, to determine the activity of our rational vegetable drugs and through the methods of phytochemical research we are isolating the active constituents in a pure form from the empiric drugs of the Indian.

The season of the year when drugs are to be gathered to obtain the highest amount of active ingredient varies with the part of the plant used. Root drugs are gathered at the close of the growing season or before growth starts in the spring to contain the largest amount of reserve material; leaf drugs are gathered at the time the plant is in flower. This the Indian knew, and according to H. H. Smith,[16] if he wanted to save a remedy at the right time, nothing could distract his attention from that work. Smith further relates that at a state fair in Wisconsin a few years ago a tribe of Menomini Indians were in from their reservation to make an exhibition of their handicraft and native dress. All went well until one day one of the Indians in wandering from the fair-grounds discovered some prickly ash (*Zanthoxylum americanum* M.) whereupon the whole band immediately settled to the task of gathering the bark for medicine, much to the consternation of the fair authorities. When

they remonstrated, the Indians told them that it was the right time to gather this, and here it was, so what else could they do?

Some of the observations of the Indian in gathering medicines are conservative, and tend to guard against the extinction of rare species. It has been observed that several tribes of the middle west transplanted desirable plants from distant habitats to regions around their village in order to have a supply of the drug close at hand. In a monograph[16] on the ethnobotany of the Menomini Indians, Smith relates an experience he once had with a Menomini medicine-man. He was desirous of obtaining a particular root which grew a long distance away. Arriving at the place where it grew plentifully, the medicine-man was advised to gather a sufficient amount to last him some time. This the medicine-man refused to do, saying, he had already three roots at his home, and consequently he could take home one root. If he took more, the snake spirit that feasted on the root would come into his home and bite his people. As proof of this, he showed the teeth marks on the end of the root. Smith concluded by saying that it might be three or four years before the medicine-man could visit the spot again on account of the long distance, but he could not be induced to take more than one root which his ritual allowed.

There were certain mystic rites and observances which were scrupulously observed in the collection of plants, lest the virtue sought might be withheld. These rites varied with the tribe and since there were no written records, such as the Herbals the Caucasian race enjoyed, they were passed down by word of mouth from generation to generation. Naturally, in the course of time the accepted rites would deviate from the original or be added to as circumstances or originality might suggest.

The four points of the compass seem with the American Indian, as with other primitive races, to be considered of prime importance in the gathering of medicinal herbs. Thus, four leaves of a particular plant were gathered or four roots, the medicine-man facing in the four directions mentioned while chanting certain mystic words—this was a common custom in many tribes. In some rituals two extra were gathered, one for the heavens above, and one for Mother Earth.

While the actual substances used in the treatment of disease varied with the region in which the tribes dwelt, many of their medicinal practices were similar. Drugs highly prized by the medicine-men of a tribe were sold to the medicine-men of other friendly tribes, and tribes were known to travel long distances to secure plants which grew in restricted localities.

It is seldom that the Indian medicine-man reveals his "secrets" to the white race. This arises from the natural suspicion handed down from generation to succeeding generations, to their attributing supernatural powers to the substances used, and to their difficulty in expressing in a strange language names which have no exact equivalent.

Long Lance of the Blackfoot Tribe, in a personal interview with me said, "It is against Indian etiquette—as you say, not in good form—to speak much with a medicine-man. A medicine-man who speaks much is called a 'gabbler' and is not held in high repute, therefore, I would not presume to ask Wolf-Head, who is still living and the most noted medicine-man of the Sioux Indians, how he made his wonderful cures."

The natural slyness and cunning of the Indian doctors renders it very difficult to discover many of their medicines and form a thorough investigation. In many tribes more reliance is placed in charms and spells for curing disease, and even when brought within the influence of civilization the Indian when sick has refused all medicine and looked only to incantations and the jingling of bells as a panacea to his ills.

The following is from Francis La Flesche:[17]

It is only recently that I have been able, through inquiry, to find out two of the most important roots used in the healing of wounds, but how they are used is known only to the medicine-men. One of these medicines is the root of the hop vine, *Humulus lupulus* L., and the other the root of the *Physalis viscora* L.

It is not the purpose in the present work to enumerate all of the plants, barks, roots, and other substances used by the aborigines in the treatment of disease, only those of special interest or of some distinctive value which has carried them through years of time and has placed them in our official books on drugs will be listed. Those

who wish further information may consult works on ethnobotany, and particularly those of Smith,[16] Freeland,[18] Kroeber,[19] Hough,[20] and Youngken.[21]

The following drugs, selected as representative of all the tribes of North America, are arranged in alphabetical order according to their common names. The Indian uses of the drugs are listed.

ANGELICA (*Angelica atropurpurea* L.).—The rhizome and roots were used by several tribes as a remedy for stomach disorders.

ARBOR VITAE (*Thuja occidentalis* L.).—An ointment was made from the leaves soaked in bear fat and used in the treatment of rheumatism. Many tribes used the bark in the sweat treatment.

BALM OF GILEAD (*Populus Candicans* Ait.).—The resinous buds were boiled in fat to make an ointment to cure a cold in the head.

BEARBERRY (*Arctostaphylos Uva-ursi* [L.] Spreng.).—The leaves were used for smoking like tobacco. Also used as a flavor.

BETH ROOT (*Trillium* species).—The rhizome was used by the Menomini to reduce the swelling of the eye. The fresh rhizome was grated and applied as a poultice. It was combined with unicorn root. (*Aletris farinosa*) as a poultice for scrofula and glandular swellings. In some tribes the Indian women used the rhizome to promote parturition and uterine hemorrhage.

BLACKBERRY (*Rubus nigrobaccus* Bailey).—The root of this plant was used as a cure for sore eyes, as an eye wash and as a poultice by several tribes.

BLACK CHERRY (*Prunus serotina* Ehrh.).—Parts of the tree were used by several tribes as a food and astringent remedy. The bark has long been used for its tonic effect and also in dyspepsia and for consumption.

BLACK COHOSH (*Cimicifuga racemosa* L.).—The rhizome and roots of this plant was a favorite remedy of the Indians of Eastern North America for cough and rheumatism. For rheumatism it was used in combination with poke-root. (*Phytolacca decandra.*)

BLOODROOT (*Sanguinaria canadensis* L.).—The rhizome and roots were used as a skin stain and in love charms. For the latter purpose a bachelor would rub some of the root on his palm and would contrive to shake hands with the girl he desired; if successful in this, after five or six days she would be found willing to marry him.

BLUE COHOSH (*Caulophyllum thalictroides* L.) Michaux.—A decoction of the root was given for fever. It was considered the most effectual febrifuge known to the Omaha. The root of the plant was boiled to obtain a tea which was drunk for the suppression of profuse menstruation. The Blue Cohosh is indigenous in the latitude occupied by the Swampy Cree Indians, and was used by them in all female complaints.

BLUE FLAG (*Iris versicolor* L.).—The rhizome was pulverized and mixed with water, or more often with saliva and the infusion dropped into

the ear to cure earache; it was also used to medicate eye-water. A paste was made to apply to sores and bruises. Most of the tribes also employed the rhizome in stomach disorders.

BLUE VERVAIN (*Verbena hastata* L.).—The leaves were boiled by the Northern tribes to make a drink to be used as a remedy for stomach ache. It was also used in the form of an infusion as a diuretic.

BONESET (*Eupatorium perfoliatum* L.).—A decoction of this plant was used by several tribes as a powerful remedy to expel colds and fever. Because of its bitter taste, like quinine, it was supposed to be offensive to the taste of an evil spirit.

BUTTERNUT (*Juglans cinerea* L.).—The sap of the butternut was used by the Menomini in the same manner as maple sap, but with the difference that the syrup and sugar from the butternut was a standard Indian physic. The bark of the root was boiled and used as a cathartic.

CARDINAL FLOWER (*Lobelia cardinalis* L.).—The Cardinal flower was compounded with Panax and Angelica in the preparation of a love charm. The Cherokee Indians used the root as a vermifuge and in the treatment of syphilis. Other species of *Lobelia* were used by several tribes as a cure for syphilis.

CASCARA SAGRADA (*Rhamnus Purshiana* DC.).—The Indians of the northwestern states used the bark of the tree as a laxative drug.

CORN SMUT (*Ustilago maydis* Jul.).—This fungus was used for food by both Omahas and Pawnees. For this purpose the spores were gathered as soon as they appeared, while firm and white, and boiled. They were said to be very good. The Zuñi used the drug as a parturient and as a remedy for postpartum hemorrhage.

CRANESBILL (*Geranium maculatum* L.).—A decoction made from the rhizomes of this plant was employed as an astringent in diarrhoea.

CULVER'S ROOT (*Veronica virginica* L.).—The root is used as a drastic physic by the Menomini.

DANDELION (*Taraxacum officinale* Weber).—The root of the dandelion was used and considered as a strong medicine among the Meskwaki Indians. It is classed as a bitter medicine and a drink is brewed that is used for pain in the chest.

DOGBANE (*Apocynum androsaemifolium* L.).—(*Apocynum cannabinum* L.).—The root of both species was used in medicine for dropsy.

ELDERBERRY (*Sambucus canadensis* L.).—The dried berries are made into an infusion and used as a febrifuge by the Menomini.

FLOWERING DOGWOOD (*Cornus florida* L.).—The Delawares and other tribes used the bark for fever and colds.

GINSENG (*Panax quinquefolium* L.).—Ginseng was one of the constituents of Indian love charms.

GOLD THREAD (*Coptis trifolia* Salisb.).—The roots were used as an astringent mouth wash and for sore throat by the northern tribes.

GOLDEN RAGWORT (*Senecio aureus* L.).—The plant was used as an astringent remedy for hemorrhages and bruises.

GREEN HELLEBORE (*Veratrum viride* L.).—The rhizome and roots of the green hellebore were powdered between two stones by the Cree Indians, and as such taken as snuff to reduce hernia. The patient was elevated to a horizontal position. He took a good pinch of snuff, and during the violent sneezing which followed a companion standing ready at the side plunged back the rupture with his fist.

GUM PLANT (*Grindelia squarrosa* [Pursh] Dunal.).—A decoction was used by the Mexican Indians and the Indians of Southern California to cure colds. The Pawnee boiled the leaves and tops and made a wash for saddle galls and sores on horses.

JACK-IN-THE-PULPIT (*Arisaema triphyllum* [L.] Schott.).—The root of this plant is pounded up and used as a poultice for sore eyes. The full-grown corm when taken into the mouth will cause an intense prickling sensation due to the rapid formation of needle-like crystals of calcium oxalate which mechanically punctures the tissues of the mouth. Small doses of the partially dried corm are used by the white men to treat chronic bronchitis, asthma, and rheumatism. The powdered corm was used by the Pawnee Indians in the treatment of rheumatism and muscular pains.

JALAP (*Exogonium Jalapa* [Nutt. et Coxe] Baillon.).—The Mexican Indians used the tuberous roots of this plant as a drastic purgative.

JIMSON WEED (*Datura meteloides* DC.).—The California Indians made a decoction of this plant which was given to young females to stimulate them in dancing. After the root was boiled in water the liquid when cold was used to produce a stupefying effect. The Pah-Utes bruised the seeds and soaked them in water, allowed them to ferment and drank the tincture as a narcotic. All of the tribes of North America were familiar with the narcotic action of the plant. Many tribes used the seed in connection with ceremonials. Among the Aztecs of Mexico the seeds of Datura were held sacred and the spirit of the plant was invoked to expel evil spirits.

JOINT FIR (*Ephedra antisyphilitica* C. A. Mey.).—The Indians of Mexico and western United States employed the plant in the treatment of venereal diseases.

JUNIPER (*Juniperus communis* L.).—Juniper was used in three forms by the Cree Indians. The berries were stewed and eaten as a diuretic, the leaves were dried and dusted over indolent sores, and the root was infused and administered in cases of gravel. The berries and the volatile oil are used by the white man as a diuretic.

MANDRAKE (*Podophyllum peltatum* L.).—The whole plant is boiled by the Menomini and used as an insecticide. Other tribes used the rhizome as a cathartic.

MULLEN (*Verbascum thapsus* L.).—The root was used in pulmonary diseases. The leaf was gathered by several tribes and smoked as a tobacco.

NEW JERSEY TEA (*Ceanothus americanus* L.).—A tea made from the roots of this plant was used for bowel troubles by many tribes. Owing to a high content of tannin the root has been used by the white man in astringent preparations.

PARTRIDGE BERRY (*Mitchella repens* L.).—The leaves of the plant were steeped to make a tea to cure insomnia.

PASQUE FLOWER (*Pulsatilla patens* [L.] Mill.).—The leaves were crushed and applied to cause a blister, as a counter-irritant for use in rheumatism. The Indian medicine-man considered the drug a poisonous one and stated that it must be used externally as it would be dangerous and harmful if taken internally.

PEYOTE (*Lophophora Williamsii* [Lem.] Coult.).—The drug was obtained from the family Cactaceae and known under the names of mescale, pellote, and peyote. The plant grows in northern Mexico and southern Texas. The stem, like a large turnip or beet, is mostly below ground, with the flowering top projecting. This upper portion is sliced off and dried and constitutes the drug. The drug was used by the Indians of Mexico as an intoxicant, very much like the cannabis in the East. It has been used in ceremonies of worship among the Mexican Indians and they in turn imparted their knowledge of the narcotic qualities of the drug to the other tribes of southwestern United States. The Peyote religion has spread northward until now it has become a cult among many of the Plains Indians. The Peyote Church established in Oklahoma has been chartered under the name of the Native American Church. An interesting account of the ceremony connected with a Peyote meeting is given by H. W. Youngken: "The ceremony connected with a Peyote meeting is usually that of prayer, performed as an invocation for the recovery of some sick individual. It is held in an enclosure called a tipi and usually begins at night and continues until some time the following morning. As many men as can sit comfortably within this 'sanctum' participate while the women prepare the sacred food. In the center of the tipi a fire is kept burning, inclosed within a crescent-shaped mound on the top of which rests a sacred peyote. The opening prayer is delivered by the chief priest, after which four peyotes are distributed to each participant, who chews and swallows them. The sacred songs now begin to the accompaniment of the drum and rattle, each man in turn singing four songs. These continue all night, there being interims of prayer and further distributions of peyote, with a peculiar baptismal ceremony at midnight. From ten to forty peyote disks are eaten by each individual. The drug is said to first usually produce a peculiar excitement of the brain, expressing itself in a feeling of contentment and a friendly attitude toward the world in general. This feeling is soon followed by a derangement of the centers of sight in the brain, which causes, particularly when the eyes are closed, a kaleidoscopic flow of scenes of great beauty and color effect. The Indians interpret these pleasing visions as a reflection of the beauties of paradise. The effect is heightened by

the weird songs, the constant sound of the drum and rattle and the glare of the fire. The meeting closes with a feast in which the women participate with the men. Peyote is also taken in the form of decoction or tea as well as in capsules of the ground disks. An excessive dose of the drug has a tendency, often, to cause unpleasant scenes in which hideous monsters and beings of distorted shape appear. The Indians are said to interpret these visual hallucinations as denizons from the abode of evil spirits sent as a warning to them to forsake their evil ways.[22]

PLEURISY ROOT (*Asclepias tuberosa* L.).—The root was eaten raw for bronchial and pulmonary trouble. It was also chewed and put into wounds. The drug is considered by the Menomini as one of their most important drugs. A compound preparation consisting of this root, ginseng, man-in-the-ground, and sweet flag, is considered by the Menomini to represent four Indians in power. When a Menomini cuts his foot with an axe, this is the first remedy that comes to his mind.

POKE ROOT (*Phytolacca americana* L.).—The early white settlers learned the uses for Poke root from the Indians. They employed the root as an emetic and as a remedy for rheumatism. The berries were used for staining.

PRICKLY ASH (*Zanthoxylum americanum* Mill.).—The Pawnee used the fruits as a remedy for horses in case of retention of urine. The western tribes used the root-bark for colic and rheumatism. They chewed it for aching teeth. An infusion of the ripe berries was used for broncial diseases.

PRINCE'S PINE (*Chimaphila umbellata* [L.] Nutt.).—The Menomini considered the plant a valuable remedy in female troubles. It was also used as a flavor.

PUFFBALL (*Lycoperdon gemmatum* Batsch.).—The prairie mushrooms were gathered and kept for use as a styptic for wounds, especially for application to the umbilicus of newborn infants.

PUMPKIN (*Cucurbita Pepo* L.).—The Menomini Indians employed the seeds, pulverized in a mortar, to facilitate the passage of urine.

PURPLE CONE FLOWER (*Echinacea angustifolia* DC.).—The plant was universally used as an antidote for snakebite and other venomous bites and stings and poisonous conditions. Burns were treated by applying the juice of the plant. The Plains tribes used the plant as a remedy for toothache.

RASPBERRY (*Rubus occidentalis* L. and *R. Strigosus* Michx.).—The root was used in a decoction as a remedy for bowel trouble. An infusion of the leaves combined with willow bark was considered an excellent remedy for cholera infantum by the Crees.

RED CEDAR (*Juniperus virginiana* L.).—Fruits and leaves were boiled together and the decoction was used internally for coughs. In the year 1849-50 Asiatic cholera was epidemic among the Teton Dakota. Many of the people died and others scattered in a panic. Red Cloud, then a young man, tried various treatments and finally a decoction of cedar leaves. This was drunk and was also used for bathing. It was said to have provided a cure.

of scurvy to what is now known as a lack of Vitamin C in the food was again discovered in the eighteenth century by the experience of Scandinavian recognizes that it is a very powerful medicine. Four joints of the trunk are chosen, the diameter of a man's finger. These sticks are of a measured length from the point of the ulna to the point of the humerus. If these sticks are peeled downward, the resulting inner bark and rind are steeped and boiled, then thrown away. The liquid is drunk and saves the life of one threatened with serious constipation. If the sticks are peeled upward the tea would be a violent emetic.

SENECA SNAKEROOT (*Polygola Senega* L.).—The Seneca tribe employed the root in the form of a decoction as a remedy for coughs and colds, also for the bite of the rattlesnake. They employed the leaves in the treatment of sore throat.

SLIPPERY ELM (*Ulmus fulva* Michx.).—The inner bark made into a tea was used as a laxative. It was also used as a poultice to draw pus out of a wound. The fresh inner bark was chewed for cough by many tribes.

SOLOMON'S SEAL (*Polygonatum biflorum* [Walt] Ell.).—The rhizome was mixed with cedar balm (leaves and twigs) and burned as a smudge to revive one who had become unconscious.

SOUR DOCK (*Rumex crispus* L.).—The crushed leaves were bound on boils to draw out suppuration. The Omahas boiled the leaves for food as the white people do. *Rumex hymenosepalus* Torr., a southern species was used as a remedy for diarrhoea.

STAGHORN SUMAC (*Rhus typina* L.).—The inner bark of the root yields a tea which was a favorite remedy for "inward" troubles. The inner bark of the trunk was spoken of as being "puckering" or astringent. The acid flavored berries were used in combination with other herbs like the Greater St. John's Wort for consumption and pulmonary troubles.

SMOOTH SUMAC (*Rhus glabra* L.).—The fruits were boiled to make a styptic wash to stop hemorrhage in women after parturition. A decoction of the root was used to drink in case of retention of urine and when urination was painful. A yellow dye was prepared from the roots by the Omaha and Winnebago tribes.

ways, smoking, chewing dry, and as an infusion.

The lists of Indian remedies of the American continents are long; some, as in Peruvian bark from which quinine is extracted, Ipecac, Cascara, and Podophyllum, so widely used at the present time, are of undoubted value; others as Sarsaparilla and Guaiac, have been discarded and pronounced useless as rational drugs. The greater number of medicinal substances used by the aborigines have not been subjected to phytochemical tests of the laboratory or of the

the weird songs, the constant sound of the drum and rattle and the glare of the fire. The meeting closes with a feast in which the women participate.

TOBACCO (*Nicotiana quadrivalvis* Pursh.).—The tobacco plant was cultivated by the tribes along the Missouri River and eastward to the Atlantic Ocean. Several species of the plant were grown in North America. An interesting story on the origin of the tobacco plant is told in the second report of the Bureau of American Ethnology: "A boat filled with medicine-men passed near a river bank, where a loud voice had proclaimed to all the inhabitants to remain indoors; but some, disobeying, died immediately. The next day the boat was sought for and found, containing a strange being at each end, both fast asleep. A loud voice was then heard saying that the destroying of these creatures would result in a great blessing to the Indian. So they were decoyed into a neighboring council-house, where they were put to death and burned, and from their ashes rose the tobacco plant." The leaves of several indigenous species of *Nicotiana* were smoked by both South and North American Indians before the discovery of America by Columbus, as has previously appeared in the text. At present its use is general throughout the world.

VIBURNUM—MAPLE-LEAVED (*Viburnum Acerifolium* L.).—The inner bark was made into an infusion and used for cramps or colic.

VIRGINIA SNAKEROOT (*Aristolochia Serpentaria* L.).—The Cherokee Indians chewed the root and spit upon the wound to cure snake bite. A decoction of the root was taken for coughs.

WAHOO (*Euonymus atropurpurea* Jacq.).—The Winnebago squaws prepared a decoction of the inner bark for uterine trouble. The inner bark of the stem was used in the form of a decoction to bathe sore eyes.

WILD LICORICE (*Glycyrrhiza Pepidota* Pursh.).—A decoction of the root is used as a remedy for fever in children.

WHITE OAK (*Quercus alba* L.).—The root bark and inner bark of the trunk of several species of oaks were used by many tribes in the form of a decoction for diarrhoea.

WHITE PINE (*Pinus Strobus* L.).—The inner bark of young trees was used by the Menomini to treat chest pains. They also made a poultice of the [illegible] the plant. The Plains tribes used the plant as a remedy for toothache.

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of scurvy to what is now known as a lack of Vitamin C in the food was again discovered in the eighteenth century by the experience of Scandinavian and British sailors. How long the Indians had known of this life saving substance remains unknown.

WILD BERGAMOT (*Monarda fistulosa* L.).—The flowers and leaves were boiled together to make a medicine for abdominal pains. The Winnebago used it for pimples and other dermal eruptions. It was the universal remedy of the Menomini for catarrh.

WILD CHERRY (*Prunus Virginiana* L.).—Decoctions of the inner bark and berries were used by several tribes for diarrhoea.

WILD INDIGO (*Baptisin leucantha* T. and G.).—The root was boiled and used in the treatment of catarrh. The root of *B. tinctoria* is used today as an antiseptic in several antiseptic preparations.

WILD MINT (*Mentha arvensis* L.).—The plant was used as a carminative by all tribes, and by the Menomini in a preparation of catmint and peppermint as a cure for pneumonia.

WINTERGREEN (*Gaultheria procumbens* L.).—The leaf and berry were made into an infusion and used for rheumatism. Many of the tribes were acquainted with the anti-rheumatic virtues of this plant.

WITCH HAZEL (*Hamamelis virginiana* L.).—A decoction of the leaves and twigs was used as a liniment. An infusion of the bark was used for bruises, piles, and hemorrhages.

YARROW (*Achillea millefolium* L.).—An infusion of this herb was used by the Winnebago tribe to bathe swellings. For earache a wad of leaves was crushed and put into the ear. The plant was used by the Menomini tribe in the treatment of fever. The fresh tops were made into a poultice for eczema.

YELLOW DOCK (*Rumex crispus* L.).—The plant was well known to the Cree Indians and extensively used as a laxative and for poultices. The root and leaves of the Yellow Dock were used by many tribes as a medicine and as a dye.

YERBA SANTA (*Eriodictyon glutinosum* Benth.).—A decoction was used for rheumatism. For affections of the lungs the leaves were used in three ways, smoking, chewing dry, and as an infusion.

The lists of Indian remedies of the American continents are long; some, as in Peruvian bark from which quinine is extracted, Ipecac, Cascara, and Podophyllum, so widely used at the present time, are of undoubted value; others as Sarsaparilla and Guaiac, have been discarded and pronounced useless as rational drugs. The greater number of medicinal substances used by the aborigines have not been subjected to phytochemical tests of the laboratory or of the

hospital ward. These are forgotten and until their virtues, should they possess such, are again discovered they will be of more interest to the student of pharmacognosy than to the therapeutist.

At the present day, amongst the masses of the people and the uninformed there is supposed to be a wealth of knowledge among the Indians concerning the treatment of disease and "Indian vegetable pills," "Indian restorative bitters," and the host of patent medicines with the Indian prefix, are among the most saleable preparations on the market. In our large cities there are swarms of advertising quacks, self-styled Indian physicians, not one-tenth part of whom have a drop of Indian blood, and some, undoubtedly never saw a genuine "son of the forest." Many regard the meadows, hills, and forests as laboratories, from which a medicinal agent for every known disease can be obtained and that many of these panaceas are known only to our dusky brethren.

Some years ago a root belonging to the species of plants known as *Cyperus* was sent to the Smithsonian Institution for examination. It was used by the Seminole Indians of the Everglades in Florida for rattlesnake bite and for almost any severe illness; wonderful cures were cited. It was claimed that it had first been procured seventy or more years ago while the tribe occupied the territory where now Miami stands. This treasure has been handed down from father to son ever since. To test its value, an Indian for a wager of a silver dollar is said to have allowed himself to be bitten by a rattlesnake. He took some of the plant and returned to collect his reward the next day, apparently no worse for the bite. As is well known, the plant is inert as a curative agent, which was the report of the Smithsonian Institution.[28]

The pioneers of North America relied largely on these Indian remedies in the treatment of their various ills. The author remembers when a small boy being treated in this way for "earache." A green limb was cut from an ash tree and one end put into the fire. As the sap was driven to the free end by the heat it was allowed to fall drop by drop into the upturned ear, the patient lying on the side.

In spite of many of these crude methods of treatment most cases

recover, for nature is kind, which evidently gave rise to the *adsum, vis medicatrix naturae.*

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Gradually merging with the invading races of the Caucasian and the Negro.

PART FIVE

CHAPTER XVII

THE CLOSING DAY

THE knell of parting day is sounding for the American Indian. While four hundred years is not long in the life history of a race, it is sufficiently long, in a casual study such as I have given him, to obtain a fair conception of his past and to anticipate his destination. His tragic past is closed as the tide of empire westward took its way, and with this ends our theme of the aboriginal in his native state.

In the Islands of the Blest where he was first observed he is choosing the path of least resistance and is amalgamating himself with the oncoming races, both white and black. In this he is surrendering most of his personality and his mode of life, but he is preserving himself—or as much of it as can be recognized as Indian.

In Peru and adjacent countries in South America this has taken place to a less extent, although enough to prevent his complete extinction. This amalgamation, however, is particularly active in the lowlands of tropical South America, where Eros more than the Great Spirit dominates the thoughts of men. So far as I have observed the cross with the negro is productive of a lower grade than when such union takes place between the Indian and the Caucasian. In a short visit to Bahia in Brazil I was interested in visiting the medical school while the faculty was in session. It was noted that all of the professors were of Portuguese ancestry, while the janitor and others of menial occupations were African, or a mixture of the latter with the Indian. At the same time I can recall many instances of the admixture of the North American Indian with the white race in which the offspring have been of high intelligence and in literature and medicine have attained distinction. This admixture, however, takes place less frequently in the temperate zones of both North and South America and particularly is this true in the whole of North America. This is also true of certain isolated places as in the Everglades of Florida, and in recent times,

the Indian reservations. These latter may be regarded as the herding pens where the Indian is confined just previous to his extinction.

For the most part the Indian reservations when first set aside were apparently worthless lands where life could with difficulty be maintained.

In North America, particularly in the United States, schools and hospitals have been given him, with what benefit still remains to be seen. Had America never been visited by the European, we can well imagine a culture emanating from Peru, invigorated by the more forceful culture of Mexico, thence northward, might have spread over the lands now occupied by the United States and Canada. Without printing and with only the *quipus* and the picture characters of Mexico, progress at best would have been slow. To their disadvantage, too, the nomadic tribes of which many of the Indians are composed were not the stock of which the culture of the Arab, the Greek, and the Roman gave to the Old World.

Furthermore, the American Indian had not erected the safeguards to life and culture which obtained in the Old World. While history records some of the deeds of Indian warriors and statesmen, the medicine-man, the man of mystery remains obscure. His name may not appear, but his work and the skill which he possessed is slowly appearing on the printed page.

To the archeologist, the paleopathologist, and others who find pleasure in delving in the hidden past, or by contact understand and are in sympathy with the race, is given the task of revealing this outstanding though elusive character.

In the settlement of Pennsylvania by the invading hosts from Europe in the seventeenth century, more consideration of the natural rights of the native inhabitants seems to have been shown than in any other part of the continent. There was at least a show of equity backed up, it must be admitted, by the grim spectre of destruction which was not at first apparent to the more simple-minded natives. It is fitting, therefore, that here, too, a sense of fairness to the memory of the American Indian should first be shown.

Here in 1903 was unveiled an equestrian statue of "The Medicine-Man," and an opportunity was given a native Indian to

speak in behalf of the much maligned and greatly misunderstood dignitaries of his race and in the present instance it may be looked upon as a eulogy in which an Indian armed with the scholastic weapons of the dominant race will again speak for his people. In part it is as follows:

Four requisites were demanded of the one who was to deal with the mysteries enshrined in the rites and ceremonies of the tribe:

First, and most important, was the recognition of the sanctity of human life. The man who was to mediate between the people and Wa-kon-da must stand before his tribesmen and the Great Spirit with hands unstained with the blood of his fellow-man.

Second, he must be a man whose words never deviate from the path of truth, for the Great Spirit manifests the value placed upon truth, in the regular and orderly movements of the heavenly bodies and in the ever-recurring day and night, summer and winter.

Third, he must be slow to anger, for the patience of the Great Spirit is shown in his forbearance with man's waywardness.

Fourth, he must be deliberate and prudent of speech, lest by haste he should profane his trust through thoughtless utterance.

The men thus chosen were true to the sacredness of their office. They protected it from the abuse of those having an hereditary right to perform its duties. There are instances well known in my own tribe where men have refused to instruct their own sons in the sacred rites, because their character lacked some of these essential requisites, the honor and sanctity of the office was paramount to mere paternal feeling.

These were the prophets and priests, these were the men who were termed in the Indian languages as the Men of Mystery and by the Europeans as the Medicine-Men. The entire life of the Medicine-Man, both public and private, was devoted to his calling. His solitary fasts were frequent and his mind was apt to be occupied in contemplating the supernatural. His public duties were many and often onerous. His services were needed when the children were dedicated to the Great Spirit; he must conduct the installation of chiefs; when dangers threatened, he must call these leaders to the council of war; and he was the one to confer upon the warrior military honors; the appointment of officers to enforce order during the tribal buffalo hunt was his duty; and he it was who must designate the time for the planting of the maize. Apart from these tribal

rites, he officiated at ceremonials which more directly referred to the individual; as on the introduction to the cosmos of a newly born babe.

The ritual in this particular ceremony is a supplication for the safety of the child from its birth to old age. In it the life of the infant is pictured as about to travel a rugged road, stretching over four hills marking the stages of infancy, youth, manhood, and old age.

On the eighth day after birth of a child the parents, through certain prescribed forms, send for the Medicine-Man. In due time he comes, clad in his priestly garb and stands at the door of the tent wherein the child lies. Raising his right hand to the sky he calls:

Ho! Ye Sun, Moon, Stars, all ye that move in the heavens;
I bid ye hear me!
Into your midst has come a new life.
Consent ye, I implore!
Make its path smooth, that it may reach the brow of the first hill!

Ho! Ye Winds, Clouds, Rain, Mist, all ye that move in the air;
I bid ye hear me!
Into your midst has come a new life.
Consent ye, I implore!
Make its path smooth, that it may reach the brow of the second hill!

Ho! Ye Hills, Valleys, Rivers, Lakes, Trees, Grasses, all ye of the earth;
I bid ye hear me!
Into your midst has come a new life.
Consent ye, I implore!
Make its path smooth, that it may reach the brow of the third hill!

Ho! Ye Birds, great and small, that fly in the air;
Ho! Ye animals, great and small, that dwell in the forest;
Ho! Ye insects, that creep among the grasses and burrow in the ground;
I bid ye hear me!
Into your midst has come a new life.
Consent ye, I implore!
Make its path smooth, that it may reach the brow of the fourth hill!

Ho! All ye of the heavens; all ye of the air; all ye of the earth;
I bid ye all to hear me!
Into your midst has come a new life.
Consent ye, consent ye all, I implore!
Make its path smooth, then shall it travel beyond the four hills!

From this fragment of an extended rite, you may be able to catch a glimpse of the Indian's conception of the entirety of the universe.

There was another kind of Medicine-Man very different in character. He held no office of public trust, for he lacked one of the essential qualifications for such a responsibility, and that was truthfulness, he continually wandered in thought, word, and deed from the straight path of truth. He was shrewd, crafty, and devoid of scruples. The intelligent classes of the tribe held him in contempt, while the ignorant of the community feared him. His bold pretensions enabled him to carry on successfully his profession of deception upon the simple. He was a "Healer," something similar to the healer known to the civilized folk nowadays as "divine," only considerably more so. He was a keen observer of nature and human nature, and he used his acumen solely to his own advantage. Had he had book learning added to what he gleaned from experience, and lived among you, he would not fail of many followers. Or, he might have been useful in the Weather Bureau at Washington, for when he said it would rain, it did rain. These up-to-date tricksters were much in evidence in the tribes, and they never failed to impress the stranger who traveled and wrote books.

The tribal religious rites were invariably observed, either annually or at the beginning of a season. To go through the forms at any other time would be sacrilege, so the Medicine-Man who officiated on these occasions never had the opportunity to become known to the stranger, as had the sorcerer, who could go through his incantations whenever and wherever any inducements might offer. It can therefore be readily understood how his character became prominent in the literature of the white race, and how his clever inventions were believed to represent the religious beliefs of the Indians, to the serious misunderstanding of my race.

The true religious ideas of the Indian will never be fully comprehended, for already many of the rites and ceremonies that kept alive such conceptions as we have been considering are being forgotten in the changes that are rapidly taking place in the life of the present generation. The youths who might have carried on these teachings and perhaps further developed them are accommodating their lives to new conditions and taking up the avocations of the race dominant in the land.

I cannot discuss, from the standpoint of an artist, the Medicine-Man as he is here portrayed by your sculptor [see frontispiece], but,

in the serious expression, the dignified bearing, the strength of pose, I recognize the character of the true Medicine-Man—he who was the mediator between his people and the Great Spirit. The statue at once brings back vividly to my mind the scenes of my early youth, scenes that I shall never again see in their reality. This reopening of the past to me would never have been possible, had not your artist risen above the distorting influence of the prejudice one race is apt to feel toward another and been gifted with the imagination to discern the truth which underlies a strange exterior.

The representation of the Medicine-Man as a nude figure is not a mere fancy of the artist, for in many of the religious rites the priest appeared in such manner. This nudity is not without its significance, it typifies the utter helplessness of man, when his strength is contrasted with the power of the Great Spirit, whose power is symbolized by the horns upon the head of the priest. With his best intelligence and greatest skill in the use of his hands, man is powerless to bring into existence even so much as the tiniest flower, while out of the force of the will of the Mysterious One, all things in the heavens and the earth have come into existence with beauty, grandeur, and majesty.*

I do not recall elsewhere a clearer rebuttal to all the calumny against the aborigine than is here shown. Armed with the training of mind and the full possession of the speech of the now dominant race, Mr. La Flesche gives us a picture of the American medicine-man that we delight to contemplate.

Such in brief is the status of the medicine-man of the aborigines of the Western Hemisphere as we close this study.

On this decline of his race he looks with calm stoicism, knowing that the end must come, that the drum-beat will grow more and more muffled, that the joyous corn dance will no longer arouse his people, nor the buffalo hunt be more than a tradition of the tribe. That he chafes at times on the encroachment of his prerogatives by the dominant medicine-man of the white race is but human. He believes in himself and that he is directed by the Great Spirit, and a man of mystery himself, he will in time pass away and depart to

* An address, *Who Was the Medicine Man*, given at the thirty-second annual meeting of the Fairmount Park Art Association, by Francis La Flesche, Philadelphia, 1904.

that happy land beyond—that land of the Great Mystery that awaits us all.

THE INDIAN'S PRAYER

Great Spirit, high above all!
Thou who commandest the sun to rule the day
And the moon to light the countless watch-fires of the night,
Hear my prayer, I implore thee.
Look down in pity on us thy children.
In the days when our fathers ruled this land
Thou didst speak and Mother Earth and all things harkened to thy voice.
The thunder proclaimed thine anger—
And the lightning's flash was a stroke of thy hand.
When thou wert pleased the forest trees declared it;
And from above, the eagle,
And in the secret places of the earth, the beaver and the bear
All know thee and speak thy tongue—
Which our wise men understand.
But, alas! these, like thy children, have been driven away!
And now through these rocks that surround us and are all that we have left,
Speak, and give us the good things in plenty
As thou didst to our fathers long ago.
And finally at the end of the trail when the long night comes and all is dark,
Guide us to that happy hunting ground where all may be as it was—
Long ago—long ago.
Hear me I implore thee.



The closing day.

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