

The Herbal Medicine Wheel

an unpublished book *by*
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(1942–2001)

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INTRODUCTION

“I pray, O Thou Master of kindness and mercy, open my eyes that I may discover the secrets of Thy wonderful deeds and that I may know the peculiar curative powers which Thou has placed in herbs and minerals, in seeds and flowers, in roots and leaves, in wood and fruit, in wines and oils in water and in other liquids in living organisms which are in the heavens above and in the waters under the earth in simple and composite structures and that through them, I shall tell of Thy might to all generations in whom Thy greatness shall come”

The Treasure of Life Joseph Zahalon published in Venice in 1665

The Herbal Medicine Wheel is a record of the history and ideas behind humanity's use of plants. The first part is a description of the world's medicinal systems in relationship to plants. The second part concerns the ideas behind the major uses of plants. The third part is an extensive bibliography of plants arranged by botanical names. The fourth part is an ethnobotanical bibliography by country.

Pythagoreas, a mathematician and spiritual leader of the sixth century before Christ, is said to have written the first herbal, which is now lost. Three centuries later Theophrastus put together a book on the uses of plants. This was followed by the herbal of Dioscorides and the writings of Pliny around +70. There was little updating of their ideas until the herbals of John Parkinson and Nicholas Culpeper came along 1600 years later. Many herbals in existence today, continue to echo ideas that have been circulating for 2,500 years.

In the eastern world the first herbal of China was said to have been written around -3000. In actuality, the art of writing was not developed enough to convey detailed thought until about -500. The Chinese ideas that influenced medical thought may be very ancient, but the central themes began to come together around the time of Christ. The original writings deal with the philosophy of healing, and have little information on plants. The vast wealth of herbal lore was gradually added as the system spread into the hundreds of tribal units throughout India.

In order to understand plants, it was necessary to understand their relationship with each other, and proper ways of identification

and classification. Joachim Jung taught school in Hamburg, Germany, until his death in 1657. He published nothing in his lifetime, perhaps because he could have been accused of heresy. He wrote the *Doxoscopiae*, which was published in +1662 and the *Isagoge Phytoscopica* published in 1679. He described the simple, compound, opposite and alternate leaf formations. He named the flower parts: perianth, stamen and style. He discovered the nature of the composite flowers such as the dandelion. He distinguished plants by their flowers and gave two names to each plant.

The English botanist John Ray worked with Jung's ideas and gave the concept of species its first clear definition. He classified flowering plants by their petals, flowers and fruits. When Linnaeus visited England, Ray shared his new classification with him.

Linnaeus added his knowledge of the sexual nature of plants to these ideas. By working with a greater variety of plants and a better understanding of plant parts, he constructed a tree of plant relationships. In 1753 he presented the fruits of his knowledge in *Species Plantarum*. This became the textbook for classifying plants throughout the world.

A century later there was an explosion in the knowledge of plants for both medical and economic uses. Botanists traveled by ships and sought economically useful plants to enrich their countries. They now had the descriptive tools to understand the relationships between plants.

The growing power of the science of chemistry made the isolation and study of chemical components easier. Chemists isolated morphine in +1803, quinine in 1819, atropine in 1831, cocaine in 1860, pilocarpine in 1875, lobeline in 1921 and reserpine in 1931. Chemical analysis and testing on animals led to an understanding of how these drugs worked.

The discovery and use of medicinal plants reached a high point in the United States around +1880. The West was won, and explorers sent back new information on medicinal plants. Hardly a week went by without a medical journal reporting on a new plant. Doctors learned to rely on the indigenous plants, instead of the traditional European drugs.

By 1900 the situation was changing quickly. Abbot Pharmaceutical company had large ads proclaiming “pure alkaloids.” The ads stated that any doctor using herbs was old fashioned and out of touch. New operations and synthetic drugs became the trademarks of the twentieth century. In 1910 Abraham Flexner issued a report that reformed medical schools. Schools with an unorthodox curriculum were put out of business.

By 1970 things were beginning to shift towards natural medicine again. The powerful new drugs were extremely costly, and often less effective than medical advertisers claimed. There were disturbing side effects, which could not be ignored. A new awareness was growing that medicine had become artificial and impersonal. With the change in consciousness that was labeled “New Age,” we began to look at “Old Age” knowledge once again. It is my belief that the wise use of the past will provide tools for the present, and stepping-stones to the future.

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1. THE TRIBAL TRADITION

Socrates: "I mean this: when a carpenter is ill he asks the physician for a rough and ready cure; an emetic or a purge or a cautery or the knife;—these are his remedies. And if someone prescribes for him a course of dietetics, and tells him to wrap his head up and keep it warm, he replies at once that he has no time to be ill, and that he sees no good in a life that is spent in nursing his disease to the neglect of his customary employment. He therefore bids goodbye to this sort of physician, resumes his ordinary habits, and either gets well, lives and does his business, or if his constitution fails, dies and is rid of his troubles."

Glaucon: "Yes, that's the proper sort of medicine in his state of life."

The Republic book III Plato -370

In north central Wyoming there is a great medicine wheel made from stones. When the first white settlers moved into the area they were curious about the big stone wheel. Nobody knew its purpose or time of building. Scientific studies have tried to link the stone spokes to the alignments of the planets. The twenty-eight spokes probably correspond to the twenty-eight poles of the medicine lodge in the sun dance ceremony. The number reflects an approximation of the lunar days of the month. The ceremony was a thanksgiving to the creator, and a time of fasting, sweating and prayer.

There are a number of medicine wheels in Alberta, Canada. In that area tribal memory asserts that they were built as memorials for powerful chiefs or medicine men.

Long before a lost Italian on a borrowed Spanish ship blundered onto these shores, the Americas were the home of millions of people. The "Empire civilizations" were the Aztecs of the Central Valley of Mexico, the Maya of Central America and the Incas, who spread over the entire western backbone of the South American Andes.

There were about 2,000 tribes that occupied North and South America, and they lived in territories with a radius of 20 to 300 miles. We know from studies by anthropologists that each tribe had from 50 to 400 plants that were used for medicinal purposes. If only 10 of these were unique to each tribe, then some 20,000 plants must have been used as medicine. Hundreds of lists of plants for the tribes exist.

In the far north, the shaman had the medical monopoly. Because of the cold and isolation, tuberculosis and epidemic diseases were almost unknown. Many of these people did not live to an old age, for life was severe in the frozen north. When food was short, often the older people went out in the cold, for this meant survival for the next generation.

There are few plants in the area, and healing was done largely with ceremonies. The most common complaint was pain and bleeding from the lungs, because of the long hunts in the bitter cold. These people used soup of willows for pain and bleeding. Willows contain a crude form of aspirin, vitamin C and bioflavonoides. In the southern Eskimo territories, Labrador tea *Ledum palustre* was used for influenza. The puffball mushroom was used to stop bleeding.

The eastern provinces of Canada consisted of small bands of Indians with little close contact. When Jacques Cartier's men were wintering at Stadacona along the St. Lawrence Seaway in 1535-36, they cured their scurvy after Indians told them to drink a tea of the "amedda" tree. Historians have debated whether this was arborvitae *Thuja occidentalis*, or hemlock needles *Tsuga canadensis*. All green plants contain vitamin C.

Other remedies recorded for Eastern Canada were sweet flag *Acorus calamus* for cholera, and chokecherry bark *Prunus virginiana* or *P. serotina* for diarrhea. Sweet fern leaves *Comptonia peregrina* leaves were rubbed on the skin for poison ivy. The bloodroot *Sanguinaria canadensis* was used for bleeding, because of its red juice.

On the northwest coast of Canada there was a lack of medical plants. This was damp rain forest country, and the one plant which became a cure-all was the "devil's club" *Oplopanax horridus*. The common name is a reminder of the long irritating thorns of this member of the ginseng family. The plant was extensively traded throughout the Northwest. Medical reports indicate that it can control diabetes, when taken as a tea. There is one record of a dying cancer patient being cured by it.

The Makah tribe along the western Washington coast used the devil's club as a good luck plant. After removing the thorns, the bark of a foot-long root was taken as a purgative during the lengthy

purification rituals. At one time the tribal gamblers used it, for it was said to enable them to see through the cedar bark bags in which the gambling sticks were hidden.

In the New England area, there are about eight major tribal groupings of Algonquin Indians. The early English settlers found them to be trusting and trustworthy. They were superstitious, but probably no more so than many English country folk. The settlers spoke of them as strong, brave, healthy, and long-lived.

These Indians did have problems with malaria, parasites and ear-aches. They also had eye problems due to the smoke in poorly ventilated lodges. Each community had herb doctors that were able to take care of most simple problems. They generally used a single herb for a single problem.

The only remedies the settlers had were those imported from England. They were quick to adopt sassafras, boneset, dogwood, lobelia and may apple from the Indians. Most of these plants were not strongly curative of the medical problems—but they were as active as any English medicines.

During the years 1612-19 smallpox and yellow fever swept over New England from the ships of the explorers. More than nine out of ten Indians were believed to have been killed by these diseases, and the once powerful tribes became a handful of survivors. Governor John Winthrop wrote in 1634 about the epidemics and added: “So the Lord hath cleared our title to what we possess.”

In New England, the Iroquois nation was the predominate contact of the early settlers. They originally lived in Canada, but left their warring Adirondack neighbors and migrated into western New York. They split into five bands known as the Mohawk, Oneida, Onondaga, Cayuga and Seneca. They were joined by the Tuscarora from North Carolina. From this “League of six nations” came several ideas which were written into the U.S. Constitution.

Their medicine men seemed to be especially skillful in removing bone and bullet fragments from wounds. The wounds were cleansed with the juice of corn stalks and a poultice of boiled corn tassels. Cedar bark leg splints were applied to broken bones. An area was left open over the site of the injury to apply herbal salves.

John Lawson published *History of North Carolina* in 1714. “We had a planter in Carolina who got an ulcer in his leg which had troubled him a great many years; at last he applied himself to one of these Indian conjurers, who was a Pamticough Indian. Now, I am not positive whether he washed the ulcer with anything before he used what I am now going to speak of. This was nothing more than the rotten bloated grains of Indian corn beaten to a powder, and the soft down growing on a turkey’s rump. This dried up the ulcer immediately.”

John Wesley did missionary work in Georgia in the 1730’s. He remarked: “If any are sick, or bit by a serpent or torn by a wild beast, the fathers immediately tell their children what remedy to apply. And it is rare that the patient suffers long; those medicines being quick, as well as generally infallible.”

The French historian Page du Pratz told the story of a French trader who lived among the Natchez. He had crippling pain in his thigh which western doctors couldn’t correct. A Natchez medicine man cured it in eight days with a poultice. The trader developed an eye infection and was advised to have it cauterized, which is exceedingly painful. Instead he went to a Natchez doctor who cured his eye quickly.

The Osage Indians had the legend that their most powerful herb “man medicine” *Cucurbita foetidissima* = *C. perennis* was revealed to them by a talking buffalo. They used it for nearly everything. It was believed to give people the power to reach old age.

The largest band of friendly Indians to the south were the Cherokees. They believed that Esaugetush Emissie, the “Master of Breath” had sent good medicines, but Anisgina, the bad spirit, caused disease and death. According to their legends, animals and humans were once brothers. Then Anisgina invented weapons and people used them against animals. As a result the great white bear called a council of the animals. Since animals couldn’t make weapons, each animal sent a disease to humanity.

Ginseng called the plants together, and each offered a remedy for a disease. The first medicine man was told all the remedies, but if he forgot, all he had to do was walk in the woods and the appropri-

ate plant would nod. Because ginseng was the first plant that offered itself, it was also the greatest. The medicine man would always bypass the first three ginseng plants, and then leave red or white beads when he dug up the fourth.

There are two remaining native American Indian medicine books. In 1914 the *Ritual of the Bacabs* was found in the Yucatan. This book is about the healing rites and herbs of the Mayas. Most of the herbs cannot be identified. The Bacabs are healing deities. The book speaks of the evil winds, which cause the disease such as the “tancas-ki” —the seizure wind, and “coc-ki” —the asthma wind. The Mayas had a supreme God called Hunab Ku, of whom there was no image.

The Cherokee were the only North American Indians to leave a written herbal. It is called the *Swimmer Manuscript* after the name of the medicine man who put his formulas into the Cherokee language. Herbal medicine is only a minor part of the book; most of it is composed of chants, songs and magic.

The favorite medicines of the Cherokee were the calamus *Acorus calamus* and goldenseal *Hydrastis canadensis*. Calamus was used for colds, colic, heartburn, fevers and indigestion. The smell of it was said to ease tension and calm nerves. Some other common remedies were rosin weed *Silphium laciniatum*, senna *Senna marilandica* and slippery elm bark *Ulmus rubra*. St. John's wort *Hypericum frondosum* was chewed for diarrhea. Since it produces a dark red color when chewed, this juice was used to paint the stick balls used in games.

In 1798 Benjamin Barton wrote about the use of goldenseal by the Cherokees and it passed into the medicine of the settlers. Berberine is the yellow coloring matter, and medical science has found it a strong antibiotic. Captain Meriwether Lewis, of the Lewis and Clark expedition, mentioned that it was used for eye infections.

Although there were dozens of food plants, the major food of the North American Indians was corn *Zea Mays*. Corn by itself is an unbalanced food, because it contains very little of the amino acid lysine. In the Northwest no cereal grains were available. Camas bulbs *Camassia quamash* furnished the principal foods. In the dry country of California, the main Indian food was acorns, soaked in water to leach out the bitter tannins.

None of the native people used alcoholic drinks on a regular basis. The Apache prepared a yeast beer from corn soaked in water called “tulapi” or “tizwin.” The Pima Indians made a beverage from the pear cactus fruits known as “navait.” Their neighbors, the Maricopa, made a wine from the giant saguaro cactus flowers. This was never done on a regular basis and the beverages had to be drunk quickly, or they would turn into vinegar due to the lack of packaging to exclude air.

A number of herbs were used to give courage or protection. Some of these may have blocked the adrenaline flow, and consequently the fear reaction. The Seminole people chewed the top of “spirit weed” *Lachnanthes caroliniana* to give them boldness and fearlessness of speech. The Cheyenne made a strong gray medicine from *Anaphalis margaritacea*. The fruits were chewed and rubbed over the body to give strength, energy and protection against danger in battle. Panamint Indian medicine men drank of tea of *Thamnosma montana*, so they would become crazy like coyotes.

Most of the cultures south of the Mexican border used some form of psychoactive drugs in diagnosis and treatment. The Maztec Indians of Mexico used the diviner’s sage *Salvia divinorum* for curing and divination. This curious mint does not grow in the wild. The sick person or the shaman eats from 20 to 80 crushed leaves. During the visions that result, you are supposed to see inside the body, to see the origin of the illness. The herb gave them the visionary experience of seeing the tree of heaven with all of the healing herbs around it.

The Cheyenne people of Wyoming called the shrubby cinquefoil *Pentaphylloides floribunda* “contrary medicine.” They had a contrary or protective dance in which the powdered dry leaves were rubbed over the hands to protect them from injury when they were thrust into a kettle of boiling soup! The Omaha medicine men applied the macerated roots of the purple coneflowers *Echinacea angustifolia* to their hands. This is a local anesthetic, and they could briefly put their hands into boiling water.

In 1885 *Echinacea* came to the attention of the medical profession as the chief ingredient of “Meyer’s Blood Purifier.” It soon gained a reputation as the remedy to use for blood poisoning, gangrene, infections, rabies, smallpox and snake bites.

In 1920 echinacea was given a thorough scientific investigation. It was given orally or by injection of animals before they were exposed to disease. Alcohol and water solutions of the herb were used, and it was given immediately or days before the animals was exposed. It did not protect guinea pigs against snakebite, tuberculosis, anthrax or blood poisoning. Humans could react differently, but it appears that the herb is less valuable than most people believe. It is now known that the herb does stimulate the immune system and the synthesis of cartilage.

The Creek Indians of Florida were the originators of the celebrated black drink *Ilex vomitoria*. Before a meeting of the tribal council the leaders drank a tea from seashells. If any of the men vomited they were considered unfit for military duty. The only thing the war parties carried was gourds full of black drink. It was believed to help them go days without food.

The Hopi of the dry Southwest have more information written on their ceremonies and prophecies than any other American Indian tribe. The people are famous for their ability to grow corn and vegetables on very arid desert land. They use 100 out of the 275 plants in their area for food and medicine.

Edmund Nequetewa was a Hopi doctor who knew the traditions and could express himself in English. Before he died in 1969 his knowledge was studied. His favorite herb was a tea of geranium roots *Geranium caespitosum* var. *fremontii*. He used it for sores, diarrhea and stomach conditions. He believed it would cure cataracts and he put it into eyes with an eyedropper. He administered the sand sage *Artemisia filifolia* for constipation and the common sagebrush for stomach gas. He once used *Penstemon eatonii* to shrink a tumor on a Navaho woman. When she refused to pay him, he stopped treating her. The tumor returned and killed the woman.

Several Indian plants deserve special consideration. During the great flu epidemic of 1918 both young and old died. The newspapers of Québec had stories describing the curing power of “poglus” *Heraclium maximum*. The Huron tribe used a tea of the roots to prevent the flu, and to cure it if necessary.

There are several studies of native medicine in the area of Seattle. The lowest class of healers used herbs, although they claimed to receive their inspiration for the use of the herb from their guardian spirit. When the Indian boys were about ten years old, they were sent into the woods to find a guardian spirit (tamanamus). After days of sweating, fasting and praying, a guardian spirit appeared to them and they returned to the tribe. If the spirit was an eagle, you wore eagle feathers and claws. If it was a deer, you wore hooves and antlers with your dress.

The Snohomish people claimed to have only three diseases before the appearance of the settlers. The meaning of these names is very general, but they were broadly categorized into English as carbuncles, neuralgia, and tumors. The main cause of disease was bad spirits. To cure the problem, you had to drive out the spirit. This could be done by beating up the person, so the spirit would want to leave, or shouting and drumming loudly, to frighten away the spirit.

Other causes of diseases were power projection known as shooting the "tamanamus." A mysterious being called the "swaht-I-uck-tid" took men's souls away from them. Then the medicine man tried to coax the soul back with dances and songs.

A wide variety of herbs, animal parts and insects were used as remedies. Diarrhea was treated with blackberry roots, Oregon grape root tea and by chewing the leaves and flowers of Indian arrow wood *Holodiscus discolor*.

There was a strong belief in cleansing the body by taking vomiting herbs and laxatives. Whole tribes overdosed on devil's club to vomit and purge. The wild cucumber *Marah oreganus* was also used as a purge. These herbs were used as first aid, when people accidentally consumed the death camas plant *Zigadenus venenosus* instead of the edible camas.

Pyrola elliptica, pounded to a pulp, was applied for rheumatism. Arthritics were thrashed with stinging nettles to cause inflammation and cure their problem. Arthritis was also treated with moxibustion, much like the Chinese and Japanese healers. The skin was dampened with saliva and a cone of dry spruce bark was burned over it.

The most common wound treatments were made of deer oil and bear grease. Many Indians chewed the tips of crab apple branches and spit those on the wound. The mashed leaves of skunk cabbage were applied to sores, bruises and fractures.

Nearly every Indian tribe used *Acorus calamus* root in the areas where it grew. The Sioux called it muskrat root, and claimed that if chewed regularly, it would cure diabetes. Many of the early settlers used it to cure their babies of colic.

Many of us moderns feel that primitive medicine must be based on natural wisdom, but often this was far from the truth. Maximilian Bartels wrote a book on natural tribal medicine. “Among the Karoks of California there are two kinds of Shamans —the root doctors and the barking doctors. The latter (women mostly) squat like a dog before the patient and bark for hours. The root doctor with potions, poultices, etc., medicates the parts where the ailment is discovered. They believe that witches cause a snake, frog, lizard, or other reptile to fasten to the body and grow through the skin into the viscera. The barking doctor first discovers the seat of the disease and then sucks until the blood flows. She then takes an emetic and vomits up a frog, which she pretends came from the patient.”

In earlier years, it was no easy matter to be a medicine man. If you lost a number of patients, you might have your eyes put out or your skull crushed with rocks. The Sevice Tribe of Arizona had a tradition that the “doctor” had to specify in advance the number of days the patient would be cured. If he failed three times, he was executed. One chief, who became a medicine man around 1860, wasn’t very good at predicting the healing time. He announced that he was bullet proof, provided that he was allowed to put his magic on the bullets. He split the bullets in half and put a piece of paper between them. When the gun fired the halves separated and went around him. He got away with the trickery, but lost his influence when the secret was discovered.

A medicine man had to be a psychic healer or at least a good showman. Many early travelers witnessed the act of sucking on the injury. Several psychic healers were said to be able to remove fishbones stuck in the throat and heal others by sucking out the illness.

In 1867 the Cheyenne and Sioux met at Rosebud, South Dakota. White Bull, a Cheyenne medicine man, was completely tied up with ropes and bowstrings by men who swore that he would never get loose. Then he was placed in a pit in a sitting position. A huge rock was tumbled end over end to seal the pit and four large rocks were placed on top. A lodge of skins was draped over the fortress.

A large crowd watched as a woman called to everyone to sing a medicine song to aid White Bull. A voice beside her asked who was in danger. When she turned to answer, she realized that it was White Bull. The crowd entered the lodge and found that the great rock was pushed aside and the rope and bowstrings were still in the pit.

The Pawnees had a medicine man who planted a kernel of corn, watered it and joined the watching crowd. The corn emerged, matured and produced another ear of corn before their eyes. Several generations before this, a young Pawnee woman would produce plums or choke cherries in the middle of winter when a branch was brought into the medicine lodge. The last person to duplicate this psychic feat was Chief Red-Fish, who died in 1928. These psychic feats are far more interesting than bending spoons or starting stalled watches. Major Frank North who was in charge of the U.S. Army's Pawnee Scouts witnessed these psychic feats.

A substantial part of psychic healing belongs to the field of the *placebo effect*. A number of studies indicate that about 34% of people with common illnesses will be cured or helped by receiving a pill with nothing in it. Belief is the basis of the cures of many tent preachers. When I was a college student in Iowa City, an evangelist wrote to the hospitals and asked the doctors to send him the cases with psychosomatic disorders. In the emotional atmosphere of revival meetings with showmanship and bell ringing, the mental block might be overcome and the person healed.

It is wonderful to think that Christ figures can wander around laying on hands and healing people. We all want miracles when we are sick, yet we don't think of a miracle as our keeping a positive mental attitude, or going on an exercise program, or eating a healthy diet. It is just as much of a miracle to be healed with herbs and diet as any religious experience. This may be what we really need, and often we

can create real miracles.

The Apache Indians had the idea of an undifferentiated supernatural power flowing through the universe. The power could come to the individual through a vision in the form of a bird, plant, animal or heavenly body. At the same time the individual received songs, prayers and dances that he could use in the healing ceremonies.

The Apache shaman cannot cure all cases, and recognized serious organic illness. In those cases he might tell the patient, "You have waited too long to call me." The shaman works by "tracing" the patient to find the problem. There is an Apache saying: "You cannot hide anything from a shaman. They know everything you have done, and every place you have been from the beginning."

The shaman arranges a special four-day healing ceremony. The snake, bear, coyote and owl are symbols of the problem, and they became part of the ceremony in an attempt to remove the evil of the disease. The medicine man will appeal to the power to find out why the patient was afflicted. Was it a taboo, witchcraft, or a lack of regard for tribal traditions and customs? Often he interrupts the ceremony to give the patients herbs.

The neighbors of the Apache, the Navaho, held great "medicine sings." The singer would collect herbs and ceremonial objects for several days. The ceremonies begin at sunset and last until 2 A.M. These would go on for about a week. The medicine man does most of the singing, but on occasion all of the participants take part.

The ceremony begins with a bowl of sage leaves, pinyon pine needles and other bitters being passed around to everyone. Sand paintings are made on the floor of the hogan. At the end of the ceremony, these paintings are removed on a blanket and spread to the winds.

Indian medicine became a victim of its own mythology. After the final wars of the 1880's, the "fighting savages" were transformed into "noble redmen," possessed with the supreme virtues of nature. Medicine peddlers saw dollar signs in selling Indian cure-alls. They used the saying: "If it's gonna work, you gotta get it from an Indian doctor."

When Buffalo Bill Cody introduced the Wild West Show, tremendous crowds of the curious came to see the "vanishing Indians."

This inspired the drug companies to set up a medicine show. The greatest of these was the “Kickapoo Indian Medicine Company,” produced by Doc Healy and Texas Charley. The show was set against a teepee encampment with war dances, ceremonies and songs. An Indian delivered an impassioned testimonial for “Sagwa” in Kickapoo, and the peddler translated it into English. Often what was said was completely contrary, and the Indians backstage would burst out laughing. The response was so good, that soon a hundred groups were touring the country, and the promoters were kept busy recruiting real Indians. In 1906 the “Pure Food and Drug Act” ended the era of the Medicine show.

In the preconquest history of **Mexico**, the first botanic garden was established by Netzahualcoyotl, the king of Texcoco. His botanic garden was divided into trees, medicinal plants, fragrant plants and dye plants. Mexico was divided into a series of tribes, and around the year +1100 the Aztecs migrated southward into the valley of Mexico. Through constant wars they conquered the entire valley of Mexico, and reduced all other tribes to paying tribute. In +1467 Motecuzhoma I established the Aztec botanic garden at Huaxtepec, and brought rare plants from all over Mexico.

The basis of the Aztec medicine system was a calendar of 20-day cycles. Each calendar day was devoted to an organ such as the liver, lungs, right eyes, etc. Aztec doctors judged problems by the time of their origin and the day sign. They might also throw 209 kernels of corn on a cloth and predict the course of the disease by the pattern. They would do little rituals and then mold a mixture of corn-dough on a guava leaf and throw it out on the nearest road. The first travelers who found it sticking to his foot was supposed to get the disease.

With the conquest of Mexico by Hernando Cortez, many secrets of Aztec medicine were lost. In 1552 the *Badianus Herbal* was written by Martin de la Cruz and translated into Latin by Juan Badiano. It was sent to King Charles I of Spain in hopes of obtaining support for a Franciscan boy’s training school. There was opposition because the other religious orders felt that the Franciscans were too sympathetic to the Indian ways.

Another source of Mexican herbal tradition was the works of Friar Bernardino de Sahagan (1629) who wrote about aspects of the ancient Aztec culture. Philip Hernandez, the physician of King Philip II spent six years in Mexico gathering material for his *Natural History of New Spain*. The complete work described over 1,200 plants, but it was lost in a fire. A rough draft of the notes for the book was edited and published.

Two Mexican plants became known throughout the world. The seeds of *Theobroma cacao* gave us chocolate and cocoa. When Cortez returned to Spain after the Conquest, he told how Montezuma was served this drink in golden goblets. Vanilla *Vanilla planifolia* comes from an orchid with pods that look like pole beans. The beans are cured to produce the flavor of vanilla.

There are many Mexican plants that might have a wider use in medicine. The seeds of the white sapote *Casimiroa edulis* are known to lower blood pressure and produce sleep. The fruit is generally too bitter, but by selecting better tasting varieties, farmers can grow it. The bark of the tree attracts cockroaches, who eat it and die. It is grown as an ornamental in California and Florida.

Mexican herb vendors sell *Nama stenocarpum* to people with stomach gas, so “the balloon on the inside goes down.” “*Salvia de bolita*” is the Spanish name of *Buddleja microphylla*. It inhibits nasal secretions, sweating and running noses. It acts like the antihistamine preparations on the market.

It is ironic that a handful of **South American** plants are the best known medical plants of the world, but most have not been investigated. In North America, a square mile of forest might have six species of trees, but in the Amazon, the same area would have up to 300 species. In 1630 Francisco Lopez de Canizares learned of the use of quinine bark to cure malaria. Despite large amounts of research on synthetic drugs, quinine is still the best remedy. Ipecac *Cephaelis ipecacuanha* was once used to treat amebic dysentery. It is sold in drug stores primarily to induce vomiting.

England has only 1,500 native plants, New Zealand has 2,000 plants, but a small country like Costa Rica has 8,000 plants. The entire area of North America has about 22,000 plants. A country

like Columbia on the northern part of the Amazon basin has 25,000 plants. The entire Amazon basin has well over 60,000 plants.

There are several secrets that the witch doctors of the Amazon possess. They apply an herb to the roots of a decayed tooth, and a day later the tooth loosens and falls out. William LaVarre was traveling in Dutch Guiana among the Djuka people. A medicine man was stirring a pot into which purple roots, lumps of whitish gum and dried leaves were added. A boy with badly bent legs then placed his legs into the hot solution. Then he was put on a table and his legs were straightened out by hand.

The secrets are being lost at a rapid rate. Many of the tribes are dying out because the natives have no resistance to Western diseases. When the tribes convert to Christianity, they often adopt missionary medicine and discard all of their previous medical knowledge.

Africa contains another vast herbal tradition. It is mixed with incantations and witchcraft, which makes it difficult to sort out the valuable plants. Many plants are associated with magic and are used to drive the spirits out. The “I’ll-fix-you-root” is used for revenge. Many herbs are known to be dangerous, especially those from the *Senecio*, *Heliotropium*, *Cynoglossum* and *Trichodesma* genera. One of the problems in African countries has been to stop people from using dangerous herbal medicines.

Many African medicines are based on magic. A tall man is treated with a tall plant or tree. Someone who lives far from a village will use an isolated plant. An unkind person would be treated with a bitter plant and a hairy man will be treated with a hairy plant.

The herbalists of Nigeria pass on their traditions, but they believe in the “mirror world,” in which their ancestors appear to them during sleep. When they have difficult cases, their ancestors show them the right plants in dreams. The Nigerian newspapers reported a case in which a man consulted many Western specialists. He was sent home to die, but as a last resort he consulted an herbalist. Ezenduka gave him herbs, which he obtained from the “mirror world,” and the man was cured. The entire tribal tradition contains numerous stories of magic, mystery and possible usefulness.

In the visions of the Sioux medicine man Black Elk several mystery herbs are mentioned. He encountered the grandfathers of the six directions —this included the earth and the sky. Two of the grandfathers represented herbs. The grandfather of the wintery north where the white giant lives, gave him an herb of power that fattens a sick and starving horse.

The grandfather of the earth, slowly became a boy with Black Elk's face. The troubled future of his people was represented as a broken hoop, and a dying holy tree. The hope of the vision was: "From the same good spirit [his people] must find another strength. It will be the herb of understanding that bears four blossoms on a single stem —blue, white, red and yellow, the colors of the four directions."

Many ethnic groups in **India** have their own tribal systems apart from the main medical systems. Peter Hembron gathered the tribal systems into a codified system known as "Adivasi Ausahd" meaning "Tribal Medicine." He called the system "Horopathy."

The ethnobotany of the tribal tradition may reveal new forms of healing which could benefit modern day illness. We have hardly done a serious look at the medicinal plants used by the tribal peoples. The strength of the healing rituals went beyond herbs; it used psychotherapy in a way which individuals felt related to them.

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