

Africa

Travels and Adventures through the Amazing World of Medicinal Plants

Kenya



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The Savannas of Africa are the birthplace of Man. My first encounter with true 'Wild Qi' and true wilderness was on those very Savannas. As a young man, a web of intrigue and unforeseen circumstances led me off my itinerary, to live unexpectedly with the Maasai tribe. Living on such a savanna, with the native peoples within the beauty and wonder of the wilderness, marked my soul for the rest of my life. It became the birthplace of my interest in nature, growing within me and slowly blooming over the years that followed.

In the mid seventies, a friend who had left England to work in Nairobi, Kenya, had left me with an 'open invitation' to join him for a vacation. I was nineteen years old. I saved money and accrued vacation time, and a year later I joined him in Nairobi for a 5-week vacation.

The very first night, my friend Paul and his girlfriend took me out to celebrate my arrival.

We visited a local nightclub; both my friend and his girlfriend were laughing knowingly together as we entered. This was unlike any nightclub I had been to in England: the ratio was 70% women 30% men! I was captivated, of course, by all the pretty faces and

brilliant smiles coming my way from so many women. My friend continued to smirk, but I was flattered; who would have thought I'd be this popular? Nevertheless, throughout a few disappointing encounters, which were much to the enjoyment of my two hosts, the women were either looking for drinks, cigarettes or gifts. Naïve as I was, I began to wonder whether maybe I was not as popular as I had thought, when I finally I met a woman about my own age who made no such gentle demands.

As we began talking, she revealed that she was Kenyan and was visiting home from her studies in Japan, and we spoke a little Japanese together, as I had just started to study for my future Japan trip. At some point during the night, she told me a sad story about her father. Only 11 years after Kenya had declared its independence, the fragile Republic was still warring internally and had made itself into a one-party-system. Her father, a well-known and wealthy landowner, had begun his own aggressive 'non-government-approved' land-sharing campaign, and this coupled with his leftist political views had put the government in a very dangerous position. This was in a different time, a time of the 'cold war', and Tanzania had a Maoist communist government on its southern border. Kenya was in a precarious position holding its tribal alliances together. Her father was murdered, and members of the government, police and military were suspected. The students had rioted. In this volatile environment and fearing for her safety, her family had sent her to study far away until the political atmosphere had cooled down.

We had fun that night and when it came time to leave, she passed me her phone numbers; by all accounts, I had to call a few people to get to her. When I returned to my hosts and told them this lady's name, they fell about laughing, saying what I had realized the open-joke was, that most were subtle 'ladies-of-the-night' in this club and that everyone of them might tell me the same famous story. As they were snorting their laughter, I realized they clearly did not believe me. I tried to convince them but to no avail. We went to my friend's home to sleep.

In the dead of the night, my friends awoke me frantically. "Do you know who that was at the club? Why didn't you tell us? We have just had a call from a friend in the secret Police, they had followed her, and we were all seen together. Do you realize the position

this puts **my girlfriend's** family in? You must never see her again promise us right now! If their two families are connected like this, it could be very bad.”

I was in shock. As if the experience of flying ‘Sudan Air’ to get there wasn’t harrowing enough, this shock put me over the top. I was only in Nairobi for less than one night and here I was in my pajamas burning this woman’s telephone number, like I was in a James Bond **movie!**

After a few days of sightseeing, there was another phone call. **My friend** had been alerted that we were now all being followed by the secret police, “just in case.” Paul thought it best, that I leave town for a while to avoid any chance encounters. Where did I want to go? he wanted to know. I had read about the Maasai tribe and how they were considered the ‘Samurai of Africa’; their courage and culture had made them one of the few tribes ever to have repelled the slave traders. They were reported to live traditionally and refused to pollute their way of life with Western materials. They lived with only one modern **convenience**; high quality Sheffield steel knives. They sounded like a great people and their land a great place to go. Anyway, curiously enough, over the next few days invitations started to come my way, the oddest one was from a member of the Kenyan Parliament (M.P.) a friend of **my friend's** family who had “just happened to pass by” and was “by chance” going to the Maasai lands the next day in his **air-conditioned** Range Rover and did I want to join him?

I then met a friend, David, who was educated at a private boarding school. David was a tall lanky 20 year old, with a bright soft smile, who exuded a gentle yet strong confidence. His father was a **well-known** veterinarian; he was traveling back to meet his family the next day. I would stay with them in a village near the Tanzania border. I **did not** have to be asked twice. We left with at dawn, the next morning. Chance had thrown me out to some of the most spectacular scenery I have ever seen, in one of the wildest places on the face of the Earth.

Kenya rises from a low coastal plain on the Indian Ocean to a series of mountain ridges and plateaus, which stand above 3,000 meters (9,000 ft.) in the center of the country. The Rift Valley, (also known as the "Cradle of Mankind,) bisects the country above

Nairobi, opening up to a broad arid plain in the north. Mountain plains cover the south before descending to the shores of Lake Victoria in the west. We hitch-hiked through the Great Rift Valley to the famous game reserve of Kenya, the Maasai Mara National Reserve. Its grass-covered smooth hills, separated by the chocolate Mara river waters with frolicking hippos, held much rich faunal diversity.

This was the African landscape right out of movies like *Out of Africa*. The reserve is located west of the Rift Valley and is a natural extension of the Serengeti plains in Tanzania. The Mara River, the reserve's backbone, traverses north to south heading for its westbound



way to **Lake Victoria**, through the Tanzanian park. The area is teeming with wild animals. Game includes elephant, black rhino, buffalo, plains zebra, hartebeest and the big cats leopards, lions hyenas; the rivers are home to hippo and crocodiles. The Mara River forms the natural barrier, which is crossed every year by large herds of migrating wildebeests and zebras that march across. A massive movement of animals that recognizes no man-made borders, more than one million wildebeests and some 200,000 zebras move in the eternal quest for better pastures. They find their way along the crocodile-crowded river. When the herds ford the stream, many animals die flattened or drowned and leave their bones littering the Mara riverbanks.

After hitchhiking many miles and walks of many miles we arrived in the heart of the Maasai lands. The Maasai are one of the best-known African tribes due to their warrior caste and effective organization. A proud people, they are tall and elegant with muscular features and a fierce, brave, and stubborn reputation. They have a distinctive appearance, with ochre-covered warriors proudly holding their spear and wearing their



bright blood-red shoulder cloaks. The women wear bangles and strings of colored beads around their necks; both men and women wear earrings stretching large holes in their ear lobes. The men sometimes cover their braided hair with a fatty ochre paste, while the women generally have shaven heads. David's family lived in an *Enkang*, a small village, encircled by a round

'fence' of sharp thorn bushes; this protects the tribe and their cattle, especially at night, from rival tribes and other animal predators. The *Enkang* may contain 10-20 families in squat huts made from branches pasted with fresh cow-dung, which bakes hard under the hot sun. Maasai huts are **small**, with perhaps two 'rooms'. It takes the eyes a long time to adjust from the bright sunshine, walking into very dark rooms with a small doorway. After the eyes do adjust they tear from smoke: the huts have for a chimney merely a tiny hole in the roof, which lets smoke escape from the **smoldering** cow-dung fire all too slowly. These are nomadic cattle herding people and the *Enkang* used to be 'temporary,' although such a nomadic life is less feasible these days. In the past, a young would-be Maasai warrior or *Moran* could be expected to prove his manhood by killing a lion armed with nothing more than a spear. I met many young boys who had participated in such a ceremony, where first prize goes to the first boy to touch the tail of the lion, the second to he who draws 'first blood,' and the third prize to him who makes the kill! While I was there I was instructed strictly to follow David's orders at all times as it is a dangerous place. These words were still ringing in my ears, as we stopped off at a store for a drink to wash away the dust from our mouths in the small town of Narok.. (Hitchhiking often means eating the dust of those who would not stop.) The dusty bar was a very foreboding place, straight out of an *Indiana Jones* film. We sat at the bar, which was covered from counter to ceiling with wire mesh, with a hole through which you pass the money and the bartender passes the beer. It was very hot and the bar was very crowded at dusk in this small, dust covered cattle town. Cattle traders, endangered-animal poachers, and ivory poachers all mingling together. There were some very rough-looking characters hanging around at the bar, with some very rough-looking scars, no doubt from spears or pangas -- the short sword everyone carried in the bush. Every now and then I could glimpse gleam of a pangas discreetly covered. by their ochre-colored blankets. Maasai and other peoples, such as the Kikuyu and the Luo, were moving around drinking beer and listening to music. I was felt very conspicuous; most tourists passed through this town in groups. The other white men were working for aid agencies with the implied protection that brings. Paul's words of caution were ringing in my ears: "Many men go missing in the bush without a trace, recycled into nature by the animals. Remember, the Maasai will die over a point of honor, so do whatever David **telsl** you and

you'll be safe. He is part of the culture and knows how to respond; do whatever he tells you."

The bar was packed. In bar-seats, we were pushed up against the bar by the crush behind us. David told me, "Save this seat for me, do not give them up for anyone," and went off. Two very sinister-looking men opposite us immediately approached and demanded the bar stool. David told me later they were poachers with blood on their hands. I politely **declined yet** leaving no room to be pushed aside. A particularly scarred taller one of the two said, "No 'white man' you do not understand. I'm not asking, I'M TELLING YOU." The tension rippled around our corner of the bar, clearing men away from the surrounding area; they must have been vacating our corner from instinct, as words could not have been heard above the blaring music -- trouble was in the air. I sized them up and down: one was wearing a ripped tee shirt with more holes than shirt, ripped shorts, and a bulge under his ripped coat looking definitely like a concealed panga to me . Adrenalin shot into my **blood**; fear coursed through my veins. I spoke to the taller man, so dark was his skin I could only see him through the dim smoky light, by the gleam reflected off his sweat. Trying not to show the weakness that these guys were looking for, and waiting for the nor-adrenaline to hit my blood and power and embolden my defiance, I replied, "I'm sorry I CANNOT give-up my friend's seat." At this point I realized I'd have to defend myself and do what it took. This resolve kept the fear balanced against the defiance of youth. It was an interminable hair-trigger moment, waiting for the first move, weighing-up each other, searching for weakness, where you look into a man's eyes and see evil, and do not let it register weakness that you've seen it. A primal 'face off', in a primal place. Thank goodness at that very moment David arrived with the largest man I had ever seen! Relief swept over me. It seems David had already surmised that these two troublemakers would be coming at me, no matter what was said, and went to get this giant, a bouncer, to throw them out. After this showdown, a few of the locals sent over free beers for doing everyone a favor.

Living in the bush was well worth the journey and its troubles. We would walk off, exploring crisp clear mornings with the smell of the day's arid heat approaching. I was instructed that everyone carries a spear in the bush; they would not let me go hiking

without one. I thought they were being ‘over-dramatic’ until they told me about the ‘Wild Buffalo’ that would hide behind shrubs and suddenly charge without warning, killing more humans than the big cats. They then instructed that in such an eventuality I was not to run but to stand my ground, against every instinct, to be a warrior and stand there, pointing the spear towards the buffalo’s underbelly, let the animal’s own weight spear him and use his momentum to take him over you. Most young *Moran* herders out protecting cattle had killed buffalo this way. “This was no ordinary hike in the park,” I thought, as we left the village compound! It took me a few days, to cease imagining a wild animal behind every bush. We looked for wild plants that are used for cooking. These same plants now are offering us hope against our battle with heart disease and cholesterol.



The Maasai are cattle herding nomads. Cattle are the basis of the Maasai life and economy, providing food mainly in the form of milk and meat. They could also soon become known for the traditional foods and medicinal plants that supplement such high-fat staples of milk, meat and maize meal. According to Dr Johns, an Associate Director at the Centre for Indigenous People's Nutrition and Environment of McGill University who reported, “up to 66% of the calories consumed in the Maasai diet come from fat, primarily saturated fats in meat, milk and yogurt — resulting in a total daily intake of more than 2,000 milligrams of cholesterol. This is high. Yet, their mean serum cholesterol levels are in the normal to low range and cardiovascular disease is virtually nonexistent. To put this in context, North American dietitians recommend that fats provide no more than 30% of the calories in a typical Western diet. Trying to understand the soaring heart disease’s toll on industrialized societies, one possible explanation put forward is their cholesterol levels may be influenced by substances found in traditional food and plant products, such as chew sticks and gums stripped from local plants. For example, some of the chew sticks they use contain saponins, a family of natural emulsifiers. So far, the research team has identified some 25 plant products used by the Maasai. Among them are latex from the *Ficus* tree and roots and barks of various plants which are chewed to alleviate

thirst. A second plant gum, which may have serum cholesterol-lowering properties, is produced by a species related to the myrrh plant. A source of antioxidants also helps, *Acacia nilotica*, whose bark the Maasai use to flavor their meat soups and milk. They add enough wild plants to milk- and meat-based soups to make them bitter and drink herbal teas with home-brewed honey beer. Johns found that 9 of 12 common Maasai plant-derived food additives contain cholesterol-lowering phytosterols, saponins and/or phenolics.

Maasai traditional food and medicine

What is in a bitter taste? James Duke renowned botanist and Herbalist worked for the USDA and in a recent interview, 'Herbal Voices, Interview with James Duke' outlined exactly why wild plants are better for us than the 'techno plant' being modernized and designed for our taste buds. There are some remarkable qualities in those 'Bitter tasting' plants, that are available in the Maasai diet.

“Scientists have changed our foods (in industrialized nations). Take the USDA for example, they have bred out most of the cancer-preventing compounds in soy. So an average primitive soybean will prevent more cancer than a USDA soybean. This is because we Americans tend to go for bland foods and the primitive soybean has a more bitter taste, so the USDA bred out five different chemicals in soy and bragged about it. They bragged about lowering pyyate content, the bowman-burke inhibitor content, and the protease inhibitors, the very things that prevent cancer. They bragged breeding out or lowering the estrogenic isoflavones, which is what soy is getting all the press about these days. They bragged about lowering the levels of saponins and phytosterols. Yet, all these have been shown to prevent cancer....And this happens across the board. Food processors and food scientists are making our food less preventative-not only of cancer but also of cardiopathy.”

A recent study published in The Plant Journal showed the amazing antioxidant capabilities of *Myrothamnus flabellifolia*, a short woody shrub from southern Africa. This plant has learned to resist and survives droughts. It can be revived after years of drought by just adding water! It uses unique antioxidants to protect from free radicals that would otherwise destroy its cells as the plant dries up. It is another example how these

plants used medicinally would protect us from the ravages of **free radicals** in the aging, and repair processes. It may well be the type of plant used by the Maasai, in their diet to offset cardio vascular damage of so much animal protein.

According to Isaac Sindiga, an Associate Professor at Moi University, Kenya, the Maasai have used herbal medicines for millennia, and their use is deeply rooted in Maasai life.

They use herbs, bark and roots which are boiled in soup that is drunk to improve the condition of the stomach and the blood. They also use herbs derived from trees and shrubs for curing ailments such as stomach infections, throat problems, pregnancy disorders, tooth problems, eye infections, children's diseases, colds, swollen legs and painful joints. Most Maasai children learn about the medicinal value of herbs as they grow up. Teenage boys are taught about all the grasses on the range. Traditionally boys are assigned the task of looking after small stock (goats and sheep) around the homesteads. In the process, they also pick up the knowledge of herbal medicines used in the home. Girls receive their knowledge of herbal medicines from their mothers and grandmothers, with whom they spend a lot of time. For example, the herb *olkiloriti* (*Acacia nilotica*) was taken as a digestive, excitant, and to prevent hunger and even thirst. Maasai accounts show that *olkiloriti* was taken by warriors before going on raids.

It was also reputed to prevent fatigue. A survey was conducted in Narroosura, in the Narok district of Kenya, in 1992 showed 60 per cent had either used herbs collected by their families or had consulted traditional healers. Maasai still use bitter herbs in their daily food that are high in antioxidants that counteract the negative effects of animal fats. The idea that nature gives us better protection from disease based upon the variety of plants and therefore the variety of plant compounds consumed, is strong for the

Maasai offsetting **heart disease** by the variety of plants consumed as food. The iKung bushmen of the Kalahari desert also bear this out. They eat more than seventy-five different plants regularly in their diet. They manage this in one of the harshest **environments** on the planet and cancer is virtually unknown, they work less and have more time for leisure pursuits. Complex plant consumption offers us hundreds of thousands of unique chemical protectants. Americans presently eat LESS than 10 plants with many eating LESS than 5, in their diet, forgoing the protection of diverse plant chemistries. Recent research confirms Lycopene in Tomatoes lower cancer risk,

Sulphurophane in Broccoli lowers cancer risk even retarding tumor growth. Allicin in Garlic significantly lowers cholesterol, reduces the stickiness of blood, and widens blood vessels, helping to prevent heart disease and stroke. Allicin also enhances immunity, warding off bacterial and fungal infections as well as viruses. Cancerous cells are also a target Garlic helps fight cancer because it contains *saponins*, which inhibit DNA's ability to initiate replication of cancerous cells.; allicin helps deactivate carcinogenic substances.

Onions also are packed with one of the more potent flavonoids, quercetin, which can reduce inflammation and counteract bacterial and viral infection. Quercetin is also an anticancer agent. The flavors of garlic and onions make palatable the strong taste of dark leafy greens such as kale. Greens supply calcium and magnesium, both needed to maintain strong bones.

Africa's Herbal History

*"The farther backward you can look,
the farther forward you are likely to see"*

Winston Churchill

To gain a perspective on the deep history of African Herbal Medicine, we can look to ancient Egypt, where the first recorded and most famous Herbalist-Physician Imhotep lived 500 centuries ago. Hippocrates comes about halfway between Imhotep and us!



Ancient Inscription with the names of Imhotep

Imhotep was a learned man, astronomer, physician, architect (he may have been the builder of the first pyramid). In later times he became worshiped, first as a physician, and later still as the god of medicine, the forerunner of Asclepius of ancient Greece. Sir William Osler tells us that Imhotep was the "...first figure of a physician to stand out

clearly from the mists of antiquity." Imhotep diagnosed and treated over 200 diseases, including 15 diseases of the abdomen, 11 of the bladder, 10 of the rectum, 29 of the eyes, and 18 of the skin, hair, nails and tongue. Imhotep treated tuberculosis, gallstones, appendicitis, gout and arthritis. He also performed surgery and practiced some dentistry. Imhotep [also] extracted medicine from plants."

The earliest written record of African Herbalism is the 'Ebers papyrus' (1500 BC). One of the oldest surviving medical texts, it includes over 870 prescriptions and herbal formulas, 700 medical herbs covering conditions ranging from chest complaints to crocodile bite. Purchased in 1872 by the Egyptologist George Ebers, it comprises 110 pages a huge roll of more than 20 meters long, dated at 1534 B.C.E.

The Egyptians were just learning to write in 3000 B.C., but they were importing massive amounts of myrrh just a few hundred years later. They traded heavily with gold, ivory,

ebony, baboons, and dogs, yet their most valuable commodity was myrrh, *Commiphora myrrha*. Myrrh was so highly prized because it was the most effective and important anti-bacterial of the day. It was inherited later by other ancient herbal lineages in Greece, Rome, and Persia to dress



wounds. In fact, it is the most commonly mentioned wound medicine in Hippocrates' writings. Frankincense, *Boswellia carteri*, is the oleo-gum resin of a tree closely related to myrrh and has similar anti-inflammatory and antibacterial properties. These were the ancient herbal gifts to Jesus, Joseph, and Mary two thousand years ago by the magi -- the gift of life itself. Since the 1st dynasty (3150 – 2925 BC), Egyptian medical institutes called "*peri-ankh*" or "*houses of life*" existed. The most famous ones was that of 'Imhotep of Memphis' which has gained an international reputation particularly for its library till AD, There were at least four other 'houses of life' which were attached to temples at Bubastis, Edfu, Tel-el-Amarna and Kom-Ombo. Apart from being teaching centers, they were also medical libraries where papyri were written and preserved.

Commonly used herbs included senna, honey, thyme, juniper, frankincense, cumin, pomegranate root, henbane (for worms) as well as flax, pine-tar, manna, bayberry, aloe, caraway, cedar, coriander, cyperus, elderberry, fennel, garlic, wild lettuce, onion, peppermint, poppy-plant, and zizyphus. Medicine in ancient Egypt was but one aspect of an advanced civilization. It was not practiced by witch doctors, as in primitive tribes, with mixtures of magic, herbal remedy, and superstitious beliefs. This was acknowledged by Homer in the *Odyssey*: *“In Egypt, the men are more skilled in Medicine than any of humankind.”* Egyptian Herbalist-Physicians were famous and often requested by other Kingdoms. A wall painting in a Thebean grave (1400 BC) depicts Nebamun, herbalist-physician of the king, receiving a payment for his services from a Syrian prince.

The Traditional Medical Healers of Africa

It is estimated that 70 to 80% of Africans use Traditional Medical Practitioners. The traditional healers of African tribes have been using ritual in combination with herbal remedies to treat Africa’s people for generations. There are approximately 45,000 traditional healers in Zimbabwe alone, whereas the country has only 1,400 medical doctors. The traditional healers are able to reach far more people than the medical doctors are able to. It is estimated that as many as 90% of the Zimbabwean people utilize the services of the traditional healers. In Uganda, there is one healer for every 200-400 people. Conventional medical personnel are far fewer – one for every 20,000 people. The number of traditional practitioners in Tanzania was estimated to be 30,000 – 40,000 in comparison with 600 medical doctors. In Malawi, there were an estimated 17,000 TMPs and only 35 medical doctors in practice in the country. In Nigeria it is estimated that there is one TMP for every 110 Nigerians, and one Medical Doctor for every 16, 400 Nigerians. In 1990, the African Traditional Healers Association had over 220,000 members. The role of TMPs takes a holistic approach: good health, disease, success or misfortune are not seen as chance occurrences but are believed to arise from the actions of individuals and ancestral spirits according to the balance or imbalance between the individual and the social environment Their botanical knowledge of plant species and their ecology are invaluable. Throughout Africa, the



gathering of medicinal plants was traditionally restricted to TMPs or to their trainees. Knowledge of many species was limited to this group through spiritual calling, ritual, religious controls.

Pygeum *Prunus africana*

The slow-growing evergreen *Prunus africana* tree, native to Africa, now has a skyrocketing demand for it that is likely lead to the tree's extinction in the wild in 5 to 10 years. It is the classic example of a natural remedy, that is often more effective than



pharmaceuticals, that has drawn massive interest to it, through recent studies. Pygeum bark is used for prostate disorders and is being **cut down** at unprecedented rates. The market in Europe and the United States market is estimated at \$220 million per year according to the Nairobi-based International Centre for Research in Agroforestry (ICRAF). Prostate disorders, which affect most men over the age of 50, often make men more susceptible to prostate cancer.

We will lose a major natural medicine for prostate disorders unless we can sustainably harvest this tree or encourage its domesticated growth. Amazingly, it is estimated that some 65 percent of all medicinal plant species are trees. Used in traditional African medicine for centuries, the bark of *Prunus africana* contains compounds that benefit the prostate gland in men. The compounds and their mechanisms are not yet understood by science. It is so effective that it has now become the conventional treatment for enlarged prostate glands in France, where it is used in 81% of cases. In addition to reducing prostate inflammation and male infertility when due to insufficient prostate secretions, in formula with other herbs it has been beneficial for the treatment of prostate cancers.

“(The) interwoven connections of the plants and their chemistries to the life around them has begun to reveal to contemporary peoples that the plant chemistries are used

not only for the plants themselves, but are created and released to heal disease throughout the ecosystems in which they grow”

--Stephen Harrod Buhner ‘The Lost Language of Plants’

Animal Stories

The connection of humans and animals is inextricably interwoven into Gaia’s regulatory network of life as just another aspect of nature, originating from the same primal origins. Animals and humans are called to the same Gaian ‘healing resources,’ making available to us the sophisticated chemistries and energies of plants. The healing resources of the eco-system are available and calling equally to the sufferings of animals as to humans. Plant systems automatically observe when a member is struggling and ill, and the mycelial networks within the surface of the soil, transport and direct the healing chemistries toward it. When, for example, a species is under attack by insects and cannot produce enough chemistries to protect itself, healthy plants in the same system support it by passing along through the mycelial network much-needed chemical reinforcements. In one experiment, scientists deliberately cut a full circle of bark around the trunk of the tree, which should normally kill the tree. The tree survived on nutrients transported via the mycelial network from other plants in the community. The tree lived for years, while trees disconnected from the mycelial network died within a year. Animals are also able to utilize the plants’ system; we all may have seen dogs search out certain grasses when they feel unwell to help regulate the health of mucous membranes of the intestines with the grasses’ antibacterial and antimicrobial actions. It has also been observed that great apes employ over thirty species of plants for medicinal purposes. There is now even a scientific term for the study of the use of medicinal plants by animals: zoopharmacognosy.

“The idea that animals can convey meaning, and thereby offer an attentive human being illumination is a commonly held belief the world over. The view is disparaged and disputed only by modern cultures with an allegiance to science as the sole arbiter of truth. The price of this conceit, to my way of thinking is enormous.”

-Bary Lopez, ‘The Language of Animals’

Sick female chimp using *Vernonia* bush for Parasites

Dr. Michael Huffman an American Primatologist worked in Tanzania with his guide and mentor, an elder of the local 'WaTongwe' tribe who was both a skilled naturalist and a renowned herbalist. While tracking a chimp who was sick, the chimp stopped in front of a vernonia bush of the daisy family, tore off a branch, and began peeling the bark. Prior to consuming the plant sap, the chimp was suffering from constipation, malaise, and lack of appetite. A day later, she made a spectacular recovery. They continued to track the chimp and collected dropping samples to send off for laboratory analysis. The results showed at the time of the first collection, the droppings contained 130 nematode eggs per gram. In under twenty-four hours, the egg level was reduced to 15 per gram. The chimp resumed hunting, exercise was unable to perform the day before. The Vernonia bush was common and available year-round, yet the chimps tended to consume it only during the rainy season, when parasite infections are most prevalent. Vernonia is one of the most important and widely used medicinal plants of Africa.. Some studies show that Veronia pith is effective against schistosoma parasites and contains potent chemestries including a toxic sesquiterpene lactones and steroid glycosides. The *glycosides vernonioside B1* and *vernoniol B1* surpress parasite movement and egg laying. Yet when infected with oesophagostomum parasitic worms, chimps seek out a different plant, *Aspilia*, which contains in its leaves a unique copound *thiarubrine A* that is active nematodes and intestinal worms. The chimps fold the bristly leaves into an accordian shape then swallow them. The *thiarubrine A* weakens or kills the worms that are then swept out of the intestines by the folded bristly accordion shaped leaves. By not chewing the leaves the chimps ensure they arrive in the intestines ready to pull the parasites free from the intestinal wall. In this way, furthermore, *thiarubrine A* is not broken down in the stomach and is thereby delivered full force as a knock-out-punch to the parasites. Both herbal remedies are taken first thing in the morning, before feeding and after the fast of the night, again to ensure a full force of the compounds are delivered to the parasite. For caenorhabditis worms, the chimpanzees' herb of choice is a variety of fig (*ficus*) leaves. Again, they swallow the leaf whole first thing in the morning, These leaves contain a high concentration of antiworm compounds.

Asian elephants use as a stimulant or a painkiller

In the early 1940's, scientists observed Asian elephants devouring the fruits *Entada scheffleri* before embarking on long treks, leading researchers to theorize that the plant may serve either as a stimulant or a painkiller.

Pregnant elephant uses a borage tree to induce birth.

According to World Wildlife Fund **Scientist** Holly Dublin, African elephants (*Loxodonta africana*) seek out a particular species of tree, possibly to induce labor. Holly followed a pregnant elephant for more than a year in Kenya and observed that the elephant followed a uniform diet and daily behavior until near the end of her pregnancy. At that time, the elephant walked 17 miles in one day, many more than her usual three, and ate a tree of the Boraginaceae family from leaves to trunk! Four days later, her contractions started and she gave birth to a healthy calf. Dublin never observed this creature eat this species before or after this **incident** and found that Kenyan women brew tea from the leaves of this tree to induce labor.

Pregnancy and Fertility of Muriqui monkeys of Brazil. Karen Strier a University of Wisconsin anthropologist found that, at different times, muriqui monkeys of Brazil go out of their way to eat leaves of *Apulia leiocarpa* and *Platypodium elegans*. These two plants contain isoflavanoids, compounds similar to estrogen. It is believed that eating the leaves may increase estrogen levels, thereby decreasing fertility. Conversely when they eat the fruit of *Enterlobium contortisiliquim* this maybe increasing the monkey's chances of becoming pregnant as the plant contains a precursor to progesterone (the "pregnancy hormone") called stigmaterol.

Asian two-horned rhino use tannin-rich bark of the red mangrove as antidiarrheal

The Asian two-horned rhino was observed eating so much of the tannin-rich bark of the red mangrove that its urine was stained bright orange. Tannins are a major component of some over-the-counter antidiarrheal preparations such as Enterovioform. The concentration of tannins in the bladder of the rhino necessary to change the color of its

urine was undoubtedly sufficient to have an impact on parasites in the creature's bladder or urinary tract.

A Young Porcupine use *mulengelele* for parasitesA young porcupine that had been 'taken-in' after its mother was caught and killed in a snare in Tanzania. Shortly after being 'taken-in', the young porcupine became sick; suffering from diarrhea and lethargy. It wandered off from the village and the porcupine dug up the root of a plant the WaTongwe tribe call '*mulengelele*'. The baby porcupine recovered from its illness.

Bears use *Ligusticum porteri*, or bear root,American Indian cultures have been closely observing the natural world for millennia. An Ethnobotanist has been studying *Ligusticum porteri*, or bear root. The root of this plant is a fundamental medicine for nearly every American Indian population that lives close to the plant's natural habitat. It is used as a headache remedy, as a fungicide, as an insecticide, and for numerous other complaints. Sigstedt says scientists have identified more than a dozen compounds of known pharmacological activity in bear root.

Much to his astonishment, Sigstedt found that when he gave the bear root to bears in the Cheyenne Mountain Zoo in Colorado Springs, they immediately began to chew up the root and rub it over their bodies--precisely what many Indian legends say that the bear taught humans to do.