

Herbs of the Outside

an unpublished book *by*
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(1942–2001)

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INTRODUCTION

*“Blot out, correct, insert, refine; enlarge, diminish, interline;
Be mindful, when invention fails, to scratch your head, and bite your nails.”*

On Poetry Jonathan Swift

Herbs of the Outside is a study of the visible parts of our body. The four sections cover the hair, eyes, teeth and skin. They reflect our habits, lifestyle and diet. Our problems can be seen in the appearance of our outer body. A remarkable number of plants have been used for healing these conditions.

Most of the hair herbs are cosmetics, but a number of herbs are reputed to grow hair, or even change its color. The eye herbs are equally interesting, with herbs being used to cure cataracts and trachoma. Many of the tooth herbs have been used for coloring, but others are used as toothpastes, or to cure pyorrhea.

Since we can directly look at the skin, we see the emotions of blushing, the wrinkles of age and paleness denoting anemia. The direct effects of disease often manifest in the skin.

I believe that most human problems have an answer in the plant world. Nearly one in ten plants throughout the world has some tradition of use in the past. The twentieth century was the great era of chemical medicines, but scientists are growing more interested in medicinal plants.

Some 250,000 species of higher plants have been classified throughout the world. They are the descendants from the first plants which colonized the land 500 million years ago. As plants evolved, they faced pressure from the climate, insects and animals. In order to survive, they evolved a variety of biochemicals, which made them distasteful to their predators. Plants faced hostile parasites in the soil and attacks from viral disease. The species that remain have a long history of survival of the fittest.

We have about 20,000 species of plants in all of North America, and 22,000 species in Mexico. Latin America has about 85,000 species of plants and South America has about the same number. The

greatest center of food plant diversity is Peru, which has 17,000 plant species. The former Soviet Union has 22,000 species, China has 28,000 species and tropical Asia has 60,000. Australia and Polynesia have 20,000 species and Africa has 45,000 species.

Many of these plants are endangered due to clearing the rain forests and eliminating the hedges around fields. On the island of Mauritius the popular medicinal tree *Ramosmania heterophylla* was believed to be extinct until a teacher found a remote specimen. People began to chop off branches for medicine, and the last known tree was surrounded by four fences and a guard. Cuttings were taken to the Royal Botanic Gardens at Kew in 1986 in order to rescue the tree.

Herbs began to disappear from medical books around 1890 and doctors wrote about them as part of the superstitious past. Doctors began to consort with drug companies, and even common knowledge about medical heritage was no longer taught in college courses. Despite this, there are many articles in medical, dental, agricultural, forestry and nutritional journals dealing with herbs. I have attempted to sift through a half billion pages of medical literature of the last three centuries to find these accounts.

I began working on this set of books in 1976. I had no idea that the century would end before I would finish it. What was intended to be a small booklet for my own use became a dozen books on various aspects of alternative medicine. I spent more than a year on the road visiting some 40 major libraries across the country. I handled some 250,000 books and journals, looking for elusive material that would aid us in handling our problems. An average reader might have taken two centuries to go through this material, but I used my skills at high-speed reading to find thousands of references of interest.

Most of the herb books published are little more than superficial summations of previous books. No real attempt has been made to summarize the past three centuries of medical and scientific studies. The Chinese herbalist Li Shi Chien summarized all the medical knowledge of his time in a thirty-year study in the *Pents'ao* in +1596. I have tried to follow his footsteps and sum up the medical herbal knowledge of our time. This study has no apparent end, for important information exists in languages that I was unable to access.

Readers may find some difficulty with the many botanical names in this book. It is just as necessary to identify a plant with its full binomial Latin name as it is for a human to use their full name for complete identification. Because botanists are slowly changing our understanding of plant families, names are changing. Many times I have cited a name = another name. Usually the first citation is the correct current citation, and the second is what it was known as in the past. I have tried to illustrate many important medicinal plants, believing that seeing brings familiarity.

This book is not intended to substitute for doctors or medical professionals. Medical problems should be referred to health professionals with the experience needed to deal with complications. Diagnosis is a professional art that can only be learned by experience. Good reading and good health to you.

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1. FOLKLORE OF THE HAIR

“I [Mercurialis] may be asked why nature has not provided man with hair that is tough and not prone to shedding, and further why, if baldness is injurious to health, should not nature show greater concern for our welfare than for that of beasts? I reply as Plato did with regard to the structure of the human head; nature’s plan is that the human head should be designed so as to possess the capability of both bodily health and mental function. If nature wished the head to produce durable hair, man would surely have been incapable of mental activity. Synecius the Philosopher put it cleverly: “Prudence and hair are incompatible.” Thus the hairiest creatures, sheep for example, are the stupidest, while those with few hairs, man for example, are the wisest.”

Hieronymus Mercurialis c. 1578.

We share 99% of our genetic material with our relatives the apes, yet they are covered with hair and we are “hairless apes.” Our lack of hair means that originally we must have come from a hot temperate climate, because without clothing, we start shivering below 80° F. There are several theories as to why we have lost our body hair. More hair means more lice and more disease, which gives a greater chance of survival to the hairless ones. Maybe our hairy ancestors burned to death over the campfires, while the hairless ones survived.

Primitive tribes would form circular chains of people to pick lice out of the hair. The herbal lore of the hair contains a number of herbs used against lice. In India these are *Acacia concinna*, a leaf paste of *Annona squamosa* and the leaves of *Gloriosa superba*. The popular pictures of Jesus are almost certainly inaccurate, because most men had short hair, due to problems with lice. In addition most people were small due to inadequate nutrition, and dark haired.

We can hardly be considered “hairless apes,” for most of us have about a quarter million hairs. The head contains from 90,000 to 165,000 hairs. Heredity defects cause a few people to have no hair at all, and a few to have hair all over their face. The Ainu people of northern Japan are said to be the hairiest. Their hair on the back approaches two inches in length, and the hair on the breast area is often four inches in length.

The biblical story of Samson is part of the ancient belief that the length of the hair is connected to physical strength. After Delilah cut his hair, his strength was gone. When it grew again, Samson became so strong that he was able to destroy a temple of Baal by pulling out one of the supporting pillars. In medieval Europe, people believed that the strength and evil influence of witches resided in their hair. After the inquisition extracted a confession by torture, they would have the heads of accused witches shaved to remove their power.

Shaving all the hair off or letting it grow often became the sign of a vow, like the monks who shaved their heads. A Danish Viking chief vowed to conquer, or go with uncut hair. In *Harald's Saga* he wrote: "I make this vow, and call God to witness, Him who created me and governs all, that I shall neither cut nor comb my hair, before I have conquered all of Norway."

Among the Brahmans of India, the first haircut of the child took on a religious meaning. The hair was combed and 21 shoots of kusa grass *Poa cynosuroides* were placed on it. Kusa grass was sacred to many tantric rituals of northern India. The mother faced east and the child sat on her right knee. Mantras were said and seven bundles of three blades of kusa grass were ceremonially cut along with the hair. Then the hair was shaved with a copper razor. It was mixed with cattle dung and burned facing northeast. Iron razors were much better, but iron is believed to destroy power, so copper was used in ancient rituals.

The lore of magic hair-growing plants was written into the sacred Hindu book of the Atharva-Veda. Hymn 21 of book six reads: "Of all the three terrestrial realms the ground is verily the best. I from the skin that covers these gather a healing medicine. Thou art the best of medicines, more excellent of plants art thou. As Soma amid the wandering stars, as Varuna among the Gods, endowed with wealth, denying not, give freely in order to give your gifts! Ye stay the hair from falling off: Ye strengthen and increase its growth."

In hymn 136 of the same book, there is another charm to promote hair growth. "Born from the bosom of wide earth, the goddess, godlike plant, art thou. So we dig up Nitatni to strengthen and fix fast the hair. Make the old firm, make new hair spring, lengthen what

has already grown. Where the hair is falling off and the roots torn away, wrest and sprinkle with the plant the remedy for all disease.” Alas, we do not know what herbs are referred to in these Hindu scriptures.

The migrations of the Indo-European people five thousand years ago spread the roots of many modern languages across India to Northern Europe. Their root word “wel” meant, “to cover.” In many languages the words for hair, sprouts, twigs and grass were derived from that original word. The association between hair and grass is also present in many religious texts.

The way we wear our hair is a presentation of our image to the world. Sigmund Freud believed that the “Id” causes us to grow hair, and the “Superego” loses it. The “Ego,” however dictates our dress, looks and hairstyle. If you are a Freudian believer, your dreams of losing your hair, mean losing your sexuality.

In Roman times Marcus Varro (-50) wrote in *De Re Rustica* that hair should be cut at the full moon to avoid baldness. We know that Emperor Tiberius observed this. Trees were the hairs of the earth, and they were to be cut only at this time. Survival of this belief in Europe continued up to the twentieth century.

There is a medieval belief that it was wrong to cut the hair at the time of the full moon. During this time the hair would “bleed” more and you would lose vitality. Scientists assure us that hair is only a dead protein put over strategic areas of our bodies for insulation. This explains why most of our hair is over our heads.

How does hair on the different areas of our body know how long to grow? When I was a boy, I shaved patches on my arms. To my surprise, some four months later, the hair in the shaved area was nearly the same length as the other hair. The individual hairs don’t know “length,” but all body hair grows at about the same rate. Each area of the body has “growing timers,” that cause the hairs to grow for so many days and then stop. That is why we don’t have to shave our arms and eyebrows.

One doctor observed a single hair growing out of a wart for nine years. During that time fourteen different hairs grew on that spot. Each hair had an average life span of about 180 days before it fell out.

The average growing cycle was about 60 days, although it varied from 27 to 157 days.

The hair on men's faces may not be subject to the growing cycles that govern the maximum length of the hair on other parts of the body, although I don't know of any studies on this. It is known that the German painter, Johann Mayo, had a beard, which touched the ground when he stood up. Ivan the terrible of Russia had George Killingworthe in his court. He had a thick wide beard that was five feet two inches long. Perhaps the record for a bearded lady, was a woman in the court of Charles XII. She had a beard over four feet in length when she was presented to the Czar in 1724.

The rate of hair growth on the face may be dependent on the temperature. One man measured the length of the hair with an optical micrometer after shaving. He found that the average rate of growth during the cold month of January was 0.305 mm. per day and during the hot month of July the hair grew at the rate of 0.538 mm. If you have dark hair, you will have that partially shaved look during the summer months when it grows faster.

George Catlin, the early American Indian painter, was one of the few white settlers to meet the Crow chief, "Long Hair." His hair cells must have had an unusually long growing cycle, for his hair measured 10 feet and seven inches in length. When Long Hair died of smallpox his hair was said to have grown 100 hands in sixteen days. In 1930 the Crow Indians allowed Major General Hugh Scott and Congressman Scott Leavitt to measure the remains of his hair.

Men are said to have had seven-foot beards, and it is possible that the chin hair cells continue to grow indefinitely. The longest known eyebrows are about three and a half inches. I once knew a man who had to cut his eyebrows, in order to appear normal.

Anselm, the archbishop of Canterbury (C. +1080), excommunicated those who wore long hair. In +1104 the Norman Bishop Serlo preached a powerful sermon to King Henry I and his court on the evils of long hair. They offered to repent and Serlo pulled out a scissors out of his coat and cut their hair on the spot before they could change their minds.

Sudden shock or trauma is sometimes able to cause our hair to fall out. In a case reported in France, an amorous man was visiting a woman when her husband suddenly entered the home. He was able to escape by hiding and he eventually left the house. Eight days later his hair began falling out and he became totally bald, but the hair regrew in about a year.

In another case a young woman received word that her husband was killed in action in WWII, and two weeks later her hair fell out. Three years later she found that he was alive in a prison camp. He returned home and five months later her hair regrew. When she had mother-in-law troubles two years later, her hair fell out again.

Herodotus, the Greek father of history, described the custom of scalping by the Scythians. It was a mark of personal bravery and revenge against the enemy in battle. Scalping is also mentioned in the Second Book of the Macabees, which is a history of the Jewish war against the Persian King Antiochus.

In +1520 Francisco de Garay made the first description of scalping among the tribes in the area of Jalisco, Mexico. Jacques Cartier described the custom on his second visit to the area of Montreal. The Hochelaga Indians showed him five scalps of their enemies stretched on small wooden hoops. Hernando De Soto noted the custom in 1540 during his search for the legendary cities of gold in the Southwestern U.S.

The tribes in the New England area did not take scalps. In 1637 the Puritans began paying a price for the heads of unfriendly tribes. In 1680 the colonists of South Carolina offered money for the scalps of unfriendly Indians. The custom took on new meaning with the introduction of good knives and money as a reward. Then it passed into language as a figure of speech.

Hair is composed of three layers, which are the cuticle, the cortex and the medulla. The cuticle is the outer scaly layer, which is lubricated with sebum. The cortex is composed of spindle-shaped cells, which make up 90% of the hair shaft. At the center is a layer of soft keratin, which contains most of the coloring pigment.

Hair has roots, which are inserted into the follicles. There are sebaceous glands by the follicles whose secretion keeps the hair glossy. There are also tiny muscles known as the arrectores pili, whose action can cause the hair to stand on end.

Hair that is thick and stiff is known as bristles. In hedgehogs the hair evolved into spines, gradually becoming thicker and sharp pointed. The hair of pangolins evolved into blunt flattened scales. In birds, hair has evolved into feathers. We have a number of collective hair words such as the “plumage” of birds, the “fur” of beavers and the “fleece” of sheep.

Language gave us a number of hair expressions. “He’s not old enough to shave” means “He’s not mature.” “Splitting hairs” means “making fine distinctions.” “Not worth a hair” meant “of no value.” “Against the hair” once meant “contrary to the natural order.” Voltaire remarked, “Man can only have a certain number of teeth, hairs, and ideas; there comes a time when he loses his teeth, hair and ideas.”

We began to develop laterality at the age of nine months, and it is further developed through childhood. This is the development of handedness, so that we can clearly say we are right- or left-handed. If we use both with equal adeptness we are ambidextrous. Emotional problems are produced when a left-handed child is forced to write and work with the right hand.

Hair whorls are a clue to the inborn handedness of the child. This is the spot on the back of the scalp, where it naturally curves either clockwise or counter-clockwise. Most whorls are clockwise. If the whorl is to the right of the mid-line of the head, the child is left-handed. If the whorl is to the left, the child is nearly always right-handed. If the whorl is in the center or there are two equally spaced whorls on each side, the child is probably ambidextrous. A study of 500 children showed that this is a generally accurate method of determining handedness.

It is now known that the hair contains a record of our diet and medical history. Hair grows at the rate of one centimeter a month, so about five inches of hair contains a record for the year. The inside of the hair has information on our diet, and the outside gathers pollutants from the environment.

A new form of hair analysis uses radioactive probes to detect tiny amount of proteins in the hair. “Radioimmunoassay” methods promise to give us an accurate record of the past. It was popular in past centuries for famous people to leaves locks of their hair. Using these locks of hair, it is possible to prove that the poet John Keats was addicted to morphine in 1819. He suffered from tuberculosis and he probably took the opium tincture known as “laudanum” for the pain. It is also shown that Napoleon had high levels of arsenic in his hair when he died. He may have been deliberately poisoned, although arsenic was used in many medicines during his time. King Charles II was an amateur alchemist who worked with mercury. A sample of his hair showed levels of mercury twenty times above normal.

Hair analysis has not proved to be useful for vitamin deficiencies, and it is limited for minerals. The amount of hair zinc in a rat correlates with zinc in the bones, but not with zinc in the blood, liver and kidneys. It does not usually give a true picture of minerals in the body, but it can point out toxic metals or extreme deficiencies.

Hair analysis is being used as a tool to study people with learning problems. Learning-disabled children show large amounts of lead in their hair. Does lead disable the learning process, or does some mechanism in their bodies cause more lead to be excreted in the hair? Hair analysis also shows that bright children usually have more zinc in their hair. Further studies of the hair may unlock the mysteries of past problems.

2. NUTRITION OF THE HAIR

“When the temple was reconstructed, the timbers were too heavy for any of the ropes then in use, so progress was slow and tedious. Then many women throughout all Japan, who were followers of the religion, cut off their hair as an expression of their faith and made the strands into ropes. The faith and sincerity of these women were entwined in the ropes, which were so strong that they could draw even very large timbers. Very soon after, the temple was completed. Of the 53 hair ropes still left in the temple, the largest is 110 meters [360 feet], 40 cm. wide and weighing 1120 kilograms.”

Inscription at the Higashi-Honganji Temple at Kyoto, Japan.

Fingernails, hair, hooves, feathers and porcupine quills are all essentially the same material, a protein known as “keratin,” which is named from the Greek word for horn “keras.” The horns of cattle, rhinoceros and antelopes are made of this protein. By contrast, antlers, which are shed yearly, are made of bone. If horns are cut, they will never resume their original shape, but antlers will increase in size each year as the animal grows older.

We can get an idea of the nourishment of the hair, by looking at the variation of amino acid composition and comparing it to the skin. Only the main amino acids are compared.

Amino acid	Skin	Hair	Amino acid	skin	hair	ratio
Glutamic acid	13.2%	14.0%	Histidine	1.1%	2.9%	1.0%
Arginine	4.3%	10.6%	Lysine	3.3%	7.9%	4.0%
Cysteine	9.1%	13.6%	Argenine	10.6%	4.3%	12.0%
Serine	8.3%	9.9%				
Leucine	<u>10.2%</u>	<u>8.6%</u>				
	45.1%	56.7%				

The hair contains a significantly greater concentration of cysteine and argenine than the skin. It is interesting to find that the amino acids histidine, lysine and arginine are found in fixed ratios of 1:4:12. If we are lacking in these amino acids, it means that our hair will grow more slowly or will be weaker than normal. A single dry hair will support about 200 grams of weight. If there is a protein deficiency in the diet, it will support about half of that weight.

The measurement of hair pluckability (trichotillometry) is a measurement of general nutrition. The amount of force necessary to pluck out a hair correlates with the serum albumin. When 16 well-nourished people were compared to 17 poorly nourished, the hair plucking force was 17 grams against 11.4 grams for the people with an inadequate diet.

The average sheet of writing paper is from two to three thousandths of an inch thick. When I checked the hair of some friends; “fine” hair was about two and a half thousandths of an inch and “coarse” hair was about three and a half thousandths. A fine-haired cat measured a thousandth of an inch for the main hairs and three ten thousandths of an inch in width for the extra fine silky hairs.

Agricultural workers have done experimental work to increase hair production on sheep and Angora rabbits. If the animals are deficient in sulfur protein, the addition of methionine or cystine raises wool production by about 10%. No other nutrients seem to have a significant effect on hair growth.

Ads in magazines say: “Vitamins for the Hair,” and picture men and women with thick glossy hair as proof. The implication is that after taking the vitamins their hair grew like magic. It is difficult to count new hairs, but it is not difficult to count the number of hairs lost by a daily brushing. When one man changed his diet to exclude salt, the hair loss fell from 95 hairs per day to around 60. This hair loss was still excessive and it turned out that the man often ate several oranges and grapefruit daily. When he drank only a single glass of orange juice, the hair loss fell to 50 hairs a day.

These findings aroused the interest of a doctor and he began trying various vitamins, with a view towards reducing hair loss. Not a single vitamin decreased hair loss, although thiamin, riboflavin and pantothenic acid did not change the loss. All of the other vitamins led to a considerable increase in loss of hair. Relatively small amounts of vitamins D and C increased the number of hairs lost by a third. A normal vitamin D supplement led to 50% more hair falling out..

The theory behind the loss of hair by vitamins is that they stimulate the production of steroids from the adrenal glands. Steroids affect the salt balance and more salt means more hair loss. These experi-

ments are incomplete. Maybe the vitamins made two hairs grow for every one that was lost. Until someone is able to count the new hair, we will have to assume that vitamins do little for the hair.

Italian scientists removed the hair on a small area on the back of rats. Each day they gave the rats subcutaneous injections of vitamins to study the growth of hair. The most effective vitamin for stimulating hair growth was vitamin B₆ followed by the sodium salt of para-amino-benzoic acid.

It would be of interest if we could feed nutrients to the hair directly, which is what many tonics and shampoos claim to do. No proof is presented that the nutrients penetrate into the hair itself or the skin used by the hair cells. Since cystine is so important to the hair, attempts have been made to use it as a tonic lotion, but it is oxidized on exposure to the air. Chemical derivatives such as esters of thiazolidine-4-carboxylic acid have been used with some success. Radioactive tracers show that some of it ends up in the hair. When methionine is fed to rats, most of the sulfur in the amino acid ends up in the cystine of the hair.

A hair nourishment patent covers a preparation made from arachidonic and linoleic acids. The lotion was tested on the backs of white mice after the hair was removed. In five weeks, only 6 of 20 control mice grew any hair. In the group treated with the fatty acids, all 20 mice showed complete restoration of their hair in two weeks. This doesn't mean that the preparation will grow hair where there is no hair, but it does mean that it accelerates the growth cycles of active hair roots.

German experiments show that flax oil is a good hair growing factor. A deficiency of unsaturated fats retards the growth of hair. The active factors are linoleic acid and linolenic acids.

Your hair normally grows by an inch about every three months. Japanese investigators claim that rubbing vitamin E into the scalp increases this by 2.4 times. Canadian scientists shaved patches from laboratory animals and then applied the milky juice of the leafy spurge *Euphorbia escula*. This increased the growth rate of the hair in the area by seven times. It probably won't cure baldness, but it did accelerate the rate of growth on a temporary basis.

Back in the sixth century of the Christian era, Paulus Aegina tried to explain why we lose our hair. "Some plants die from dryness from want of sap, and some from the sap being unsuitable for them. It happens in like manner with the hairs; for baldness is occasioned by want of the natural juices."

The circulation theory seems to explain baldness and it is based on several observations. When a doctor studied the skulls of 80 cadavers, he found that baldness occurred when the skull bones grew completely together so that there could be no circulation between the normal cracks. When the skin in the bald area is cut, there is little bleeding. This indicates that there is poor circulation.

Dietary factors influence the circulation, and we would expect people with low blood pressure to have more hair. We are dealing with a thin layer overlying a hard covering of bone and special measures may be needed to grow hair in those areas. Scientists in both Germany and Japan found that the areas in which hair is lacking are about a degree colder than the area with hair. As the circulation decreases, the temperature falls. Lack of circulation doesn't bring enough nutrients to make hair grow.

A college professor decided to test an old observation that very few alcoholics around the Bowery of New York City were bald, but many college professors were bald. Comparing numbers he found that twice as many professors as drunks were bald. The explanation seems to be in the dilation of the blood vessels on the surface of the skin. This dilation of the blood supply accounts for the reddened face and nose seen so often among hard drinkers. With good circulation, the hair gets nutrition and it stays.

When you spend time in cold weather and return, your face is red and flushed from exposure. Hours later, you can still see and feel the effects of the cold. The body adapted by sending extra blood to the skin to keep it from freezing. Perhaps this is good for the hair. The Arctic explorer Ernest Shackleton recommended extreme cold to strengthen the hair. He said that all of those who went with him to the north had thick strong hair.

The male hormone testosterone decreases the microcirculation of the scalp more than estrogen. As nutrients decrease, the fatty layer under the skin is burned by the cells for energy, which explains why there is little fat remaining under bald areas. Without nutrients the hair falls out, for the cells can't produce hair. Any true hair-grower must increase circulation to bring hair proteins to the area.

The health of an animal shows in sleek glossy-looking hair. This was the old secret of the gypsy horse traders. They would buy a tired-looking horse and sell it a couple of months later looking younger and healthier. They fed it dried nettles- *Urtica dioica*, comfrey- *Symphytum officinale* and flax seeds *Linum usitatissimum* to achieve this glossy healthy look. I am told that some people who show animals at fairs still use these herbs to produce a glossy look. These herbs may provide good nutrition for our hair.

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