ETHNOBOTANICAL USE OF PLANTS
PART 4
THE AMERICAN CONTINENT

Anthony C. Dweck,
Research Director, Peter Black Medicare Ltd., Trowbridge, Wilts., UK BA14 0XB

INTRODUCTION

In the last of this series of articles we shall concentrate on the Americas, especially on the “Red Indian” tribal use of plants. The American continent is a rich source of plant species, with thousands of indigenous plants and many hundreds that have been imported and naturalised by the immigrant populations who settled there.

Sadly, the tribes responsible for the ethnobotanical use of the indigenous plants, have to a large extent disappeared. (see Table. 1)[1, 2]. There were a number of major problems.

1. The newly arrived settlers were (in the most part) not eager to form a relationship with the local inhabitants - a feeling that was mutual.

2. The settlers felt more secure with their own medicines and remedies, and would rather use these in preference to trying an alien panaceas.

3. Many of the American Indian dialects had no written form, and so the medicinal values of the plants were never recorded.

As might have been expected, many of the herbal medicines brought with the settlers would not grow in the new environment, and in some cases the immigrants had no remedies for the wealth of new complaints that confronted them, e.g. snake and scorpion bites are not a common occurrence in Europe!

The information that has survived is mostly from what the settlers learnt from the native American Indians (who by all accounts were well skilled in the use of the medicinal plants and herbs around them).

The use of plant materials was very much as one might expect, those that were essential and could be grown and harvested, were found close to the settlement. Other more specialised herbs would have to be found in the wild or "wild crafted". Undoubtedly, there was a trade in those medicinal plants that were found in one tribal area, but not in another.

In South America, the story is very different. The tribes deep in the rain forests have captured the imagination of the world and so there has been a rush to understand and record their extensive knowledge, before they succumb to westernisation and exploitive deforestation.

The literature is extremely vague as to which specific tribe was responsible for any particular plant discovery, and so you will notice that the term "American Indian" is mostly used, sometimes with a weak geographical location.

SKIN TREATMENTS

Psoriasis

-oOo-

Thuja or Cedarwood (*Thuja occidentalis*) is a versatile and useful plant and has been used successfully for the treatment of psoriasis, rheumatism, and for warts[3]. Also known as the Tree of Life or Arborvitae, it is useful as a counter-irritant in the relief of muscular aches and pains, including those of rheumatism. It can be applied externally in a salve for warts and other skin problems.

American Indians made a tea of the inner bark to promote menstruation, relieve headache and heart pain and reduce swelling[4]. A marked antifungal effect is found if used externally for ringworm and thrush, but thuja has a specific reflex action on the uterus and may help in delayed menstruation, but because of this action it should be avoided during pregnancy[5].

-oOo-

Sarsparilla (*Smilax ornata*, *Smilax regelii*) can be used in all cases of skin diseases and rheumatism. *Smilax aristolochiaefolia*, American Sarsparilla, Bamboo Brier from South America is alterative, pectoral, diaphoretic, sudorific and is quite distinct from Jamaican Sarsparilla (*Smilax ornata*) in appearance[6].

The American Indians favoured the Jamaican Sarsparilla (so-called because it was imported via Jamaica) as a cooling medicine for the blood[7]. The components present in the plant, namely: saponins, sarsaponin, parallin, sapogenins, sarsapogenin, smilogenin and plant sterols such as sitosterol and stigmasterol in both free and glucoside forms give the plant the antirheumatic, antiseptic and antipruritic properties. These attributes make the plant ideal for psoriasis, and other cutaneous conditions especially where there is desquamation[3, 8]. In addition the plant has anti-inflammatory properties[9], which would further relieve the discomfort of psoriasis. Modern herbalists use the root and rhizome today for scaling skin diseases and also for a number of rheumatic conditions[10]. Clinical experience (but not double blind studies) with Sarsaparilla extracts, showed favourable results for psoriasis[11].

-oOo-

Chickweed (*Stellaria media*) is also known as Stitchwort, Scarwort, Satin Flower, Adder's Mouth and Starweed. There are about 25 species native and naturalised in the American continent. The American Indians used native chickweed and also adopted naturalised species brought by the settlers[12].

Chickweed contains saponin glycosides, coumarins and hydroxycoumarins, flavonoids, carboxylic acids, triterpenoids and vitamin C (ca. 150-300 mg per 100 g). These constituents give the plant antipruritic, vulnerary, emollient and antirheumatic properties, which when used in the form of an ointment or poultice is excellent for eczema, psoriasis, ulcers and boils[13].

-oOo-

Echinacea (*Echinacea angustifolia* DC, *E. purpurea* (L.) Moench and *E.pallida* (Nutt.) Britton). Family: Compositae. This plant is known by many names: American cone flower, purple cone flower, snakeroot, Kansas snakeroot, black sampson, narrow-leaved purple coneflower, scurvy root, Indian head, comb flower, niggerhead, black susans, hedgehog. It is native to Kansas, Nebraska and Missouri and was used in traditional medicine by the

American Indians during the 1800s for the curative powers of the plant, which ranged from a 'blood purifier' to a treatment for dizziness and rattlesnake bites[14].

The whole plant can be used. including the root and the rhizome either dried or fresh. The fresh
leaves were used by Mexican Indians to bind around a bleeding wound, to prevent inflammation (antiseptic) and to relieve pain (analgesic).

The Omaha Ponca used the whole root of *Echinacea angustifolia* for toothaches, enlarged glands, i.e. mumps, and for snake bites, stings and other poisonous conditions. Externally, the juice of the root was used to bathe burns. The Sioux Indians also used the root for snake bites and septic conditions[15], while the Pawnee Indians used the root for rattlesnake bite.

Oglala Dakota Indians used the root of *Echinacea pallida* internally for toothache and severe colds. The Crow Indians and many others placed the juice of the root in the mouth for hollow teeth, and it was also used for colds and colic. In addition to this the Comanche Indians used the root for sore throat. The Lakota in addition to toothaches, used it for tonsillitis and pains in the bowels.

Cheyenne Indians used an infusion of powdered leaves and roots for sore throats, gums, mouth and also chewed the root for the same conditions; the juice of the root placed in the mouth for hollow teeth; an infusion of the root and leaves was rubbed on sore neck; the root tea was used for arthritis, measles, mumps, rheumatism and smallpox.

Mezkwaki Indians used the root in medicines for stomach cramps, eczema and fits.

Delaware Indians used *Echinacea purpurea* for advanced venereal disease.

The native Americans considered *Echinacea purpurea* as an aphrodisiac and analgesic that would give one more courage, stamina, tolerance to pain etc., and so used the fresh leaves to bind wounds[16]. The Plain Indians also used various species for treatment of sore throats, toothaches, infections, wounds, snakebites, and skin problems, as well as mumps, measles, smallpox, and cancer. When these illnesses occurred, they would suck on the root. Samples of Echinacea were uncovered in campsites from the 1600s, but its use probably goes back much further[17].

It was eventually introduced into medicine in 1871 by a patent medicine vendor in Nebraska who learned of its value as a "blood purifier" from the Indians[18].

-oOo-

Pearly Everlasting or Cottonweed (*Anaphalis margaritacea* (L) C.D.Clarke) is used as an expectorant, astringent, anodyne, sedative. Used for diarrhoea and dysentery. American Indians used the tea for colds, bronchial coughs and throat infections. Poultice used for rheumatism, burns, sores, bruises, and swellings[19]. This family of plants is widely used in herbal medicine for psoriasis[20]. Interestingly a related species found in Nepal (*Anaphalis triplinervis* (Sims) C.B.Clarke) is used as a flower paste as an antiseptic on wounds, both in man and cattle[21].

-oOo-

Eczema

-oOo-

Jacob's Ladder (*Polemonium caeruleum*). The American Indians used root in prescriptions for piles and to treat eczema[19]. Root tea once used as an astringent for scrofula and snakebites.

-oOo-

Bloodroot (*Sanguinaria candensis* L.) is also known as Indian Paint, Tetterwort, Red Pucoon, Red Root, Paucon, Coon Root, Snakebite, or Sweet Slumber. The root or the whole plant are used. The plant is found in rich open woods from Canada, south to Florida and west to Arkansas and Nebraska.

It contains alkaloids including sanguinarine, protopine, sanguidimerine, cholerythrine, berberine; red resin; chelidone acid.

It is used in cases of ringworm, when the fluid extract is applied. The plant is also used for scrofula and applied to fungal infections, ulcers and other skin diseases. Sanguinaria root is used as a local application in chronic eczema[22].

Bloodroot's name describes the deep orange-red juice of the root, which was used by Native American tribes as a stain and a dye, which they used to stain both their faces, bodies and clothes. The juice of the root was squeezed onto sugar for use as a sore throat lozenge. Native Americans treated cancers of the breast, uterus, skin, nose and ear with bloodroot.

During the mid 1800s, topical preparations containing blood root extracts were used as part of the "Fell Technique" for the treatment of breast tumours[23]. Based on Indian traders' reports, Fell[24] reported the use of the red sap from bloodroot (*Sanguinaria canadensis*) for the treatment of cancerous diseases by the North American Indians living along the shores of Lake Superior. On hearing of this plant, Fell developed a treatment far superior to any other, a therapy based on a paste of bloodroot extract, zinc chloride, flour and water. Fell's technique was perfected at the Middlesex Hospital, London, and the results of 25 cases, mostly of breast cancer, are detailed in his treatise. From this pioneering work further research developed[25, 26, 27, 28, 29].

The plant is also cited for skin burns[30], sores and other skin problems[4]. They also recognised bloodrood as a preventative against dental caries, as well as having the ability to make gums less sensitive (a dental analgesic) - a property that has been attributed to the sanguinarine present[17]. The root tea was also used by American Indian tribes for the treatment of rheumatism, the treatment of warts, nasal polyps and skin cancers. Bloodroot was used by the Indians an acrid emetic. Its use in home-made cough remedies seems to have been adopted by early settlers[31].

It was official in the U.S. Pharmacopoeia from 1820 to 1926.

According to Foster and Duke[19] ”A bachelor of the Ponca tribe would rub a piece of the root as a love charm on the palm of his hand, then scheme to shake hands with the girl he desired to marry. After shaking hands, the girl would be found willing to marry him in 5-6 days”.

The Iriquois Indians used the plant as a ‘blood purifier’[32] and as a haemostat with a decoction of the roots being applied to stop the bleeding from axe cuts on the foot[33]. The Micmac Indians used the roots to treat infections[34]. The Mohegan Indians used the inner bark

of dried root as a 'blood purifier'[35]. The Ojibwa tribe used the plant for its analgesic properties and applied the plant as a poultice or used as a root infusion on sores and cuts[36].

-oOo-

Centaury (*Centaurium erythraea*) was highly prized by the American Indians as a remedy for ailments of the blood and liver. Externally it was used for wound treatment and to deter mosquitoes. It was used for blood impurities and eczema, as well as used externally as a lotion
for all types of sores and wounds and to cleanse a sore mouth and to cool inflamed gums[37].

-oOo-

Clover, Red Clover, Trefoil (*Trifolium pratense*) has long been recognised amongst herbalists as a useful remedy in certain cases of eczema[38, 3]. It is indicated for chronic skin disease and is specific for eczema and psoriasis. American Indians both ate it and used it medicinally, in ointments for external sores and internally in skin disease[39]. The flowers contain salicylic acid, coumaric acid, isorhamnetin, trifolianol, quercitin glycoside, essential oil, trifoliin, pratol, rhamnose, coumestrol.

-oOo-

Ephedra (*Ephedra distachya*) is known as Desert tea, Brigham Young plant, desert herb, ephedra, Mormon tea, squaw tea, teamster's tea. The herb is used. It is febrifuge, diuretic and tonic. American Indians used it, both internally and externally, to treat syphilis and mucous discharges. The early pioneers considered it to be a "blood purifier"[4].

-oOo-

Golden Seal (*Hydrastis canadensis*) also known as Yellow Root, Orange Root, Yellow Puccoon, Ground Raspberry, Wild Curcuma, Turmeric Root, Indian Dye, Eyeroot, Eye Balm, Indian Paint, Jaundice Root, Warnera. It is a native of Canada, eastern United States. The American Indians used the root as a medicine and the yellow juice for staining their faces and for dyeing their clothes. They also valued the root highly as a tonic, stomachic and as an application for sore eyes and general ulceration. Externally it is used as a lotion in the treatment of eye affections and as a general cleansing application[22]. It is also used as a mouthwash for gum and mouth disease and as an external application to broken skin and eruptions[40].

It was a herb much admired by the American Indians, pioneers through the West and by early naturopaths. It is best used externally, since it is a very strong disinfectant, antiseptic and astringent. It is useful for sore gums, mouth sores and cold sores, which should be painted with goldenseal powder. It will also help heal the wound after tooth extraction. It is used as an eye wash and is good for wounds when used as an ointment, and the lotion is good for skin eruptions[41]. Preparations containing golden seal have been marketed for the treatment of menstrual disorders, pain of minor sciatica, rheumatic or muscular pain, and as an antispasmodic. Today goldenseal finds some use as an ingredient in commercial sterile eye washes[42]. The use of hydrastis (the major active component of the plant), both as a drug and as a dye, was learnt by the early European settlers from the Cherokee Indians[43].

The tincture is official in the United States Pharmacopoeia (USP) and B.P.

-oOo-

Witch Hazel (*Hamamelis virginiana*) is well known to the cosmetic and toiletry industry, the steam distillate of fresh leaves and twigs of Hamamelis is used on account of its very mild astringent effects, and has also been recommended for certain skin conditions, such as boils, ulcers, itching eczema, bruises etc.[44]. Modern Americans learned to use this extraordinary herb from the New England Indians who made a decoction from the twigs for swellings, inflammations and tumours[41]. Both leaves and bark are astringent, tonic and sedative. Its astringent action is due to its relatively high tannin content, and it is of great value in the treatment of varicose veins. Preparations can be used for minor burns and inflammations, as a wash for bed sores, and as a lotion for insect stings[45]. There has also been some success in treating atopic dermatitis with Hamamelis ointment[46].

It can be used as a facial toning lotion for oily skin and to control minor pimple formation. It will also reduce the pain of insect bites. Can be used cold or with ice to reduce the pain of sprains or athletic injuries. It is soothing, and anticouperose, with recommended levels set at 1-2% dry extract, 2-5% glycolic extract in tonics for mucosae and skin, soothing products, astringent preparations for minor capillary problems. It is also haemostatic, a veinous vasoconstrictor, and vasoprotector[47].

Dr. Hawes, an early 19th century Indian missionary and amateur chemist, determined that distillation from the twigs produced a more potent medicine than a simple tea. In 1866, Tomas Newton Dickinson of Essex, CT, an area known for its fine grade of witch hazel shrub, pioneered the manufacture of a witch hazel astringent/cleanser by refining Dr. Hawes distillation process and naming the product Dickinson's Yellow Label distinctive for its yellow and black "bull's eye" label[48].

-oOo-

Jojoba (*Simmondsia chinensis* Schneider or *Buxus chinensis*). The Indians and Mexicans have for a long time used jojoba oil as a hair conditioner and restorer, as well as in medicine[49].

But earlier use was recorded in 1789 by Francisco Clavijero, who wrote that the plant was celebrated for its medicinal value, especially curing the suppression of the urine from mucous concretions, for facilitating childbirth, and for wounds. The oil which is derived from it is an excellent remedy for cancer and is also edible.

The Apache Indians used the plant for the healing of wounds. The Seri Indians used the plant for sores on the head. To relieve eye soreness, the fruit was ground and wrapped in a cloth, which was then squeezed and the liquid put in the eyes. Recent research has suggested that the oil is anti-inflammatory in its action. The American Indian tribes used jojoba consistently for the treatment of wounds and swellings[50]. The natives of the American Sonora desert used jojoba oil for hair dressings, skin salves, medicinal preparations and food. They attributed magical powers to the oil; legends that it could cure cuts, scratches and sores or promote hair growth were widely accepted[51].

-oOo-

Papaya or Paw Paw (*Carica papaya*). Latex from the unripe fruits possess fungicidal properties, is used to treat ringworm in Papua New Guinea, and is applied to infected sores by the Aligandi Cuna Indians of Panama. In Belize it is applied to wounds. In Samoa the inner bark is used to treat toothache[52]. There is good scientific evidence to support the use of papain to speed wound healing and clear epithelial debris[53, 54].

-oOo-

Yarrow, Milfoil (*Achillea millefolium*). The North American Indians knew of the healing properties of milfoil even before the Europeans came to their land. It contains essential oil, achillein, stachydrine, choline, glyco-collbetain, poltines, apeginine, achilline, matricine, proazulenes, inuline, ascorbic acid, antibiotic substances, tannins, aconitic acid, asparagine, waxy oil, an enzyme, gum, benzaldehyde cyanhydrin-glycoside, flavones. The azulene content
can be up to 40% or more[55].

An infusion of the whole plant, speeds the clotting of the blood in an injury and reduces bleeding in haemorrhoids[56]. The flowering tops are anti-inflammatory[57].

It is used in cosmetics as a distilled water. As it contains azulene it can be used instead of chamomile. It is to be found in many alcoholic preparations and in addition to its tonic properties is also cicatrising[58]. Externally, a decoction is used to treat slow healing wounds, skin rashes and eczema, chapped skin and as a gargle and bath preparation[59]. The Shakers used it as a tonic well into this century and the Pah-Ute (Paiute) Indians used the plant in a decoction to treat weak stomachs[60].

“In former times it was much used as a vulnerary, and was given internally for the suppression of haemorrhages, and of profuse mucous discharges. It was employed also in intermittent fevers, and as an antispasmodic in flatulent colic and nervous affections” [61].

There is good evidence to suggest that many of the benefits of yarrow could stem from the antimicrobial properties of the essential oil present in the plant[62]. Other studies have been carried out to justify and verify the ethnobotanical use of this plant[63, 64].

-oOo-

Wounds, cuts and other skin problems

-oOo-

Big Sagebrush (*Artemisia tridentata* Nutt). The Tewa and Sanpoil used it as a carminative and laxative. The Paiute and Shoshone found it a useful stimulant, analgesic, antiseptic, and a febrifuge, in addition they (as well as the Navajo) used it as a diaphoretic and general bitter tonic. The Washoe also treated big sagebrush as a tonic and, along with the Zuni, used to burn it after illness to purify the "sickroom". The Hispanics and early pioneers, who learned of its use from the Indians, used it as a blood purifier, parasiticide and antibiotic.

The dry powder was sprinkled onto cuts, wounds, or sores or used as a baby powder. For relief of inflammation and pain, such as rheumatism, a poultice applied locally was the most common approach. To fight infections, a local wash with the decoction was typically used. After childbirth, branches were burnt for disinfectant fumigation. External washes were prepared by boiling and steeping the leaves. Pioneers would infuse the leaves in hot water or mix the volatile oil with olive oil for topical application[65].

-oOo-

Birthroot or Bethroot (***Trillium erectum*** or *Trillium pendulum*) contains a volatile oil, a fixed oil, tannic acid, the saponin trillarin (a diglycoside of diosgenin), a glycoside resembling convallamarin, a resin and starch.

The South-eastern Indians used this plant as an aphrodisiac. In the 1800s, it was commonly used to control skin infections, and stop haemorrhages. The name "birthroot" comes about because the

pioneers used it for haemorrhages after parturition. Trillium has found some use as an astringent, expectorant, and externally as an astringent poultice[66].

-oOo-

Gum Plant (*Grindelia robusta*) is an American plant which thrives west of the Mississippi to the Pacific and Mexico in dry areas and salty plains. It contains cerotic acid, phenolic substances, borneal, various acids, tannin[58]. The aerial parts contain a resin constituted by saponins and a mixture of diterpenic acids such as grindelic acid (9, 13-epoxy-labd-7-en-15 oic acid) and their derivatives 6-oxogrindelic and 7a, 8a-epoxydihydrogrindelic acids[67]. It is balsamic, antiphlogistic and a vascular tonic and is used externally in local compresses on inflamed or irritated skin. The California Indians are credited with being the pioneers in discovering the remedial secret of this plant - a decoction of the leaves and flowering tops was taken to purify the blood[68]. Today the plant is used in a lotion for dermatitis. An aqueous extract has recently been shown to have anti-inflammatory activity in the rat paw oedema test[13].

-oOo-

Clematis (*Clematis virginiana* L.) or devil's-darning-needle, old-man's beard, traveller’s joy, vine bower, virgin's bower, woodbine. It may be found from Manitoba to Quebec, south to Alabama and Louisiana, and west to Kansas. The stem, root or flowers can be used. The popular use of *C. virginiana* in pioneer medicine was probably learned from the Native Americans. It was a common remedy for skin disorders (sores, cuts), itching and venereal eruptions. The leaf or the plant was used in folk remedies for treating cancers and tumours, as well as for itching skin conditions, ulcers and scrofula[69]. A related species, *Clematis chinensis* Retz., is prescribed as an analgesic in rheumatism, and as an antipyretic[70]. In homoeopathy, a tincture prepared from the stem, leaves and fresh flowers is used for infected skin eruptions, inflammations of the ganglia and some cases of rheumatism[71]. The toxicity of this plant is generally considered to be only slight, and there have been no reports found of human poisoning, although the sap can cause blistering of the skin[72]. For the collectors of unusual information: 15g of the drug in decoction with 250g of rice vinegar dissolves fish bone lodged in the throat[73].

-oOo-

Boneset (*Eupatorium perfoliatum*) is also known as thoroughwort, vegetable antimony, feverwort, agueweed, Indian sage, sweating plant, eupatorium or crosswort. It is a widely found plant that grows in swamps, marshes and shores from Canada to Florida and west to Texas and Nebraska.

It consists of the dried aerial parts gathered during the flowering period and contains a glycoside eupatorin, and volatile oils[74]. Boneset was used as a charm and as a medicinal remedy for centuries by the North American Indians. As a charm, the root fibres were applied to hunting whistles, believing they would increase the whistle's ability to call deer. The Indians used boneset as an antipyretic and to treat skin rashes[20] and the early settlers used the plant to treat rheumatism. The name "boneset" was derived from the plant's use in the treatment of breakbone fever, a term used to describe the high fever that often accompanied influenza[75]. Leaves were traditionally poulticed onto tumours[19].

-oOo-

Miscellaneous uses

-oOo-

Apache Plume (*Fallugia paradoxa*) is found in the South-western United States of America and was used by the Hopi Indians as a hair rinse, which was reputed to promote hair growth[76]. It was also used for a variety of skin ailments[1].

-oOo-

American Pennyroyal (*Hedeoma pulegioides*) or European Pennyroyal (*Mentha pulegium*) have a deserved reputation as insect repellents.

Penobscot Indians used Pennyroyal tea when their periods did not come on, as did the Cherokee. Rappahannock Indians used the tea for menstrual pain, and the Ojibwa used it for upset stomach. Cherokee poulticed the leaves onto headaches and toothaches. Nanticoke Indians used it for liver and kidney ailments. Cherokee drank pennyroyal tea for colds, coughs and fevers, haemorrhages, even whooping cough[77]. In large doses, pennyroyal oil, if not the tea, can have emmenagogue properties, so it should be avoided by pregnant women, since it can cause abortion[78].

-oOo-

Sunflower (*Helianthus annuus*) is rich in triglycerides of linoleic acid, an essential fatty acid needed by the body to maintain good skin condition. Studies indicate that cutaneous application of the sunflower oil increases the linoleic acid levels of the skin, lowers transepidermal water loss, and helps eliminate scaly lesions common in patients with essential fatty acid deficiency[79]. Sunflower oil is used for psoriasis[80,] relieves the pain of arthritis[81], and is used on bruises[82]. The sunflower originally came from Peru in the 16th. century where as in Mexico, a number of varieties grow in the wild. It was a plant highly prized by the people, who adorned their temples with sunflowers made of pure gold[83].

The history of conventional sunflower usage by humans can be traced to Hopi Indians and other tribes of the arid south west United States. This desert botanical was probably collected by the early Spanish explorers and introduced into Europe. Settlers in Virginia found the Indians using oil from sunflower in bread making as early as 1590[84]. As with all members of the Compositae, there is a risk of contact dermatitis[85].

-oOo-

Prickly Pear (*Opuntia ficus-indica*) also known as Barbary pear, cactus pear, Indian pear, Indian fig or tuna fig, is not a kind of fig or pear, but comes from any of numerous cacti of the genus *Opuntia*[86]. It has been part of the European flora since the 16th century. The Spanish imported it from Mexico to Europe soon after the discovery of America. It is therefore of American origin, and spread rapidly in the temperate and warm regions of southern Europe and Africa[87].

The prickly pear contains about 83% water and 10% sucrose, the remainder is tartaric acid, citric acid, mucilage and other mucopolysaccharides. The seeds contain a fixed oil, a fatty acid, albumen and starch. The natives use the mucilaginous materials from inside the leaves as a moisturiser to protect the skin against the sun. Pulp from the Opuntia leaf is applied as a poultice to painful, swollen tarantula bites which rapidly disappear without burning. The pulp is also used on the sore breasts of nursing mothers[88]. In Sri Lanka, the use is similar, the young cladodes of this plant are ground and applied as a poultice to allay heat and inflammation. This material is also applied to boils to hastens suppuration[89]. In a recent congress, the Prickly Pear was cited as being antipyretic, anti-inflammatory and analgesic in its properties[90].

-oOo-

Pokeweed (***Phytolacca americana***) or Pokeweed is a poisonous perennial plant, native to North America. The native American tribes had long used pokeweed as a cure for rheumatism before it was adopted by settlers and made official in the United States Pharmacopoeia from 1820 to 1916. Dried pokeweed root was used to relieve pain and allay inflammation, ease chronic rheumatism and treat skin parasites[91]. The saponin esculentoside, isolated from *Phytolacca esculenta*, inhibits phagocytic activity and interleukin production, properties that may underlie its strong anti-inflammatory actions[92]. The authors report a case of poisoning by roots of *Phytolacca decandra* L. (*P. americana*) accidentally mixed with carrots. Four horses were poisoned and two

died within 12 to 24 h after feeding. PM showed severe gastroenteritis. This is thought to be the first case of *Phytolacca* poisoning[93]. In view of the toxicity, this is probably a material best omitted from cosmetic formulae.

-oOo-

CONCLUSIONS

In this quick overview we have had a glimpse of the vast knowledge of medicinal plants possessed by the many tribes that made up the population of the United States of America prior to the influx of settlers from foreign lands. Sadly, none of the tribes had written language prior to contact with foreign visitors (Sequoya c.1760-1843 is credited with the invention of the Cherokee written language). The true scope, extent and depth of medicinal plant knowledge can now only be imagined.

REFERENCES

1. Tim Johnson: Internet address: http:// www.herbweb.com/herbage/main.htm. Herbage 4th edition.
2. The Grolier Encyclopaedia, CD ROM 2nd. edition. 1993 Grolier Electronic Publishing
3. B.H.M.A.: The British Herbal Pharmacopoeia 1983. ISBN 0-903032-07-4.
4. J.Lust: The Herb Book, 1986, 16th. impression, Bantam Publishing. ISBN 0-553-17273-5.
5. D.Hoffmann: The New Holistic Herbal. Element. Second impression 1991. ISBN No. 1-85230-193-7
6. R.C.Wren: Potter's New Cyclopaedia of Botanical Drugs and Preparations, 1985. 8th impression, published C.W.Daniels. ISBN 0-85032-009-7
7. C.F.Leyel: Herbal Delights. 1987 Faber and Faber ISBN 0-571-14850-6
8. Bradley, P.R.: British Herbal Compendium Volume 1. 1992. BHMA. ISBN No. 0-903032-09-0.
9. The British Herbal Pharmacopoeia 1996. The British Herbal Medicine Association (BHMA). 4th edition 1996. ISBN No. 0-903032-10-4.
10. D.Hoffmann: The New Holistic Herbal. Element. Second impression 1991. ISBN No. 1-85230-193-7
11. Thurmon F.M.: The treatment of psoriasis with a Sarsaparilla Compound. New Eng. J. Med. 1942, **227**, 128-133.
12. Hutchens, A.R.: Indian Herbalogy of North America. 1973 First paperback edition. Shambhala. ISBN No. 0-87773-639-1.
13. R.C.Wren, rewritten by E.M. Williamson and F.J. Evans: Potter's New Cyclopaedia of Botanical Drugs and Preparations, 1994, published C.W.Daniels. ISBN 0-85207-197-3.
14. Lawrence Review of Natural Products (Jan 1990 revised May 1995), Copyright 1994 by Facts and Comparisons (ISSN 0734-4961). 111 West Port Plaza Suite 400, St. Louis, Missouri 63146-3098.
15. Alma Hutchens: A Handbook of Native American Herbs - the pocket guide to 125 medicinal plants and their uses. Shambhala. 1992. ISBN No. 0-87773-699-5.
16. Glenise McLaughlin: Medicinal Plant review. Aust J Med Herbalism Vol 4 (4) 1992. Echinacea.
17. Keville, K.: The Illustrated Herb Encyclopaedia - a complete culinary, cosmetic, medicinal and ornamental guide to herbs. Grange Books. 1991. ISBN No. 1-85627-175-7.
18. Varro E. Tyler "Phytomedicines in Western Europe: Their potential impact on herbal medicine in the United States". Presented at the American Chemical Society Symposium "Human medicinal agents from plants" April 1992.
19. S.Foster/James A.Duke: Eastern/Central Medicinal Plants. Peterson Field Guides. 1990. ISBN No. 0-395-35309-2 also 0-395-46722-5 (pbk). Houghton Mifflin.
20. A.Y.Leung: Encyclopedia of Common Natural Ingredients used in food, drugs and cosmetics. 1st. edition. John Wiley 1980 ISBN No. 0-471-04954-9.
21. Nirmal K. Bhattarai: Traditional herbal medicines used to treat wounds and injuries in Nepal. Tropical Doctor 1997, 27, (suppl 1), 43-47.
22. M.Grieve: A Modern Herbal, 1984 Savvas Publishing. ISBN unknown.
23. Lawrence Review of Natural Products (July 1992) “Bloodroot”, Copyright 1994 by Facts and Comparisons (ISSN 0734-4961). 111 West Port Plaza Suite 400, St. Louis, Missouri 63146-3098.
24. Hartwell, J.L. 1960. Plant remedies for cancer. Cancer Chemother Rep 1960 (July): 19-24.
25. Fell, J.W. 1857. A treatise on Cancer, and its Treatment. J. Churchill, London. p.95.

26. Stone, W.S. 1916. A review of the history of chemical therapy in cancer. Med. Rec. 90: 628-634.
27. Bentley R, Trimen H. 1880. Medicinal Plants, Vol.1, plate 20. J & A Churchill, London.
28. Barton, W.P.C. 1817. Vegetable Materia Medica of the United states; or Medical Botany. Vol.1. W. Carey & Sons, Philadelphia; Schoepf D. 1787. Materia Medica Americana. JJ Palm, Erlangen, Germany. 170p.
29. Shear MJ, Hartwell JL, Leiter J. 1960. In JL Hartwell, Plant remedies for cancer. Cancer Chemother Rep 19960 (July): 19-24.
30. A.Y.Leung and Steven Foster: Encyclopedia of Common Natural Ingredients used in food,drugs and cosmetics. 2nd. edition. John Wiley 1996 ISBN No. 0-471-50826-8.
31. Tyler, V.E., Brady L.R., Robbers, J.E.: Pharmacognosy. 9th edition. Lea & Febiger. 1988. ISBN No. 0-8121-1071-4.
32. Herrick, James William. Iroquois Medical Botany Publication University Microfilms International, Ann Arbor, Page 337, 336
33. Herrick, James William. Iroquois Medical Botany Publication University Microfilms International, Ann Arbor, Page 336.
34. Chandler, R.Frank, Lois Freeman, & Shirley N. Hooper. 1979. Herbal Remedies of the Maritime Indians Publication Journal of Ethnopharmacology 1:49-68 Page 61 .
35. Tantaquidgeon, Gladys: 1972. 1928 Folk Medicine of the Delaware and Related Algonkian Indians Mohegan Medicinal Practices, Weather-lore and Superstitions. Pennsylvania Hist. and Mus. Commission. Anth. Papers #3, SI-BAE Annual Report #43: 264-270, Page 75, 132 264
36. Reagan, Albert B. 1928. Plants used by the Bois Fort Chippewa (Ojibwa) Indians of MN. Wisconsin Archeologist 7(4):230-248. Page 231
37. J.de Bairacli Levy: The illustrated herbal handbook for everyone. 1991 4th edition. Faber and Faber. ISBN No. 0-571-16099-9.
38. M.Evans: A guide to herbal remedies. C.W.Daniel. 1990 ISBN No. 0 85207 221.
39. M.Stuart: The Encyclopaedia of Herbs and Herbalism. 1986. Orbis ISBN 0-85613-700-6. signed edition.
40. S.Y.Mills: The A-Z of Modern Herbalism, A comprehensive guide to Practical Herbal Therapy. Thorsons 1989 (retitled) ISBN No. 0-7225-1882-X. signed edition.
41. D.D.Buchman: Herbal Medicine: The Natural way to get well and stay well. 1987. Century Hutchinson ISBN 0-09-153691-X.
42. Lawrence Review of Natural Products (June 1987) ‘Golden Seal’, Copyright 1994 by Facts and Comparisons (ISSN 0734-4961). 111 West Port Plaza Suite 400, St. Louis, Missouri 63146-3098.
43. W.C.Evans: Trease and Evans, Pharmacognosy. 13th edition. Balliere Tindall ISBN 0-7020-1357-9.
44. R.G.Harry: The Principles and practice of modern cosmetics - vol 2. Cosmetic Materials. 2nd. edition 1963 published Leonard Hill.
45. L.Gordon: A Country Herbal. 1980 Webb and Bower (publishers) Ltd. ISBN No.0-906671-09-4.
46. Swoboda, M. and Meurer, J.:Treatment of Atopic Dermatitis with Hamamelis ointment. British Journal of Phytotherapy, Vol.2, No.3, 1991/1992.
47. Council of Europe. Plant Preparations used as ingredients of cosmetic products. 1st. edition. Strasbourg 1989. HMSO. ISBN No. 92-871-1689-X.
48. Marvin M.Kaplan: E.E.Dickinson spreads the word on Witch Hazel. Happi October 1993 pp.78-80.

49. The Lawrence Review of Natural Products July 1988 (updated Sept 1995) ‘Jojoba’, Copyright 1994 by Facts and Comparisons (ISSN 0734-4961). 111 West Port Plaza Suite 400, St. Louis, Missouri 63146-3098.
50. F.Bloomfield: Miracle Plants. Jojoba and Yucca. Century Publishing. 1985. ISBN No. 0 7126 1008 1.
51. D.J.Ricks: Functional Natural oils. Cosmetics and Toiletries, vol 106,p.77, Feb 1991.
52. Milliken,W., Miller, R.P., Pollard, S.R., and Wandelli, E.V.: The Ethnobotany of the Waimiri Atroari Indians of Brazil. Royal Botanic Gardens Kew. 1992. ISBN No. 0-947643-50-8. (05.04.93)
53. S. Thomas Glasser, M.D. "A new treatment for sloughing wounds". American Journal of Surgery 50: 321-322 November 1940.
54. Caci, F., Gluck, G.M.: Double-blind study of prednisolone and papase as nhibitors of complications after oral surgery. J Am Dent Assoc (1976 Aug) 93(2):325-7
55. A data sheet from Dragoco
56. J.Wiseman: The SAS Survival Handbook. 1986, William Collins & Co. Ltd. ISBN No. 0-00-272774-9.
57. Martindale. The Extra Pharmacopoeia. 29th. Edition. 1989. The Pharmaceutical Press. ISBN. No.0-85369-210-6.
58. Chiej, R.: The Macdonald Encyclopoedia of Medicnal Plants. 1984, reprinted 1988. Macdonald Orbis. ISBN No. 0-356-10541-5 (hb), -10542-3 (pb).
59. S.Bunney: The Illustrated Book of Herbs. 1984. Octopus ISBN 0-7064-1489-6.
60. Forsell, M.: Herbs - The Complete guide to growing, cooking, healing, and pot-pourri. 1990. Anaya Books. (originally published under the title Heirloom Herbs in the USA by Villard Books).
61. G.Wood and F.Bache. The Dispensatory of the United States of America. 15th edition. 1883. J.B.Lippincott & Co.
62. Barel, S., Segal, R., Yashphe, J.: The antimicrobial activity of the essential oil from Achillea fragrantissima. J Ethnopharmacol (1991 May-Jun) 33(1-2):187-91.
63. Kelley, B.D., Appelt, G.D., Appelt, J.M.: Pharmacological aspects of selected herbs employed in hispanic folk medicine in the San Luis Valley of Colorado, USA: II. Asclepias asperula (inmortal) and Achillea lanulosa (plumajillo). J Ethnopharmacol (1988 Jan) 22(1):1-9.
64. Chandler, R.F., Hooper, S.N., Hooper, D.L., Jamieson, W.D., Flinn, C.G., Safe, L.M.: Herbal remedies of the Maritime Indians: sterols and triterpenes of Achillea millefolium L. (Yarrow). J Pharm Sci (1982 Jun) 71(6):690-3
65. 65. Francis Brinker: *Artemisia tridentata* Nutt.British Journal of Phytotherapy, Vol.2, No.3, 1991/92.
66. Spoerke, D.G.: Herbal Medications. Woodbridge Press (Santa Barbara, California 93160). 1990. ISBN No. 0-88007-181-8.
67. I. Morelli, E. Bonari, A.M. Pagni and P.E. Tomei, also F. Menichini: Selected Medicinal Plants. FAO Plant Production and Protection Paper 53/1. Food and Agriculture organisation of the United nations. Rome 1983. FAO 1984. ISBN No. 92-5-101481-7.
68. Charles Francis Saunders: Edible and Useful Wild Plants of the United States and Canada. Dover Books. 1976 (first published 1934). ISBN No. 0-486-23310-3.
69. The Lawrence Review of Natural Products (Mar 1996). ‘Clematis’.
70. Keys, D.: Chinese Herbs - Their Botany, Chemistry and Pharmacodynamics. 1976 (1990 in paperback) Charles E.Tuttle. ISBN No.0-8048-1667-0.
71. P.Schauenberg, F.Paris: Guide to Medicinal Plants. 1990 First paperback edition (Paris 1974). Lutterworth Press ISBN No. 0-7188-2820-8.

72. Marion R. Cooper and Anthony W. Johnson: Ministry of Agriculture, Fisheries and Food. Poisonous Plants and Fungi - an illustrated guide. London. HMSO. second impression 1991. ISBN No. 0-11-242718-9.
73. Daniel P.Reid: Chinese Herbal Medicine. Shambhala (Boston) 1993. ISBN NO. 0-87773-397-X and ISBN No. 0-87773-398-8 (paperback).
74. The British Pharmaceutical Codex, 1923. An Imperial Dispensatory for the use of Medical Practitioners and Pharmacists. The Pharmaceutical Press. London. p.426.
75. The Lawrence Review of Natural Products (Feb 1993)
76. Walter H. Lewis, Memory P.F. Elvin-Lewis: Medical Botany - plants affecting man's health. John Wiley & Sons. 1977. ISBN No. 0-471-53320-3 (hardback) 0-471-86134-0 (paperback).
77. J.A.Duke: Focus on American Pennyroyal. The International Journal of Aromatherapy. Winter 1991, vol.3, no.4.
78. Tony Balacs: Safety in pregnancy. Essential issues II. The International Journal of Aromatherapy, Spring 1992 vol.4, No.1, p.12.
79. Roberta Wilson: "Desert plants - derivatives for personal products. DCI January 1993.
80. R.Trattler: Better Health through Natural Healing. 1985 Thorsons Publishers. ISBN 0-7225-1382-8.
81. H.Winter-Griffith: The Vital Vitamin Fact File. 1988. Thorsons Publishing ISBN 0-7225-1693-2.
82. Malcom Stuart: Illustrated guide to Herbs. CPG (Cambridge Physic Garden) Edgerton International Ltd. 1994
83. P.Back. The Illustrated Herbal. 1987. Hamlyn Publishers through Octopus Books printed in Hong Kong by Mandarin. ISBN No.0 600 553 361.
84. James Arquette, James Brown and Kelly Dwyer: A place in the sun. SPC November 1994, p.49-51.
85. E. Gomez, R. Garcia et al. Occupational allergic contact dermatitis from sunflower. Contact Dermatitis 1996: **35**: 189.
86. Beazley, M.: Fruit - A connoisseur's guide and cookbook. Alan Davidson and Charlotte Knox. 1991. Mitchell Beazley Publishers. ISBN NO. 0-85533-903-9.
87. Bianchini F., Corbetta F,.: The Fruits of the Earth. Translated from the Italian by Mancinelli A.Bloomsbury Books, London. ISBN No. 1-870630-10-6.
88. Robert Noll: Southwest Desert Botanicals. Cosmetics and Toiletries Vol. 109, June 1994, p.35-37.
89. D.M.A. Jayaweera: Medicinal Plants used in Ceylon Part 2. National Science Council of Sri Lanka. Colombo 1980.
90. Mulas, M.: Medicinal properties and yield possibilities of the prickly pear (Opuntia spp.) in the Mediterranean environment. First world congress on medicinal and aromatic plants for human welfare (WOCMAP), Maastricht, Netherlands, 19-25 July 1992. [edited by Palevitch, D.; Simon, J. E.; Mathe, A.]. Acta Horticulturae (1993) (No. 331): 79-84. ISBN 90-74379-03- 6 [En, 12 ref.] [Centro Studi e Ricerche A.C.S.I., 07100 Sassari, Italy.]
91. Roger Phillips & Nicky Fox. Herbs. Pan Books. 1990. ISBN No. 0-330-32600-7.
92. Guo-Qing Liu, Dept of Pharmacology, China Pharmaceutical University, Nanjing 210009, China: Chinese Natural Products and New drugs. Pharmaceutical News, Vol.2, No.2, 1995.
93. D. Greiss, F. Enjalbert, J. Rech: Diagnosis of poisoning by *Phytolacca decandra* L. in horses. Review of Medécine Vétérinaire (1994) **145** (2) 133-139.