

The

Central

Spine

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USES OF CACTI, PAST AND PRESENT
By JERRIE LAMONT

Early historians of Mexico tell how cacti was used as food, beverage, housing and fencing materials, firewood, glues, tools, medicine, dyes and inks. How they were sold in the market place, and how they were used in ceremonies. Cacti, among the Indians, was a source of food and drink.

RELIGION Among the Aztecs the teonochtlii, or "divine prickly pear" was considered sacred. To the Aztecs, the red prickly fruit held much association with their sacrifices. They compared it to the human heart offered to the Gods for sacrifice.

In Mexico--Teonochtitlan--out of the buildings that formed the principal temple two were dedicated to rites in which cacti or cacti spines played a major role. The teonochtlii became the symbol and banner of the Aztecs thus, Napanitli which means "my banner" from which Nopalitl was derived, the nopal of our times.

The Aztecs used the "nopal" symbol on all of their artistic work, jewelry, paintings, feather works, embroidery, etc. One of the first gifts sent by Montezuma to Charles V of Spain was a beautiful collar with eight golden pieces and 183 "chalchihuites" or green stones (emeralds) in the form of tunas.

When Mexico obtained its independence from Spain, the young nation chose, as its emblem of nationality, the old Aztec sign of an eagle perched on the nopal. The sign now embellishes the Mexican National flag.

DYE Cacti as an indirect source of dye in pre-hispanic times was the cochineal dye. At first it was believed to be an excrescence of the Opuntia tomentosa and it took a long time to recognize that it was an insect that dwelled on the cacti.

The dye was used to color clothing material and feathers. The Indians learned to cultivate the insect and to reproduce it by "planting it" in Opuntia before the eggs were laid.

Today the dye is used in some lipstick manufacturing. At one time the total production of cochineal, for export, was 6.5 million tons annually.

BOTANICAL GARDENS Tenococans and Mexicans had the first of the kind in the world, and among which were those of Montezuma and Netzahualcoyotl in 1567. Of course they included many cacti. Up to a few decades ago, one could still find in the Valley of Mexico, plants introduced by the Indians to their botanical gardens and stations. The Echinocactus horizantalonium found by Bravo (1922) in the northern part of Mexico was one of the few surviving specimens born at the site of one of the botanical stations from seeds probably belonging to a collection specimen.

TANNIN The stem of columnar cacti as a source of tannin for skin dressings for burns has been reported from the Pima Indians, used much as we use it today.

VINEGAR From wine prepared from cactus fruits, a vinegar was obtained that was used as a condiment for stews and other dishes. Also fermented cactus wine was used for etching by certain Indians.

LIVE HEDGES The use of cacti to form live hedges to limit land boundaries, or for protection, was widely used over Mexico and is still used today. I saw this in the Phoenix Botanical Garden and in California.

Ornaments The Indian tribes that settled in Anahuac were quite fond of flowering plants. The most popular were Nyctocereus, Aporocactus, Heliocereus, Epiphyllum and Nopalxochia. It is quite possible that the Aporocactus flagilliformis, which is known only in cultivation, originated from a specimen of Aporocactus flagiformis collected and cultivated by natives several years before the conquest.

SOAPS The triterpenoid alkaloid producing cacti furnished the Indians with a substitute for soap. The Navajos used Peniocereus greggii for this purpose. Some southern Mexican Indians communities still use the stems of Stenocereus to do their laundry. Their preference, however, is Agave or Furcraea leaves.

FISH POISON The Machaerocereus gummosus was cut into small pieces and thrown into lagoons. It was used by the Baja Indians to poison the fish which then floated to the surface of the water where the Indians collected them.

GLUES The mucilage produced by most cacti was used by several Indian tribes of Mexico as a source of glue. Generally, from Opuntia, Stenocereus. Ariocarpus and Stenocereus thurberi yielded a fine glue by concentration at low temperatures the juice extracted from the stems. Great quantities of excellent glue were obtained from Pachycereus bollianus. The gums produced by certain Opuntias were used in the Mexican central plateau either by themselves or mixed with other sticky substances obtained from other plants such as Oncidium (an orchid) or from insects. The juice extracted from Opuntia pads was mixed with mud and mortars as a gluing material for adobe and stone construction, especially as plasters to cover construction.

FIREWOOD Several species of cacti were used as firewood,, but mostly that of Cylindropuntia. The dried vascular bundles of the Opuntia furnished a long flame that was useful as torches. According to some historians, in a ceremony every 52 years the Aztecs extinguished all fires. The people believed that the world would come to an end if a new fire could not be started. The new fire was started with "nopal" wood.

CONSTRUCTION WOOD The dried vascular bundles of the tall cereus provided the Indians with good housing material for walls and roofs.

TOOLS Several tools were made by using Ceri. These long, light bundles were used as poles to gather fruits, to make lances, spears and harpoons for fishing and hunting, and to make tools used in agriculture. They were also used to make the frames of a litter that was woven with palm or cat-tail leaves. This was used for carrying or pulling loads of many kinds.

In South America the foot long spines of the columnar cacti are used as knitting needles by Indian women. In Mexico the long white spines of Perekiopsis chapistle are still sold in market place and are used in making lace.

Cactus spines, at one time, were used for gramophone needles. The strong straight spines of several cactus were used as needles for engraving or as puncturing tools. The hooked spines of the Ferocactus were attached to a pole and used to pick fruits. The pads of the prickly pear were put under heavy stones that were to be moved and the stones simply slid over them. A cleansing tool, provided by the spines of several cacti, was the toothpick. Among the Aztecs teeth must be cleaned after each meal.

FIBERS The soft woolly hairs of the cephalia of the Cephalocereus, the central wool of Echinocactus platyacanthus and some Coryantha were gathered by Indians and used to stuff pillows and mattresses, and were mixed with other fibers for weaving cloth.

SEEDS Cactus seeds were a source of nourishment. The seeds of the Opuntia, Pachycereus, Carnegia, Stenocereus and Ferocactus were eaten fresh, or stored away for future use---or in some cases were recovered from their own feces, washed and eaten again. Seed was frequently ground into a flour meal and eaten much the same as corn flour which was mixed with water and provided an "atolle" a kind of porridge.

Cactus seeds are quite oily, especially those of the Pachycereus pringlei and Pachycereus pecton-aboriginium. The ground meal was sometimes added to stews or used like butter on tortillas. The Seri and Papago Indians used this meal in small balls with salt added. It was prepared either with seeds collected for the purpose or from seeds discarded from the wire prepared from the fruit. The Seri women used to mix fresh seed of the Cardon (Pachycereus pringlei) with those of Zoostera marina which are rich in proteins. Also used for food purposes were Ferocactus acanthodes, Ferocactus wislizenii and Ferocactus covillei, in Sonora and Arizona.

STEMS The stems of some species of cacti were eaten raw. Such cacti are Echinocactus, Ferocactus and Echinocereus. The Seri Indians still use Ferocactus acanthodes to extract a potable juice in times of thirst. Some Indians, from the Sonoran desert, chewed the bitter pulp of the Saguaro. The

stems of the flat padded Opuntia are still considered a delicacy and are probably used today much the same as they were several thousand years ago. The word "nopalito" means little "nopal" and napalli was one of the natural generic names of Opuntia and Nopales.

The tender stems, stripped of their spines, were cooked and mostly used when mixed with meats, eggs or vegetables and seasoned with various species of wild onions, chili peppers, chocolate, pumpkin seeds and different kinds of tomatoes.

The fleshy stems of Echinocereus, Ferocactus and Melocactus are cut into small pieces and slowly cooked in water mixed with "tequesquite" (a natural sodium bicarbonate) which produces a syrup which crystallizes into a candy. It is still used today and the manufacture of candy is one of several threats to the survival of barrel cactus.

FLOWERS The flowers of Opuntia, Stenocereus, Myrtillocactus and Ferocactus are edible. The petals of Opuntia are used as vegetables mixed with stews. The flowers of Pachycereus pringlei can be eaten fresh. The small flowers of Myrtillocactus can be used as food, either cooked separately, mixed with stews, or boiled with syrup and candied. The flowers of several other species are used to give color to soft drinks and dishes.

FRUITS A great percentage of cacti fruits are not only edible but juicy, fresh, sweet and quite tasty due to the high content of sugar and water. Cactus fruits are eaten raw, fresh or sun-dried and they can also be cooked as vegetables and added to stews. Primarily they are used as syrups and preserves. Fermented juices of some species are made into alcoholic beverages.

The prickly pears were mostly eaten raw, but also crushed and boiled. According to temperature and duration of the boiling process the following products are obtained;

1. A thin syrup now called "miel de tuna"
2. A sort of marmelade
3. A thick syrup now called "melcocha"
4. A soft paste, now called "queso de tuna"
a tuna cheese.

The syrups were either prepared for more or less prompt consumption or they were stored in earthen jars, sealed with mud, waxes or glues, for consumption at a later time.

The tunas, sliced and dried in the sun, was another way to conserve them for future use.

The strained juice of fresh tunas was used as a source of wine. The juice, heated at a low temperature, either by the sun or firewood, will ferment in about an hour in an active way. This alcoholic drink is called "colonche" and has a nice sweet flavor. The wine prepared from the fruit of the Machaerocereus gummosus is the strongest. A soft wine was prepared by the Seri by fermenting under the sun the mashed pulp with added water. When placing in a container the kneaded fruit pulp without any water, it forms its own juice which becomes a strong wine.

The Seri Indians, to preserve fruits of columnar cactus, took the pulp of the ripe fruit and mixed it with pulp from unripe fruit. The mixture is mashed and kneaded and the juice is poured off into pottery jars. The mashed pulp forms a sticky mixture which is patted and formed into flat, round cakes and then dried.

Opuntia surplus fruits dried are used like our prunes, Northern Europe benefits from a well-known brand of facial cream whose base in the cactus Opuntia.

Fruits that can be used from cactus are:

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|-------------------------|----------------------------|
| PACHYCEREUS | P. PECTEN-ABORIGINUM |
| STENOCEREUS THRUBERI | CARNEGIA GIGANTEA |
| MACHAEROCEREUS GUMMOSUS | LOPHOCEREUS SCHOTTII |
| SELENICEREUS VAGANS | S. MURILLI |
| STENOCEREUS MONTANUS | ACANTHOCEREUS OCCIDENTALIS |
| CEPHALCEREUS ALENSIS | C. PALMERI |

The fruits of many cacti are of greater importance to cattle than to man, since it can be used as fodder and to quench thirst. Burbank tried to raise a spineless cactus and succeeded. However, a steady diet of cacti is unbalanced for cattle feed. Actually, spineless cacti need sub-tropical temperatures and an annual rainfall of at least 20 inches. They do very well when the rainfall is as much as 50 inches.

MEDICAL Opuntia pads were used to decrease pain and swelling with broken bones. Sliced in half, heated and applied to the part of the body that was swollen, much as today's hot poultices, the moist heat did much to relieve pain.

Prickly pears were used by the Aztecs to cure toothaches. The tooth was first punctured and a poultice of Opuntia tenochtle was applied.

Juice extracted from the stem "extinguishes fever, quenches thirst, and humidifies the internal organs." The fruits stop diarrhea, especially if caused by fever. The gum of the prickly pear regulated the heat of the kidneys, especially if mixed with "pitaya juice."

The roots of the prickly pear used with a species of geranium was considered good for hernias and epilepsy and as a remedy for an irritated liver. "It is said that the roots which are bitter heal ulcers."

Opuntia leaves, after being peeled and mashed with water are given to a woman who cannot give birth, or to one whose child has sided to help with a normal delivery.

Lophocereus schottii was used by the Indians of Sonora against gastric ulcers and tumors, but only the five ribbed stems were used as medicine. Today herbalists sell it under the name of "musaro."

Lophophora williamsii is the most widely known cacti used for its psychological and hallucinatory effects. It also decreases fatigue and produces affective and intellectual alterations along with modifications of perceptions, visions and euphoria.

Other species included in the generic group of peyotes are:

Arioretusus

A. fissuratus used to give endurance to runners

Pelecyphora aselliformis is presently used in San Luis Potosi for fever and as a substitute for peyotes.

Corypantha compacta

Epethelantha micromeris increases vision

Mammillaria heyderi relieves headaches, clarifies vision, enables use to find witches and builds endurance for runners

Echinocereus trigochidiatus produces mental changes.
Pachycerus pectin-aboriginum produces dizziness and vision
Saguaro contains alkaloids and is mainly used in the form of wine from its fruit. Used primarily for the Rain Ceremony
Selenicereus grandiflora is used in a heart medication in general use today
Dioscrea elephantipes (Elephant foot) was the precursor of cortisone
Aloe for burns and today one can find it in almost any form for hands, face, body and burn cream lotions

Today research is being done to find the effects of a semipurified product, obtained from Opuntia streptacantha on rabbits. The end product would effect people with glycemia (low blood sugar) and triglyceridemia (high cholesterol.)

Last but not least, the nurseryman and explorers who make a living by providing cactus to cactophiles with even more beautiful plants for their greenhouses. There are even people who make money from cacti by writing about them.

By JERRIE LAMONT

Thirty years ago Jerrie walked by a house in Cleveland and saw a handsome white trumpet shaped flower blooming in a white ceramic container, It was an Echinopsis. She was ecstatic with the beauty of the flower. She was hooked.

The next step was to buy cactus seeds. 25 cents for a packet! She bought Ferocactus and Opuntia and got almost 100% germination. It was ten years or more before they got to any size and bloomed.

Jerrie kept adding to her collection of plants for many years. She joined the Midwest Cactus and Succulent Society (Cleveland.) Two and a half years ago she came to the National Convention of CSSA in Phoenix, and in spite of the extreme heat during that convention, she became sold on Arizona. This is where she wanted to live.

Jerrie still has her greenhouse but she has turned to the propagation and cultivation of her plants outside in the ground.

Seven years ago she became a nurse and became interested in the medicinal uses of plants. She investigated the many uses of cacti for food.

The paper we are reading today was prepared for the (Cleveland) Midwest Cactus and Succulent Society, where each member was required to give a talk every two years or so.

Jerrie is currently nursing at the Valley Lutheran Hospital in Mesa.

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