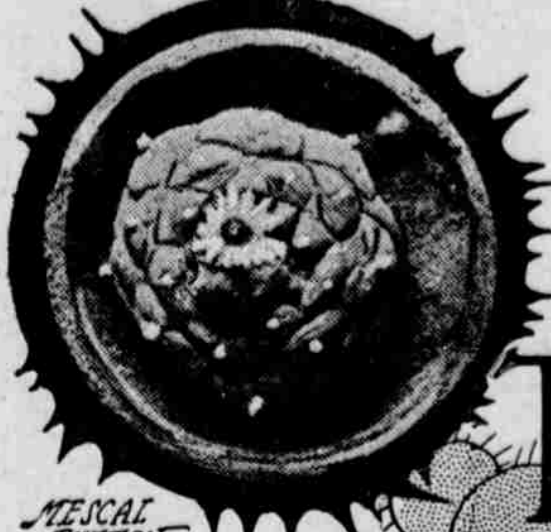


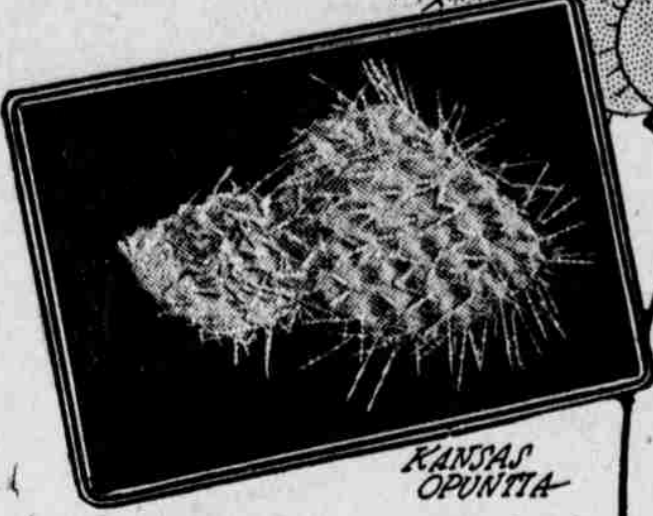
CACTI and THEIR USES



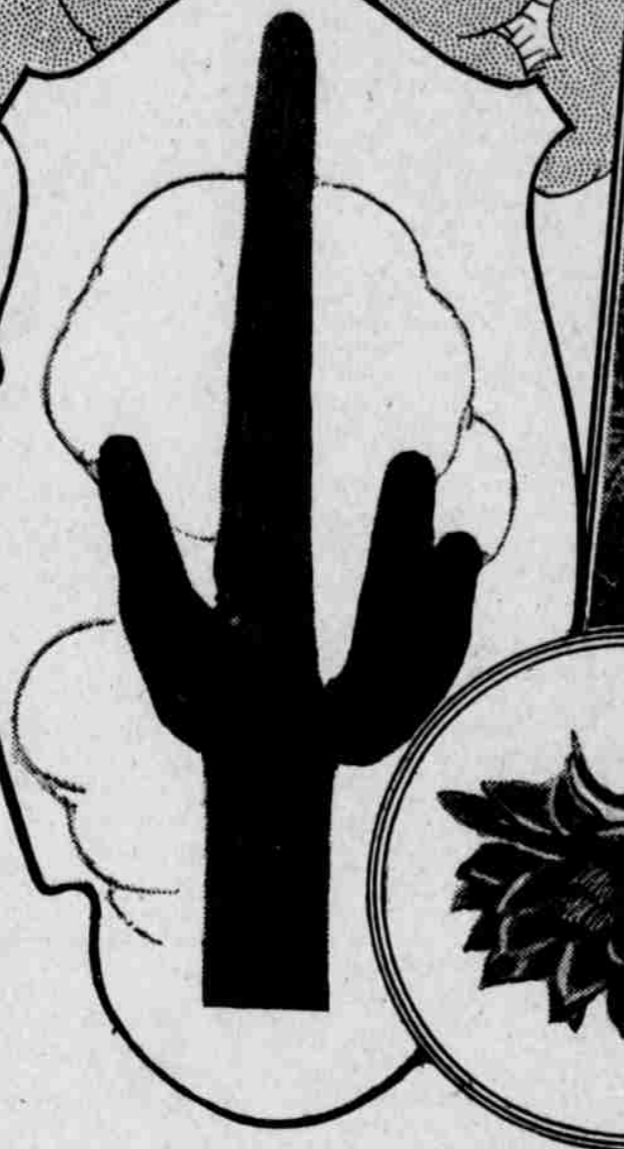
MESCAL BUTTON



MEXICAN ECHINOCACTUS



KANSAS OPUNTIA



AMERICAN DESERT CACTI



HELIocereus MOLLONI

THE STORY OF OUR STATES

By JONATHAN BRACE

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OKLAHOMA

OKLAHOMA holds the record for rapid growth. It was in the first term of President Benjamin Harrison that Oklahoma was opened up. Good farm land available under the Homestead Act was difficult to find so the United States bought from the Indians, who had been segregated in Indian territory, a large tract of some 40,000 square miles that had been used largely by the Indians as pasture for their cattle and horses. This was called Oklahoma, a word meaning "fine country," and was arranged to be ready for sale to homesteaders at 12 o'clock noon of April 22, 1889. Troops were placed on guard to prevent any settlers entering before that time for more than 100,000 "boomers" as they were called, came from all over the country to obtain farms or places for business. On the stroke of the hour, bugles sounded and the mad rush by men, women and children to locate claims began. The government had arranged land offices at many places at which claims could be filed for the farms or city lots, and all that day these were besieged by fighting mobs to register their selections. Before midnight hundreds of farms were staked out and Oklahoma City and Guthrie were well on their way to become cities. The latter in particular seemed to burst full fledged from grassy plain to bustling city. In less than three hours four business blocks were laid out, and lined with tents in which were shops and offices. A city council was elected at four o'clock with over 10,000 votes cast, and the Oklahoma Herald issued its first edition before all the "boomers" had reached town. In less than six months Guthrie had four newspapers, electric lights, street cars, and half a dozen banks. Additional lands were opened up for settlement in later years and the same scenes of phenomenal growth were re-enacted.

Thus was developed this region which came into the possession of the United States as a part of the Louisiana Purchase in 1803 and which was set aside for so many years as Indian country. Previous to the formation of Oklahoma territory, congress had forbidden white settlers in this part of the country, and this edict was enforced by federal troops. As the demand for more land was felt and as the Indians decreased in numbers, Indian territory was added to Oklahoma territory, and in 1907 it was admitted to the Union as the State of Oklahoma, adding another star to our flag, which for eleven years had contained forty-five. The state has flourished to such an extent that it has ten presidential electors, which is more than double that of many of the older states of larger size.

NEW MEXICO

AS ITS name implies, New Mexico's history is closely allied with Old Mexico. It was the Spanish who were its first explorers, De Vaca visiting this region in 1536 and Coronado four years later. The natives were the Pueblo Indians, although they are sometimes erroneously reported to have been Aztecs as they were well advanced in the arts and had a comparatively high civilization. These Indians were conquered in 1598 by Juan de Onate and became subject to Spanish rule, being forced to work the mines and pay tribute. Missions were established and Santa Fe was founded about 1606.

Except for a period of ten years later when the Indians revolted and maintained their independence, New Mexico remained under Spanish control until in 1821 Mexico gained its independence from Spain. Then New Mexico became a province of Mexico. Thus it remained until the outbreak of the Mexican war, when in 1846 Colonel Kearny marched from Fort Leavenworth with his troops, occupied Santa Fe and declared this region a part of the United States. By the Treaty with Mexico in 1848, the upper part of the state was formally ceded to the United States and the Territory of Mexico was organized in 1850, which reached from Texas to California. Arizona was set off from New Mexico in 1863 and a few years later a portion was contributed to Colorado. Application for admission as a state started in 1850, but it was not until 1912 that New Mexico became the forty-seventh state.

New Mexico ranks fourth in size among the states with an area of 122,634 square miles, but is sparsely populated and accordingly has only three electoral votes for President.

Almanac an Old Institution.

Almanacs are by no means of recent invention, in fact, there is one in the British museum at present which was issued during the reign of Rameses the Great, and is about 3,000 years old. In those good old days almanacs were worth having, instead of merely telling you that Monday was the first of April it went on and said that on that day you mustn't start on a journey, or look at a rat, or go outdoors before daylight, as these things were unlucky.

SEE RECORD CROP

Western Canada Farmers Rejoice Over Bountiful Harvest.

Favorable Weather and Fertile Land Combine to Pour Riches into the Hands of Agriculturists.

There are those in nearly every state in the Union who have relatives or friends, or someone they have known, who are residents of some of the provinces of Western Canada. They have gone there to carry on the profession and occupation of farming. Their progress has been carefully watched and such news as may come from them or the country that they have taken partial possession of will be read with interest. Important news just now is the condition of the crops. Newspaper correspondents and government representatives are now in a position, after making a careful survey of conditions, to announce that the crop conditions in Manitoba, Saskatchewan and Alberta carry the promise of an early and bountiful harvest and farmers view the outlook with utmost pleasure. Good growing weather has prevailed since seeding and all cereal crops are well advanced. Wheat headed out has long, heavy heads, and big yields are indicated; predictions are being made that the record production per acre in 1915 will be exceeded. Harvesting began in some sections in the early part of August. An interesting feature of the situation is the fact that there are no bad reports from any part of the country from the Red river to the Rocky mountains and from the International boundary to Peace river. There will also be good fruit, vegetable and root crops.

Most remarkable has been the germination of most of the grain. Marquis wheat sown on May 11 was fully headed out on June 30.

Considerable advancement has taken place in the last few years in the growing of corn. Sunflowers are also being grown quite extensively. Both these do wonderfully well. On July 4 the writer was shown a twenty-acre field of corn that had reached a height of upwards of five feet, while a five-acre field of sunflowers close by, was entering for a keen race skyward. Both will doubtless be used for ensilage, to which will be added a splendid crop of alfalfa or sweet clover, which also have proved very successful. Now that corn, sunflowers, sweet clover and alfalfa have taken a liking to the country, it will mean a period of reconstruction in many farming districts, and mixed farming will supersede the period of "grain mining" that, no matter how fertile the soil, no matter how generous it may be in giving forth from its great storehouse of all the properties that have given to Western Canada its well-earned name of the wheat granary of the world, too much may be asked of it; the departure from this into the sphere of more intensive farming, covering many generalities not before indulged in, will add dollars per acre to the value of this productive land. Those who have watched the progress of Western Canada, have been looking for the day when corn and such like can be grown successfully. It has now arrived.

The cattle and dairy industry will be given an impulse that will attract those who have been wedded to this kind of farm life, while none of the interest that may be taken by the grain grower will be lessened. Already there is an influence following the fact that corn and sunflowers can be grown, that is leading to the erection of silos in many parts of the country, all indicating a growing satisfaction as to the great future that lies before it.

Due chiefly to the drop in costs of materials and wages, farmers throughout the prairie provinces are erecting many buildings this year, says the editor and manager of the *Prairie Lumbarman*, who was a visitor to Vancouver a few days ago. A campaign is under way among the retail lumbermen and farmers, urging the erection of 2,000 silos this year, and this is meeting with success, more plans and specifications having been prepared and more structures being under way probably than at any other time in the history of the West.—Advertisement.

Protection Against Radium.

A physician using radium has to insulate himself thoroughly from its effects. Dr. Belcher of the French Academy of Medicine says they must wear gloves lined with lead, and spectacles containing lead salt; they must handle the radium salts with pliers and sit at the table lined with lead. He is perfecting a lead protector for the heart and lungs, but advises operators to wrap themselves in thin lead sheets.

Jud Tunkins.

Jud Tunkins says nature puts enough scales on a fish to give it more of a bathing suit than some human beings wear.

From Missouri.

"What in the world are you kicking about?" asked the red-headed landlady. "When I took my room you told me there was a single hair mattress on the bed," said the thin boarder. "So I did." "Well, will you please come up to my room and show me the single hair?"

Knows a Lot.

"So your son is home from college?" "Yep." "Has he learned much?" "He certainly has. More than his mother and I have picked up in a lifetime."

CACTI are as much a part of the desert as the sand and the blinding glare and the lack of water. The desert without the cactus would be like "Hamlet" with Hamlet left out. There are something like five million square miles of desert scattered about the globe and it takes about a thousand species of cacti to go round.

But the traveler does not have to visit all the deserts of earth to find variety of species. Down on the border line between the United States and Mexico there are famous cactus areas, where this curious and interesting plant may be found in bewildering variety. At one end of the scale the desert wayfarer sees the giant saguaros, 50, 60 feet high, fluted, columnar forms with branching limbs and curving lines. Close to the other end is the dreaded choyas—little round patches of glistening, frosty white. And under every bunch are the discarded joints, like little frosty pine cones covered with spines. Old desert travelers claim that the choya is alive and leaps at man and horse. Certain it is that it seems impossible to avoid the steel-like thorns that pierce leather and flesh. Apparently they are poison thorns, for the pain is like no other and almost unendurable; they sting and burn and at the same time seem to freeze—and they stick like a barbed fishhook.

On the other hand, there is the blisgini cactus—which has saved uncounted lives of those who know. Its barrel-shaped mass contains a fluid resembling water; and it is cool. Then, again, there is the cactus that furnishes "peyote"—a stimulant of which the Indians are so fond that congress has thought of passing legislation to control its use. Again, there are cacti that furnish delicious fruits. Some of the cacti are good eating. Some are used for the manufacture of a variety of articles ranging from toothpicks to chairs. One kind of cactus has been used for ages as a hair brush.

In short, the cactus is almost as useful to the American of the Southwest and to the Mexican as the buffalo used to be to the plains Indian. It is no wonder that the cactus is seen on the flag of Mexico and many of the old-time coins and that it is the state flower of more than one of the American states of the Southwest.

Manifold as are the present uses of the cactus, there is every indication that its usefulness will be extended by the evolution and development of special varieties. For example, there is probably a future for the spineless cactus as a food for cattle. Any forage that can be grown on the desert without irrigation and has a food value something like half that of alfalfa is bound to have a future. The world is presumably to hear further from Luther Burbank's experiments. Dr. P. L. Sherman, experimenting with spineless varieties, found that they were rich in sugar and were fitted for the manufacture of cheap candy. It is also easy to imagine conditions a few years hence under which it will be worth while to develop the fruits of the cactus family.

So, all in all, the cactus family is one of the most interesting in the world, to say nothing of its value, both actual and potential. Dr. William A. Murrill of the New York Botanical garden has written for the *Scientific American Magazine* a most interesting article outlining the many uses of cacti. The article is illustrated from photographs by courtesy of the United States National museum. Says Doctor Murrill:

It is estimated that there are three billion acres of desert land in the world; and, if these unattractive and unproductive wastes are ever to "blossom like the rose," it will be the cacti or plants similarly adapted to desert conditions that will furnish the flowers. Desert plants were like other plants once, but the vital necessity for preserving moisture gradually wrought a wonderful change in their appearance and structure. Few of the cacti now have any conspicuous leaves, their place being taken by flattened joints, or pads, which are modified portions of the stem; and even the sap has become mucilaginous or milky, preventing the loss of water to the hot, dry air by which these plants are continually surrounded. Spines of various shapes and sizes serve to protect them against grazing animals that are often killed when driven by hunger and thirst to devour these plants in spite of their spines. The few forms of spineless cacti that occur in the wild state always frequent rocky ledges and other situations that are inaccessible to most animals, if not to all.

The number of species of cacti recognized is large, amounting to about one thousand, and half of these are found in Mexico. They vary from tiny plants no bigger than one's finger to trees 60 feet in height, presenting all manner of queer and interesting shapes and furnishing the botanist with no end of knotty problems. Extensive collections of living plants may be seen under glass at the New York Botanical garden, the Missouri Botanical garden in St. Louis; while others in the open are to be found at Riverside, California; Tucson, Arizona; Mead's Park, New

Mexico; Laredo, Texas; Miami, Florida, and elsewhere.

Cactus plants are certainly not ornamental in the ordinary sense, but beauty is relative. A forest of giant cactus trees stretching mile after mile in the desert with nothing to rival them may be decidedly attractive. In Mexico the cactus ornaments the national banner and is stamped on many of the older coins, while in Arizona and New Mexico it has been selected as the state flower.

The cactus family is noted for the magnificence of its flowers, which are usually large, often fragrant, wide-spreading or tubular, diurnal or nocturnal, evanescent or persistent, and vary in color from white, yellow, or orange to rose-colored, deep-red, or purple. The calyx and corolla are not distinct, but the numerous stamens in the center are often differently colored and lend an added charm to the flower. The fruit is often brilliantly colored, highly ornamental as well as useful, and lasts for a long time.

The cactus plant has indirectly added much to the attractiveness of certain manufactured garments by supporting the cochineal insect, from which the famous cochineal dye is made. This insect occurs on a species of *Opuntia*, the cochineal fig, and its near relatives, along with other mites and scale-insects, but it is so minute and difficult to distinguish with the unaided eye that it was long thought to be the seed or bloom of the plant itself. Leeuwenhoeck, in 1708, discovered that it was the female of an insect (*Coccus cacti*), which never moved from a certain spot on the cactus, the male being the active member of the family, but colorless and therefore useless. These insects are harvested three times during the dry season, being swept from the cacti into wide-mouthed bags with stiff brushes and killed in boiling water or hot ovens, after which they are dried in the sun and put up in small packages for the market. In this thoroughly dried condition 70,000 insects are required to make a pound.

The ornamental value of cacti, although important, is not uppermost in the mind of the average inhabitant of arid regions. The trunks furnish him material for houses, corrals, firewood, etc., and, when planted close together, they form hedges that are lasting and impervious. It is here behind a shield of thorns that the little cactus wren finds a refuge from hawks where she can build her nest and rear her young in safety.

The cactus trunk is composed of a wood axis, or skeleton, surrounded by pulp. From this skeleton table legs, chairs, napkin rings, canes, veneering, etc., are made. The spines also are useful, serving as needles, toothpicks and pins for mending leather or cloth. Some are curved and supply ready-made fish-hooks, while the straight ones are bound to slivers of bone to form very efficient barbs. One species of cactus bears fruits that resemble great chestnut burs, and these have been used by the Indians for ages as hair brushes.

The pulpy parts of the stems and fruits are highly valuable as food both for man and beast. The young pads, or joints, may be cut into strips and cooked like string beans, or boiled as greens, or stewed like okra, or fried like eggplant, or pickled, or made into sweetmeats like citron. "Tuna cheese" is made from the fruits of certain cacti, while the juice of red fruits is often used in coloring ices, jellies and candies, and even in water-color painting.

The traveler who "knows how" need never lack for water where there are cacti. He may cut off the top of a barrel-cactus, pound up the pulp and squeeze the water from it into his drinking cup. He will find it slightly salty and bitter, but clear and rather palatable. Or he may support a cactus trunk on stones, build a fire under each end, and make a hole in the middle, from which the water will gradually trickle.

The Indian traveler also uses the milky juice of *Mamillaria* for healing cracks in his feet or for internal complaints when on long journeys.

One of the most curious and interesting of the cacti is the "mescal button," or "peyote," which is a strong stimulant and allays all hunger and thirst and fatigue for the time being. The Tarahumare Indians and Huicholes of Mexico make a cult of the "peyote," going on long pilgrimages in search of it and employing it both medicinally and religiously as a cure for all bodily ills and a powerful aid to abstinence.

In certain parts of Mexico, Sicily and elsewhere, the natives live almost entirely on fresh cactus fruits when they are in season. They grow them in gardens and orchards and often gather them at dawn when they are coolest, although their temperature is always below that of the surrounding air. They are also used in salads, preserves, pickled with lemons, dried, fermented as a beverage, made into a syrup called "tuna honey," a thin paste called "melcocha," or a thick paste similar to guava jelly. Even the seeds are sometimes dried and saved to use when the fruits are gone.

The Barbados gooseberry, used for tarts and sauces in the West Indies, is apple-shaped and decorated with small leaves or bracts. The plant, *Perezia aculeata*, is a straggling shrub with slender branches, recurved prickles, glossy-green leaves, and clusters of pale-yellow flowers.

The prickly pears, or tunas, are abundant and much used. They are pear-shaped or globular, weighing from an ounce to a pound; red, yellow, or purple in color; and usually sweet, though sometimes acid in flavor. The skin contains clusters of tiny spicules, or glochids, which are very irritating if taken into the mouth, so that care is required in peeling them. They are sometimes called Indian figs or Barbary figs because of the numerous small seeds which they contain. Several species of *Opuntia* are cultivated for their fruits as well as for their edible joints. The flowers are large, usually yellow or orange, rarely rose or red.

Delicious fruits are those of *Cereus pitahaya* and its relatives. This species grows to the height of 60 feet and its trunk reaches two and a half feet in diameter. The fruit is gathered at dawn with long reed sticks armed with several prongs.

The fruits of *Cereus giganteus*, a handsome cactus of the Southwest, are also much esteemed either in the fresh state or preserved. They are egg-shaped, two or three inches long, green on the outside and crimson within. The strawberry pear, obtained from *Cereus triangularis*, is pear-shaped, bright-red, with slightly acid pulp, making it desirable in the fresh condition or as an ingredient of the "pepper pot" of the West Indies. Excellent fruits are also produced by *Lemnecocereus thurberi* and certain other large tree-cacti, and these "pitahayas" do not have the annoying prickles found in the fruits of *Opuntia*. "Garambullas" are the small currantlike fruits of *Myrtillocactus*. They are eaten fresh or dried like raisins. The melon cacti produce a number of small edible fruits resembling tiny scarlet radishes or red peppers. The Mexican strawberry, found on a species of hedgehog cactus, is salmon-colored, two inches in length, and very sweet in flavor. It gets its name from its numerous minute seeds. Tetezo figs, so important to the natives of southern Puebla, are the fruits of a species of *Pachycereus*.

Although many of the wild cacti furnish valuable food for man and beast, it must be admitted that there is room for improvement both in the quantity and the quality of this food. I have visited Mr. Burbank's experimental grounds in California and fully realize the difficulty of his task in dealing with the cacti and the importance of his results. His problem was to take a vagrant, forbidding plant, and divest it of its thorns and prickles, breed out its indigestible woody skeleton and improve the size and flavor of its fruits.

The fruits of the Burbank creations are over three inches long, usually yellow or red in color, and have flavors all their own, resembling those of peaches, melons, pineapples, etc.