

# LUTHER BURBANK'S GREATEST TRIUMPH

## EDIBLE CACTUS THAT PROMISES TO RECLAIM BILLIONS OF DESERT ACRES AND FURNISH FOOD FOR MAN AND BEAST



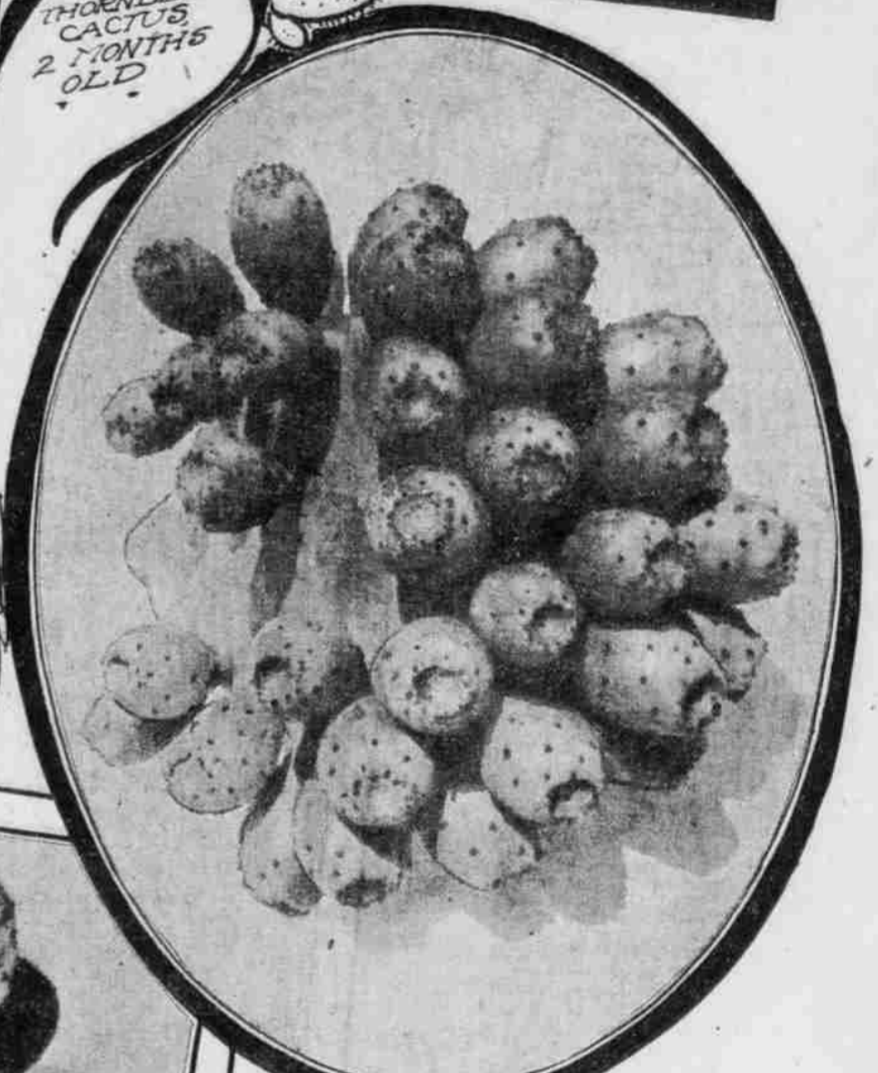
BURBANK HOME AT SANTA ROSA BOUGHT FROM THE SALE OF 5 CACTUS LEAVES FOR \$1,000 EACH



THORNLESS CACTUS, 2 MONTHS OLD



LUTHER BURBANK IN A FIELD OF CACTUS



ONE LEAF IMPROVED OPUNTIA BEARING 32 RIPE FRUITS, WHICH WITHOUT THE LEAF, WEIGHED 7 LBS.



A FLOURISHING FIELD OF THORNLESS CACTUS AT INDIO, CALIFORNIA



SHOWING GROWTH OF THORNLESS CACTUS FROM SINGLE LEAF IN 30 DAYS

**A** VEGETABLE that grows fruit. This is the evolution of the thornless cactus produced by that wizard of plant life, Luther Burbank, of Santa Rosa, Cal. The thornless cactus he regards as his greatest triumph. He believes it will prove one of the greatest blessings modern science has given to mankind. He believes it will do a great deal to solve the problem of food for livestock and that it will prove of incalculable value as a hygienic food for man.

The thornless cactus is a proved success. At a model nursery, established for the purpose of propagating this new and wonderful plant, near Indio, in the Salton Sea district, there are now 1200 growing flourishing plants. By Spring of 1909 there will be half a million plants, and the distribution of them to satisfy the demand throughout the country will then begin. Within 18 months it is confidently expected, many thousands of acres adjacent to Los Angeles will be planted in thornless cactus. Within five years, the cactus enthusiasts prophesy, all the land now planted to wheat or barley or alfalfa will be growing thornless cactus.

Those critics who have accused Mr. Burbank of claiming to have produced something already in existence do not know whereof they speak. Mr. Burbank does not assert that he produced the thornless or spineless cactus; he concedes that isolated individual plants without thorns were found in Arizona, in Texas, in Southern California, Australia and various parts of the world. What he has produced is a thornless cactus which is of incalculable value as forage and as food for man and which will come true, that is, thornless, from graft.

In other words, he has, by 12 years of patient, laborious experimentation and selection, produced several varieties of cactus which, reproducing from the leaves broken off and thrust into the ground, will come true, that is, spineless, through succeeding generations, and will yield an almost unbelievable amount of food and fodder. Here are some figures:

The 2-year-old thornless cactus plant stands six feet high, is six feet in diameter and weighs 500 pounds. An acre of such plants will yield 20 tons of forage each year and 20 to 25 tons of delicious fruit, which, workers on Mr. Burbank's experimental farms declare, is better than apples, oranges, peaches or pears.

**Cactus as Forage and Fruit.**  
Four tons of cactus fodder is equivalent in feeding value to one ton of alfalfa; hence 20 tons of cactus equals 20 tons of alfalfa. It follows, then, that if Mr. Burbank's production is all that is claimed for it, one acre of land will pro-

duce as much fodder, actual feeding value. In thornless cactus, as would four acres of alfalfa, for a crop of 124 tons of alfalfa to the acre is exceptionally good.

Moreover, the cactus may be grown on land which will not grow alfalfa. Some varieties of the thornless plant are expected to grow with no irrigation whatever; others will require a little water. Burbank believes that three billion acres of unproductive soil throughout the world may be made productive by the thornless cactus.

But this is not all. The 10 to 20 tons of fruit which may be taken from the cactus plant per acre per year has a decided commercial and economic value. The fruit may be pickled, canned, preserved or used for the making of syrups. It will find a ready market in the fresh state, and is expected to supplant many popular fruits in the fancy of epicures. The leaves of the cactus plant may be used with advantage and keen enjoyment, as a food for man. Baked as greens, fried as egg plant, or served as lettuce or a salad, it is said to be delectable.

The claim is made that the leaf of the thornless cactus is of more food value than any other vegetable that grows, because it supplies in greater quantity than any other the organic minerals and salts—magnesium, iron, potassium, magnesium and sodium—which are needed to build up the nerve cells.

**Value in Mineral Salts.**  
Among Burbank's assistants in the propagation of the thornless cactus is Dr. F. N. Doud, of Los Angeles, who has charge of the Thornless Cactus Farming Company, to which Burbank has entrusted all his perfected plants, together with the responsibility of propagating each variety and eventually distributing them to the world. Dr. Doud is an enthusiast on the subject of the cactus food value. He has made a careful study of its properties, and by chemical analysis has proven that it is rich in these organic salts which he says are so sadly needed in the daily diet of the average human being.

to man and beast any student of dietetics will understand.

"An acre of thornless cactus will support five to ten dairy cows. Hens and sheep do splendidly upon it. Cactus will take the place of alfalfa. While, because of the large percentage of water it contains, we have to allow four tons of cactus to equal one of alfalfa in feeding value, yet we must at the same time admit that in other respects the four tons of cactus will contain more real nutriment for the cow or horse than one ton of alfalfa. Probably no more convincing statement may be made in regard to this than that the Government experts have found the thornless cactus superior to sorghum hay for dairy cattle."

**Perfecting the Individual.**  
Dr. Doud spoke interestingly of Professor Burbank's work and of his philosophy. "Professor Burbank," said he, "believes that in human life and plant life, the efforts of the philanthropist and the scientist should be devoted to the perfecting of the individual. He holds that any effort toward raising the masses is lost unless it is directly applied to the individual. I have known Professor Burbank to grow a thousand young trees and destroy 200 of them because he could not afford to devote his time to caring for them. Philosophically, he concluded it a wiser thing to take the one tree out of the thousand which more nearly approached perfection and toll with it, to the end that the perfect thing for which he was striving might be attained.

"It was thus with his experiments with the cactus. Out of thousands and thousands of plants, Professor Burbank, after years of painstaking experimentation, selected only a few. The remainder he destroyed. The propagation of the superior individual; that is his theory and his rule of action.

"Professor Burbank believes that science may achieve the triumph of manipulating the organic forces of nature just as it has done with the unorganized forces. Steam and electricity are the best examples of what has been done in the latter direction. The perfected fruits and plants

of the last generation are but forecasts of what may be done in the former.

"The great pressure of the present age is to get food for man and beast from the soil. In a few years the matter of lumber supply may supersede this in importance, but there is no question that today the greatest problem is that of cheap and plentiful supply of foodstuffs and feed. There are, Professor Burbank estimates, 2,000,000,000 acres of unproductive land in the world today—unproductive largely for lack of moisture. He believes that eventually the thornless cactus will be grown on this waste soil. The desert is the home of the cactus. It will take the moisture from the air where no rain falls. It will grow where no other vegetation grows. It may be made to grow in many climates and under innumerable climatic conditions.

Professor Burbank is still experimenting with the cactus, though he has perfected no less than seven varieties. He hopes to get a plant which will grow in colder climates, even in Minnesota, Wisconsin and North Dakota. Some of the varieties he has already produced will stand 10 to 15 degrees of freezing.

**What Has Been Done on a Desert.**  
The Thornless Cactus Farming Company of Los Angeles, which has charge of the work of propagating the perfected species, produces some interesting figures on the rapidity of growth of the plant. The single leaf of the cactus, dried and thrust into the ground, will in three months produce five to ten slabs or leaves, and each of these slabs will grow three to five more in another two months. Each of these leaves will weigh two to three pounds. In the case of the opuntias, one of the best of the Burbank productions, the plant is all practically food and drink from root to tip, and is greatly relished by all herbivorous animals from the canary bird to the elephant. Each year the productiveness of the plant increases. It multiplies with amazing rapidity, as

witnessed by the fact that the 1200 plants now flourishing at Indio are expected to produce nearly half a million plants by next Spring. In the East, where the Winter cold is severe enough to kill the plant if left out of doors, the leaves may be cut off and stored and planted again

in the Spring, yielding an average crop of 75 tons per acre. It is one of the peculiarities of the thornless cactus that the leaf must be dried before being planted.

While some have seen fit to scoff at the latest Burbank triumph, there can be no argument that it is the greatest of all his marvelous accomplishments. The thornless cactus, if it has not yet arrived, is rapidly arriving. The United States Government has conducted extensive ex-

periments and has cordially endorsed the plant as a potent agent in the reclamation of the desert and in the solution of cheap and abundant food for livestock.

**Not Purchasable Today.**

Today the thornless cactus is practically unpurchasable. Professor Burbank sold five leaves to an Australian company for \$1000 each, with the proceeds of which he has built his new bungalow at Santa Rosa. His old home is now called the pumping station, because it is here that his historians manage to entice him away from his work a couple of hours a day to get from him the information they must have to complete the several books about his life and work now being prepared. A few leaves were sold in this country at \$500 each. But the plant is not on the market and will not be till next Spring, 1909, when it is expected there will be sufficient plants to satisfy the immediate demand. Then the thornless cactus will take its place among the great fruit-growing plants of the world. Already numerous companies and colonies are being organized to grow this remarkable production. The La Prosperidad Colony Association, the Los Angeles organization which is preparing to settle 500,000 acres of the richest land in Lower California, expects to set aside a large tract of land to the growing of thornless cactus. Ranchers, cattle-raisers and farmers are getting in their applications for a supply of the plants at \$12 apiece when the distribution shall begin next Spring. Professor Burbank and Dr. Doud expect the next three years to demonstrate all and more than has been claimed for this, the greatest of all the Burbank triumphs.

Los Angeles, March 30.

## Overheating in Automobiles Due to Carelessness

**BY H. A. GRANT, M. E.**  
**N**O DETAIL of an automobile has been given more careful attention and more thought by designers than the cooling system, and it is not making too strong a statement to say that nowadays in ninety-nine cases out of a hundred, when the motor of a car overheats, it is due to the carelessness of the operator rather than any inherent defect in the cooling system.

The cooling problem has been studied, not only by automobile designers, but by the manufacturers of radiators as well. Occasionally an automobile is found which does not cool, because of some fundamental defect in the system, but this now is an exception in a modern motor car.

Probably not more than 20 per cent of the heat-units generated perform actual work in driving the car, while of the remaining 80, perhaps 50 per cent have to be taken up by the cooling system, leaving only 30 per cent to go out from the exhaust; in other words, more than double the amount of horsepower is absorbed by the radiator than is used in driving the car.

Assuming, then, that an engine is prop-

erly designed, let us investigate the causes of overheating. A gasoline motor obtains its power from the ignition of a charge of air and gasoline vapor, or, in other words, there is too little air and too much gasoline, the result is the mixture ignites slowly and burns not only during the power stroke, but also during the exhaust stroke. The hot gases are therefore carried back and expelled through the exhaust, with the result that the cylinder walls become overheated, causing the water to boil. The remedy in this case is to decrease the quantity of gasoline until a perfect mixture results.

Another common cause of overheating may be due either to the quantity or quality of lubricating oil. It is unfortunate, but nevertheless true, that there is much poor oil put upon the market. Many an oil that will lubricate efficiently when the engine is working under a light load may prove worthless and possess little lubricating value when under a full load. In other words, the temperature that the cylinder obtains limits the value of the lubricating qualities of the oil.

If, therefore, a motor when cool gives its full amount of power, and gradually overheats when run for some

time with throttle, in ninety-nine times out of a hundred the trouble is due to the quality or the quantity of the oil.

Poor circulation is due either to a defective pump or to some stoppage in the water system, and this may also be responsible for overheating. While pump troubles were common four or five years back, the modern centrifugal pump is productive of very little annoyance.

In my estimation, the automobile of today is thoroughly standard, and when trouble arises it is due to lack of intelligent care rather than any inherent defect in the car itself.—From The Circle.

**Goose.**  
She went away from me, and never more Will her light feet fall on my lonely floor; The perfume of her presence lingers yet— Each day, each hour forbids me to forget Her empty throne, now that her reign is o'er.

Oh, to call back my words! Oh, to restore The old way! Oh, to be just as of yore! Oh, bitter days! Oh, nights of vain regret The went away!

Today I stand before another door To see if she will come for dollars four A week, and be my cook, Ag, but I'll bet She sails her way, and leaves me to fret Or make the kind of pie she made before She went away!

—Cleveland Leader.