

# SALT BUSHES MAY REDEEM DESERT

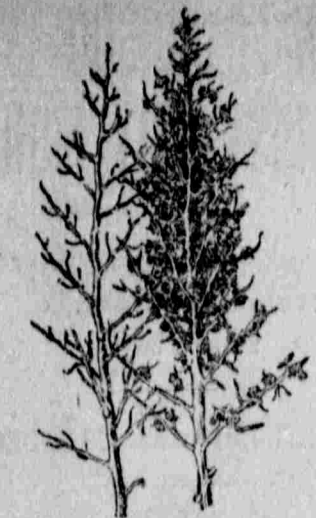
University Class in Nature Study Considers Peculiar Native Species.

## PLANTS THAT EAT ALKALI.

Will Grow on Saline Soils, and Fit the Barren Lands for Agriculture.

Three grades of desert soil have been recognized since the advent of the pioneers into the arid west: (1) Land that is in itself highly fertile, awaiting only for the application of water by means of irrigation to spring into the most abundant productivity; (2) Land in which some greasewood is found, which is then barely capable of reclamation, and requires careful cultivation and irrigation to wash out the alkali which it contains; (3) Land completely covered with greasewood or land completely barren from the presence of alkali. This land is generally considered irreclaimable.

For all but the worst of the alkaline soils, however, it appears that nature has not left us without a means of making them fertile and productive.



**THE NATIVE GREASEWOOD.**  
A Worthless Shrub (Sarcobatus Vermiculatus) That Grows on Alkaline Land.

of vegetation absorbs moisture from the soil and transpires it into the atmosphere.

### ALKALI LANDS.

Land on which the greasewood flourishes represents the opposite extreme from the mealy soil found about the roots of the sage. Wherever the land has no drainage into lake or river, it is likely to contain so much saline mineral matter that it constitutes what is known as an alkaline soil. Extreme examples of this kind of soil may be seen on the alkaline flats, which exist wherever land is not drained. In dry countries like ours, where the annual rainfall is so slight that no great amount of water sinks into the earth through the subsoil, but practically all of the rainfall evaporates into the atmosphere, the salts in the soil are not carried off, as they are in lands drained by flowing streams. All soils contain the minerals of the rocks from which they were formed; but in humid climates, these minerals are washed out of the soil and carried down to the sea.

from four to ten feet high, and is generally spoken of as indicative of a good soil. It is recommended for desert planting.

### THE TUMBLING SALT BUSH.

One of our commonest weeds (atriplex exonioides) used for the tumbling salt-bush (atriplex volutans), will soon be breaking off from its stem close to the ground, and will go rolling over the land, scattering its seeds like the Russian thistle, to which in form, it bears a general resemblance. A Volutans is recommended for alkali soils, but it may be rather a nuisance that a benefit, since it loses its value as a food when the seeds have fallen, and it rolls too far.

### OTHER ALKALI PLANTS.

The Utah saltbush is similar to a weedy-looking, succulent and prolific growing plant common in this locality. It forms a large and dense mat over clay soils and is relished by cattle, which crop it very close to the ground. It can easily be grown on clay and alkaline lands and affords good pasture.



**THE SHAD SCALE.**  
A. Fruit; B. Flower. (Atriplex Canescens). Will grow on Alkali Soils and is a Good Forage Plant.

ture, and even fodder if cut when young. Winter fat, or sweet sage, is a half shrubby plant from one to three feet high that will thrive on alkali and other soils. It has cottony seeds that are greedily eaten by all grazing animals, so that it is becoming scarce. It is recommended for planting.

### HUNTING FOR BURIED METEOR.

Suspicion That an Enormous One is Hidden in Arizona.

Out in Arizona there is a curious conical uplift, not big enough for a mountain, but looking like one. It is known as Coon Butte. It has a height of only 100 feet above the plain, but is much broader than it is high. When a person reaches its top he finds a huge cavity, resembling a crater. The hole goes down 400 feet below the surrounding plain and about 500 feet below the crest.

Geologists have long speculated in regard to its origin, and what looked like a possible clue to the mystery was furnished when bits of meteoric iron were found on its slopes and a few miles away. The fragment known as the "Canyon Diablo" meteorite, which contained microscopic diamonds, was discovered near Coon Butte. At a scientific meeting held in 1891, when the region was described by Dr. Grove K. Gilbert of Washington, suggested that the fall of the iron masses might have been connected with the formation of the crater, and that the large hole might have been caused by the penetration of the earth by an enormous iron meteorite, perhaps 100 miles in diameter, large enough to be termed an asteroid. In such case the asteroid is buried in or near the hole, and probably at no great depth.

Dr. Gilbert was unable to visit the place himself at the time, but he sent an assistant to examine the crater and its surroundings. The latter reported that there were indications that the hole was caused by a steam explosion, and the material forming the elevation had probably been forced up from below. Moreover, the presence of a large mass of iron, it was thought, would be dimly indicated by its influence on magnets properly used for test purposes, and no evidence of this sort was discovered. Hence for a time the meteoric theory was abandoned. Recently, however, it has been revived. The startling character of the suggestion with regard to the hole was revived when it was remembered that the Peary meteorite brought from Greenland a few years ago, and weighing about 70 tons, measured only four or five feet each way. That is one of the biggest meteorites known to date. What, then, must have been the force of one measuring 1,000 or 1,500 feet across? Of course, it is not yet proved that a meteor really did hit the earth and create a ring around the spot where it went down, but this subject has now acquired new importance.

It seems that two men, D. M. Barstow and B. C. Tighman, became interested in Dr. Gilbert's theory, and went out and studied the place for themselves. They found a possible explanation of the absence of magnets, and they thought that the debris could not have been scattered by a steam explosion. So convinced were they of the truth of their theory, that they went there in 1903 they "located" the mountain under the United States mineral land laws, and at great expense proceeded to sink shafts and make bore holes with the hope of finding the buried asteroid. This results of this work, so far as it has yet gone, were recently recorded in two papers published in the Proceedings of the Academy of Natural Sciences of Philadelphia (December, 1905). One of them has been written from the point of view of the geologist (Mr. Barstow), the other from those of the physicist, chemist and mathematician (Mr. Tighman). The former says: "The results of my mind a sentiment of doubt that this mountain and its crater were produced by the impact of a huge meteorite or small asteroid," the latter feels that "he is justified, under the circumstances, in concluding that the formation of this locality is due to the impact of a meteor of enormous and unprecedented size."

### SCIENTIFIC MISCELLANY.

A new respiratory apparatus which has resulted from late experience in French mining consists externally of a rubber bag, which is worn in front about waist high, and is supported by a strap from the shoulder. The mine is breathed from and into the bag through a mouthpiece. The exhaled gases pass through a tube containing grains of silica, which retains the moisture and carbonic acid and renews the air for breathing by setting up a corresponding quantity of oxygen. The circulation through the bag is sufficient, and enables the miner to work in suffocating gases an indefinite time.

The oldest living plant has been claimed to be some individual among the dragon-trees of the Canary Islands. A one-famous specimen of Tenerife, whose age has been variously estimated at 4,000 to 6,000 years, retained its full height of 70 or 80 feet until 1819, when a storm struck the tree and the storm cut it in 1867 tore off the branches remaining.

Snake venom, says a British physician, has been shown by recent research to be highly poisonous protein bodies, which are variously affected by heat and by chemical solutions in sunlight. That it has a little toxic effect when taken by the mouth is due to its slight absorption by the stomach and alteration by the bile and pancreatic juice.

a horny oval plate, requiring a saw to cut it.

Calcium is practically a new metal, its recent isolation in the electric furnace having made it a commercial product. Experiments described by L. Stocken, a European metallurgist, prove that it can serve in steel-making, as it does not alloy with iron, but it is likely to be useful in refining copper and nickel. The oxidation can be effected by it without risk of any of the calcium being left behind as impurity. It readily forms alloys when molten copper is poured upon it, but these are so brittle that a bar two inches thick containing seven per cent of calcium can be broken by a tap with a hammer. An alloy of 30 per cent with 80 of copper is white and decomposes in the air. Very brittle alloys are formed with aluminum and magnesium, and a mixture of calcium with 10 per cent of either of these metals is pulverized in a mortar. Calcium gives toughness to an alloy of aluminum and zinc that is much employed for electrical purposes.

The death of Drake, the venerable giant tortoise or testudo abingdoni of the London zoological gardens, removes one of the last members of a vanishing race, for whose fellows a recent search has been made in vain, and one of the earth's oldest inhabitants, whose life may have reached back to the days of Elizabeth and Cromwell. The age of this tortoise is estimated at between 300 and 400 years. When captured in the Galapagos Islands late in the eighteenth century, its shell bore a half-faded date beginning with "15," and it was supposed to have been marked by seventeenth century pirates when it was at least 20 years old. As Drake often kept motionless for hours, even the date of death is not exactly known. It ate enormous quantities of lettuce-hearts, its only food.

A remarkable botanical specimen of Japan is a hollow tree-trunk 8 feet in circumference containing a living tree nine feet in circumference. The older tree was destroyed about 130 years ago, leaving 20 feet of trunk, and the inner tree is about 110 years old.

The difficulties of concentrating tidal power and making it available are great, and so far it has been used only on a small scale and in a primitive way, but the near future will probably see great electric generating plants established at favorable localities where the tides run high and there are natural storage basins. Some months ago a plan was worked out for utilizing the tides and power of the river Selma. Assuming that tidal embankments were needed for guiding the channel through the estuary, it was proposed that these be connected to the shore on either side so as to form two large reservoirs, each of which should be divided into a high water basin and a low water basin, the discharge from one to the other to drive turbines. The available tide is about 10 feet. Each reservoir would have an area of about 2,500 acres, and it was estimated that about 4,000 horsepower would be given off during the six hours of the rising tide. The cost of division dams, turbines and other works was placed at \$60,000. From this the annual cost of each horsepower was computed at \$1, including land rent and interest at 10 per cent, but this would rise to more than \$30 if the channel walls were to form a part of the expense.

The experiment of electrocuting cockroaches was tried by Edison long ago, and now a French electrician, M. Maurice Chauvin, is making practical application of the idea. The new apparatus is designed for killing guinea pigs and mosquitoes. Two rings, one above the other, with a network of parallel and vertical chains between them, form a cylindrical lantern, and in the center an electric or other light is placed. Each chain is kept charged by an electric current. As the mosquitoes try to reach the light, they come in contact with the live chains, and the instant two chains are touched at the same time a short circuit is established, promptly killing the insect.

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**THE TUMBLING SALT BUSH.**  
Drawn From Nature by Pupils of the Training School.

Among our native weeds there are some peculiar growths chiefly of the pigweed and goosefoot family (chenopodiaceae) that have the peculiarity not only of thriving in the alkaline soils but of extracting the alkali from them and of rendering them capable of supporting cereals, beans, squash, etc., and other grains and other vegetables. Will then grow, but not the peas, legumes, beans, vetches, etc., which require even small amounts of the alkaline salts. The sunflower family thrives well in alkali land, but the cultivated grasses do not.

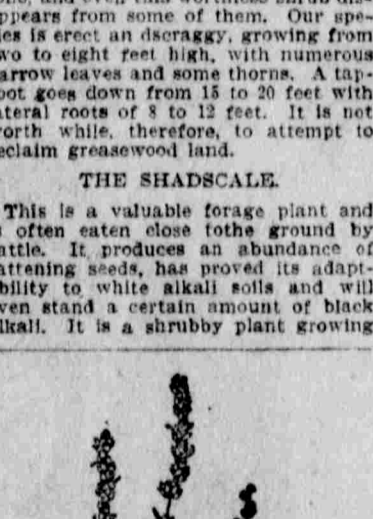
### SAGE BRUSH LAND.

It has been shown that sagebrush is an indication of fertile soil; and the question arose in the normal class at university as to whether the sage that confers a benefit upon the soil or whether it tends to impoverish a soil naturally rich. So far as present observation goes, the former proposition seems to be true; for the land has yet been reported as exhausted from its long period of sagebrush growing. This peculiar fact raises an important question: Are some plants a benefit to the soil? That is, do they enrich rather than impoverish the land on which they grow? This is a fact made use of in the practice of intelligent rotation of crops. In the present case, it was asked:



**SWEET SAGE, OR WINTER FAT.**  
This Plant (Eurotia Lanata) Will Grow on Alkaline Land and Makes Fine Pasture.

ed. "Why is it better to have land covered with sagebrush than entirely barren?" Different class members answered that unless the sage has been accidentally removed, as by fire, sagebrush land is likely to be superior to the land for the following reasons: (1) The land does not bake when covered by sagebrush, for the roots penetrate the soil and render it loose and shelled underneath, while the surface is shielded from the direct rays of the sun. (2) The sagebrush increases the fertility of the soil by its annual deposit of leaves, which form a dark, rich humus (humus) at the base of every plant, in which the seeds of the sagebrush are under the protection of the shaggy bark that shelters it from the wind. (3) The ground is more moist under the sage than in land that bakes and dries, but less moist than bare land, for the latter covers as shields to the moisture, while any form



**THE NATIVE GREASEWOOD.**  
This is a valuable forage plant and is often eaten close to the ground by cattle. It produces an abundance of fattening seeds, has proved its adaptability to white alkali soils and will even stand a certain amount of black alkali. It is a shrubby plant growing



**NUTTALL'S SALT BUSH.**  
(Atriplex Nuttallii). Recommended for Alkaline Soils; a Good Fodder.