Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, for the U. S., Canada or Mexico.....$3 00
One copy, six months, for the U. S., Canada or Mexico..... 1 50
One copy, one year, to any foreign country belonging to Postal Union. 4 00

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is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, $5.00 a year, for the U. S., Canada or Mexico. $6.00 a year to foreign countries belonging to the Postal Union. Single copies, 10 cents. Sold by all newsdealers throughout the country. See prospectus, last page.

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NEW YORK, SATURDAY, AUGUST 8, 1891.

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(Illustrated articles are marked with an asterisk.)

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SCIENTIFIC AMERICAN SUPPLEMENT

No. 814.

For the Week Ending August 8, 1891.

Price 10 cents. For sale by all newsdealers

THE GOVERNMENT COLLECTION OF ECONOMIC PLANTS.

The collection of economic plants in the grounds of the United States Department of Agriculture at Washington embraces many rare and curious varieties, and it is well worthy of a visit and of careful study. A portion of these plants are intended for distribution in sections of the country adapted to their growth; but the principal object in maintaining the collection is to provide an educational museum of select economic plants, the products of most of which are familiar to many people, while few may have seen the plants themselves.

The plants have been procured, most of them, from botanic gardens throughout the world, while others have been raised from seeds procured from their native countries. The collection is kept in glass structures in atmospheres suited to their respective requirements, and the localities in this country where they will thrive the best is thus ascertained.

Almost every plant in the collection has interesting characteristics, and all have a special value for the srudent of botany, because they are very rarely met with in this country. A few specimens are here described, which will be a fair indication of the character of this most valuable collection.

Abrus precatorius.—Wild licorice. This twining, leguminous plant is a native of the East, but is now found in the West Indies and other tropical regions. It is chiefly remarkable for its small oval seeds, which are of a brilliant scarlet color, with a black scar at the plate where they are attached to the pods. These seeds are much used for necklaces and other ornamental purposes, and are employed in India as a standard of weight under the name *rate*. The weight of the famous Kohinor diamond is known to have been ascertained in this way. The roots afford licorice, which is extracted in the same manner as that from the true Spanish licorice plant, the *Glycyrrhiza glabra*. Recently the claim was made that the weather could be foretold by certain movements of the leaves of the plant, but experimental tests have proved its fallacy.

Adamsonia digitata.—This is the baobab tree, which is a native of Africa. It has been called the tree of a thousand years, and Humboldt speaks of it as "the oldest organic monument on our planet."

Adamson, who traveled in Senegal in 1794, made a calculation to show that one of these trees, 30 feet in diameter, must be 5,150 years old. The bark of the baobab furnishes a fiber which is made into ropes and also manufactured into cloth. The fiber is so strong as to give rise to a common saying in Bengal, "As secure as an elephant bound with the baobab rope." The pulp of the fruit is slightly acid, and the juice expressed from it is valued as a specific in putrid and pestilential fevers. The ashes of the fruit and bark boiled in rancid palm oil make a fine soap.

Agave americana.—This plant is commonly known as American aloe, but it is not a member of that family, as it claims kindred with the Amaryllis tribe of plants. It grows naturally in a wide range of climate, from the plains of South America to elevations of 10,000 feet. It furnishes a variety of products. The plants form impenetrable fences, the leaves furnish fibers of various qualities, from the fine thread known as pita thread, which is used for twine, to the coarse fiber used for ropes and cable. Humboldt describes a bridge of upward of 130 feet span over the Cimbo in Quito, of which the main ropes, 4 inches in diameter, were made of this fiber.

It is also used for making paper. The juice, when the watery part is evaporated, forms a good soap, as detergent as castile, and will mix and form a lather with salt water as well as with fresh. The sap from the heart leaves is formed into pulque. The sap is sour, but has sufficient sugar and mucilage for fermentation. This vinous beverage has a filthy odor, but those who can overcome the aversion to this fetid smell indulge largely in the liquor. A very intoxicating brandy is made from it. Razor straps are made from the leaves, and they are also used for cleansing and scouring pewter.

Antiaris intoxia (the Upas Tree).—Most exaggerated statements have passed into history regarding this plant. Its poisonous influence is said to be so great as not only to destroy all animal life, but even plants could not live within ten miles of it. The plant has no such virulent properties as the above, but, as it inhabits the low valleys of Java, where carbonic acid gas escapes from the crevices in volcanic rocks, which frequently proves fatal to animals, the tree was blamed wrongly. It is, however, possessed of poisonous juice, which, when dry and mixed with other ingredients, forms a venomous poison for arrows, and severe effects have been felt by those who have climbed upon the branches for the purpose of gathering the flowers.

Brosimum galactodendron.—The cow tree of South America, which yields a milk of as good quality as that from the cow. It forms large forests in the mountains near the town of Cariaco and elsewhere along the seacoast of Venezuela reaching to a considerable height. In South America the cow tree is called *Palo de Vere* or *Arbal de Leche*. Its milk, which is obtained by making incisions in the trunk, so closely resembles the milk of the cow, both in appearance and quality, that it is commonly used as an article of food by the people of the places where the tree is abundant. Unlike many other vegetable milks, it is perfectly wholesome, and very nourishing, possessing an agreeable taste, and a pleasant balsamic odor, its only unpleasant quality being a slight amount of stickiness.

Cereus gigantia.—The suwarrow of the Mexicans, a native of the hot, arid and almost desert regions of New Mexico, found growing in rocky places, in valleys and on mountain sides, often springing out of mere crevices in hard rocks and imparting a singular aspect to the scenery to the country, its tall stems often reaching 40 feet in height, with upright branches looking like telegraph poles for signaling from point to point of the Rocky Mountains. The fruits are about two to three inches long, of a green color and oval form; when ripe, they burst into three or four pieces, which curve back so as to resemble a flower. Inside they contain numerous little black seeds embedded in a crimson colored pulp, which the Indians make into a preserve. They also use the ripe fruit as on article of food.

Dracæna draca.—The dragon's blood tree of Teneriffe. This liliaceous plant attains a great age and an enormous size. The resin obtained from it has been found in the sepulchral caves of the Cuanches, and hence it is supposed to have been used by them in embalming the dead. Trees of this species still in vigorous health are supposed to be as old as the pyramids of Egypt.

Mauritia flexuoso.—The Moriche, or Ita palm, very abundant on the banks of the Amazon, Rio Negro, and Orinoco Rivers. In the delta of the latter it occupies swampy tracts of land, which at times are completely inundated, and present the appearance of forests rising out of the water.

These swamps are frequented by a tribe of Indians called Guaranes, who subsist almost entirely upon the product of this palm, and during the periods of the inundations suspend their dwellings from the tops of the tall stems. The outer skin of the young leaves is made into string and cord for the manufacture of hammocks. The fermented sap yields palm wine, and still another beverage is prepared from the young fruits, while the soft inner bark of the stem yields a farinaceous substance like sago.

Papyrus antiquorum.—The paper reed of Asia, which yielded the substances used as paper by the ancient Egyptians. The underground root stocks spread horizontally under the muddy soil, continuing to throw up stems as they creep along. The paper was made from thin slices, cut vertically from the apex to the base of the stem, between the surface and the center. The slices were placed side by side, according to the size required, and then, after being wetted and beaten with a wooden instrument until smooth, were pressed and dried in the sun.

The collection of economic plants contains specimens of the bread fruit trees from South America, camphor trees from the island of Formosa, the South American trumpet tree, whose hollow branches are used for musical instruments, the tree from which the famous Peruvian barks are obtained, and many others equally interesting.

The Speed of a Horse.

While the public is still marveling over Salvator's wonderful performance in running a mile in 1·35½, there are few who have, through comparison and analysis, sought to realize what a terrific burst of speed this is. It is nearly forty miles an hour—a rate averaged by very few of our fastest railway trains. There are 5,280 feet in a mile, so that for every one of these ninety-five seconds—for every beat of a man's pulse—this wonderful horse covered fifty-five and three-tenths feet of ground. The shortest space of time noted by the turfman's watch is a quarter of a second—an interval so brief that the eye can hardly observe, the mind can hardly appreciate it. Yet in every one of those 382 quarters of a second that magnificent creature leaped sixteen and three-tenths feet. Such are the amazing results of careful breeding as exhibited in the American race horse.

Nitrate of Soda.

No manure that I have ever seen used, not even cow manure, in which I have great faith, has produced such immediate effect in the growth, vigor, and full color of foliage. Mr. J. J. Willis, writing in the *Gardeners' Chronicle*, maintains that it is a most valuable factor in the production of vegetable crops and fruits. He strongly recommends it for strawberries, celery, cabbages, onions, in fact, for all kitchen garden produce. But he recommends it to be used in conjunction with ordinary manures. He says: "It may be stated that nitrate of soda is not regarded as a substitute for other manures. Taking horticulture as we find it, we recommend nitrate of soda as the cheapest and best form in which to apply nitrogen to plants. To those who are using ordinary stable manure we say, continue to use it, but use nitrate of soda in addition."—*W. Watson, in Garden and Forest.*