

## Lesser Importations

**D**ESPITE an increasing demand for sugar, its production in the United States continued to decline during the Civil War and the decade following. Most of the sugar up to this time had been processed from sugar cane. But the stocks of sugar cane deteriorated more rapidly than they could be replaced by the search for new, hardy varieties.

### CHINESE SORGHUMS

In an effort to step up sugar production, the industry turned to sorghos. Chemists searched for a method of refining sugar from the *Chinese sugar cane* (black amber cane), one of the first sorgho imports, and the Department of Agriculture introduced other sorghos for experiment. More than forty million gallons of syrup were produced from the Chinese sorgho in 1862, and two mills manufactured paper from the fiber. No quantity of sugar could be refined from the cane, however, and in 1864 Commissioner Newton sent an agent to China to secure fresh seed and to explore for new varieties. Newton believed that the Chinese sorgho had deteriorated through hybridization with broom corn, and that new varieties and information on the Chinese processes of sugar-making might be helpful.

The varieties Newton's agent brought back were not successful so experiments were continued chiefly with the varieties introduced in 1857 by Leonard Wray, and the Chinese sorgho which had been imported in 1854. Wray had brought several varieties from Natal, South Africa, via Europe at the request of Horace Greeley. The original variety names have been lost, but they came to be cultivated widely for syrup and grain.

State experiment stations and individuals also were busy breed-

ing and selecting varieties of sorghos. From the original Chinese sugar cane the *Early Amber* was selected, and from this variety arose the *Minnesota Early Amber* which was widely distributed by members of Congress during Commissioner Le Duc's administration. Growers reported it to be a heavy yielder of syrup and sugar.

*Durras From Egypt*—Sorghums were found to be adapted to the hot, dry areas of Kansas and Texas where corn would not flourish. The importance of this fact could not be overestimated. Sorghums are especially valuable today for grain production in arid regions of the West. The *White durra* and the *Brown durra*, called Egyptian corn, were brought from Egypt to California in 1874—it is not known by whom. Their success was the beginning of an expanding grain sorghum culture.

"Guinea corn," or White Milo maize from the West Indies, was grown at a very early date in the South. White and Red kafirs from Natal were shown at the Centennial Exposition at Philadelphia in 1876, and the seed distributed. *Shallu* (Egyptian wheat) was introduced from India by the Louisiana Agricultural Experiment Station about 1890. In the course of further introductions came two from Australia—in 1888 the sorgho *Planter*, originally from India, and in 1891, the *McLean*. *Pink kafir* was introduced from South Africa about 1904, *feterita* in 1906, and *hegari* in 1909. All were procured by the Department of Agriculture from the Anglo-Egyptian Sudan in the Upper Nile.

*Teosinte*—Growers also attempted to produce sugar from corn, pumpkins, and teosinte during the 1870's. The teosinte, which is an ancestor of Indian corn, was introduced from Central America by the Department of Agriculture. The first seed crop of teosinte was harvested in southern Florida in 1887. The plant produced an abundance of fodder when it had sufficient moisture.

Interest in sorghos as a source of sugar cane was so high during this period that Commissioner Le Duc prophesied, ". . . it is not too much to say that the success attending the manufacture of cane-sugar from sorghums and maize will mark the year 1879 as an important epoch in the agricultural progress of our people."

During Le Duc's administration the efforts to produce sugar from sorghos reached their peak. Peter Collier received an appropriation of \$25,000 from Congress to aid this work. Collier is credited with introducing between 50 and 100 varieties of sorgho from Java, Burma, China, India, and South Africa. In the sum-

mer of 1881, fifty-two of these varieties were grown experimentally. However, from the ninety-three acres of cane worked up, only 165 pounds of sugar could be obtained. Sorgho cultivation was admittedly a failure and investments of private capital in the sorghum sugar industry were wiped out.

The Federal government, however, continued to make expensive experiments with sorghos for some years. Eight hundred varieties and subvarieties had been tested by 1890 for sugar qualities, but the government still intended to continue the introduction of others for test. Only eight or ten varieties had been found suitable, and these only in restricted localities.

*Emphasis on Selection*—Congress voted an appropriation of \$25,000 in 1899 to enable the Secretary of Agriculture to continue experiments in producing sugar from sorghum and beets. Experimenters stressed the selection and analysis of sorghum varieties for sugar content. Nine sorghum sugar laboratories were established in Kansas, and similar experiments conducted in other states. Certain materials in most sorghums prevented the crystallization of sugar in the juices. As varieties were sought with a high percentage of sucrose, and free from the deleterious substances which interfered with refining, more attention came to be given to breeding and selection rather than to introduction.

Sugar cane stocks were also being imported during the period of experimentation with sorghos, though Le Duc and others favored sorghum as a sugar source. Growers believed that fresh canes from Java were necessary for successful sugar planting in the lower Mississippi Valley. Introductions of sugar cane came from Japan, Hawaii, and Brazil. Le Duc reported in 1880 that sugar cane introductions still were being made, but he suggested that growers turn to the sorghums to avoid the recurring deterioration of the sugar cane stocks.

#### BEEETS

The Department of Agriculture was slow to encourage sugar production from the sugar beet, although it had been the basis since Napoleonic times of a sugar industry in Europe where there was an abundant supply of cheap labor. In 1838, the Committee on Agriculture in the House of Representatives issued a report on the culture of the sugar beet because the importation of sugar had quadrupled from 1832 to 1836. The Committee insisted ". . . that when the soil, climate, and other circumstances, will

enable the people of this country to produce, by their own labor, on their own soil, any article which is extensively consumed amongst us, it is the duty of the Government, as far as may be deemed constitutional, to facilitate, by all reasonable encouragement, the production of that article."

The House Committee submitted a bill to authorize the President to lease land for a term of ten years for the cultivation of the mulberry and the sugar beet. Nothing came of this action.

Commissioner Capron argued that beet cultivation would prevent huge sums being spent abroad for sugar. Government publications gave information on sugar beet culture and the progress of local experiments. A chemist in the Department of Agriculture tested the sugar content of the most approved varieties of French and German sugar beets.

By 1864, the exorbitant price of sugar had induced individuals in Illinois to cultivate the sugar beet. Seeds of sugar beet varieties from Germany and France were distributed annually by the Department after 1868, and several large sugar beet refineries were established in Illinois, Wisconsin, California, and Colorado.

Congress appropriated \$10,000 in 1881 to continue experiments in the cultivation of sugar beets and the manufacture of sugar. Quantities of select seed were bought in Europe. By 1888, sugar beets were considered adaptable to many parts of the country, and a considerable development of the industry was expected. Sugar beets already had been successful for several years on the Pacific Coast. At the close of the century chemical experiments were being concentrated on the manufacture of sugar from beets. To assist experiments beet seed of several varieties were imported annually for distribution.

### FRUITS

Plant introduction during the commissionership did not alter greatly the character of the fruit crops of the Northeast and of the Midwest. The Department's most significant fruit introduction was that of over 200 varieties of apples from Russia in 1871. These came from the Imperial Botanic Garden of St. Petersburg. This introduction, it was hoped, would yield varieties adaptable to the rigorous climate of the North and Northwest, and others which were late ripening.

After 1872, shoots were distributed annually for the next ten

years. More than 95,000 shoots were sent out in 1878, and the next year 80,000 were distributed. Although a few worthy varieties were found, the most significant results were the attention directed to northern Europe as a source of better fruits and the extension of apple culture farther north.

Twenty-four new apple varieties received from Kecskemet, Hungary, in 1893, included Hungarian sorts not previously brought to America. In 1895, twenty-nine choice apple varieties received from Austria-Hungary were distributed to experiment stations for trial. Shoots of eighteen apples received in 1897 from the Pomologist of New Zealand, and varieties from Australia were distributed in June, 1897. Northern growers cultivated the quinces, brought in from Japan after 1854, mostly as ornamentals. A special appropriation in 1886 of \$5,000 to pay for a pomologist, promoted collection and dissemination of pomological specimens and information.

#### VEGETABLES

A great variety of new vegetables were tried during the early years of the Department. Many were imported from England, France, and Germany by Newton and Capron, and enormous quantities were mailed to gardeners. Varieties were not carefully identified and often were little more than trade names varying from one seed house to another. Isaac Newton, especially, imported quantities from Charlwood and Cummins of London.

Of seventy varieties of garden peas tested in 1866, all did well except a few from Germany. Many melons, squashes, onions, and other vegetables were sown with profitable results. A watermelon from China and a variety of other Chinese vegetables were worthy of special mention. Seed of the "Turnip-Rooted Chervil," a vegetable of the carrot family described as a delicious vegetable fit to replace the Irish potato, were sent by Franklin Webster, consul at Munich, Bavaria, to the Department in 1864. Webster enclosed directions for its cultivation and preparation as a food.

In 1877, steps were taken to import the *Turkish rhubarb* direct from that country to promote a potential medicinal crop for the South. Consul Winslow at Paita, Peru, sent stalks of the yucca plant of Peru with instructions on planting. The tubers, which grew up to twenty pounds in weight, were used as a staple article of food among the natives of Peru.

**TROPICAL AND SIMILAR CROPS****OLIVES**

The history of olive cultivation in the United States goes back more than three centuries. Franciscan fathers first set out orchards in California during the time of the Spanish missions. Two centuries later, the remnants of these orchards were found in San Diego County and repropagated there. Early attempts were made to cultivate the olive in other sections of the country as well. In 1755, Henry Laurens of Charleston, South Carolina, imported olive trees and raised the fruit. A colony at New Smyrna, Florida, planted olives in 1769. Fifteen years later, the Society for the Promotion of Agriculture of South Carolina imported olive cuttings.

Already noted has been the high value Jefferson placed on the olive and the Federal land grant to the Tombigbee vine and olive colony in 1817. Charles Mason introduced olive stocks and cuttings from France in 1854. These were distributed in the Carolinas and the southern states. Many other olive introductions were made throughout the nineteenth century.

The olive was not particularly successful in the East because it required several years to come into bearing, and farmers wanted quicker returns on their investment. Commissioner Le Duc selected some of the best commercial varieties from Europe in 1878 in an effort to encourage olive cultivation, and in 1880 the Department distributed 3,000 olive plants.

Pickled olives were becoming popular, and by 1887 some orchards of more than forty acres were thriving in California. Growers in the southern states began experimenting with olive culture about the same time. The Division of Gardens and Grounds imported many European varieties in response to the frequent requests for olive plants, and in 1892 it was shipping out seedlings almost daily.

**COFFEE**

William Saunders discouraged would-be coffee growers by pointing out that coffee required a continuous temperature of above fifty degrees Fahrenheit. But Commissioner Le Duc interested himself in some coffee trees in Manatee County, Florida, grown by Mrs. Julia Atzeroth from seed secured from Mexico about 1875. Mrs. Atzeroth wrote Le Duc that she had protected



the trees in the winter by stacking pine tops around the plantings located near warm salt water currents. The Department sent her a number of young coffee trees in 1879 for her own use and for other persons in her locality. In 1880 Mrs. Atzeroth forwarded to the Department a pound of coffee grown outside a greenhouse, and considered her plantation a success. That same year the Department distributed a thousand plants, and many more were raised from seed and distributed in Florida, California, and in some parts of Texas in 1889. Coffee plants from Liberia were introduced in Florida, but they proved unsatisfactory. After 1891 the plants were distributed only to encourage production for home consumption.

#### OTHER TROPICALS

The government introduced many tropical plants for trial between 1862 and 1889. Isaac Newton set aside an "apartment" in one of the greenhouses to determine what tropical fruits were worthy of greenhouse cultivation and wrote horticulturists for new varieties. Dwarf banana plants and several pineapple and guava varieties were transmitted to the most congenial parts of Florida for trial. The government's collection of tropical fruits included the *mangosteen*, *tamarind*, *mango*, *Indian persimmon*, *cherimoya*, and other trees. In 1870 the *Mamey apple*, various ornamental tropical plants, and three kinds of avocados were received from Santo Domingo. A conservatory was built in 1870 to protect tropical plant collections, and assistance was given agricultural colleges in the construction of such buildings. The government assisted the citrus fruit industry by importing new varieties until northern markets for the fruit became established.

At the request of Commissioner Colman, Prof. J. B. Steere of Ann Arbor, Michigan, secured seed and plants of the mango, cherimoya, and bananas from the Philippine Islands. Guavas, six varieties of bananas from the Philippines, and other tropical plants were allotted to experienced growers. In 1889, growers experimentally raised coconuts in Florida. The Department distributed *pyrethrum* seeds for many years. Growers in California reported that this plant had been profitably cultivated for use as an insecticide.

#### PASTURE, FORAGE, AND OTHER FARM CROPS

The rapid settlement of the West emphasized the need for plants especially adapted to subarid regions. Some of the prob-



The curious, dangling fruits of an Egyptian Sausage Tree growing beside a filling station at Coconut Grove, Florida, attract thousands of motorists every year. (From *The World Was My Garden* by David Fairchild, Chas. Scribner's Sons).



lems of dry farming in the West have been pointed out by Dr. Walter Prescott Webb in his book *The Great Plains*. The shortage of suitable plants became obvious during the 1870's, but the first special appropriation for this work was not made until 1880. Congress set aside \$5,000 for research on the agricultural needs of the South and the West, and seven years later voted a like sum to carry on the work. Field investigations were carried out to discover and introduce suitable forage crops to increase the grazing capacity of arid lands.

The value of the grain sorghums to the West was recognized. Native grasses were carefully studied and catalogued by botanists, and the government planned the dissemination of many varieties. *Japanese lespedeza*, a valuable fodder and grazing plant, grew freely on different soils and was planted extensively in the South. An Abyssinian grass was reported very good in Texas, and in other places Russian forage plants, luxuriant in growth, were considered promising.

Guinea grass seed were procured through the American consul at Kingston, Jamaica, and sent to the South in the fall of 1873. This was the familiar *Johnson grass*, a valuable grass for hay but a notorious pest in cultivated fields. The description of these two grasses was the same: they seeded like millet, grew in bunches, withstood drouth and heat, and reproduced from both seeds and roots. Guinea grass had been introduced in Louisiana in 1874, and two years later it was reported the best grass for Arkansas. The grass was known as Johnson grass in Alabama in 1873 where it had been growing for twenty-five years.

Johnson grass has had many names. A correspondent of the *Southern Cultivator* wrote, from Buckhead, South Carolina, in April, 1848, of a grass called Means' grass which from the description seems identical with Johnson grass. He stated that "many years ago" a few seeds were discovered among imported hemp seed from the Mediterranean by "Means" who planted it in his garden. After a few years it took possession to the exclusion of everything else. Means had it dug up root and branch and thrown into some gullies below his house from which place it became distributed throughout the entire section of South Carolina. The grass also was known as Egyptian grass.

The *Silver Skin buckwheat* from Germany proved superior in several respects to the commonly grown varieties. It was well-adapted to the Pacific Coast and gave superior yields. In 1890 a

buckwheat from Japan gave great satisfaction. Because the Japanese variety yields twice the amount per acre and does not blight from the hot sun, it has been adopted as a preferred variety in the Northwest.

Colman directed choice Persian smoking tobacco from the provinces bordering the Caspian Sea to Florida in 1887. Sumatra tobacco, jealously guarded by the Dutch, also was procured. The high prices received for this tobacco caused the formation of a large company in Florida for producing it. In the 1880's the old varieties were being replaced by new tobaccos especially adapted to the needs of the different tobacco growing localities. A new type of America's own Indian corn, found in Rumania and considered a superior bread corn, was tested but found unsuitable for cultivation here. Newton tested Irish potatoes from Great Britain and other places in Europe, but native seedlings proved superior.

#### FOREST TREES AND MISCELLANEOUS INTRODUCTIONS

There was no need to import new trees for forestation. Instead European nations looked to the United States for better forest trees. As David G. Fairchild explained the attitude of the Department in 1898:

. . . the United States possesses in its forest flora such a wealth and variety of valuable species that there is little call for increasing the number, at least in the forest regions and for the present, when we have hardly yet begun to be acquainted with the possibilities of our own species and with the necessity of method in their propagation. (1)

The Department of Agriculture did import some species, however, for special reasons. The camphor tree from Japan was distributed annually after 1862, and around 1889 some 3,000 plants were being distributed yearly—mostly in Florida and in Texas where they served as ornamental shade trees. The tree was first used as a shelter for orange groves in Florida, and later for industrial purposes.

Growers expected the *osier willow*, used in basket making and rough furniture, to become a profitable crop since good quality willows could be produced cheaply in America. Cuttings of the osier willow were frequently imported from European countries, and 45,000 roots and cuttings were distributed in the winter of 1862. A small willow plantation was established in 1889 on the Department grounds, and furnished in 1891 thirty different kinds

of willows to 150 applicants. In the same year a second planting of newly introduced cuttings was started.

A third tree introduction during this time was the *cork oak* which had once interested Thomas Jefferson. Reports of success were received ten years after distributions were made in Mississippi in 1859. Le Duc was considerably interested in the cork oak in 1878. Reports from California promised the cork oak could supply the needs of the wine industry there. However, the cork supply for the United States still is imported from the Mediterranean countries because its cultivation depends on a supply of cheap labor.

An arboretum of various hardy trees and shrubs was being collected as rapidly as the plants could be gathered in 1870. Distributions of Spanish chestnuts and English walnuts were reported doing well. The *Laurus* of western China, a good timber tree of solid, durable wood, was forwarded to the Department by the consul-general from Shanghai in 1880. State experiment stations were established at the time these problems in forestry arose and did much to test for adaptation in local areas. California growers in 1889 were enthusiastic over results of the plantings of cork oak, the camphor trees of Japan and China, the Japanese mulberry tree, the eucalyptus, and the English Oak.

*Reforestation*—As settlers moved westward into the plains region and established their homesteads, the shortage of trees adaptable to arid climates and soils became more apparent. At the same time, the nation suddenly awoke to the fact that forests were rapidly dwindling under the demands of industry and the clearing of land for agricultural purposes. The first move to encourage conservation and reforestation was an act by Congress in 1880 setting aside land for this work. However, the program met with difficulties because proved forest trees were not available in sufficient quantities. In 1897, 500 packages of seed of the *Australian tanbark wattle* were mailed to applicants in the Southwest, Pacific Coast, and Gulf States. A noted botanical collector, Dr. Edward Palmer, was commissioned in 1897 to secure trees of economic importance to the Southwest from the dry regions of the Mexican plateau.

Work by the Department of Agriculture during this period was directed mainly to the South and West because agriculture in these sections was undergoing a complete transformation, and the new areas opening up presented special problems in cultivation.

The search for new crops for these regions had a beneficial effect on the agriculture of the entire nation and led to the discovery of many superior varieties and methods of farming.

#### BIBLIOGRAPHY

1. Fairchild, David G., "Systematic Plant Introduction," USDA Division of Forestry, *Bulletin No. 21*, 1898.