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PLANT IMMIGRANTS.

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Foreign Seed and Plant Introduction.

EXPLANATORY NOTE.

This multigraphed circular is made up of descriptive notes furnished mainly by Agricultural Explorers and Foreign Correspondents relative to the more important introduced plants which have recently arrived at the office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry of the Department of Agriculture, together with accounts of the behavior in America of previous introductions. Descriptions appearing here are revised and published later in the INVENTORY OF PLANTS IMPORTED.

Applications for material listed in these pages may be made at any time to this Office. As they are received they are placed on file, and when the material is ready for the use of experimenters it is sent to those on the list of applicants who can show that they are prepared to care for it as well as to others selected because of their special fitness to experiment with the particular plants imported. Do not wait for the annual catalogue entitled NEW PLANT INTRODUCTIONS which will be sent you in the autumn and in which will be listed all plants available at that time. Regular requests checked off on the check list sent out with the catalogue are not kept over from year to year. If you are especially interested in some particular plant in the catalogue write and explain in detail your fitness to handle it.

One of the main objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant experimenters, and it will undertake as far as possible to fill any specific requests for foreign seeds or plants from plant breeders and others interested.

David Fairchild,

Agricultural Explorer in Charge.

November 14, 1918.

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Aesculus wilsonii (Aesculaceae), 45532. **Horse-chestnut.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 2452a. Kingmen, Hupeh, China, September 24, 1917.) The interesting and beautiful Chinese horse-chestnut, a tree deserving to become widely planted in the southern United States. Not as charming as the European horse-chestnut but better able to withstand hot summers and long periods of drouth. To be planted in those sections of the United States where the temperature does not fall much below zero. Chinese name **So lo shu** (**Swa loh shu**). " (Meyer.)

Brassica pekinensis (Brassicaceae), 45529. **Pai ts'ai.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 2449a. Kingmen, Hupeh, China, September 13, 1917.) A variety of **pai ts'ai** said to grow into large solid heads when planted in the fall and given sufficient space in rich moist soil. When sown thickly in beds in spring or fall and not transplanted, it is pulled up with the roots and eaten chopped up and boiled like spinach. Can also be employed in sauerkraut making. Chinese name **Tung pai ts'ai** meaning 'Winter white vegetable.' To be tested especially in the southern sections of the United States." (Meyer.)

Brassica pekinensis (Brassicaceae), 45530. **Pai ts'ai.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 2450a. Kingmen, Hupeh, China, September 13, 1917.) A variety of **pai ts'ai** with very dark green, bullate foliage, not making a closed head. Sown out in fall and transplanted at distances of half a foot or more in all directions. It needs a moist, muck soil to grow to perfection and in mild climates it keeps on growing throughout the whole winter. It is eaten in soups, chopped up like spinach. Chinese name **Hei pai ts'ai** (**Gho pai tsia**), meaning 'Black, white vegetable.' To be tested mainly in the southern United States." (Meyer.)

Corylus avellana (Betulaceae), 45692. **Filbert.** From France. Presented by Mr. Edmond Verain, St. Jean le blanc, par Orleans, Loiret. **d'Alger.** This is a well-known hazelnut, and because of its many hundreds of years of cultivation has received many different names. Goeschke, in *Die Haselnuss*, mentions 41 names which have been given to this plant. The bush is of low

much-branching habit, spreading widely by means of suckers. It is a very prolific shrub, and is one of the most fruitful of all the varieties of hazelnut. The leaves are of medium size, roundish or oval-elliptic. The nut is medium-sized, 20 to 22 mm. long, and very long-pointed. Seldom grows singly, but is usually found in groups of 2 to 5. Shell dark brown, later even becoming brownish black. The upper half is covered by a greyish wooly tomentum which becomes stronger towards the tip. The kernel, which has a sweet almond-like taste, is oval and entirely fills the shell. Blooms in mid-spring; ripens early - from the middle to the end of August depending on the climate. Older pomological workers state that this nut comes true to seed; but more recent workers state that only about one fifth of the seed planted comes true to the variety. It is a nut to be universally recommended. (Adapted from Goeschke, Die Haselnuss, p. 78.)

Inga sp. (Mimosaceae), 45351. **Cojiniquil.** From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 183a. Finca Chejel, Baja Verapaz, Guatemala. October 15, 1917.)

An indigenous species of *Inga* common along water courses in the Alta Verapaz, and also planted for shade in coffee plantations. The tree is medium-sized, reaching about 40 feet in height, with a broad open crown and scant foliage. The leaves are large, compound, with 3 or 4 pairs of leaflets. The fruits, which are produced in abundance during September and October, are slender pods about 6 inches in length. They contain 6 to 10 irregularly oblong, dark green seeds, each surrounded by a white, jelly-like pulp of sweet, aromatic flavor, strikingly suggestive of the litchi (*Litchi chinensis*). While the quantity of pulp is not great the flavor is really excellent, and the fruit seems to be popular among the inhabitants of the region. While it is not anticipated that this fruit will ever become of commercial importance in the United States, the species is well worthy of a trial by plant fanciers in Florida for the interest which it possesses." (Popenoe.)

Licoris aurea (Amaryllidaceae) 45526. From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 1283. Chien ching shan near Kingmen, Hupeh, China. September 21, 1917.) A bulbous plant, flowering in late summer, with large ochreous yellow flowers, borne on stems often over 2 feet tall.



FOUR-YEAR-OLD FEIJOA BUSH AT TALLAHASSEE.

(*Feijoa sellowiana*. See S. P. I. No. 39555.)

The hardiness of this South American fruiting bush is something of a surprise. It promises to grow and fruit as far north as Alabama and Georgia. It appears to be cross-fertilized by birds, which are fond of the thick petals of the flowers. The large-fruited selected varieties of California deserve a trial in the Gulf States. (Photographed by R. A. Young, on the place of Geo. B. Perkins, Tallahassee, Fla., August 12, 1916; P19859FS.)



THE SCENTED MELON OF GUATEMALA.

(*Sicana odorifera*. See S. P. I. No. 43427.)

The melocoton, a peculiar melon found in the Guatemalan lowlands, which, when prepared as a preserve is famous throughout the Republic. The name, *melocoton*, properly belongs to the peach, but has probably been applied to this melon through some resemblance, fancied or otherwise, to the peach. In color the melocoton is either a beautiful deep red or a black; the flesh is yellow, aromatic, with numerous black seeds. The ripe melon has a delightful spicy fragrance. The possibility of hybridizing it with other species of cucurbits should be considered. (Photographed by Wilson Popenoe, Mazatenango, Guatemala, September 23, 1916; P16804FS.)

The foliage dies down in summer but comes up again in early spring or late winter, where the climate is mild. Apparently withstands zero temperatures. Collected in pockets of humus soil beneath tall trees on a rocky mountain slope at an elevation of over 2,000 feet above sea level. May possibly be hardy at Washington, D.C." (Meyer.)

Malus theifera (Malaceae), 45681. From Jamaica Plain, Massachusetts. Presented by the Arnold Arboretum. A small handsome tree with stiff spreading branches, resembling a cherry tree when in bloom. The fragrant flowers are white or light pink with purple calyx, and the young leaves are purplish. The fruit is globose, light greenish yellow with reddish cheek, ripening in Massachusetts in October. The tree is Asiatic in origin, ranging from China to Assam. (Adapted from Rehder, and also Bailey, Standard Cyclopedia of Horticulture, p. 2872.)

Pavetta zimmermanniana (Rubiaceae), 45554. From Buitenzorg, Java. Presented by the Director of the Botanic Gardens. A small rubiaceaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers. "The remarkable researches of Zimmerman and Faber, detailed in the Jahrbücher für Wissenschaftliche Botanik, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and several other species of *Pavetta*, *Psychotria*, and possibly other genera of the Rubiaceae contain colonies of a non-motile, nitrogen-fixing bacterium which he names *Mycobacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and, when the seed germinates, grow through certain stomata of the very young leaves and into the intra-cellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply imbedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a solution of sublimate to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen, grew well

and remained healthy for 4 months, whereas those not so infected turned yellowish white and died in 3 or 4 weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the fact that these rubiaceae plants with bacterial nodule-bearing leaves occur in many parts of the tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these tropical trees and shrubs, plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of Pavetta and other rubiaceae plants which will be worth while growing for their nitrogen-fixing leaf-bacteria in the orchards of our semitropics or wherever else the climate will permit of their cultivation." (David Fairchild.)

Pogonopus speciosus (Rubiaceae), From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 191. Finca Chejel, Baja Verapaz, Guatemala. October 15, 1917.) A handsome flowering shrub from the valley of the Rio Polochio, near Tucuru, Alta Verapaz. The brilliant scarlet bracts make the plant a striking object among the vegetation along the slopes of the valley, suggesting the poinsettia in color. The plant is bushy in habit, reaching 15 feet in height, the leaves broadly lanceolate, acuminate, 3 to 5 inches long, with margins entire. The flowers are tubular, about 1 inch long, produced in corymbs 2 to 4 inches broad. Many of the flowers are subtended by ovate-acute bracts, 1 to 1½ inches in length, and of brilliant crimson-scarlet color. This species should be tested as an ornamental shrub in Florida and California." (Popenoe.)

Prunus mume (Amygdalaceae), 45523. **Japanese apricot.** From Yokohama, Japan. Purchased from the Yokohama Nursery Company. A tree with somewhat the appearance of the common apricot, but the bark is greenish or gray, and the foliage is duller in color. The leaves are relatively small, long-pointed, lighter colored beneath, and the fragrant flowers are sessile or nearly

so. The yellow or greenish fruit is usually smaller than the fruit of *P. armeniaca*, and the dry flesh adheres to the pitted stone. The tree is a native of Chosen and perhaps of China. It is very valuable as an ornamental, and the double-flowered form was introduced into Europe from Japan in 1878. In late years it has been imported from Japanese nurseries in quantity, and in various forms such as the white, double-white, double-rose, and weeping. The double-flowered form is especially valuable in gardens for its early profuse blooming, being in flower about the same time as the almond, and being, when at its best, almost as beautiful. The fruit is about an inch in diameter, and is used in Japan as a pickle. The fruits are picked just before they are ripe, and soaked in water for 24 hours; then they are mixed with salt and the leaves of the red-leaved variety of *Perilla nankinensis* and allowed to stand a week or less depending on the temperature. After this the fruits are spread in the sun to dry, and while drying are sprinkled with the juice of the *Perilla* leaves. After 3 to 5 days they are put up in weak brine, and will keep indefinitely. The pickled fruit is exceedingly sour, and often forms a part of the Japanese soldiers' ration. For best results the tree should be grown in a shady place. There are hundreds of distinct varieties grown in Japan for both flowers and fruit. This importation however is of seeds for trial as a stock, there being a possibility that it may prove resistant to crown gall. (Adapted from Bailey, Standard Cyclopaedia of Horticulture; Bean, Trees and Shrubs Hardy in the British Isles; and F.N. Meyer, Agricultural Explorer for this Department.)

Pterogyne nitens (Caesalpiniaceae), 45485. **Ybyra ro.** From Porto Murtinho, Matto Grosso, Brazil. Presented by Mr. C. F. Mead. "In many ways, this timber is the most useful found hereabouts, especially for hulls of boats, coach work, etc. You have no timber at all like it." (Mead.) A tall, stout, unarmed tree, abundant in parts of Argentina and Brazil. The wood is very strong and resistant, and is used in the construction of carts, excepting the spokes. It is considered an excellent wood in Misiones whence it is exported. It is also highly valued in Salta, and is used in coach making. (Adapted from S. Venturi, Contribucion al Conocimiento de los Arboles de la Argentina.)

Ribes fasciculatum chinense (Grossulariaceae), 45689. From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Handsome shrub, native of northern China, growing to 4 feet in height, and chiefly valued for its late persistent foliage, and the bright scarlet berries which remain on the branches during the whole winter. The small greenish flowers are dioecious, and the insipid fruit is sub-globose, scarlet, glabrous and $\frac{1}{2}$ inch across. The subspecies differs from the type in having larger leaves, and the young branches, petioles and leaves pubescent. (Adapted from Bailey, Standard Cyclopoedia of Horticulture. Vol.5, p.2960.)

Rubus trichomallus (Rosaceae), 45356. From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 186aa.) A very interesting species of Rubus which I have seen only in the Verapaz. It is common about Purulá, Tactic and San Cristobal, and I have seen it as far east as Sepacuité. It occurs at elevations of approximately 5,000 to 6,000 feet. There is another wild Rubus in this region which is more common but its fruits are much more seedy and of acid flavor. This plant sends up strong, rather stiff canes sometimes 10 or 15 feet in length. They are covered abundantly with reddish spines, the young branchlets appearing coarsely hairy. The leaves are trifoliate (distinguishable by this means from the other species whose leaves are composed of 5 leaflets), and velvety in texture. The leaflets are ovate-acuminate, about 3 inches long, finely serrate. The flowers which are rather small, are produced in large terminal racemes. The fruits are not as large as in many wild blackberries, being scarcely more than half an inch in length, but they are of delicious flavor, and the seeds are so soft that they are scarcely felt in the mouth. In this latter respect the species is a marked contrast to the others seen in Guatemala, the seeds of wild blackberries being usually very large and hard. The plant bears abundantly, and the sweetness of the fruits makes them very desirable for eating in the fresh state. This Rubus can be strongly recommended for trial in the southern United States." (Popenoe.)

Saccharum officinarum (Poaceae), 45513. Sugar cane. From Reduit, Mauritius. Presented by H. A. Tampany, Director, Department of Agriculture. **M.P.55.** A widely grown variety, exceeded only by **White tanna** in area

under cultivation. Twelve per cent of all the land devoted to sugar cane raising is occupied by this variety. In Mauritius this variety seems to prefer the lowlands, two thirds of the area devoted to it being below 600 feet in elevation. The origin of this variety is traced to Mr. G. Ferromat, Manager of the Clemencia Estate, Flacq, who began to grow canes from seed in 1891. **M.P.55** is the best of the varieties he succeeded in raising. (Adapted from Henri Robert, Sugar Cane Varieties in Mauritius.)

Notes on Behavior of Previous Introductions.

In a letter dated July 24, 1918, Mr. Charles E. Adams, of Mountain View, Cal., states:

"*Diospyros kaki*, 26773, bore a few fruits for the first time which were delicious, sweet without the pucker before they were frosted and of fine large size. This year the tree is well filled with fruit."

Mr. John B. Wiggins, of Holly Hill, S.C., writes, August 22, 1918:

"I have noticed the strong, very healthy growth, even during dry periods, of the **Quetta nectarine**, (*Amygdalus persica nectarina*) upon the *Amygdalus davidiana* stocks. The two plants (*Amygdalus persica nectarina*, 34684), sent me by your Office February 29, 1916, have done so well here upon that stock that I should like to use it. The peach borers are very numerous here and it seems that they do not attack the *davidiana* stocks so readily as they do stocks of other seedling peaches here, though there is not a sufficient number of the *davidiana* stocks here for a fair test."

Mr. A. D. Shamel, of Riverside, Cal., reports, October 31, 1918;

"Our three Feijoa plants (*Feijoa sellowiana*, 26121,) produced a very large crop this year. On two of them the fruits were the largest that I have ever seen, about the same size as the Harman avocado. We picked about 3 bushels of fruits from the three bushes which are 5 years old. My wife has made up a large quantity of jelly from them, as much as we can use all year. We have used them sliced, like sliced bananas, with sugar and cream. They are delicious in this way. We also made pies - and very good pies - from them. In addition, we have given a bushel of fruit to neighbors who are fond of them." (See Plate 231.)

United States Department of Agriculture.
Bureau of Plant Industry.
Office of Foreign Seed and Plant Introduction.
Washington, D. C.

Washington Scientific Staff.

David Fairchild, Agricultural Explorer in Charge.
P. H. Dorsett, Plant Introducer, in Charge of Plant Introduction Field Stations.
B. T. Galloway, Plant Pathologist.
Peter Bisset, Plant Introducer, in Charge of Foreign Plant Distribution.
Wilson Popenoe, Agricultural Explorer.
H. C. Skeels, G. P. Van Eseltine, and R. A. Young, Botanical Assistants.
D. A. Bisset, Miss Bessie Broadbent, L. G. Hoover, R. N. Jones and P. G. Russell, Assistants.
Edward Goucher, Plant Propagator.

Field Stations Scientific Staff.

R. L. Beagles, Superintendent in Charge, Plant Introduction Field Station, Chico, Cal.
E. O. Orpet, Assistant in Plant Introduction.
J. M. Rankin, Superintendent in Charge, (Yarrow) Plant Introduction Field Station, Rockville, Md.
Edward Simmonds, Superintendent in Charge, Plant Introduction Field Station, Miami, Fla.
J. E. Morrow, Superintendent in Charge, Plant Introduction Field Station, Brooksville, Fla.
Henry E. Juenemann, Superintendent in Charge, Plant Introduction Field Station, Bellingham, Wash.

Collaborators.

Mr. Aaron Aaronsohn, Haifa, Palestine.
Mr. Thomas W. Brown, Cairo, Egypt.
Mr. H. M. Curran, Laurel, Md.
Mr. M. J. Dorsey, University Farm, St. Paul, Minn.
Mr. Robt. H. Forbes, Tucson, Ariz.
Mr. Gustav Eisen, New York City.
Mr. A. C. Hartless, Saharanpur, India.
Mr. Barbour Lathrop, Chicago, Ill.
Mr. H. Nehrling, Gotha, Fla.
Mr. Charles Simpson, Little River, Fla.
Mr. H. P. Stuckey, Experiment, Ga.
Dr. L. Trabut, Director, Service Botanique, Algiers, Algeria.
Mr. H. N. Whitford, School of Forestry, New Haven, Conn.
Mr. E. H. Wilson, Arnold Arboretum, Jamaica Plain, Mass.
Dr. F. A. Woods, Washington, D. C.