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PLANT IMMIGRANTS.

No. 140.

DECEMBER, 1917.

GENERA REPRESENTED IN THIS NUMBER.

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Foreign Seed and Plant Introduction.

E X P L A N A T O R Y N O T E .

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.

October 11, 1918.

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Actinidia chinensis (Dilleniaceae), 45588. Yang tao. From Krling, China. Presented by Rev. John Berkin. The Yang tao, as this deciduous climber is known in Szechwan province, where it is native, has attracted considerable attention from travelers and missionaries in China, because of the high quality of its fruits, and the ornamental value of the plant. Single plants often grow 30 feet in length so that the vine will cover large areas of trellis. The leaves have a plush-like texture, and an unusual dark-green color. The young shoots are bright pink and villous-pubescent. The size and regular spacing of the leaves make this climber valuable where large areas of foliage are desired. The flowers are buff-yellow to white, fragrant, and of large size, being from 1 to 1½ inches in diameter. The abundance of these flowers adds greatly to the beauty of this plant, and enhances its value as an ornamental. The following account of the fruit was written by Mr. Wilson while in China. "Fruits abundantly produced, ovoid to globose, 1 to 2½ inches long, 1 to 1¼ inches across; epicarp membranous, russet-brown, more or less clothed with villous hairs. Flesh green, of most excellent flavor, to my palate akin to that of the gooseberry, but tempered with a flavor peculiarly its own. The fruit is excellent when fresh, and also makes very fine jam and sauce. A number of the Yang tao fruits which were produced by vines growing in California were shipped to Washington and have been eaten by a number of people of discriminating taste, and the universal opinion appears to be that we have in this Chinese fruit a distinct new possibility for home gardens in Southern regions. What American horticulturists will do with it remains to be seen. It is now essentially a wild fruit, for the Chinese have done no more with it than Americans have with their largest wild fruit, the papaw (*Asimina triloba*). While this plant is not hardy in regions of severe winters, the rapid growth in the spring will make it a valuable ornamental, even in those regions where it is killed to the ground each winter." (See fuller description in "Some Asiatic Actinidias," by Fairchild, issued January 18, 1913, in Bureau of Plant Industry Circular No. 110.)

Amaranthus paniculatus (Amaranthaceae), 45535. Huauhtli. From Mexico. Presented by Mrs. Zelia Nuttall, Casa Alvarado, Coyoacan, Mexico City. An annual, with entire leaves, bearing the abundant, grainlike edible

seeds in dense panicles. Some plants produce white seeds, and some produce black. The white seeds are those chiefly used by the natives. This plant is found both in cultivation and growing wild. The seeds ground and cooked in the form of small cakes known as *alegria*, are eaten in large quantities by the poorer classes, especially during a time of scarcity of corn. *Huauhtli* was cultivated by the Aztecs before the discovery of America. It occupied an important place in the fare of the people, and accounts show that every year 18 granaries, each with a capacity of 9,000 bushels, were filled by Montezuma. Often the tribute exacted by the Aztecs from the people they conquered would take the form of a certain amount of this grain. It was so closely connected with the life of the people that it figured in religious observances. Spanish historians, writing in the first half of the 17th century, give accounts of how the ancient Mexicans made figures of their gods out of the flour obtained from the seed. The figures were carried in procession, and at the end of the ceremony were broken up, and served to the people as a form of communion.' (Adapted from Safford, A Forgotten Cereal of Ancient America, Proceedings of the Nineteenth International Congress of Americanists, p. 256-297, 1917.)

Annona diversifolia (Annonaceae), 45548. From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 205a. Guatemala, Guatemala. November 8, 1917.) The *anona blanca*, from Chiquimula (elevation 1,400 feet). This species is not known in the highlands of Guatemala, nor have I seen it elsewhere except in the vicinity of Chiquimula and Joetán, both in the southeastern part of the republic, close to the border of Honduras. The tree strongly suggests *Annona squamosa* in appearance, but is easily distinguished by the leaf-like bracts at the base of the branchlets. The fruit is much larger than that of *A. squamosa*, resembling more closely that of *A. reticulata*. It is generally heart-shaped, up to 5 or 6 inches in length, with the carpellary areas indicated by incised lines on the surface, which is pale glaucous green in color. The skin is nearly a quarter of an inch thick, the flesh is said to be tinged rose color when ripe, and the seeds are much larger than those of either *A. squamosa* or *A. reticulata*. The season of ripening in southeastern Guatemala is September. While I have not been able to test this fruit thoroughly,

it seems to be far superior to *A. reticulata*, and to approach the cherimoya in quality. If it succeeds at low elevations in the tropics, as seems to be the case, it may prove to be a very valuable species for cultivation in regions which are too hot for the cherimoya. It should be given a careful trial in such regions as South Florida, Cuba, and Porto Rico. I do not know how productive the tree may be, since I have seen only two specimens in fruit, and these were growing under rather unfavorable conditions. The seeds forwarded under this number were taken from fruits purchased in the market of Chiquimula by Mr. B. B. Williams, of the Friends' Mission." (Popenoe.)

Avena sativa (Poaceae), 45565. **Oats.** From Paris, France. Presented by Vilmorin-Andrieux & Company. "*Hybride noire tres hative*" (very early hybrid black). This variety was obtained about 10 years ago at the experimental farm at Verrieres by crossing the two varieties, Australia and Joannette; it has been carefully selected, and has proved itself to be a well-mixed variety which is vigorous, tillers well and attains a height of 4 to 5 feet according to cultural conditions. The panicle is well filled and perfectly continuous, and the spikelets contain two and often three beautiful, black, full, faintly awned grains. In our comparative studies, this has constantly ripened 8 or 10 days in advance of the earliest varieties, giving a greater yield. Sown March 1 it heads early in June, and ripens about July 20. In brief, it is highly profitable, uniting the best qualities, extreme earliness, abundant production, and resistance to rust and shattering." (Vilmorin-Andrieux catalogue.)

Castanospermum australe (Fabaceae), 45504. **Moreton bay chestnut.** From Dominica, British West Indies. Presented by Mr. Joseph Jones, Curator, Botanic Gardens. The **Moreton bay chestnut** is a large ornamental tree native of Queensland and New South Wales, where it is said to grow abundantly along rivers. The leaves are odd-pinnate, and are composed of from 11 to 15 broad, thick, entire leaflets. The large flowers are yellowish green on opening, but later change to a deep yellow-orange. They are borne in loose axillary racemes usually about 5 inches long. The pod is 8 to 9 inches long, with 4 to 5 globular seeds larger than Italian chestnuts.

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The large evergreen leaves and the racemes of bright orange-yellow flowers make an attractive picture in any subtropical garden. The large globular seeds are roasted and eaten like chestnuts. The tree has been introduced into Southern California, but is not common. (Adapted from Bailey, Standard Cyclopedia of Horticulture, and Berger, in Gardeners' Chronicle ser. 3, vol. 38, p. 244.)

Citrus ichangensis (Rutaceae), 45534. **Ichang lemon.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 145b. Kingmen, Hupeh, China. September 26, 1917.) A citrus fruit called **Hsiang yuan**, meaning 'fragrant round'. It exists in many varieties, and is able to withstand colder temperatures than the tangerine and kumquat but is not as hardy as *Poncirus trifoliata* (*Citrus trifoliata*). The rind exhales a delightful fragrance and the Chinese use the fruits as room-perfumers and carry them about instead of perfumed handkerchiefs. Since they possess an abundant juice of good quality, foreign residents use these fruits for making lemonade. If it were not for the many very large seeds this fruit could well be substituted for the ordinary lemon; as it is, it may be grown considerably north of the true citrus belt to supply a home product from which to make refreshing drinks." (Meyer.)

Crataegus stipulosa (Malaceae), 45575. **Manzanilla.** From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 216a. Guatemala, Guatemala, November 20, 1917.) A native species of *Crataegus*, well known in the Guatemalan highlands, where it occurs both wild and cultivated. Seed was previously sent in under No. 32a. (S.P.I.No. 43430). The manzanilla is a large shrub or small, erect, slender tree, about 20 feet tall; when old, sometimes having a thick trunk a foot or more in diameter at the base, but never developing to a greater height. In spring it produces white flowers resembling apple blossoms. In early fall, commencing about October, the fruits ripen, and from this month are abundant in all the markets until after Christmas. They are much used for decorative purposes, after being strung on long threads. They are eaten in several ways, principally stewed and in the form of jelly. For stewing

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THE SONCOYA, AN INTERESTING FRUIT TREE FROM GUATEMALA.

(*Annona purpurea*. See S. P. I. No. 43426.)

The soncoya is a handsome tree, characteristic of the Guatemalan lowlands. While it is common in the forest as a wild tree, it is also seen in gardens and dooryards, where it is planted for its large prickly fruits. It is questionable if the soncoya will withstand frost, but it should succeed in extreme southern Florida. (Photographed by Wilson Popenoe, at Ayutla, Guatemala, September 27, 1916; P16821FS.)



RESISTANCE TO COLD OF THE GUATEMALAN AVOCADO.

(*Persea americana*.)

The freeze of February 3, 1917, at Miami, Fla., subjected the avocados at the Plant Introduction Garden to a temperature of 26.5° F. for a few minutes. This temperature froze the foliage and twigs of the avocado tree of the tender West Indian type but affected those of the Guatemalan type much less severely and did not injure at all those of the Mexican type. In the illustration Admiral Ross is touching the dead brown leaves of a shoot coming from the West Indian seedling stock upon which was budded February 7, 1914, the Grande variety of the Guatemalan type. This bud has produced a good-sized tree in the three years and scarcely a leaf was injured by the freeze. (Photographed by David Fairchild, at the Miami Plant Introduction Field Station, February 12, 1917; P20427FS.)

they are first boiled with wood ashes, after which the skin is easily removed; they are then placed in hot syrup and boiled for a short time. Their flavor somewhat suggests the apple, and is very pleasant. The fruits look like small apples, being nearly spherical in form, yellow in color, with russet dots and a blushed cheek, and having a slender stem. The largest ones are an inch and three quarters in diameter. The ordinary size is about one inch. The thin skin surrounds a rather dry, yellowish, mealy pulp and three large seeds. The plant is easily grown and should succeed in California and Florida." (Popenoe.)

Juglans mollis (Juglandaceae), 45352. **Walnut.** From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 180a. Finca Chejel, Baja Verapaz, Guatemala. October 15, 1917. The wild walnut of the Verapaz. It is not a common tree; but seen occasionally on mountainsides and along water courses, at elevations of 1,500 to 4,500 feet, so far as my own observation goes. The tree is only moderately large, rarely reaching a greater height than 40 to 45 feet. The nuts, which are sometimes produced very abundantly, are as large as a good specimen of *Juglans nigra*, but have a thicker shell and consequently less kernel. This species is of interest in connection with the attempt now being made to obtain good nut-bearing trees for the tropics. It should be planted in such regions as south Florida and Cuba. Since it appears to thrive in Guatemala under a rather wide range of climatic conditions it may succeed in many parts of the tropics and subtropics." (Popenoe.)

Lilium philippinense (Liliaceae), 45570. **Benguet lily.** From Manila, P.I. Presented by Mr. Adn. Hernandez, Director, Bureau of Agriculture. "This new white trumpet lily seems destined to become of very great value to both private and commercial growers. The short time necessary to flower it after potting surprises all who are growing it for the first time. We found last year that it was all the introducers claimed for it, and from a hatch of small bulbs potted September 8 we cut flowers December 3 of this year. These bulbs were grown in a cold-frame for nearly half that period or they would have flowered earlier. The long, pure white, sweet-scented flowers arrange beautifully in

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vases. The stems are sufficiently strong, without being too rigid, as is the case with other forcing liliiums, and the foliage is so much more graceful than that of other lilies that any flower lover would not hesitate a moment which variety to select when both were purchaseable. For floral designs this lily is superior to any other white variety and we fully expect it will in a few years be as much a market necessity as *Harrisii* and *longiflorum* now are. Six or seven bulbs may be grown in a 6-inch pot or pan and a dozen or more in an 8-inch pan for good effect." (Florist's Review, December 13, 1917.)

Malpighia sp. (Malpighiaceae), 45506. From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for this Department. "(No. 196. Guatemala City, Guatemala, November 6, 1917. *Azerola*, from Amatitlan (elevation 3,900 feet). The name *azerola*, which properly belongs to a species of *Crataegus* is applied, in Central Guatemala, to a large *Malpighia*, whose fruits are not unlike those of the Barbados-cherry (*Malpighia edulis*). I have only seen the plant in a few places, it is most abundant at Amatitlan, where it is seen in a large proportion of gardens and dooryards. This species is much larger than *M. edulis*, often becoming a small bushy tree 20 feet in height, but more commonly seen as a large shrub, spreading in habit, with a dense crown. The leaves, when young are covered with a thick whitish tomentum, when mature they are membranaceous, elliptic-acuminate in form, about four inches long, cuneate at the base, bright green and glabrous above, heavily pubescent, with the venation prominent below. The flowers are produced in small axillary clusters. Individually they are scarcely an inch broad, with clawed, crepe-like petals of lilac-pink color. The fruits, which ripen mainly during August and September are the size of a large cherry, but flattened and sometimes pointed toward the apex. They are bright red when fully ripe, with a tender skin and juicy, whitish flesh of peculiar subacid flavor. The seeds, three in number, are roughly winged. The character of the growth suggests that this plant may be slightly hardy. It has not been seen in the lowlands, but is grown at elevations of 4,000 to 5,000 feet, where the climate is comparatively cool, but not cold enough to experience severe frosts. The

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plants produce abundantly. While not a fruit likely to become of great importance in the United States, it possesses sufficient interest and value to merit a trial. The regions in which it seems likely to succeed are, Florida, southern Texas, and California." (Popenoe.)

Pennisetum merkeri (Poaceae), 45572. **Napier fodder-grass.** From Rhodesia. Presented by Mr. J. Burt-Davy, Botanist, Agricultural Supply Association, Johannesburg, South Africa. "The great value of prolific and drouth-resistant fodder plants, which are generally very difficult to procure, is well known to stock owners; and this species which is but little known, as yet, can be most highly recommended for both of these qualities. During the last season, which was very dry and most disastrous for stock, this grass grew to a height of nearly 11 feet and produced a large quantity of succulent, nutritious, and fattening fodder. This is greatly relished by the stock, and is, according to analysis, much richer than green maize. A reliable official says: 'There is a concensus of opinion that in this plant we have found a fodder of great value and one which remains green even during such long periods as from six to eight months when other herbage is parched up or destroyed. It grows rapidly to the height of 12 feet or more in favorable weather, thrives well in various soils, and resists both frost and drought to a remarkable extent. At 7 feet high it has produced 12 tons of green fodder per acre, and a few months later 15 tons, making a total yield of 27 tons per acre. It is everlasting when once established, and the tufts or stools increase in size after each cutting or when grazed off. It should prove of untold value to farmers in South Africa who suffer much loss through frequent and protracted droughts, and in the East Indies and other countries where light rainfall and semi-arid conditions obtain. As a prolific and drought-resistant plant it promises to prove one of the very best brought into cultivation.'" (B. Harrison.) See S.P.I. No. 43241 for previous introduction.

Pterocarya stenoptera (Juglandaceae), 45587. From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 2447a. Kingmen,

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Hupeh, China. September 5, 1917.) An ornamental tree belonging to the walnut family, growing to a large size. The foliage is pinnated and of fresh green color. In early spring, before the leaves are out, the trees are loaded with long greenish brown, staminate catkins, which give them a festive appearance; these are followed by racemes of small winged fruits which persist on the trees until September. The young foliage is covered with small yellow-brown glands and when rubbed smells like sour apples. The trees love moist situations, especially near running water and in porous soil; however, they also thrive on dry fields, but do not grow so fast nor so large as when near water. It is one of the best flowering trees in the Foreign concessions at Hankow and Shanghai and is called by foreigners the 'Chinese ash' on account of its resemblance to a *Fraxinus*. Chinese name **Maliu shu**, meaning 'Fiber willow tree', often abbreviated to **Liu shu**. This is a very promising shade tree for streets, parks and gardens in those sections of the United States where the summers are moist and warm and the winters but moderately cold. It does well where rice and cotton mature fully, and where the large-leaved privet (*Ligustrum lucidum* Ait.) and the tea-olive (*Somathus fragrans* Lour.) remain out-of-doors the year round." (Meyer.)

Notes on Behavior of Previous Introductions.

In a letter dated September 7, 1918, Miss Alice Cooper, of Mayesville, South Carolina reports:

"S.P.I. No. 18586, *Prunus* sp. This bore heavily and was a beautiful sight. Some of the plums were almost as big as our largest "Abundance", almost black and covered with a purple bloom. The tree was admired by many for its beauty, and all agreed that the fruit was fine. It was so solid and meaty that it could be cut in slices and had a splendid flavor. We are delighted with it. *Lilium* sp. S.P.I. No. 40751. Lily. This grew nearly four feet tall and bore four of the largest white lilies I ever saw. One bud was six and one half inches long. The blooms were trumpet shaped, pure white, fragrant. Stamens brown."

"*Prunus armeniaca* 38281. **Chinese Apricot** has done exceptionally well, the leaves are healthy and free from shot-hole fungus. No American variety that I

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have tried here ever held their leaves until fall, while this one looks beautiful and I believe will be a success here. The *Amygdalus persica nectarina*, **Quetta nectarines** have done well, leaves are free from fungus. *Prunus domestica*. **Papagone prune** (40498) has done well, leaves are free from fungus." V. L. Deane, Seabrook, Texas, September 12, 1918.

In a letter dated March 18, 1918, Mrs. J. Radford Carter, of Merritt, Florida, reports the following results with *Persea americana*:

"We had an unusually cold February this year and during the severe cold, we kept our young avocado plants banked in sand; the old trees went through all right, excepting a few frosted lower limbs. Lower limbs of the mango were frosted also, but there will be plenty of fruit this summer."

Excerpts from a letter under date of April 7th, 1916, from John Bracken, Prof. of Field Husbandry, University of Saskatchewan, Saskatoon, Saskatchewan.

"Your communication of the 29th ult., enclosing photograph of one of our plats of *Medicago sativa*, **semi-Palatinsk alfalfa** is to hand. This plat did particularly well last year. It yielded more than any of our other alfalfa, but, of course, the latter were produced under rather different conditions. The semi-Palatinsk you photographed yielded 10,562 lbs. green weight in the first cutting; 5,520 in the second, and 4,875 in the third. The dry matter in the first cutting was 27.22% of which 21.77% was protein. A species of grass that we secured through your Bureau that has done very well here is *Agropyron elongatum*."

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Office of Foreign Seed and Plant Introduction.
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