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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.

January 29, 1919.

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Acacia pycnantha (Mimosaceae), 45867. **Golden Wattle.** From Richmond, Australia. Presented by Mr. F. H. Baker. A rapid-growing tree, attaining a height of about 30 feet, the bark of which is used for tanning. The flowers which are borne in clusters are yellow, hence the name, **golden wattle.** The tree has no soil preference, but is usually found on the poor sandy soil near the seacoast; here it serves also as a sand binder. The wood is tough and close-grained, having a specific gravity of 0.83. The bark contains as high as 33.5 per cent of tannin, and the dried leaves have yielded as much as 15.16 per cent of tannic acid. The range is South Australia, Victoria, and southern New South Wales. (From Maiden, Useful Plants of Australia, p. 312-313, and p. 365.)

Actinidia chinensis (Dilleniaceae), 45946. From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 2456a. Near Lung to ping, Hupeh, China. November 23, 1917.) A variety of **yang tao** bearing smooth fruits of various sizes ranging from that of a gooseberry to a good-sized plum. It possesses a good flavor though it sets one's teeth on edge as does the use of non-select pineapples and wild blueberries. This fruit really is of high promise for the United States, and especially so for the mild-wintered sections. It should preferably be grown as an arbor vine. In its native habitat one finds it bearing most heavily when crawling over low scrub and rocks on northeast exposures, where the plants are subjected occasionally to strong twisting winds which seem to check their tendency to excessive vegetative growth. Where this **yang tao** occurs one also finds around the farmsteads coir palms, loquats, bamboo clumps, tea plants, tung-oil trees, etc. The fruits when properly handled keep fresh for a long time; they ship and keep especially well after having been subjected to a slight frost. As to their uses, - they can be eaten out of hand or as a desert when skinned, sliced and sprinkled over with sugar; excellent preserves can also be made from them. The Chinese with their excessive vegetable diet and their abhorrence of sour fruits do not care for this fruit and let it waste mostly. However, Caucasians universally seem to enjoy this unique berry which in flavor combines that of gooseberry, strawberry, guava, and rhubarb. Possibly in some of the southern states new industries could be built up by cultivating this fruit for the

northern city markets. (The meaning of **yang tao** is 'male peach', which name is as inappropriate as is our name 'pineapple' for the Ananas.)" (Meyer.)

Amaranthus paniculatus (Amaranthaceae), 45811. **Guate.** From Culiacan, Sinaloa, Mexico. Procured by Mr. W. E. Chapman, American Consul, Mazatlan, from Mr. Frank G. Leeke, Culiacan. "**Guate** is an ancient Aztec foodstuff modernly used (popped) with sugar and milk as a breakfast food; also ground into meal after popping. Possible production, one half ton per acre. It grows semiwild amid corn as a secondary crop. The present production is very small, but can be stimulated if a market is opened." (Leeke.)

Castanea seguinii (Fagaceae), 45949. **Chinquapin.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 2459a. Ichang, Hupeh, China. November 16, 1917.) A shrubby **chinquapin** occasionally growing into a tree 25 to 40 feet high. Occurring on mountain slopes here and there in central China often in great quantities. Sprouts only 2 feet high often produce seeds. It appears to be totally resistant to the bark fungus, *Endothia parasitica*, and may be of considerable value in breeding experiments such as Dr. W.Van Fleet has been conducting for several years. This species seems to be more moisture-loving than *C. mollissima*, but it grows well on the most barren mountain slopes. Chinese name **moh pan li** meaning 'hairy board-oak'." (Meyer.)

Ceratonia siliqua (Caesalpiniaceae), 45924. **Carob.** From Valetta, Malta. Procured by Mr. Wilbur Keblinger, American Consul. The **carob tree** or **St. John's bread** is a handsome, slow-growing leguminous tree, with evergreen, glossy, dark green, pinnate leaves, forming a rounded top and attaining a great size. It grows well in the semiarid hills all around the Mediterranean, preferring limestone soils; it is sensitive to cold and does not succeed north of the orange-growing regions. The staminate and pistillate flowers are borne on different trees and it is necessary, in order to insure a crop of pods, to have a considerable proportion of staminate trees in the plantation. The large pods, which are chocolate-colored when ripe, are usually borne in great quantities and contain an abundance of saccharine matter around the smooth hard seeds. Italian analyses show the pods to contain over 40 per cent

of sugar, and some 8 per cent of protein, more than 75 per cent of the total weight is digestible. Unusually large trees may reach a height of 60 feet with a crown 75 feet in diameter, and may produce as high as 3,000 pounds of pods. These pods are a concentrated feed for horses, milch cows, and fattening stock; to a certain extent they replace oats for horse feed. Sirups and various sweetmeats are sometimes prepared from the **carob** pods; they are relished by most children and are sometimes offered for sale by fruit dealers in America. (Adapted from description by Mr. W. T. Swingle.) "It requires dry hot weather rather than moist heat. It has never done well in Florida but thrives in Southern California." (Fairchild.) See Inventory 35, Plate No. 3.

Citrus ichangensis (Rutaceae), 45931. **Lemon.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 1288. Changyang, Hupeh, China. December 10, 1917.) A large variety of **Ichang lemon**, mostly shipped down to Shansi, a few days run down the river. The fruits sell wholesale at 1 cent (Mex.) a piece and retail at 2 to 3 cents (Mex.) according to size and supply. The Chinese, with their great dislike to sour fruits, never use these lemons in beverages but employ them only as room perfumers or carry them about to take an occasional smell at them, especially when passing malodorous places. Locally the rind is candied in a limited way and resembles orange peel in flavor and appearance. The fruits ripen during the month of October; and, since they do not possess long keeping qualities, they disappear very quickly. In fruit stores, in Ichang they are all gone by mid-December. The trees grow to medium-large size and resemble pomeloes in general appearance though they are less massive in outline and the foliage is of a lighter hue of green. The trees are densely branched and have large spines on the main branches and small ones even on the bearing branchlets. The foliage suffers a good deal from caterpillars; the trunks are attacked by borers, and maggots are occasionally found in the fruit. Foreign residents in and around Ichang make from these lemons a very fine lemonade which is of a more refreshing quality than the ordinary kind; they are also used in pastry, sauces, and preserves. On the whole it seems that this **Ichang lemon** is a very desirable home fruit for those sections of the United States that are

adapted to its culture, especially the South Atlantic and Gulf States. It may also prove to be hardier than any other citrus fruits of economic importance. Around Ichang, trees have withstood temperatures of 19° F. The Chinese name of this lemon is **Hsiang yuan.**" (Meyer.)

Citrus ichangensis (Rutaceae), 45937. **Lemon.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 1294. Ichang, Hupeh, China. December 20, 1917.) An especially fine variety of **Ichang lemon**, very juicy, and having a delightful fragrance. It makes a superior lemonade. The tree is of a somewhat drooping habit, and the foliage very dense. Obtained from the garden of the British Consulate at Ichang." (Meyer.)

Citrus nobilis (Rutaceae), 45932. **Mandarin.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 1289. Changyang, Hupeh, China. December 10, 1917.) A large **mandarin** of a fine light orange color with a somewhat corrugated skin; it contains but few seeds and has a sweet, refreshing flavor. Local names **Chun gan** and **Loba gan** meaning respectively 'Spring orange' and 'Turnip orange'." (Meyer.)

Corchorus capsularis (Tiliaceae), 45809. **Jute.** From Calcutta, India. Secured by Mr. Jas. A. Smith, American Consul General, from Ralli Brothers. This species and the closely allied *C. olitorius* are the chief sources of the jute fiber of commerce. *C. capsularis* is an annual, attaining a height of 8 to 12 feet, with a long, thin stem, branched only at the top. The flowers are small and yellow. The young shoots are commonly used as a pot-herb, especially in Egypt. The fiber is obtained by retting in stagnant pools. Retting consists in steeping the stems in water until they soften sufficiently to allow the fibro-vascular bundles to be extracted from the softer material around them. The fiber is extensively used in the manufacture of cordage, coarse cloth, fishing nets, gunny-bags etc. The plant requires a hot, moist climate followed by a dry season. The method of propagation consists either in broadcasting the seed, or in transplanting into rows the seedlings raised in a nursery. This plant is indigenous to Ceylon, India and Malaya. (Adapted from Bailey, Standard Cyclopedia of Horticulture, p. 841, and Macmillan, Handbook of Tropical Gardening and Planting, p.542.)

THE NANCE, A WEST GUATEMALAN FRUIT.

(*Byrsonima crassifolia* (L.) H. B. K.)

This fruit, which is borne on small trees common in the village dooryards of the west coast of Guatemala, is bright yellow in color when fully ripe and has an acid, sometimes rather strong flavor. Each fruit contains a single seed the size of a cherry stone. Since the Nance tree occurs at altitudes of 4,000 feet in rich loam soil, it may succeed in California where the frosts are not too frequent. (Photographed by Wilson Popenoe, at Amatitlan, Guatemala, September 21, 1916; P16791FS.)

A RUBBER-PRODUCING VINE IN THE EVERGLADES.

(*Cryptostegia grandiflora.*)

There appear to be difficulties which have not yet been overcome in the profitable cultivation of rubber-producing vines. The Cryptostegia has certain features about it which make it worthy of the attention of those interested in rubber production, and it may not be too much to hope that some one will devise labor-saving methods which will make the cultivation of this vine profitable, utilizing, perhaps, the wood pulp and the floss from the pods as secondary products. Since its introduction, it has become established on the keys of Florida and in the Everglades near Davie, where the specimen photographed was growing. It has grown vigorously, not being injured by flooding. Mr. Robert Werner is holding up one of the strange-shaped, nearly ripe pods, while just below his fingers the white latex, which is produced in abundance, is flowing from several incisions. The rubber of Cryptostegia, which is contained to the amount of 2 per cent dry weight in the twigs and leaves, is reported to be hardly equal to Ceara rubber, although its general qualities are encouraging. (Photographed by David Fairchild, February 6, 1916; P20012FS.)

Gleditsia sinensis (Caesalpiniaceae), 45803. **Locust.** From Yi Hsien, Shantung, China. Presented by Rev. R. G. Coonradt. A tree up to 60 feet in height with a trunk girth of 3 to 9 feet, found in the dry valleys of western Szechuan at altitudes ranging from 3,000 to 5,000 feet. It grows to a very large size, with a massive bole clean of branches for from 9 to 30 feet from the ground, and a wide-spreading head of thick branches. The bark is quite smooth and pale grey in color. In degree of spinescence the trees vary considerably and some are quite thornless. The wood is nearly white and of little value, but the flattened pods are rich in saponin and are valued as a substitute for soap, and are also used in the process of tanning hides. (Adapted from Sargent, Plantae Wilsonianae, vol. 2, p. 91.)

Prunus glandulosa (Amygdalaceae), 45944. **Plum.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 1301. Ichang, China. December 30, 1917.) A shrubby, flowering plum growing to a height of from 3 to 5 feet. It can be trained to one stem but naturally grows into a densely-branched bush. It bears masses of double, rose-colored flowers in May and is a fine little shrub for borders and near door entrances in those regions where it is perfectly hardy. Obtained from the garden of the Customs Compound." (Meyer.)

Pyrus sp. (Malaceae), 45834. **Pear.** From Manchuria. Collected by Prof. F. G. Reimer, Superintendent, Southern Oregon Experiment Station, Talent. "No. 46. **Pin li,** or **Ping li.** Very similar to small **Suan li,** (S. P. I. Nos. 45846 & 45847). These seeds were obtained from fruit grown near the Chien Shan mountains, near Lishan, Manchuria. This is a very popular cultivated variety in the Chien Shan region, and seems to be well adapted to the conditions there. The fruit is small, varying from 1¼ to 1½ inches in diameter, roundish or slightly flattened in shape, and greenish yellow in color, with often a blush on one side. It ripens during September and possesses a very agreeable and refreshing tart flavor. This variety undoubtedly has been derived from *P. ussuriensis,* as it resembles that species in tree, leaf and fruit characters. While the fruit has the tartness of that species, it is of very much better flavor, and the flesh is softer than in the wild form. The calyx is always persistent, open

and with distinctly spreading lobes. This variety will be thoroughly tested for blight resistance, and if it shows the marked degree of resistance characteristic of this species it should prove of great value, especially in breeding work." (Reimer.)

Pyrus sp. (Malaceae), 45845. **Pear.** From China. Collected by Prof. F. G. Reimer, Superintendent, Southern Oregon Experiment Station, Talent. "**Ya kuang li.** From Maton, China. A large pear, shaped somewhat like a Bartlett, but thicker toward the base end. It is very juicy and of very good flavor, comparing favorably with the better European pears. I regard this as an extremely promising pear. It certainly possesses considerable *P. ussuriensis* blood and for this reason we anticipate that it will show a marked degree of resistance to pear blight. If this proves to be the case this will be one of the most valuable pears ever introduced into America. It should prove to be of the very greatest value for breeding work." (Reimer.)

Pyrus sp. (Malaceae), 45846. **Pear.** From China. Collected by Prof. F. G. Reimer, Superintendent, Southern Oregon Experiment Station, Talent. "**Suan li.** From Lo Han Ling Pass, China. A small roundish or slightly flattened pear, greenish-yellow in color, often with a slight blush on one side. It is very juicy and possesses a very agreeable tart flavor. While too small for the general market it should prove valuable for the home orchard, local market, and for breeding work. This variety undoubtedly belongs to *P. ussuriensis*. Hence its great value for breeding work." (Reimer.)

Pyrus sp. (Malaceae), 45848. **Pear.** From China. Collected by Prof. F. G. Reimer, Superintendent, Southern Oregon Experiment Station, Talent. "**Pai li.** From Cheng An Sze, near Peking, China. A medium-sized pear of lemon-yellow color with soft, juicy, sweet flesh of excellent flavor. This is regarded as one of the very best Chinese pears both by the Chinese and foreigners. It is an excellent keeper and can be obtained on the Peking market from October until March. This variety also shows some of the characteristics of *P. ussuriensis* and I believe that that species was one of its parents. These four varieties (S. P. I. Nos. 45845 to 45848) are far superior to any of the other numerous oriental pears, at least as judged by the tastes of Americans. They are the first oriental varieties that

I have ever eaten which I could pronounce as really good in quality. These varieties constitute by far the best material that I have ever seen for breeding blight-resistant varieties. They should also prove of value in breeding hardy pears for the cold plains region." (Reimer.)

Pyrus ussuriensis (Malaceae), 45833. **Pear.** From China. Collected by Prof. F. G. Reimer, Superintendent, Southern Oregon Experiment Station, Talent. "No. 60. Collected from wild trees at Shinglungshan, Pechilli, China. Trees of this species were formerly very abundant in this region, but as it has been opened up for settlement during the past five years, and as the soil is well suited to agriculture, most of the trees have been destroyed. However many trees are still left, especially along the margins of the valley, in the canyons and along the streams. These trees attain a very large size, often reaching 75 feet in height and 2½ feet in diameter. The fruit is roundish or slightly flattened, from 1 to 1½ inches in diameter, greenish in color, with gritty flesh and sour flavor. Earlier introductions of this species made by Mr. F. N. Meyer, have shown greater resistance to pear blight than any other species in the experiments at the Oregon Station. It appears to be very promising as a stock for cultivated pears in very cold regions in this country, and in regions where pear blight attacks the roots and trunks of the trees; also in breeding hardy and blight-resistant pears. It has given rise to some of the best cultivated varieties of northern China." (Reimer.)

Rosa gentiliana (Rosaceae), 45819. **Rose.** From Kew, England. Presented by the Director, Royal Botanic Gardens. A **rose** which is abundant in the mountainous regions of western Hupeh and eastern Szechuan, where it forms tangled masses 6 meters or more in height. It grows best in rocky situations from river level to 1,400 feet altitude. The numerous large white flowers are very fragrant, and the anthers are golden yellow. This species is easily distinguished by its glabrous pale gray shoots, and three to five foliolate leaves which are shining green above and very pallid beneath. (Adapted from Plantae Wilsonianae, vol. 2, p. 312.)

Schizophragma sp. (Hydrangeaceae), 45942. From China. Collected by Mr. Frank N. Meyer, Agricultural

Explorer for this Department. "(No. 1299. Tsung chia tsui, Hupeh, China. Altitude 3,000 feet. December 14, 1917.) An evergreen vine found trailing over rocks and boulders in a semishady place. The foliage is medium small and leathery, like that of a daphne. Apparently quite rare. To be tested under protection from extremes of sun and frost." (Meyer.)

Solanum muricatum (Solanaceae), 45812 to 45814. **Pepino**. From Equador. Presented by Mr. Frederic W. Goding, American Consul General, Guayaquil. "During a recent trip to the interior I saw thousands of the plants growing near Huigra, on a farm owned by Mr. Edward Morley. There are three varieties of the fruits; the green, the green striped with purple and the dark purple. This fruit forms a part of the diet of the people of the interior, being eaten raw or cooked in various ways; but foreigners prefer them in a salad as the common cucumber is prepared. Served in this way they are delicious." (Goding.) The **pepino** or 'melon pear' is an erect, spineless, bushy shrub or subshrub two or three feet high, the branches often with rough warty excrescences. The leaves are usually entire or with slightly undulate margins. The rather small flowers are borne in a long-stalked cluster. The corolla is bright blue and deeply five lobed. The ovoid fruit, four to six inches long is long-stalked and drooping. The color is yellow overlaid with splashes of violet purple. The yellow flesh is aromatic, tender, juicy, and in taste suggests an acid egg plant. In cultivated varieties the seeds are seldom present. This plant is said to be a native of Peru. In the north the season is too short for the fruit to develop, but the plant will set fruit freely in a cool greenhouse. Readily propagated by cuttings of the growing shoots. (Adapted from Bailey, Standard Cyclopedia of Horticulture, p. 3182.)

Ulmus sp. (Ulmaceae), 45943. **Elm.** From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for this Department. "(No. 1300. To tze wan, Hupeh, China. December 12, 1919.) An uncommon **elm** growing to a large size and found in mountain districts at low elevations. Young branches often corky, bark of old trunks grayish brown and fissured. Possibly a desirable shade and avenue tree for mild-wintered regions." (Meyer.)

Notes on Behavior of Previous Introductions.

A letter dated May 24, 1918, from Mr. H. Ness, Horticulturist in Charge of the Texas Agricultural Experiment Station reports as follows;

"Among the goodly number of newly introduced fruits which we obtained from your Bureau in February 1915, *Prunus sp*. No. 31652 has shown itself in fruiting this year to be one of the most valuable acquisitions in the way of a plum that has come within my experience. We have eleven trees. Two of these bore a heavy crop, which ripens during the first week of May, hence earlier than any cultivated plum, to my knowledge, in existence. The fruit is about the size of the Burbank plum, and fully its equal in quality. The meat is very firm, dark red, and of good flavor. The trees are the strongest growers of any plum that I know, and stood last summer's drouth which was so injurious to all kinds of plants here, without any apparent injury. Another excellent feature, which I noticed is that the fruit has not been attacked by the **curculio**, or any disease, nor were any diseases visible upon any part of the tree during last year's unfavorable condition."

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Office of Foreign Seed and Plant Introduction.
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