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## U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, Chief of Bur

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INVENTORY

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OF

## SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1

TO MARCH 31, 1918.

(No. 54; Nos. 45705 to 45971.)



WASHINGTON:

GOVERNMENT PRINTING OFFICE.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JAN-UARY 1 TO MARCH 31, 1918 (NO. 54; NOS. 45705 TO 45971).

## INTRODUCTORY STATEMENT.

This fifty-fourth inventory represents a war-time period and is small in numbers, but some very interesting and it is hoped valuable introductions are included in its pages.

Perhaps the most notable collections included are those made by Prof. F. C. Reimer, whose studies of pear-blight and whose search after a resistant species of Pyrus are among the most interesting occurrences in the field of plant pathology. Prof. Reimer, at considerable financial sacrifice and personal risk, made a thorough canvass of the pear situation in China and collected as a result of his work what is certainly the most comprehensive assortment of oriental forms and species of the genus Pyrus (Nos. 45821 to 45850) which has ever been introduced. He believes it includes the material from which in all probability will be produced, by selection and breeding with the European pears, the varieties resistant to fire-blight which are adapted for stocks because of their freedom from this disease. He thinks from it will come the hardy varieties of pears which in time will be grown in the northern Great Plains region, where pear growing is now impossible, and he finds that a few varieties of these oriental pears are sufficiently good in quality to warrant their use without improvement in those regions where the fire-blight has hitherto made pear growing unprofitable.

Pyrus betulaefolia × phaeocarpa he found growing on dry hillsides, on the plains, and even in ponds where for a large part of the year water covered its roots a foot deep. This hybrid is found from extreme northern China to the Yangtze River. This may be useful in America as a stock, since it is used in this way in China. It is unfortunately not blight resistant, however, but since this disease does not exist, so far as known, in Europe it may be more valuable there.

Pyrus calleryana Prof. Reimer gathered from its northernmost limit, central Chosen (Korea). Pyrus phaeocarpa becomes a tree

60 feet in height and 2½ feet in diameter. Pyrus serrulata, a species from which, apparently, have originated some of the small-fruited cultivated varieties of central China and which has shown a marked degree of blight resistance, is represented. Pyrus ussuriensis is the species of which young trees (from seed which Mr. Frank N. Meyer collected) have shown a higher degree of resistance to blight than any other species yet tested. It is from this that have arisen some of the best cultivated pears of China such as the "Ya Kuang li," a large pear resembling the Bartlett, which compares well in flavor with the best European pears; the "Suan li," a small but very juicy pear of tart flavor; and the "Pai li," a medium-sized lemon-yellow pear of excellent flavor.

The researches on crown-gall and the search for a stock for the stone fruits have revealed the fact that the Japanese mume (*Prunus mume*, Nos. 45876 to 45881) is worthy of careful study, and through the kindness of Prof. Onda a collection of the most promising varieties has been obtained. These include the varieties which are most used by the Japanese for the production of their pickled mume, a kind of pickle which for sourness makes all other pickles seem sweet. There are said to be several hundred varieties of this species (which is classed as an apricot rather than a plum), and a thorough canvass of the various forms should be made.

As the result of many years of plant breeding and selection, Dr. Van Fleet has produced some remarkable varieties of chestnuts of the species Castanea crenata and of the Chinese species which Mr. Meyer introduced (C. mollissima), which is resistant to the bark disease. He has produced some interesting hybrids between Castanea crenata and C. pumila, the common chinquapin. These are for trial as orchard trees for the production of table chestnuts (Nos. 45858 to 45866).

In this connection Mr. Meyer's discovery of a shrubby chinquapin (Castanea seguinii, No. 45949), which is found on the mountain slopes of central China and which appears to be immune to the bark disease and at the same time better adapted to moist locations, is worthy of mention.

In 1898 Prof. Hansen introduced a Russian variety of quince (*Cydonia oblonga*, S. P. I. No. 1123), which at Murdock, Kans., has proved hardy and which bears excellent fruit, whereas the standard varieties do not fruit there. Budded plants of this variety are being again distributed under Nos. 45889 and 45890.

During the winter of 1917-18, when Mr. Meyer was in Ichang, he made an investigation of the Ichang lemon, which, according to the researches of Swingle, is to be considered as a new species of the genus Citrus (C. ichangensis). He found that it was used by the

Chinese largely as a "room perfumer," and he remarks in regard to their use of it that "they carry them about to take an occasional smell of them, especially when passing malodorous places." But by the Europeans in Ichang the fruits of this lemon are preferred to the ordinary lemon for making lemonades. Since trees of it in the Changyang region have withstood temperatures of 19° F., it may have special value because of its hardiness. Mr. Meyer's introduction (No. 45931) is a large variety of this remarkable fruit.

The yang-tao (Actinidia chinensis) has so far established itself in this country that there are hundreds of plants of it scattered in private places from the southern Atlantic coast to Puget Sound. It has fruited sparingly, but its fruits have decided promise, being of excellent flavor and having good shipping qualities. The introduction by Meyer of a smooth-skinned variety (No. 45946) from the Hupeh Province, which he says "combines the flavors of the gooseberry, strawberry, pineapple, guava, and rhubarb," is not without especial interest at this time.

In the koumé of Zanzibar (Telfairia pedata, No. 45923) we may have a valuable addition to the list of tropical table nuts, providing it is a heavy bearer. Through the late Mr. Buysman, who conducted a private plant-introduction garden for many years at Lawang, Java, the first seeds of this curious cucurbit were received. It is a rank-growing tropical liana, covering the trees at the edge of the forests of East Africa. It próduces fruits 3 feet long and 8 inches in diameter, bearing over 250 large, flat, oily seeds the size of an almond and of good flavor. Reports on this species have also been sent in by Dr. H. L. Shantz, who saw it during his exploration of East Africa and formed a favorable impression of its qualities.

Little has been done in the way of providing the Tropics with a good table grape, although there are species of Vitis which it would seem might easily be developed for this purpose. In *Vitis* sp. (No. 45796), a wild species from the brushwood of the low country of Zacuapam, Mexico, which tastes like a Catawba, and in another small-fruited form (*Vitis tiliaefolia*, No. 45797), both sent in by Dr. C. A. Purpus, we may have species which the plant breeder can use to advantage.

From our collaborator, Dr. L. Trabut, whose remarkable work has won for him the Frank N. Meyer memorial medal for distinctive services in the field of plant introduction, we have received an interesting species of wild rice from West Africa. Unlike the true rice, it sends out rootstocks, and from its character of holding its foliage for several months it converts swampy lands into excellent pastures. It rises to  $1\frac{1}{2}$  meters in height and, like our own wild rices, scatters its seeds, making the collection of grain difficult. Chevalier has

classed this Oryza barthii (No. 45717) as one of the very best forage plants of West Africa, and it is as such that it is being tried here.

One of the most spectacular introductions of recent years into the Southwest is that of the athel, an African tamarisk (Tamarix aphylla, No. 45952), which is considered the best of the Egyptian species both for timber and as a windbreak by Dr. Trabut, from whom the plants originally came. They constitute one of the best of the many gifts of Dr. Trabut to this country. In the Coachella Vallev its handsome form is already transforming the landscapes and adding great rows of beautifully shaped trees to the desert. rapid growth even exceeds that of the Eucalyptus, and the settlers there are most enthusiastic about its value. To Prof. J. J. Thornber belongs the credit for its introduction in this region, for the trees now in the valley were introduced by him, although in 1899 Mr. Walter T. Swingle secured and shipped in plants noted in our Inventory No. 7 under the name Tamarix articulata, No. 3343. Unfortunately, these plants died en route, owing to the recall to the port of departure of the ship on which they were placed and to a consequent delay of three months in reaching this country. The practical utilization of the plant is due to the prompt recognition of its value by Mr. Bruce Drummond, of the Indio Date Garden.

Whether it would be advisable to introduce the gall insect, which Dr. Trabut calls to our attention and which produces on this tamarisk large quantities of galls containing 45 per cent of tannin, is a question requiring careful study.

Mrs. Zelia Nuttall, the noted archæologist of Mexico, whose love for plants has led her to investigate the vegetables used by the Aztecs, calls our attention to three forms of a remarkable new vegetable, a species of Chenopodium named by Mr. Safford in her honor (Chenopodium nuttalliae, Nos. 45721 to 45723). The large branching inflorescences of this rapid-growing plant, gathered before the seeds ripen, are cooked as a vegetable. According to Mrs. Nuttall, it forms a delicious potherb of peculiar delicacy. Since it grows rapidly and can be cultivated in our Southwest, it deserves special consideration.

The success of the roselle (*Hibiscus sabdariffa*) as a source of brilliant jelly-making material and an excellent substitute for cranberry sauce makes Wester's two Philippine varieties of it of special interest (Nos. 45800 and 45801).

Although the mulberry has hardly any real rank in America as an orchard fruit, to drop it out of our fence corners and yards and deprive our children of the delights of coloring their faces and their clothes with its brilliant juice would be a pity. *Morus acidosa* (No. 45708) is a bushy mulberry from the Provinces of Hupeh and Szechwan, which when I first saw it in the Arnold Arboretum was

covered with quantities of berries with a tart flavor quite different from the supersweetness of the ordinary mulberries. It deserves a place in our dooryards where there is not room for a mulberry tree.

Of new or little-known ornamentals the following seem to promise unusual interest: A gorgeous yellow-flowered shrub from New Zealand (Pomaderris elliptica, No. 45892); a Chinese Gordonia from Hongkong (G. axillaris, No. 45718); the beautiful Amygdalus triloba (No. 45727), a flowering almond which ranks as one of the most beautiful of blooming shrubs; Rosa helenae (No. 45729) from western Hupeh, where it forms thickets 6 meters across and as many meters high, which are covered with masses of fragrant white blooms, according to its discoverer, Mr. E. H. Wilson; Hydrangea paniculata praecox (No. 45733), the seeds of which Prof. Sargent collected in Hokkaido, Japan, where it makes a growth of 20 feet in height; and Acokanthera spectabilis (No. 45748), a flowering shrub from southwestern Africa sent in by Mr. Walsingham, of Cairo, which has pure-white, scented flowers borne in short, dense cymes.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

> David Fairchild, Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction, Washington, D. C., August 19, 1921.



## INVENTORY.

## 45705 to 45711.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 2, 1918.

45705. Cotoneaster francheti Bois. Malaceæ.

A very ornamental shrub from Yunnan Province, China, remarkable for its graceful form, persistent foliage, and brilliant red fruits. The ovate leaves, about 1½ inches long, green above and silvery hairy beneath, persist almost throughout the winter. The drooping branches, clothed when young with white hairs which become brown with age, are abundantly covered with orange-red oblong fruits, half an inch in length, making the plant extremely beautiful for massing effects or as a bush. The white flowers are in corymbs of 5 or 10. The plant is easily cultivated, will flourish in any soil, and requires only an airy exposure for abundant fruitfulness. It can be multiplied easily by seeds or cuttings. (Adapted from Revue Horticole, vol. 79, p. 256.)

45706. Cotoneaster horizontalis perpusilla C. Schneid. Malaceae.

This ornamental plant, a native of China, is one of the most charming and distinct of all hardy shrubs; it has a marked flat-distichous mode of growth. In open ground, it grows about 3 feet high, producing flat, table-like branches densely clothed with tiny, orbicular, deep lustrous-green deciduous leaves. The young wood is covered with a thick brown wool. The small, abundant flowers are pink-white, and although the plant is very pretty when in bloom, it attracts more notice when in fruit; the berries are small, very plentiful, and scarlet when ripe. This shrub is very pretty, growing on ledges of a rockery or at the foot of a wall where it will grow 6 or 7 feet high flat against the wall. It can be increased by both cuttings and seeds. (Adapted from the Gardeners' Chronicle, vol. 32, ser. 3, p. 91.)

45707. Cotoneaster zabeli C. Schneid. Malaceæ.

An ornamental bushy shrub up to 7 feet in height, with corymbs of pink or pinkish flowers which are followed by clusters of red fruits. This is the common cotoneaster of the thickets in western Hupeh. The

<sup>&</sup>lt;sup>1</sup> All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will undoubtedly be changed in many cases by the specialists interested in the various groups of plants, to bring the forms of the names into harmony with recognized American codes of nomenclature.

oval-elliptic leaves are usually rounded and emarginate or mucronulate, but occasionally acute; often all forms are found on the same shoot. (Adapted from Sargent, Plantae Wilsonianae, vol. 1, p. 166.)

45708. Morus acidosa Griffith. Moraceæ.

Mulberry.

Usually a broad shrub from 3 to 16 feet in height, but occasionally forming a tree up to 25 feet in height. It is found in the Provinces of Hupeh and Szechwan, China. The leaves are very variable in size and shape and are not used for feeding silkworms. The fruits are dark red or shining black and palatable. (Adapted from Sargent, Plantac Wilsonianae, vol. 3, p. 300.)

45709. Prunus serrulata pubescens Wilson. Amygdalaceæ.

Flowering cherry.

"At its best this variety is a tree of moderate size, from 13 to 16 meters tall and from 1 to 2 meters in girth of trunk, but I saw very few such large trees in Japan. In habit and in the size and color of the flowers it agrees closely with var. spontanea (white or pink, from 1.5 to 2.5 centimeters, usually 2 centimeters, in diameter). The branchlets as a rule remain gray for a longer period and do not assume the characteristic chestnut-brown color until after several years." (Wilson, The Cherries of Japan, p. 35.)

45710. Prunus tomentosa Thunb. Amygdalaceæ.

This shrub, 6 to 8 feet in height, appears perfectly hardy and vigorous; it flowers and fruits well at the Arnold Arboretum and withstands perfectly the rigorous winters at Ames, Iowa; its fruit buds are hardy and its flowers endure severe frost without injury. It forms a broad, spreading, twiggy bush of numerous branches rising from the ground and clothed with branches to the base. These lower branches, where they touch the moist ground, often send out roots and form independent plants. bark is a gray or bronzy brown, smooth at first, but finally scaling off laterally in thin flakes like the bark of the yellow birch. The downy gray young branches are thickly covered with buds, from which a profusion of flowers and leaves appear simultaneously in early spring. The sessile flowers, crowded in the axils of the leaves, are smaller than those of the common cherry and are white or light rose in color. The leaves are ovate, serrate, sparingly hairy above, densely and softly so beneath, with long, slender, persistent stipules. The red cherries, half an inch in diameter, are slightly covered with very short, inconspicuous hairs; the firm, juicy, pleasantly acid flesh is without the noticeable staining qualities characteristic of some of the wild cherries and plums. With careful selection and cultivation this little cherry might prove of some economic value. Native to northern China. (Adapted from Garden and Forest, vol. 5, p. 58.)

45711. Prunus tomentosa endotricha Koehne. Amygdalaceæ.

This variety differs from *Prunus tomentosa* in that the leaves are elliptic to oblong, with a very short petiole, and the fruit is dark red, about half an inch in diameter.

## 45712. CARICA PAPAYA L. Papayaceæ.

Papaya.

From the city of Panama, Panama. Presented by Mr. B. H. A. Groth. Received January 2, 1918.

Papaya seeds imported for experimental purposes.

"There are included both yellow and pink-fleshed varieties of many sizes and shapes." (Groth.)

## 45713 to 45716. Prunus spp. Amygdalaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received January 2, 1918.

Introduced for experimental use by the Office of Horticultural and Pomological Investigations.

45713. PRUNUS AVIUM L.

Mazzard cherry.

A common species often used as a stock and also, certain forms at least, as an ornamental.

45714. PRUNUS ARMENIACA L.

Apricot.

45715. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid.

Myrobalan plum.

The Myrobalan plum (a popular stock for *domestica* plums) is now regarded as a culture form of *Prunus cerasifera*, though it is often held as a distinct species under the name of *P. myrobalana*.

45716. PRUNUS DOMESTICA L.

Plum.

A variety called "Julian" by Vilmorin-Andrieux & Co. It seems not to be the variety *juliana* as understood in this country, however.

## 45717. Oryza Barthii Cheval. Poaceæ.

Rice.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 3, 1918.

An interesting African species, used for both human food and forage. In habit it differs markedly from the cultivated rices, throwing out rootstocks to a length of several decimeters, with scattering stems rising from them. The foliage remains green for two or three months and converts many swampy lands into excellent pastures. The stems rise to a height of 1 to  $1\frac{1}{2}$  meters—even higher in deep water. The panicle is short; and the ripe grain, which is small, falls out of the husk very easily. For this reason it is impossible to cut the heads for thrashing without losing most of the grain. To obviate this difficulty, the aborigines, in those regions where the plant is common, paddle among the ripe grain in their canoes, shaking the panicles over a small calabash, or basket, held in one hand. Most of the grain falls into the basket and is saved. If it is late in the season, the ripe grain will float on the surface of the water and that which falls outside of the basket may be recovered.

This species is not cultivated; in fact, the grain has very limited use, owing to the difficulty in harvesting it. It is sold at a very high price, however, and is considered a product of unusually choice quality.

The grain is not so important, from an economic standpoint, as the forage which the plant furnishes. It is considered one of the very best forages of West Africa. (Adapted from Chevalier, Bulletin du Muséum National d'Histoire Naturelle, 1910, No. 7, p. 406.)

## 45718 to 45720.

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received January 3, 1918.

## 45718 to 45720—Continued.

45718. GORDONIA AXILLARIS (ROXb.) Szyszyl. Theaceæ. (Camellia axillaris Roxb.)

A handsome evergreen shrub from China, which succeeds very well in a good conservatory [in England], but is rather more sensitive to cold than the other camellias. It bears large, yellowish white, axillary flowers, with obcordate, partly crumpled petals and many yellow stamens of unequal length, connected at the base, falling off with and holding the petals together. The leaves are a beautiful dark glossy green; the lower are serrate, the upper quite entire. (Adapted from Curtis's Botanical Magazine, pl. 2047.)

For an illustration of this tree in its native habitat, see Plate I.

45719. Pterocarpus indicus Willd. Fabaceæ.

Padouk. A tall tree with ascending glabrous branches, compound leaves 6 to 9 inches long, leaflets 2 to 4 inches long, yellowish flowers in large terminal or axillary panicles, and an orbicular pod 2 inches broad. It is distributed through the Malay Archipelago, the Philippines, and China. (Adapted from Hooker, Flora of British India, vol. 2, p. 239.)

Macmillan, in his "Handbook of Tropical Gardening and Planting," lists this species as a shade tree suitable for low, moist regions (annual rainfall 70 inches or more). He also lists it as a tree the wood of which is valuable for timber.

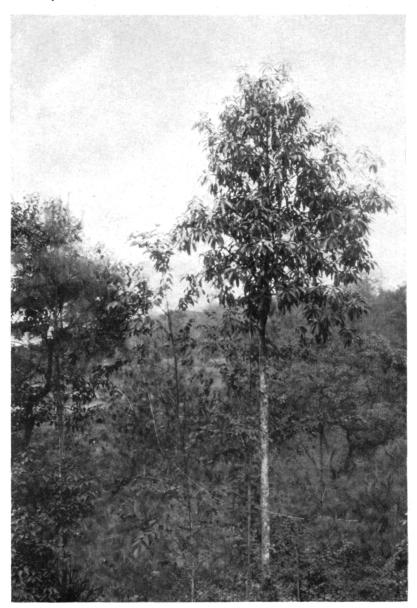
45720. Tutcheria spectabilis (Champ.) Dunn. Theaceæ.

A handsome, ornamental small tree or shrub, indigenous to the island of Hongkong. The leaves are alternate, short petioled, coriaceous, and shining. The flowers are about  $2\frac{1}{2}$  inches in diameter, usually having seven white, roundish obovate petals. The fruit is the size of a small apple, retaining at the base the persistent sepals and containing several fairly large seeds. The plant flowers in May and fruits in November. (Adapted from *Champion*, *Transactions of the Linnean Society*, vol. 21, p. 111.)

## 45721 to 45723. Chenopolium nuttalliae Safford. Chenopodiaceæ. Huauhtzontli.

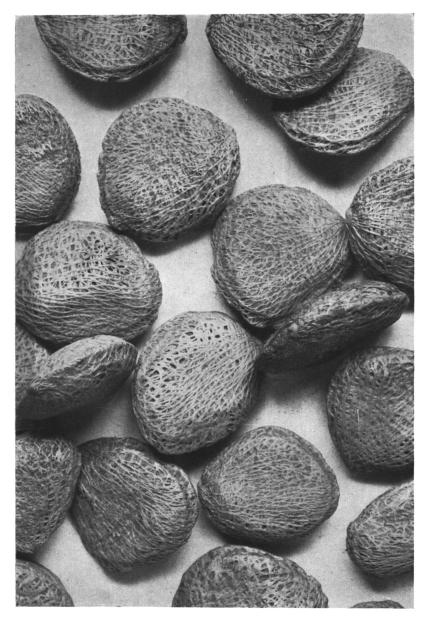
From Mexico. Presented by Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, City of Mexico. Received January 4, 1918. Quoted notes by W. E. Safford.

45721. "Xochihuauhtli (flowering huauhtli). A plant cultivated near the city of Mexico for the sake of its prolific branching inflorescences, which are gathered before they are quite mature, while the seeds are still soft, and cooked with other ingredients as a vegetable. This variety, with yellowish or pale-brown, discoid seeds, is the most popular. The inflorescences are known by the Aztec name huauhtzontli, signifying "huauhtli heads." Botanically the plant is closely allied to Cheno podium paganum Reichenb. and C. album L. It is quite distinct from C. quinoa Willd., the celebrated food staple of the Peruvian highlands; and it must not be confused with the plant called michihuauhtli (fishegg huauhtli). which is a white-seeded Amaranthus, not a Chenopodium."



A HANDSOME FALL-BLOOMING, BROAD-LEAVED EVERGREEN FROM SOUTHERN CHINA. (GORDONIA AXILLARIS (ROXB.) SZYSZYL, S. P. I. NO. 45718.)

This large-flowered evergreen shrub or small tree is of particular value, since so few trees bloom in late summer and fall. The large, shining, dark-green leaves and creamy white flowers, 2 to 3 inches across, are very attractive and should be a welcome addition to the gardens of the Southeastern States. For parks and cemeteries in this section it may prove of unusual value. There are only 16 known species of Gordonia, 2 of which are native to southeastern North America and the others native to southeastern Asia and the Malay Archipelago. (Photographed by E. H. Wilson, No. 391, near Kiating, Szechwan, China, October 5, 1908.)



KOUMÉ NUTS FROM ZANZIBAR. (TELFAIRIA PEDATA (J. E. SMITH) HOOK., S. P. I. No. 45923.)

These nuts are produced in a large gourdlike fruit 3 feet long and a foot in diameter. Each gourd contains 200 of these seeds. The vine which bears them is a tropical, rank-growing cucurbit which climbs to the top of forest trees—a regular liana. In East Africa the koumé nuts are used by Europeans as table nuts and for flavoring cakes, and a sweet, pleasant-tasting edible oil is extracted from them. They have been seriously considered as a source of vegetable oil, but the bitter inner skin surrounding the oily kernel and the hard nature of the shell are obstades to be overcome before they are eligible for oil-producing purposes. As a decorative screen for the edge of the forest and because of its edible nuts, it is worthy of study by tropical horticulturists. (Photographed by E. L. Crandall, October 1, 1920, from seeds sent in from East Africa by Dr. H. L. Shantz; P26505FS.)

## 45721 to 45723—Continued.

45722. "Tilhuauhtli" (black huauhtli"). A plant used by the Mexicans as a potherb, possibly the original form from which the pale-seeded xochihuauhtli has been developed by cultivation. Like the latter, the immature inflorescence (huauhtzontli, or huauhtli heads) is used for food. The seeds of this variety, discoid in form with the periphery crenated, resemble very closely those of Chenopodium album and C. paganum. The plant should not be confused with the common forms of Amarapthus, which are used when young by the Mexicans as potherbs and which have jet black, very highly polished seeds."

45723. "Tlapalhuauhtli" (red huauhtli). A variety of xochihuauhtli having reddish or rose-colored seeds. Like the yellow or pale-brown variety, they are in the form of disks with the periphery distinctly crenulate and differ decidedly from Chenopodium quinoa, of the Peruvian highlands, to which they are botanically related. The prolific, branching inflorescences are gathered before the seeds are mature and cooked with other ingredients as a vegetable. This plant must not be confused with the sacred michihuauhtli of the Aztecs, which is not a Chenopodium, but a white-seeded Amaranthus."

## 45724 to 45726.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received January 5, 1918.

45724. Acacia scorpioides (L.) W. F. Wight. Mimosaceæ. (A. arabica Willd.)

A tree which varies greatly in size in different districts. The leaves are compound, consisting of 10 to 30 pairs of linear-oblong leaflets 5 to 6 centimeters long. The flowers are borne in clusters of two to six in each upper axil; the petals are almost entirely united and twice as long as the calyx. The pod is linear, straight, or slightly curved. (Adapted from Muschler, A Manual Flora of Egypt, p. 460.)

The gum which exudes from the branches of this tree is used as a local application, being soothing to irritated or inflamed mucous membranes. It possesses, however, little medicinal value of its own, its principal use being as a vehicle for more powerful remedies. (Adapted from the National Standard Dispensatory, p. 6.)

45725. Crotalaria sp. Fabaceæ.

These were sent in as blue flowered. They agree closely with C. junces L., which is yellow flowered.

45726. Dodonaea viscosa (L.) Jacq. Sapindaceæ.

"A very interesting hedge plant which is beautifully dense and green, responds to the shears perfectly, and when taken in hand early makes a perfectly compact wall clear to the ground. The seedling plants form a rather deep taproot and must be transplanted with some care on that account. This is one of the most perfect tropical hedge plants I have ever seen. The shrub is called tatta by the natives." (Prof. S. C. Mason.)

#### 45727 to 45729.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 8, 1918.

45727. Amygdalus triloba (Lindl.) Ricker. Amygdalaceæ.

(Prunus triloba Lindl.)

Flowering almond.

One of the most beautiful of all hardy flowering shrubs; it is covered with a profusion of pink and white flowers and will thrive in almost any good garden soil, either as a bush in the open or trained to a wall. It may be planted at any time during the winter, and once it has filled its allotted space it should be closely pruned each spring immediately after blooming. The flowers are borne on the young wood; hence, by removing this promptly at the time stated, vigorous new shoots are produced for flowering the following year. (Adapted from *The Garden*, vol. 79, p. 17.)

45728. Cotoneaster foveolata Rehd, and Wils. Malaceæ.

"Cotoneaster foveolata is a tall shrub with black fruit and leaves which late in the autumn turn to brilliant shades of orange and scarlet. For its autumn foliage this plant might well find a place in every garden." (Arnold Arboretum Bulletin of Popular Information No. 50.)

45729. Rosa helenae Rehd. and Wils. Rosaceæ.

 $\mathbf{R}$ ose.

"Rosa helenae is very abundant in rocky places from river level to 1,500 meters everywhere in western Hupeh and eastern Szechwan, but it has not yet been reported from farther west. In wayside thickets and by the banks of streams it forms tangled masses often 6 meters tall and as much through, and in the margins of woods it rambles over small trees. When covered with masses of its white fragrant flowers this rose is very beautiful. It has proved quite hardy and has flowered profusely at the Arnold Arboretum." (Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 311.)

#### 45730 and 45731

From the city of Panama, Panama. Plants presented by Sr. Ramon Arias-Feraud. Received January 9, 1918.

45730. Cephaelis sp. Rubiaceæ.

- "Obtained in the Chiriqui Mountains." (Arias-Feraud.)
- "Raicilla, or ipecacuana. A shrub 8 to 16 inches high, with ascending or erect simple stem and somewhat creeping root. It is one of the sources of the medicinal ipecacuana. The typical plant grows in Peru, but specimens of closely allied or identical species from Central America are in the economic collection of the United States Department of Agriculture.

"Roots and stems only were received, so that it is impossible to identify this plant with certainty." (W. E. Safford.)

45731. Smilax officinalis H. B. K. Smilacaceæ.

Sarsaparilla,

- "Obtained in the Chiriqui Mountains." (Arias-Feraud.)
- "Chiriqui zarzaparilla. A climbing plant with square stem, armed along the angles with triangular prickles resembling those of a rose. Leaves glabrous, often a foot long, variable in form, often triangular or oblong, acute at the apex, cordate or somewhat auriculate at the base, with two or three longitudinal nerves on each side of the midrib; petioles

## 45730 and 45731—Continued.

bearing a pair of long tendrils some distance from the base. Flowers in stalked umbels. This species has been collected in Honduras. It bears a certain resemblance to the Mexican *Smilax medica* Schlecht. et Cham. in its much larger leaves, distinctly angled stems, and stouter spines. It is very distinct from the species of smilax recently received from Jamaica. The roots are of a cinnamon-brown color and are said to be more amylaceous than the 'Jamaica sarsaparilla' of commerce. It is one of the principal sources of sarsaparilla." (W. E. Safford.)

## 45732. Oryza sativa L. Poaceæ.

Rice.

From Nanhsuchou, Anhwei Province, China. Presented by Mr. J. Lossing Buck, Nanhsuchou Agricultural Experiment Station. Received January 10, 1918.

"A bearded variety called 'fragrant rice' by the Chinese. It brings three times the price of other rice on the market. It is grown in a restricted area about 20 miles north of Nanhsuchou." (Buck.)

## 45733. Hydrangea paniculata praecox Rehder. Hydrangeaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 11, 1918.

"There are two forms of this hydrangea with perfect and ray flowers, and one of these, variety praecox, is just coming into flower [July 5]; and the other, variety tardiva, will not be in flower for several weeks. There are three plants of the variety praecox in the collection, differing in the size of the flower clusters and in the size of the ray flowers. The handsomest and the earliest of these was raised from seeds collected by Prof. Sargent in Hokkaido, where it grows into a small tree sometimes 20 or 30 feet tall." (Arnold Arborctum Bulletin of Popular Information No. 28.)

### 45734 to 45745. Zea mays L. Poaceæ.

Corn.

From Peru. Received through Mr. William F. Montavon, American commercial attaché, Lima. Received January 4, 1918. Quoted notes by Mr. E. B. Brown, of the Office of Corn Investigations.

"Varieties of the flour type introduced for experimental and breeding work."

45734. No. 1. Rosa subido, Sapallanga. "A purple-tinged variety."

**45735.** No. 17. Colorado Jaspeado, Churcampa. "A strawberry-colored or calico-colored variety."

45736. No. 22. Guindo, Marcaballe. "A red variety."

45737. No. 23. Plomo Jaspeado, Sicaya. "A mottled-purple variety."

**45738.** No. 11. Encarnado, Paucarbamba. "A strawberry-colored or calico-colored variety."

45739. No. 3. Beata, Sicaya. "A mottled-purple variety."

**45740.** No. 25. Negro, Huanchos. "A dark reddish purple variety.

45741. No. 24. Polvo de Oro, Colcabamba. "A golden-brown variety."

45742. No. 28. Blanco Perlas de la Reina, Acobamba. "A white variety."

45743. No. 16. Colorado Oscuro, Acostambo. "A red variety."

45744. No. 10. Sangre de Toro, Surcubamba. "A dark-red variety."

45745. No. 41. Flor de Retrama, Chongos. "A yellow variety."

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## **45746** and **45747**. Pyrus spp. Malaceæ.

Pear.

From Stotts Station, D. C. Presented by Mr. Bernard F. Joy. Received January 15, 1918.

**45746.** Pyrus sp.

"A seedling pear of the oriental type, with small, hard, roundish fruit, found on the place of Mr. Bernard F. Joy, Stotts Station, D. C., near the Eastern Star Home. Foliage glossy and leathery; wood clean, smooth, and bright; growth vigorous; tree very fruitful and has never blighted; fruit about the size of a walnut, hard and gritty, practically worthless; may be valuable as a resistant stock. According to Mr. Joy, this tree came with a lot of varieties he purchased about 8 or 10 years ago. More than likely it was a budded or grafted tree, and the bud or graft failed to grow." (B. T. Galloway.)

45747. Pyrus sp.

"A seedling pear of the oriental type, with large, roundish, apple-shaped fruit; found on the place of Mr. Bernard F. Joy, Stotts Station, D. C., not far from the Eastern Star Home. A vigorous tree which so far has not been subject to blight. The fruit is woody and gritty, but quite sweet. The tree has a clean habit and may prove valuable as a stock." (B. T. Galloway.)

## 45748. Acokanthera spectabilis (Sond.) Benth. Apocynaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received January 5, 1918.

A large shrub, native to the western districts of South Africa from Albany to Port Natal, growing on wooded sand hills near the sea. The glabrous branches are stout, green, and obscurely angled. The coriaceous, elliptic leaves are 3 to 5 inches long and narrowed into a very short petiole. The pure white, sweet-scented flowers borne on very short pedicels in densely fascicled short cymes make the plant very beautiful at flowering time. In fact, so dense does the inflorescence become that it often appears as a globose head near the top of the branch. Some of the natives are said to consider this plant poisonous. (Adapted from Curtis's Botanical Magazine, pl. 6359.)

## 45749. Colocasia esculenta (L.) Schott. Araceæ. Taro.

From Okitsu, Japan. Tubers received from Prof. T. Onda, of the Imperial Agricultural College. Received January 15, 1918.

"Kinu-katsugi (Yego-imo). A Japanese taro of the dasheen type, the tubers of which are similar in appearance to most other varieties received from that country. In comparison with the Trinidad dasheen the cormels, or lateral tubers, are small, moist when cooked, and lacking in flavor. However, this variety is considered one of the best grown in Japan." (R. A. Young.)

### 45750 to 45754.

From Lavras, Minas Geraes, Brazil. Presented by Dr. Benjamin H. Hunnicutt, Director da Escola Agricola de Lavras. Received January 7, 1918.

45750. Myrciaria Cauliflora (Mart.) Berg. Myrtacee. Jaboticaba.

"One of the best indigenous fruits of Brazil and, at the same time, one of the most curious and interesting, owing to its habit of producing its fruits directly upon the trunk and larger branches (cauliflory). Several

## 45750 to 45754—Continued.

species are grown under the name of jaboticaba; they are still somewhat confused botanically, but it appears that most of the plants common in cultivation belong either to Myrciaria cauliflora or M. jaboticaba, fruits of the latter being distinguishable from those of the former by the presence of a slender stem.

"The jaboticaba occurs in southern Brazil, both wild and cultivated. It is a very handsome tree, reaching a height of 35 or 40 feet, with a dense dome-shaped crown. The leaves are small, lanceolate, and light green in color; flowers white, with four petals and a conspicuous tuft of stamens. The fruits are produced in the greatest abundance and are the size of large grapes, with a tough leathery skin, juicy white pulp of rather acid aromatic flavor, and two to four flattened oval seeds. The resemblance between the jaboticaba and some of the grapes of the Muscadine group, e. g., James, is very striking, not only in general appearance but also in flavor.

"The jaboticaba prefers a soil that is rich and deep; it is rather slow of growth, coming into bearing after six or eight years. It withstands slight frosts and gives promise of being successful in southern Florida and perhaps also in sheltered locations throughout southern California. At the present time seed propagation is the only means of multiplication which is commonly employed, but inarching or some other means of propagation should be utilized to perpetuate good varieties." (Wilson Popenoe.)

45751. Solanum bullatum Vell. Solanaceæ.

Capoeira branca. An interesting plant which grows on the rolling prairies of the State of Minas Geraes, Brazil, and which is said to have unusual value for feeding live stock, especially horses.

Analyses made by the Bureau of Chemistry, United States Department of Agriculture, show that this plant contains an unusual quantity of protein. The percentages shown by these analyses are as follows: Moisture—leaves, 8.36; branches, 7.04. Ether extract—leaves. 2.29; branches, 0.59. Protein—leaves, 20.88; branches, 14.06. Crude fiber—leaves, 28.03; branches, 37.45.

45752. Stryphnodendron barbatimam Mart. Mimosaceæ.

"A small leguminous tree which occurs commonly on the plains of the State of Minas Geraes and is said by Pio Correa to be distributed from Para in northern Brazil to Sao Paulo in the southern part of the country. The bark contains a high percentage of tannin and is known as casea da virgindade; the seeds are said to be poisonous and the leaves to have medicinal qualities. It is the bark, however, that seems to have economic interest, being considered of value for use in tanning. According to Brazilian authorities it contains as high as 40 per cent of tannin; an analysis made by the Bureau of Chemistry, United States Department of Agriculture, gave the following percentages: Total dissolved solids, 31.6; soluble solids in cold water, 28.6; nontannins, 6.7; tannins, 20.1." (Wilson Popenoe.)

45753 and 45754. ZEA MAYS L. Poaceæ.

Corn.

45753. Typical yellow flint from Brazil.

45754. A white variety of the flour type.

## 45755. Zea mays L. Poaceæ.

Corn.

From Caracas, Venezuela. Presented by Mr. Preston McGoodwin, American Minister. Received January 8, 1918.

A native white corn of the flour type. This corn is planted widely in Venezuela and is exported in large quantities.

## 45756. Chayota edulis Jacq. Cucurbitacea. Chayote.

(Sechium edule Swartz.)

From Zacuapam, Mexico. Fruits presented by Dr. C. A. Purpus. Received January 3, 1918.

"The chayote is becoming known in the United States as a useful vegetable belonging to the squash family. In some parts of tropical America it is eaten as commonly as are potatoes in North America and in the same manner: Stewed with meat, creamed, and so on. It has not the food value of the potato, but is more comparable in this respect to the squash. In an effort to extend and improve its culture in this country, varieties are being introduced from as many regions as possible." (Wilson Popenoe.)

## 45757 to 45765. Zea mays L. Poacea.

Corn.

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received January 10, 1918. Quoted notes by Mr. E. B. Brown, of the Office of Corn Investigations.

"Varieties of the flour type introduced for experimental and breeding work."

45757. No. 20. Punso, Huarnancaca. "A dark-red variety."

45758. No. 33. Flor de Granada, Pucara. "A purple variety."

45759. No. 21. Café con Leche, Huayuca. "A coffee-with-milk colored variety."

45760. No. 6. Rosa Bajo, Sapallanga. "A purple variety."

45761. No. 2. Crema, Chongos. "A yellow variety."

45762. No. 32. Granada, Salcabamba, "A purple variety."

45763. No. 13. Mixto, Huarnancaca. "A variegated variety."

**45764.** No. 8. *Pecho de Paloma*, Chupaca. "A purplish and mottled variety."

45765. No native name. "A purple and yellow variety."

## 45766. Elaeis guineensis Jacq. Phoenicaceo.

Oil palm.

From Buitenzorg, Java. Presented by Mr. P. J. S. Cramer, chief, Plant Breeding Station. Received January 23, 1918.

This palm is very important economically. The fruit is used by the natives for food; an intoxicating drink is made from the juice of the stem; the leaf-stalks and leaves are used for thatching the native houses; and the fleshy outer layer and the kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. It is a native of tropical West Africa and, both wild and in cultivation, occurs over immense areas. (Adapted from Macmillan, Handbook of Tropical Gardening and Planting, p. 538.)

Messrs. Dorsett, Shamel, and Popenoe, in Department of Agriculture Bulletin No. 445, mention the uses of this tree in Brazil. In regard to the oil from the pulp they say: "Dendé oil [as it is there called] is an important food prod-

uct, entering into the preparation of a number of dishes, some of which, such as vatapá, are considered peculiar to the region. While utilized by all classes of people, its greatest popularity is among the negroes, long familiarity having made dendé oil almost as indispensable to them as olive oil is to the Spaniard."

## 45767. Coix lacryma-jobi ma-yuen (Rom.) Stapf. Poaceæ.

Ma-yuen.

From Soochow, China. Presented by Prof. N. Gist Gee, Soochow University. Received January 10, 1918.

This variety might be called the cultivated edible Job's-tears and includes many forms, all of which are characterized by having a thin, loose, easily broken shell. They are often longitudinally striated and in many examples are constricted at the base into what is called an annulus. In the central provinces of India, among the aboriginal tribes, this grain forms an important article of food. In Japan, where the plant has been introduced, the seeds are pounded in a mortar and eaten as meal. (Adapted from The Agricultural Ledger, No. 13, p. 217.)

## 45768. Juglans cathayensis Dode. Juglandaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, Assistant Superintendent of Parks. Received January 22, 1918.

A deciduous tree, native to central, western, and southwestern China. At low altitudes it forms a bushy tree 15 to 30 feet high, flowering and fruiting when 8 to 10 feet high. In the woods and forests it occasionally makes a tree 40 to 70 feet high. The leaves on young plants are often a yard long, rivaling those of Ailanthus and Cedrela. The fruits are produced in clusters of 6 to 10 and are  $1\frac{1}{2}$  to  $1\frac{3}{4}$  inches long. The seeds are sweet and pleasantly flavored. (Adapted from *Gardeners' Chronicle*, 3d ed., vol. 50, p. 189.)

## 45769. $\times$ Eucalyptus trabuti Vilm. Myrtaceæ. Eucalyptus.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 21, 1918.

"A hybrid between *Eucalyptus botryoides* and *E. rostrata* found in sowing seeds from a tree of the former species which stood near one of the latter. Always tends to revert to the male parent. It is the first undoubted Eucalyptus hybrid, and the existence of hybrids in this genus has been denied by Baron Ferdinand Mueller. This hybrid is one of the most vigorous trees of the genus, and in a nursery row at the Mustapha Experiment Station it has crowded out the pure species. The beautiful red wood is suitable for furniture." (*Trabut.*)

### 45770 to 45773.

From Cairo, Egypt. Presented by Mr. W. Carl McQuiston. Received January 24, 1918.

45770 and 45771. Cucumis melo L. Cucurbitaceæ.

Melon.

Introduced for varietal studies.

45770. De Cavillon.

45771. Egyptian sweet.

45772. Cucurbita Pepo L. Cucurbitaceæ. Vegetable marrow.

A garden product much prized in Europe, although little known in this country. It thrives well, however, when grown here. The following account of the culture and uses of the plant, taken from Gardening Illustrated, is quoted in Bailey, Standard Cyclopedia of Horticulture, p. 2960:

## **45770** to **45773**—Continued.

"Vegetable marrows should be eaten young—say when about one-fourth to one-sixteenth their full size. Cut in this state, and boiled quickly until quite tender in plenty of water, carefully strained, and served with melted butter, they are second to no vegetable that comes to the table, not even excepting green peas or asparagus. Early cutting, careful cooking, and serving are the chief points to which attention should be paid; but there are others, one of the principal being rapid growth. Grow vegetable marrows quickly and they are almost sure to be good; grow them slowly and you will find them often tough and bitter. Hence, the soil or place in which they are grown can hardly be too rich for them. Not but what they do fairly well in any good garden soil, but the richer it is the better. On a rubbish heap, for instance, vegetable marrows grow with wonderful vigor and fruit abundantly."

45773. Holcus sorghum sudanensis (Piper) Hitche. Poaceæ.

Sudan grass.

Introduced about 10 years ago, this grass has become very popular as a forage crop. It is easily cured, easily handled as hay, and very drought resistant. It is much superior to ordinary sorghum in the above qualities, and in yield, drought resistance, and palatability it appears distinctly to outclass Johnson grass. It does best in the South, but has been grown in some of the Northern States. Sudan grass is probably best adapted to the drier portions of Texas, Oklahoma, and Kansas; and it seems well adapted for growing with cowpeas for hay and silage. (Adapted from the Yearbook of the United States Department of Agriculture for 1912, p. 495.)

## 45774 and 45775. Juglans Regia L. Juglandaceæ. Walnut.

From Srinagar, Kashmir, India. Nuts presented by Mr. R. K. Koul, Koul's Gardens. Received January 24, 1918.

45774. "This walnut compares favorably in size with the best varieties cultivated in the United States. Its shell, however, is rather thick and hard. The form of the nut is broadly oblong-oval, the length 1\frac{3}{4} inches. Its quality has not been tested, but judging from its external appearance this would appear in most respects to be a good variety." (Wilson Popenoe.)

45775. "A slightly smaller nut than the preceding [S. P. I. No. 45774], and differing markedly in shape. It is slender and tapers slightly toward both ends. The outline is almost elliptical. The surface is not so heavily wrinkled as in the above variety and in most of those grown in the United States. The shell appears to be quite hard. The quality of this variety has not been tested." (Wilson Popenoe.)

## 45776 to 45783. Colocasia esculenta (L.) Schott. Araceæ.

Taro.

From Sienku, Chekiang Province, China. Tubers presented by Mrs. A. O. Loosley Received January 25, 1918. Quoted notes by Mrs. Loosley, except as otherwise indicated.

"Yü-na. This vegetable, if need should arise, might help out the potato crop, as it comes between the potato and the artichoke. The natives call the

latter 'foreign yū.' I think these are a little more solid than the artichoke. They are like the potato in substance, but more glutinous and quite different in flavor. They are a substantial addition to a meal. The 'sprouts' are separated in the field, excepting in the 'ginger variety,' and it is these sprouts which are planted for the new crop. In suitable soil and conditions the vegetable is prolific. The crop is harvested in the autumn in the district of Taichow Sienku, Chekiang Province, whence these specimens came."

- **45776.** "Ong-y $\ddot{u}$ , or red  $y\ddot{u}$ , is a little red on the point, cooks a trifle glutinous. The natives prefer these, and I have sent more of this kind. It is a local variety."
- **45777.** "Ong-hwa-yü, or red floury  $y\ddot{u}$ , is very pink and cooks mealy. It is a local variety."
- 45778. "Ts'ih yū; also called Tsiang-yū or ginger yū because the 'na,' or shoots and head, are more like the ginger root and do not divide easily; this sort is the only one of which I am sending the 'head,' as the Chinese call it. The other specimens all have a head like this, but more clearly separated from the root and easily broken off; whereas this one must be divided by cutting. The natives say this particular one will divide in five pieces for planting. The ginger  $y\ddot{u}$  cooks mealy."
- **45779.** " $Ts'ing\ y\ddot{u}$ , or blue  $y\ddot{u}$ , is a little bluish on the point and stalks and has a large leaf. This variety also cooks mealy, but is said to be better to eat after keeping a few months. It keeps well."
- **45780.** "Ta- $y\ddot{u}$ , or large  $y\ddot{u}$ , has a large head and few sprouts; also mealy."

"This taro roughly resembles the Trinidad dasheen in leaf characters, though the petioles have lighter markings, like those of the 'amadumbe' [S. P. I. No. 36057] from Rhodesia. When cooked the corms and cormels (lateral tubers) are slightly yellowish and of smooth texture. Both are rather moist, and yet the corms are somewhat mealy and very pleasing to the taste. They improve in quality after being dug. The corms are elongated and regular in form and weigh about a pound each. The tubers are small, weighing only from 1 to 3 ounces each." (R. A. Young.)

- 45781. "Wöng-yü, or yellow yü; point a little yellow; glutinous."
  - "The leaf stems of the yellow  $y\ddot{u}$  are blackish maroon. The corm is roundish and when cooked is moist, soft, and light colored with a tinge of violet at top. The cormels are rather small and when cooked are moist and soft. Both corms and cornrels lack flavor." ( $R.\ A.\ Young.$ )
- **45782.** "U-ken-y $\ddot{u}$ , or black-stalked  $y\ddot{u}$ ; the stalk is black and more nearly round. This is the earliest variety and is glutinous."
  - "The corms of this variety are tough when cooked and unfit for table use. The cormels, or tubers, are of fair size but are soft, pasty, and flavorless. The plant is small growing and the leaf stems blackish maroon." (R. A. Young.)
- **45783.** "Ong-hwa-yü, or red floury  $y\ddot{u}$ , is a variety having the same name as S. P. I. No. 45777, but the sprouts come out in a different way."

<sup>&</sup>lt;sup>2</sup>Upon being grown, the tubers listed as S. P. I. No. 45777 proved to be avariety of Colocasia antiquorum (L.) Schott.

## 45784. Secale cereale L. Poaceæ.

Rve.

From Pampas Centrale, Argentina. Presented by Mr. Juan Williamson. Received January 29, 1918.

"A yellow variety of rye which was found in a neglected field in Argentina among plants of the ordinary green color. The yellow plants were transplanted and fertilized by ordinary green plants. The seed produced from this fertilization, when grown the next year, produced all green plants. The seed of these plants the following year produced both yellow and green plants in the proportion of one yellow to three green ones. It was also found that when yellow plants are fertilized by pollen from yellow plants the offspring are all yellow. It is thought that the yellow color is due to the wider spacing of the chlorophyll plastids." (Williamson.)

## 45785 to 45788. Zea mays L. Poaceæ.

Corn.

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received January 29, 1918.

45785. No. 5. Rosa (No. 2), Pilcomayo. Rose-colored corn from Pilcomayo.

**45786.** No. 12. Amarillo Bajo, Chupaca. Short yellowish corn from Chupaca.

45787. No. 9. Anaranjado, Colca. Orange-colored corn from Colca.

**45788.** No. 14. *Plomo Oscuro*, Chupaca. Dark lead-colored corn from Chupaca.

#### 45789 to 45791.

From Summer Hill, New South Wales, Australia. Presented by Mr. Hugh Dixson. Received January 29, 1918.

45789. Elaeocarpus cyaneus Ait. Elæocarpaceæ.

"Grows naturally in a sandy peaty soil, although it will stand a stronger one. Should stand  $10^\circ$  F. if not continuous." (Dixson.)

Usually a small glabrous tree, although sometimes attaining a height of 60 feet or more. The elliptic-oblong to oblong-lanceolate leaves are 3 to 4 inches long, acute at the base, coriaceous, and very conspicuously reticulate. The flowers are borne in loose racemes which are shorter than the leaves. The hard globular drupe is usually one seeded and blue in color. Found in Queensland, New South Wales, and Victoria. (Adapted from Bentham, Flora Australiensis, vol. 1, p. 281.)

## 45790 and 45791. Kennedya spp. Fabaceæ.

"Grow well in my garden in rather stiff soil. Should stand  $10^{\circ}$  F. if not continuous." (Dixson.)

## 45790. Kennedya monophylla Vent.

(Hardenbergia monophylla Benth.)

"Kennedya monophylla is a mass of royal blue when in flower. It is better to cut it half back after flowering or after the seed is ripe.

It does well in a sunny hedge, untrimmed in winter." (Dixson.)

An Australian plant with solitary, ovate or lanceolate, coriaceous, strongly reticulate leaflets which are 2 to 4 inches in length. The numerous flowers occur in pairs or rarely three together on pedicels rather longer than the calyx. (Adapted from Bentham, Flora Australiensis, vol. 2, p. 246.)

### 45789 to 45791—Continued.

45791. KENNEDYA NIGRICANS Lindl.

A large twining vine from Western Australia. The broad, ovate leaflets are 2 to 3 inches long, and very often only one to each leaf. The deep violet-purple flowers are about 1 inch in length and are borne in racemes which are shorter than the leaves. (Adapted from Bentham, Flora Australiensis, vol. 2, p. 249.)

## 45792 to 45797.

From Zacuapam, Mexico. Presented by Dr. C. A. Purpus. Received January 3, 1918.

45792. Acacia sphaerocephala Cham, and Schlecht. Mimosaceæ.

Bull-horn acacia.

"One of a group of acacias remarkable for their large, stipular, inflated spines, which closely resemble the horns of a buffalo. This particular species is a shrub or small tree. The leaves are bipinnate and have remarkable glands on the rachis and leaflets. The flowers are borne in globose heads on long thick peduncles, clustered in the axils of the long forklike spines. The seeds, when ripe, are surrounded by a sweetish yellow or orange-colored pulp which causes the fallen pods to be eagerly sought after by pigs and other animals." (W. E. Safford.)

45793. Lycopersicon esculentum Mill. Solanaceæ.

Tomato.

"The common tomato of Mexico." (Purpus.)

45794. Phaseolus lunatus L. Fabaceæ.

Lima bean.

"Frijol majan. This bean is adapted to a hot country and should be planted in a rocky or gravelly soil. It is often planted as a filler between banana trees." (Purpus.)

45795. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. Yard-Long bean.

"Tripa de Gallina. An excellent bean for salad or for cooking like string beans. It is adapted to a hot country. These seeds were produced near Misantla, Vera Cruz." (Purpus.)

45796. Vitis sp. Vitaceæ.

Grape.

"Callullos. A large grape which has the taste of a Catawba and is used for making a fine jelly. It grows in the brushwoods in the low country." (Purpus.)

45797. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ. (V. caribaea DC.)

"A small-fruited wild grape excellent for jelly. This is essentially a tropical grape." (Purpus.)

For previous introduction, see S. P. I. No. 45361.

### 45798. Annona senegalensis Pers. Annonaceæ.

From Loanda, Angola, Africa. Presented by Mr. Antonio d'Oliveira-M., Inspector of Agriculture. Received February 15, 1918.

"Variety ambacencis. The plant from which this seed was obtained, growing at an altitude of 2,500 feet, came into full fruit about the middle of December." (D'Oliveira-M.)

Annona scnegalensis varies greatly in size, sometimes being a low shrub up to 2 or 3 feet in height and again a tree 20 feet in height. The young branches are rusty or tawny tomentose. The coriaceous leaves have a

rounded apex and broadly rounded base, and the upper surface is glabrescent while the lower is usually pale and more or less pubescent. The solitary flowers are borne on spreading or decurved peduncles, one-third of an inch to  $1\frac{1}{2}$  inches long. The edible fruit is erect or pendent, yellow or orange when ripe, and  $1\frac{1}{2}$  inches or more in diameter. This plant has been found in Upper Guinea, Lower Guinea, north-central Bornu, Nile Land, and Mozambique District. (Adapted from Oliver, Flora of Tropical Africa, vol. 1, p. 16.)

## 45799. Juglans regia L. Juglandaceæ.

Walnut.

From India. Nuts presented by Mr. C. C. Calder, Curator of the Herbarium, Royal Botanic Gardens, Sibpur, near Calcutta, who obtained them from Mr. Green, Cinchona Plantation, Munsong. Received January 26, 1918.

"No. 2. The large-leaved, large-seeded walnut. The trees of this kind are more spreading than and not so lofty as those of the common kind. It attains a very large size." (*Green.*)

## 45800 and 45801. Hibiscus sabdariffa L. Malvaceæ. Roselle.

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received January 30, 1918.

45800. Archer. "Plant robust, frequently exceeding 1.60 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those of the red types; eye yellowish; pollen pale yellow; stigma green; full-grown calyx greenish white, sparsely covered with short stiff bristles; average length of calyx 45 mm., width 26 mm., including epicalyx 32 mm.

"The Archer is very prolific, the fruit is somewhat less acid than that of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety which is said to resemble champagne in taste and appearance.

"Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested at the Lamao Experiment Station the same year. It has been named in honor of Mr. Archer." (Wester, Philippine Agricultural Review, June, 1914.)

45801. Rico. "The young plants of the Rico retain their unifoliate leaf characters longer than the Victor, and the leaves later are mostly tripartite instead of five parted. The stems and calyces are dark red and the leaves dark green with reddish veins. The pollen is golden yellow. The calyx is of about the same length as that of the Victor [45 to 50 mm.], but of greater equatorial diameter [28 mm.]; the fleshy spines subtending the calyx lobes are stout and stand at nearly a straight angle from the axis of the fruit; the apex of the calyx lobes is frequently incurved.

"The Rico has been named and described from plants grown from seed obtained by the writer in 1911 from Mr. J. E. Higgins, horticulturist of the Hawaii Agricultural Experiment Station, and has probably descended from a variety grown in 1902 in the Agricultural Experiment Station, Mayaguez, Porto Rico, by Mr. O. W. Barrett, now chief of the division of experiment stations of this Bureau." (Wester, Philippine Agricultural Review, March, 1912.)

## 45802. Triticum speltoides (Tausch) Grenier. Poaceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 30, 1918.

A bushy grass, branching from the base, with slender, erect stems bearing rough narrow leaves and stiff, rather loose, spikes of long-awned flowers. It is a native of western Asia, being found especially in Syria, and is considered one of the species from which the cultivated wheats were derived. (Adapted from Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 2, p. 711.)

## 45803. Gleditsia sinensis Lam. Cæsalpiniaceæ. Honey locust.

From Yihsien, Shantung Province, China. Presented by Rev. R. G. Coonradt. Received February 5, 1918.

A tree up to 60 feet in height, with a trunk girth of 3 to 9 feet, found in the dry valleys of western Szechwan 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 9 to 30 feet from the ground and a wide-spreading head of thick branches. The bark is quite smooth and pale gray 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; they are also used in the process of tanning hides. (Adapted from Sargent, Plantae Wilsonianae, vol. 2, p. 91.)

#### 45804 and 45805.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director of the Botanic Gardens. Received February 6, 1918.

45804. Garcinia mangostana L. Clusiaceæ.

Mangosteen.

A medium-sized Malayan tree, with large feathery leaves and globular, purplish brown fruit, about the size of an apple. It is one of the most delicious fruits of the Tropics. The delicate, white, juicy pulp, surrounding and adhering to the seed, is the part eaten. The dense, thick, reddish rind contains tannin and a dye. The tree is a slow grower and does not usually bear until it is 9 or 10 years old. The essential conditions are a hot, moist climate and a deep, rich, well-drained soil. It thrives up to 1,500 feet and is propagated usually by seed, but also by layering. (Adapted from Macmillan, Handbook of Tropical Gardening and Planting, p. 164.)

For previous introduction, see S. P. I. No. 45180.

45805. Nephelium lappaceum L. Sapindaceæ.

Rambutan.

A large, handsome, spreading tree, up to 40 feet in height; common in the low country of Ceylon and the vicinity of Malakka Strait, ascending to 2,000 feet altitude. The terminal clusters of bright crimson fruits, about the size of hen's eggs, are produced on every branch, each fruit being covered with long soft spines. The large seed is surrounded by a layer of white, opaque pulp, which is of a very agreeable acid taste. The tree is readily propagated by grafting or "gootees" (layering). (Adapted from Macmillan, Handbook of Tropical Gardening and Planting, p. 176.)

## 45806 to 45808. Zea mays L. Poaceæ.

Corn.

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received February 7, 1918.

45806. No. 27. Salmon, Iscuchaca. Salmon-colored corn.

**45807.** No. 30. Amarillo Subido, Chongos. Yellow gold-tinged corn of the flour type.

**45808.** No. 31. Amarillo Melchocha, Punta. Yellow-paste corn of the flour type.

## 45809. Corchorus capsularis L. Tiliaceæ.

Jute.

From Calcutta, India. Obtained by Mr. James A. Smith, American consul general, from Ralli Bros. Received February 11, 1918.

"The leaves of both *Corchorus capsularis* and *C. olitorius* are commonly eaten as a vegetable when the plants are young, and the practice apparently extends to the wild plant both in India and in other parts of southern Asia; also in Egypt and the Levant, where *C. olitorius* is said to be an important potherb." (*Ralli Bros.*)

This species and the closely allied Corchorus olitorius are the chief sources of the jute fiber of commerce. Corchorus capsularis is 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 of some varieties are commonly used as a potherb, especially in Egypt. The fiber is obtained by means of 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 transplanting into rows the seedlings raised in a nursery. This plant is indigenous to Ceylon, India, and the Malay Peninsula. (Adapted from Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 841, and Macmillan, Handbook of Tropical Gardening and Planting, p. 542.)

## **45810.** Schoenocaulon officinale (Schlecht.) A. Gray. Melanthiaceæ. Sabadilla.

From Caracas, Venezuela, Presented by Mr. H. Pittier, Received February 11, 1918.

This plant is also known as Asagraea officinalis Lindl., Veratrum officinale Schlecht., and Sabadilla officinarum Brandt. It is a bulbous plant, growing in grassy places on the eastern declivities of the volcanic range of the Cofre de Perote and Orizaba, near Teocelo, Huatusco, and Zacuapam, down to the seashore in Mexico; also in Guatemala. It has been cultivated near Vera Cruz, Alvarado, and Tlacotalpan, on the Gulf of Mexico.

The fruit consists of three follicles about half an inch long, united at the base. These are light brown in color and papery in texture. Each follicle usually contains two narrow, pointed, black seeds. The testa incloses an oily, albuminous interior. The seed is inodorous and has an acid bitter taste.

Sabadilla (Cebadilla) is used principally as a source of veratrin, which is a powerful irritant and counterirritant. In Mexico the bulb of the plant is used as an anthelmintic under the name of cebolleja, but is said to be very dangerous in its action. (Adapted from Pharmacographia, A History of Drugs, Fluckiger and Hanbury, p. 697.)

## 45811. Amaranthus paniculatus L. Amaranthaceæ. Guate.

From Culiacan, Sinaloa, Mexico. Procured by Mr. W. E. Chapman, American consul, Mazatlan, from Mr. Frank G. Leeke, Culiacan. Received February 12, 1918.

"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.)

## 45812 to 45814. Solanum muricatum Ait. Solanaceæ. Pepino.

From Ecuador. Obtained by the American consul general, Dr. F. W. Goding, Guayaquil. Received February 13, 1918.

"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.)

45812. Morado oscuro, purple pepino.

45813. Blanco, white or green pepino.

45814. Morado claro, light green striped with purple.

## 45815. Zea mays L. Poaceæ.

Corn.

From Guelph, Canada. Presented by Mr. J. A. Neilson, of the Ontario Agricultural College. Received February 13, 1918.

"Squaw corn, which was grown during the season of 1917, near Pine River, in the Province of Manitoba. Pine River is north of 52° north latitude and is about 228 miles northwest of Winnipeg. The man who grew this corn said that he did not have any difficulty in getting it to grow in this section. The stalks are rather low growing and will produce ears in a comparatively short time.

"This may not be of any particular value to you in the United States, as you now have many excellent varieties, but it may be of interest to you to know that well-ripened corn can be grown even as far north as the above-mentioned place." (Neilson.)

#### 45816 and 45817.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received February 15, 1918.

45816. Garcinia mangostana L. Clusiaceæ. Mangosteen. For previous introduction and description, see S. P. I. No. 45804.

45817. Lansium domesticum Jack. Meliaceæ. Langsat.

"This, like the mangosteen, is a delicious oriental fruit not yet well established in America but esteemed throughout the Malayan region. Judging from our limited experience with it, the languat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West

## 45816 and 45817—Continued.

Indies and other parts of the American Tropics. The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white translucent flesh, which separates into five segments. Each segment normally contains an oval seed, but some of the segments in each fruit are usually seedless. The flavor is highly aromatic, at times slightly pungent. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways." (Wilson Popenoe.)

## 45818. Crataegus Mexicana Moc. and Sesse. Malaceæ.

Hawthorn.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 15, 1918.

This seed is from a tree which flowered in Egypt. The tree is bushy, 8 to 10 feet in height, with glabrous, olive-colored branches. The leaves are oblong, attenuated at the base, and 2 to 3 inches in length. The abundant flowers are borne in terminal corymbs. The fruit is larger than is usual among the hawthorns. The color when ripe is pale yellow, dotted with brown. It is a native of the table-lands of Mexico and has been found quite hardy in England. (Adapted from *The British Flower Garden*, p. 300.)

## 45819. Rosa gentiliana Lev. and Van. Rosaceæ. Rose.

From Kew, England. Presented by the director of the Royal Botanic Gardens. Received February 15, 1918.

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, 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 3 to 5 foliolate leaves, which are shining green above and very pallid beneath. (Adapted from Sargent, Plantae Wilsonianae, vol. 2, p. 312.)

Received as Rosa cerasocarpa Rolfe, which is referred to R. gentiliana in Plantae Wilsonianae.

### 45820 to 45838.

From Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received February 15, 1918.

Obtained by Prof. Reimer during his recent trip, in cooperation with the Office of Foreign Seed and Plant Introduction, to find blight-resistant stocks for commercial varieties of pears and for crossing with American varieties, in an effort to produce blight-resistant hybrids. Quoted notes by Prof. Reimer.

45820. Crataegus pinnatifida Bunge. Malaceæ. Hawthorn.

"No. 65. From the Chien Shan Mountains, near Lishan, Manchuria. This is the large-fruited hawthorn found wild and widely cultivated in Manchuria. northern China, and eastern Siberia. It has been introduced

### **45820 to 45838**—Continued.

at various times during the past and often described. It should be tested for blight resistance and as a stock for pears."

45821. Pyrus betulaefolia X phaeocarpa. Malaceæ. Pear.

Seeds obtained from wild trees at Hsia Ying and Panshan. China. This species produces an abundance of small brown fruit about as large as good-sized peas and of very poor flavor. The trees are very vigorous and attain a height of 50 feet and a trunk diameter of 20 to More often, however, it is a tree from 30 to 40 feet high, with a trunk about 1 foot in diameter. It is a widely distributed species, and I found it from extreme northern China to the Yangtze River. This species is certainly a marvel in its ability to adapt itself to all sorts of conditions. It is common on dry hillsides, on the plains, along edges of ponds, and I often saw it growing well in ponds where the water around the tree, for at least a large part of the year, was a foot deep. It is used extensively throughout northern and eastern China as a stock for all their cultivated varieties and seems to be admirably suited for this purpose. What a pity that this species is so susceptible to pearblight! Where root-blight is not troublesome this should prove a valuable pear stock in this country."

45822. Pyrus betulaefolia Bunge. Malaceæ.

Pear.

"No. 66. From Kingmen, Hupeh Province, China. These seeds were collected from typical trees of this species growing near trees of *Pyrus calleryana*. A careful study will be made of the seedling to determine whether or not these two species have hybridized. The trees are very vigorous and often attain very large size in this region."

45823 to 45828. Pyrus calleryana Decaisne. Malaceæ. Pear.

- 45823. "No. 18. Collected at Hadzmura, Ise Province, Japan. Tree 30 feet high with a trunk 12 inches in diameter, growing along the edge of a rice field about a foot above an irrigation ditch. A very vigorous specimen and bearing large quantities of small fruit."
- 45824. "No. 24. Collected near the village of Kono, Ise Province, Japan. About 50 trees growing on a mountain side. These trees were small, looking more like large bushes than trees, being only 3 to 8 feet high and with trunks from 1 to 5 inches in diameter. They had evidently been cut off for fuel, which accounted for their small size. The trees were loaded with small brown fruits from one-fourth to half an inch in diameter."
- 45825. "No. 30. Collected 5 miles south of Suigen, Chosen (Korea), in the Kwasan Mountains. These were the largest trees of this species that I saw in Korea, being 15 feet tall and from 5 to 6 inches in diameter. They are of especial interest and value, because central Chosen is the northern limit of this species, and the winters are quite cold; hence, these trees may prove considerably hardier than those from central China and southern Japan; and, if so, can be used as a stock in colder regions in this country."
- 45826. "No. 31. Collected 2 miles west of Suigen, Chosen. This is the type which has been named *Pyrus faurei* by Schneider. It is very similar to *P. calleryana*, but the trees and leaves are usually much smaller. I regard this as simply a dwarf form of *P. calleryana*, the dwarf habit being due to the fact that this is

### **45820 to 45838**—Continued.

the northern limit of the species and the trees or bushes are usually growing on very poor soil. The northernmost region in which I found this type was from 75 to 100 miles north of Seoul, Chosen."

- **45827.** "No. 64. Collected from typical trees at Kingmen, Hupeh Province, China. The trees are very vigorous and often reach a height of 60 feet and a trunk diameter of 2 feet. *Pyrus betulaefolia* is abundant in the same region and grows under the same conditions."
- 45828. "No. 103. Obtained in the Chien Kang Mountains, northwest of Ichang, China, at an altitude of 2,900 feet. The tree from which this seed was taken was 30 feet high with a trunk diameter of 18 inches and bore an enormous crop of fruit. The species is very common in the mountains north and south of Ichang."

45829 and 45830. Pyrus Phaeocarpa Rehder. Malaceæ. Pear.

- 45829. "No. 47. Collected near Tan Che Tse temple, about 30 miles southwest of Peking, China. Tree wild, about 35 feet high, with trunk 1 foot in diameter. The fruit, which is borne in clusters of from one to five, is roundish, of russet color, from one-half to three-fourths of an inch in diameter, two to three celled, and has a deciduous calyx. Near Yangfan I saw trees of this species from 50 to 60 feet high, with trunks 2½ feet in diameter and an enormous spread of branches. Young trees of this species, from earlier introductions, when inoculated with pear-blight have proved quite susceptible to the disease. It should be tested further, to determine its resistance or susceptibility to blight and as a stock for other pears."
- **45830.** "Collected 20 miles west of Peking, China. This form is similar to No. 47 [S. P. I. No. 45829], and the notes under that number will also apply to this."
- 45831 and 45832. Pyrus serrulata Rehder. Malacee. Pear.
  - 45831. "No. 100. Collected in the Chien Kang Mountains, 15 miles northwest of Ichang, China, at an altitude of 3,700 feet. The tree is of medium size and moderately vigorous. The fruit is round, russet color, from half an inch to an inch in diameter, three or sometimes two celled, and has a deciduous calyx. The leaves are a very rich dark green and remain on the trees very late in the fall. This type should be tested very thoroughly as a stock for cultivated varieties. It has shown a marked degree of resistance to pear-blight in our work at Talent. This type probably has given rise to some of the small cultivated varieties in Central China."
    - **45832.** "No. 105. Obtained at an altitude of 3,275 feet in the mountains 15 miles northwest of Ichang, China. It is very similar to No. 100 [S. P. I. No. 45831], except the shape of the fruit, which is obovoid. To be tested for blight resistance and as a stock for other pears."

45833. Pyrus ussuriensis Maxim. Malaceæ.

Pear.

"No. 60. Collected from wild trees at Shinglungshan, China. Trees of this species were formerly very abundant in this region, but as it has been

## **45820 to 45838**—Continued.

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  $2\frac{1}{2}$  feet in diameter. The fruit is roundish or slightly flattened, from 1 to  $1\frac{1}{2}$  inches in diameter, greenish in color, with gritty flesh and sour flavor. Earlier introductions of this species made by Mr. Frank 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, in regions where blight attacks the roots and trunks of the trees, and in breeding hardy and blight-resistant varieties. It has given rise to some of the best cultivated varieties of northern China,"

#### 45834. Pyrus sp. Malaceæ.

Pear.

"No. 46. Pin li, or Ping li. Very similar to small Suan li [S. P. I. Nos. 45846 and 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 1½ 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, which it resembles in tree, leaf, and fruit character. While the fruit has the tart flavor of that species, it is of very much better flavor, and the flesh is softer than in the wild forms. 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 P. ussuriensis it should prove of great value, especially in breeding work."

### 45835. Pyrus sp. Malaceæ.

Pear.

"No. 112. Pin li. From Mukden, Manchuria. Identical with No. 46 [S. P. I. No. 45834]."

#### 45836. Pyrus sp. Malaceæ.

Pear.

"No. 109. Shampa li. A cultivated variety grown in the Chien Shan Mountains, near Lishan, Manchuria. The fruit is small, yellowish when ripe, with a persistent calyx. It probably belongs to *P. ussuriensis* and for this reason should be thoroughly tested as a stock."

## 45837. Pyrus sp. Malaceæ.

Pear.

"No. 111. Shampa li. From Mukden, Manchuria. Identical with No. 109 [S. P. I. No. 45836]."

### 45838. Pyrus sp. Malaceæ.

Pear.

"No. 110. Shu li. Another cultivated variety from Liaoyang, Manchuria. Similar to Shampa li. Undoubtedly a cultivated form of P. ussuriensis."

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## 45839 to 45850. Pyrus spp. Malaceæ.

Pear.

From China. Collected by Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent. Oreg. Received February 16, 1918. cions of Chinese pears collected by Prof. Reimer during his recent trip, in

Scions of Chinese pears collected by Prof. Reimer during his recent trip, in cooperation with the Office of Foreign Seed and Plant Introduction, to obtain blight-resistant stocks for the commercial varieties of pears and for crossing with American varieties, in an effort to produce blight-resistant hybrids. Quoted notes by Prof. Reimer.

#### 45839. Pyrus calleryana Decaisne.

"Scions from Suigen, Chosen (Korea), of the dwarf form that grows in central Chosen. Fruit of no value. May prove valuable as a stock." 45840 to 45844. Pyrus ussuriensis Maxim.

"Scions of five different trees of the wild *P. ussuriensis* from Shinglungshan."

#### 45845. Pyrus sp.

"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 Pyrus 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."

#### 45846 and 45847. Pyrus sp.

"Suan li. A small roundish or slightly flattened pear, greenish yellow in color, with often 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."

45846. "Suan li from Lohualing Pass, China."

45847. "Suan li from Matow, China."

45848. Pyrus sp.

"Pai li. From Chenganssz, near Peking. 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 by both 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 three varieties [S. P. I. Nos. 45846 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 and only oriental varieties that I have ever seen or 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 hardy pears for the cold Plains region."

#### 45849. Pyrus sp.

"Huang hsau li. From Chenganssz, near Peking. A medium-sized roundish pear, yellowish with a bright-red cheek; flesh firm but of very poor quality."

#### **45839 to 45850**—Continued.

45850. PYRUS Sp.

"Pan chin tse. From Chenganssz, near Peking. A very large greenish pear with a persistent calyx. Flavor tart; quality not high. May be of value in breeding work."

## 45851. Trichoscypha sp. Anacardiaceæ.

From Lambarene, Gabon, Africa. Presented by Rev. Edward A. Ford. Received February 16, 1918.

"I am sending you some seeds of a native fruit called *mvut*, of which there are two principal varieties, with the sarcocarp red and white, respectively; the former I think is the more common, the latter is larger and less pungent; it is the latter variety which I send." (Ford.)

### 45852 to 45856. Zea mays L. Poaceæ.

Corn.

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received February 18, 1918.

Samples of flour corn introduced for experimental and breeding purposes of the Office of Corn Investigations.

45852. No. 18. Pasas, Locroja. A type with irregular, elongated kernels of a brownish yellow color.

45853. No. 19. Chancaca, Pucara. A type with kernels of a brownish yellow color.

45854. No. 7. Matiz Blanco Colorado, Pariahuanco. A type with reddish kernels,

 $\bf 45855.$  No. 29. Colorado Claro, Nahuinpuquio. A type with reddish kernels.

45856. No. 26. Canela, Puncha. A type of a light brownish yellow color.

# 45857. Chenopodium ambrosioides L. Chenopodiaceæ.

From Santos, Brazil. Presented by Mr. Carl F. Deichman, American consul. Received February 19, 1918.

Herva de Santa Maria. A native of Mexico, but now naturalized in Brazil. in the southern provinces of Brazil it is known by the above name, but in the northern provinces as matruz, mentruz, and mastruco. In Lisbon and the Azores it is called herva tormiquera.

The plant is an annual, but has an almost woody stem, 1 to 2 meters in height, with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are very small and of a black color. The whole plant has a powerful aromatic odor. An infusion of this plant has been used with good results in Europe as a cure for nervous affections. (Adapted from *The Pharmaceutical Journal and Transactions*, p. 713.)

# 45858 to 45866. Castanea spp. Fagaceæ. Chestnut.

From Bell, Md. Cuttings presented by Dr. W. Van Fleet, of the Bureau of Plant Industry. Received February 23, 1918. Quoted notes by Dr. Van Fleet.

45858 to 45861. CASTANEA CRENATA Sieb. and Zucc.

**45858.** "Bell No. 1. Fourth generation by straight selection. Started by a variety cross between two early, prolific types of *C. crenata*.

#### **45858 to 45866**—Continued.

Very large nut, with good cooking qualities, but poor eating qualities when raw. The tree has a good habit, with thin, handsome branches. The trunk is clean and bright. Leaves very narrow."

See S. P. I. No. 45334 for previous introduction.

**45859.** "Bell No. 2. Fourth generation by selection. It is a prolific bearer. The fruit is very large and good for cooking, but not good for eating when raw. It is more bitter than Bell No. 1."

See S. P. I. No. 45335 for previous introduction.

45860. "Bell No. 3. Fourth generation. Much like Bell No. 2. Worth consideration for dissemination."

See S. P. I. No. 45336 for previous introduction.

45861. "Bell No. 4. Fourth generation by selection. The trees have very much the same habit as the previous numbers, and the nuts are about the same size. The nuts have good eating qualities and are better than the above numbers."

See S. P. I. No. 45337 for previous introduction.

#### 45862. Castanea mollissima Blume.

This is the common chestnut of China; it is distributed from the neighborhood of Peking in the northeast to the extreme limits of Szechwan and Yunnan in the west and southwest. Near villages and towns, where the wood is continually cut down to furnish fuel, this chestnut is met with as a bush or low shrub; but in thinly populated areas it is a tree from 15 to 20 meters tall, with a trunk from ½ to 2 meters in girth. The Chinese name is Pan li, and the nuts are a valued article of food. (Adapted from Sargent, Plantae Wilsonianae, p. 194.)

See S. P. I. No. 45338 for previous introduction. 45863 to 45866. Castanea pumila  $\times$  crenata.

Hybrid chestnut.

45863. "Bell No. 5. A very attractive nut of fair quality, which looks as though it would be a good commercial nut."

See S. P. I. No. 45340 for previous introduction.

**45864.** "Bell No. 6. Second (F<sub>2</sub>) generation from self or chance fertilized seeds; Arlington, Va., 1916."

45865. "Bell No. 7. Second (F<sub>2</sub>) generation from self or chance fertilized seeds; Arlington, Va., 1916."

**45866.** "Bell No. 8. Second generation. A very prolific tree, about 7 feet high, and yielding from 3 to 4 pounds of nuts this season (1916). The nuts are of very good flavor and of good size for a chinquapin, but small for a chestnut."

See S. P. I. No. 45341 for previous introductic:

#### 45867 to 45869.

From Richmond, Australia. Presented by Mr. F. H. Baker. Received February 25, 1918.

45867. Acacia pycnantha Benth. Mimosaceæ. Golden wattle.

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 prefer-

### **45867 to 45869**—Continued.

ence, but is usually found on the poor sandy soil near the sea coast; 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. (Adapted from Maiden, Useful Native Plants of Australia, pp. 312 and 365.)

45868. HAKEA ROSTRATA F. Muell. Proteaceæ.

An erect shrub, several feet in height, with glabrous branches. The terete leaves are smooth and rigid. The flowers are borne in sessile axillary clusters. The rugose fruit is 1 to  $1\frac{1}{2}$  inches long and three-fourths of an inch broad, recurved at the base, incurved from the middle, with a closely inflexed, conical beak. Found in Victoria and South Australia. (Adapted from Bentham, Flora Australiensis, vol. 5,  $p.\ 508$ .)

45869. Indigofera sp. Fabaceæ.

"A beautiful native shrub." (Baker.)

# 45870. Annona sp. Annonaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 26, 1918.

A species of Annona, originally from Colombia, the seeds of which, according to Mr. Safford, resemble those of *Annona sericea*.

#### 45871 to 45881.

From Japan. Cuttings presented by Prof. T. Onda, Bureau of Horticulture, Imperial Agricultural Experiment Station, Okitsu, Shiznokaken, Japan. Received February 27, 1918. Quoted notes by Prof. Onda.

45871 to 45875. Diospyros kaki L. f. Diospyraceæ. Kaki.

- **45871.** "1. Gosho. Medium-sized, rather flattened, yellowish red fruit with a pointed apex. Staminate flowers abundant. Not very fruitful in a wet climate."
- **45872.** "2. Tenjin-Gosho. Large, rather square, round-pointed fruit with a beautiful crimson skin. No staminate flowers. Not very productive."
- 45873. "3. Oku-Gosho. (Oku means 'late,' but this variety is not so late in ripening.) Large, depressed-globose, crimson fruit, which often splits a little at the apex. Staminate flowers very few, but a very productive variety."
- 45874. "4. Hana-Gosho. Fruit above medium size, broadly ovate with a pointed apex; skin yellowish red. Staminate flowers very few, but fruit plentiful."
- 45875. "5. Jiro. Large, depressed-globose, crimson fruit, with four longitudinal grooves. This variety has no staminate flowers, but is quite productive.

"These varieties of the Gosho class usually have no black spots in their flesh; very scarce, if any."

45876 to 45881. Prunus mume Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

#### **45871 to 45881**—Continued.

- 45876. "1. Rinshu. Medium-sized flowers with a light green calyx and white petals; large fruits with thick flesh; not very productive."
- **45877.** "2. Yoro. Medium-sized flowers with a reddish brown calyx and light-red petals; bears large fruits with thick flesh and is very productive."
- **45878.** "3. Bungo. Large flowers with reddish brown calyx and light-red petals; fruit of medium size with rather thick flesh; not very productive."
- 45879. "4. Hana-ka-mi. (Meaning 'good in flowers, aroma, and fruits.') Medium-sized light-red double flowers, having from 20 to 25 petals; fruits small, with medium-thick flesh; very productive."
- 45880. "5. Shiro-Kaga. Medium-sized flowers with reddish brown calyx and white petals; fruit small with medium-thick flesh; very productive."
- 45881. "6. Ko-mume. Medium-sized flowers with brownish red calyx and white petals; fruits very small, about the size of large peas, but with rather thick flesh; a very productive variety.

"As regards your inquiry about the fertilization of mume trees, we have not noticed any insects, as we have very few at the flow-ering time of *mume*; but as to what assists their fertilization we have not yet investigated. We do not think *mume* is self-sterile, as it commonly fruits very well, even when it stands singly."

#### 45882 to 45885.

From Natal, Brazil. Presented by Mr. E. C. Green. Received February 27, 1918.

45882 to 45884. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean Introduced for studies in the oil content of the various varieties of the

castor-bean.

**45882.** A small seed with a light ground color and dark splotches.

**45883.** A medium-sized seed with a dark ground color and lines and splotches of darker color.

45884. A large seed, nearly white, with a few reddish brown markings

45885. Stizolobium Aterrimum Piper and Tracy. Fabaceæ.

Mauritius bean.

"Enormous quantities of this seed are said to be produced on wild plants growing in the woods in Brazil." (Green.)

This is a very widely cultivated species and has been introduced into the United States from Brazil, New South Wales, Australia, Cochin China, Barbados, Mauritius, Java, and Ceylon. In our Southern States this plant grows to a very large size, but is so late that the pods barely mature. The extreme lateness prevents the wide cultivation of this species in the United States.

The vines are very strong and vigorous, with striate softly pubescent stems. The leaflets are very large, with sparsely appressed-pubescent surfaces. The purple flowers are borne in many-flowered, pendent

## 45882 to 45885—Continued.

racemes, 18 to 30 inches long. The black, sickle-shaped pods are about 4 inches long. The seeds, four or five in number, are oblong, black, and very shiny. (Adapted from *Bureau of Plant Industry Bulletin No. 179*, p. 18.)

## 45886. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Guatemala. Purchased by Mr. Herbert S. Austin at the request of Mr. Wilson Popenoe, of this office. Received March 2, 1918.

Secured for the purpose of testing the oil content of various varieties.

#### 45887 and 45888.

From the city of Panama, Panama. Presented by Dr. Ramon Arias-Feraud. Received March 5, 1918.

45887. IPOMOEA sp. Convolvulaceæ. Morning-glory.

"Seeds of morning-glories that keep open the whole day." (Arias-Feraud.)

**4588.** Operculina tuberosa (L.) Meisn. Convolvulaceæ. (*Ipomoea tuberosa* L.)

A perennial, stout-stemmed herbaceous vine, climbing to the tops of the tallest trees. The leaves are large and compound, with seven oblong leaflets; and three to six yellow flowers are borne on a long peduncle. The fruit is a membranous round capsule, about an inch long, containing two to four large seeds which are covered with short black hairs. It is a native of Brazil. (Adapted from De Lanessan, Les Plantes Utiles des Colonies Francaises, pp. 398 and 567.)

## 45889 and 45890. Cydonia oblonga Mill. Malaceæ. Quince.

From Murdock, Kans. Grafts presented by Mr. J. W. Riggs, of the Experiment Grounds. Received March 6, 1918.

Scions from trees of a variety sent to the Office of Foreign Seed and Plant Introduction by Prof. N. E. Hansen, from Samarkand, Russian Turkestan, May 24, 1898, and numbered S. P. I. 1123. Mr. Riggs states that this variety has yielded fine fruit at Murdock, while trees of standard quince varieties have not borne any fruit. The tree is hardy, not being injured in that section of Kansas by drought and heat.

45889. Scions grafted on apple stocks.

45890. Scions grafted on Japanese pear stocks.

# 45891. Rubus Macrocarpus Benth. Rosaceæ. Blackberry.

From Colombia. Presented by Hermano Apolinar-Maria, Instituto de, la Salle, Bogota, at the request of Mr. F. M. Chapman, Washington, D. C. Received March 7, 1918.

"In April, 1913, while on a visit to Colombia, I found this variety growing in a little posada called El Peñon in the Temperate Zone at an altitude of 9,600 feet, on the trail from Bogota to Fusagasuga. El Peñon is exceedingly wet, and this giant blackberry may be found only under the conditions which prevail there. It is not the mora de Castilla, a cylindrical berry which grows in profusion at 5,000 to 7,500 feet; but this berry is much larger, more nearly round, and shaped more like a strawberry. These berries are often 3 inches in length." (Chapman.)

### 45892 to 45898.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale. Received March 7, 1918.

45892. Pomaderris elliptica Labill. Rhamnaceæ.

"Kumarahou. A rare dwarf shrub belonging to the Auckland Province. This plant is difficult to transplant, but is easily raised from seed. It flowers when 2 years old and if kept well pinched back makes a glorious specimen, being covered in spring with a mass of yellow flowers. It grows on some of our poor clay lands of a close nature, similar to that where the heather grows." (Wright.)

A branching shrub, 4 to 8 feet high, with the young branches, leaves, and flower clusters covered with white or buff-colored stellate hairs. The ovate to oblong leaves are 2 to 3 inches long, and the cymes of yellow flowers, with crisp-margined petals, are clustered into large many-branched panicles. Native name Kumarahou, from kumara (a tuberlike root) and hou (growing deeply or strongly). (Adapted from Cheeseman, Manual of New Zealand Flora, p. 99, and from Laing and Blackwell, Plants of New Zealand, p. 236.)

45893 and 45894.  $\times$  Veronica and Ersonii Lind. and Paxt. Scrophulariacem.

- **45893.** A hybrid between *Veronica salicifolia* and *V. speciosa*. An ornamental shrub, with drooping, entire, thick, pale-green leaves, somewhat like those of phlox, and brilliant violet-blue flowers, sometimes whitened toward the base of certain racemes. This plant is an interesting combination of grace and majesty, elegance and hardiness. The handsome racemes are dense, erect, slightly nodding at the tip, and somewhat longer than the leaves. (Adapted from *Flore des Serres et des Jardins de Europe, vol.* 7, p. 35.)
- 45894. Variety variegata. A handsome ornamental shrub, with blue-purple flowers in long, slender, semierect racemes. For 30 or 40 years this Veronica has been largely propagated and used as a bedding plant for the sake of its clear variegation, the leaves having a broad, creamy white margin. Under this system of treatment the plant seldom or never flowered but produced an abundance of shoots and foliage, which was really what the flower-bedding gardener desired. By cultivating it in a pot, however, until the stems get fairly woody and the pot filled with roots, it flowers beautifully, making a handsome subject for the greenhouse or conservatory in winter. (Adapted from The Gardening World, vol. 23, p. 829.)

45895. Veronica salicifolia Forst. Scrophulariaceæ. Speedwell.

A very useful, gracefully ornamental species, forming a large bush 5 to 8 feet high, clothed with willow-shaped leaves up to 5 inches in length. During summer it bears profusely slender, pendulous racemes, often 6 inches or more long, of white, pink, or lilac-tinged flowers. (Adapted from Gardening Illustrated, vol. 37, p. 308.)

45896 and 45897. Veronica speciosa R. Cunn. Scrophulariaceæ.

Speedwell.

45896. One of the best of all the veronicas, for it is of vigorous habit, 3 to 5 feet high, forms a wide and shapely bush, and blooms well in autumn and early winter. It bears erect, dense racemes of

#### **45892 to 45898**—Continued.

purple or reddish purple flowers, but there are varieties with white, lilac, pink. blue, and red blossoms. As the racemes are some 3 inches long and borne from nearly every leaf axil on the upper parts of the shoots, the effect is very fine. (Adapted from Gardening Illustrated, vol. 37, p. 308.)

Received as *Veronica imperialis*, which seems to be a garden name for *V. speciosa*.

**45897.** Variety *kermisina*. A handsome dark form, the plants blossoming when in a young state, which is not often the case with *Veronica speciosa*. (Adapted from *Loudon*, *Encyclopedia of Plants*, p. 1546.)

#### 45898. Veronica sp. Scrophulariaceæ.

Speedwell.

Received as Veronica lobeliaflora, for which name a place of publication has not been found.

## 45899. STIZOLOBIUM PRURITUM OFFICINALE Piper. Fabaceæ.

From Chinandega, Nicaragua. Presented by Mr. C. B. Sibley, Escuela de Agricultura. Received March 8, 1918.

"Pica-pica. From what I have observed of this plant it must be very much like the velvet bean of the Florida orchards. I have noticed that it is a very heavy producer of nitrogen nodules. They are very numerous and also quite large. This fact has been taken advantage of by the natives, so that they welcome the plant into the corn fields that lie fallow or resting. One other point in its favor is that the stem of the plant during the growing season does not become hard and woody, so that, used as a green manure, it would soon decay in the soil after being plowed under." (Sibley.)

# 45900. Condalia lineata A. Gray. Rhamnaceæ. Piquillin.

From Oran, Argentina. Presented by Mr. S. W. Damon. Received March 9, 1918.

"The fruit from which I took these seeds was bought in the market of Jujuy. I have never seen it growing, but as bought it resembles a small-sized inferior grade of cherry." (Damon.)

A spiny, much-branched shrub with alternate, spatulate to oblong-ovate, sharply pointed, leathery leaves about half an inch long. The flowers have a 5-parted whitish calyx, but no petals. The oblong, 1-seeded fruits are borne singly or in pairs on short pedicels in the axils of the leaves. (Adapted from A. Gray, in Botany of the U. S. Exploring Expedition, vol. 1, p. 275.)

### 45901. Pyrus communis L. Malaceæ.

Pear.

From Columbia, Mo. Cuttings presented by Dr. J. C. Whitten, College of Agriculture. Received March 12, 1918.

"The Surprise pear forwarded by Dr. Whitten, of the College of Agriculture, Columbia, Mo., is one of the most promising as a blight-resistant pear and may prove of economic importance as a stock for commercial varieties. As grown by Prof. Reimer at Talent, Oreg., it was one of the most vigorous of stocks and seemed to transmit this vegetative character to nearly all varieties of pears which were grafted or budded upon it. Its congeniality, in other words, is to be commended. Dr. Whitten says that the Surprise pear is apparently a pure

Pyrus communis. This variety is a large, vigorous grower. It early begins the formation of short, spurlike branches, which spread horizontally, with few of the upright rank shoots customary to Kieffer and other hybrids. The fruit is small, not much larger than Seckel. It is moderately late, ripening only a little ahead of Kieffer, and is of poor quality. The variety bears profusely, however. Dr. Whitten says that he does not remember having seen a trace of blight in any of the Surprise trees on his grounds, though they are growing in a pear orchard in which numerous susceptible varieties have died out entirely from blight and other varieties have blighted more or less every year." (B. T. Galloway.)

## 45902. Arundinaria falcata Nees. Poaceæ. Bamboo.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 12, 1918.

A slender bamboo growing to a height of 20 feet but not exceeding half an inch in diameter, having the young stems covered with a bluish white waxy coating soon turning yellowish green. The light-green striate-veined leaves are 4 to 6 inches long by one-third of an inch wide, with downy sheaths. The species is not very hardy, being a native of the lower slopes of the Himalayas in northwestern India. (Adapted from Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 448.)

Received as Arundinaria gracilis, which is now referred to A. falcata.

## 45903. Zea mays L. Poaceæ.

Corn.

From Argentina. Purchased from H. H. Marini & Co., Buenos Aires, through the American consul general. Received March 13, 1918.

An amber-colored variety of corn, obtained for experimental tests.

# 45904. Lagenaria vulgaris Seringe. Cucurbitaceæ. Gourd.

From Japan. Presented by Dr. L. H. Bailey, Ithaca, N. Y., who obtained them from Gov. H. Hiratsuka, Utsunomya, Japan. Received March 14, 1918.

"The largest gourd utensils I ever saw were at Utsunomya, Japan. I asked for seeds of them and have received a packet from Gov. H. Hiratsuka, of the prefecture. I am sending you some of these seeds, thinking that possibly you would like to have them grown at your Maryland or Florida stations, where the season will probably allow them to mature. Some of the gourds I saw in the market in Japan would hold, I should think, at least a peck." (Bailey.)

#### 45905 to 45912.

From Venezuela and the West Indies. Collected by Mr. H. M. Curran, Laurel, Md., during an exploring trip made by him in 1917. Received March 14, 1918. Quoted notes by Mr. Curran unless otherwise noted.

45905. Acacia sp. Mimosaceæ.

"From La Vela de Coro, Venezuela. A shrub or small tree, with ornamental red or purple wood."

45906. Acanthorhiza aculeata (Liebm.) Wendl. Phœnicaceæ. Palm. "From Venezuela."

"A palm with a trunk 6 to 9 feet tall and 4 to 6 inches in diameter, armed with spiniform roots 3 to 4 inches in length. The leaves, forming a dense crown, are fan shaped, green above and silvery below, and about

## 45905 to 45912—Continued.

3 feet in diameter on petioles 18 inches long. The leaf bases are densely covered with woolly scurf, which splits into many strong fibers; and the branch inflorescence, about 2 feet long, is also densely covered with white woolly scurf. The smooth fruit, three-fourths of an inch long by five-eighths of an inch in diameter, is not edible." (C. B. Doyle.)

45907. Achras Zapota L. Sapotaceæ.

Sapodilla.

(A. sapota L.)

"From Curação, Dutch West Indies. A choice variety."

A small, symmetrical tree, 25 to 30 feet high, with leathery, dark-green, shiny leaves and round or oblong fruit which resemble in outward appearance a smooth-skinned brown potato. It is a native of tropical America, although cultivated in the Asiatic Tropics as well. When thoroughly ripe, the fruit is fine for eating, having a very thin skin inclosing a pale-brown, juicy pulp of delicious flavor. It is best propagated by cuttings, although it may be raised from seeds. (Adapted from Macmillan, Handbook of Tropical Gardening and Planting, p. 133.)

See S. P. I. No. 44866 for previous introduction.

45908. Annona muricata L. Annonaceæ.

Soursop.

"From Curação, Dutch West Indies."

"A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves; large flowers with fleshy exterior petals; and very large, fleshy, green fruits with white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice and excellent jelly and preserves from the pulp. It is easily propagated from seeds or by budding." (W. E. Safford.)

See S. P. I. No. 44453 for previous introduction.

45909. Bauhinia sp. Cæsalpiniaceæ.

"From Trinidad, British West Indies. Ornamental."

45910. Cercidium viride (Karst.) Taub. Cæsalpiniaceæ.

"Indjoe fino or Llaro. From La Vela de Coro, Venezuela. Tree used as an ornamental; golden flowers. Suitable for planting in dry sections of the southern United States."

A thorny shrub or small tree, with compound opposite leaves, each divided into one or two pinne, which in turn are divided into five to eight pairs of oblong or somewhat ovate-oblong short-stalked notched leaflets; the orange-yellow flowers grow in short, loosely flowered clusters hidden in a tuft of leaves; the pod is oblong-linear, flatly pressed together, and membranous or somewhat leathery in texture. Cercidium viride is found in the hot steppes of Venezuela and New Granada, where the tree is called quica by the natives. It is also called brea on account of the resinous substance which covers the trunk and branches and which is used as a substitute for pitch. (Adapted from Karsten, Florae Columbiae, vol. 2, p. 25, pl. 113.)

45911. Lagerstroemia speciosa (Muenchh.) Pers. Lythraceæ.

(L. flos-reginae Retz.)

"From Trinidad, British West Indies. Ornamental."

A magnificent flowering plant which in the Tropics affords one of the most brilliant floral displays imaginable and which is made much use of

#### **45905** to **45912**—Continued.

in the gardens of Indian potentates and other places in the East. The flowers appear on axillary peduncles, usually forming panicles at the tips of the branches. The leaves are opposite and entire, oblong, glabrous, and dark green. The flowers are a beautiful shade of rose in the morning, deepening during the day until they become purple in the evening. It is a plant of large growth and is found from Malay to China. (Adapted from Gardeners' Chronicle, 3d ser., vol. 15, p. 77.)

45912. Toluifera sp. Fabaceæ.

"An ornamental leguminous tree from Trinidad, British West Indies."

#### 45913. Zea mays L. Poaceæ.

Corn.

From Peru. Procured by Mr. William F. Montavon, United States commercial attaché at Lima. Received March 15, 1918.

"No. 15. Ojos de Lechuga, Matibamba." (Montavon.)

A peculiarly marked variety, having a dull-yellow ground color overlaid with brown lines so as to resemble the grain on a panel of wood. Introduced for the experimental and breeding work of the Office of Corn Investigations.

### 45914. Pinus armandi Franch. Pinaceæ.

Pine.

From Formosa. Presented by Mr. G. Takata, director, Department of Productive Industries, Taihoku. Received March 16, 1918.

"A pine producing very large cones full of large, edible seeds which are eagerly collected by the priests in the temples; the cones supply an excellent fuel." (F. N. Meyer.)

For previous introduction, see S. P. I. No. 38468.

#### 45915 to 45918.

From Panama. Presented by Sr. Ramon Arias-Feraud. Received March 16, 1918. Quoted notes by Sr. Arias-Feraud. Descriptions adapted from Cook and Collins, Economic Plants of Porto Rico.

"I am sending you a package containing seeds from different plants grown on my own plantation."

45915. Anacardium occidentale L. Anacardiaceæ.

Cashew.

"Red cashew. Trees about 20 feet high, bearing fruits the third year."

A handsome quick-growing tree reaching a height of 40 feet, with large, entire, oval leaves; the wood is close grained, strong, and durable and is used for boat building. The cashew, like the poison ivy, possesses an acrid substance which is strongly irritant to the epidermis and the mucous membranes of human beings. The poisonous material, however, is not spread throughout the plant, but is mostly concentrated in the rather soft shell of the nut, which is borne upon a pear-shaped red or yellow fleshy receptacle 2 to 4 inches long. This receptacle is edible and quite harmless when ripe, having a very agreeable subacid taste in the raw state. It is also very good when cooked. The nut is kidney shaped or distinctly curved near the middle and contains a single large kernel of quite firm flesh, of fine texture and of delicate, very pleasant nutty flavor. No attempt should be made, however, to eat it in the raw state, on account of the poisonous juice of the shell, which must be driven off by the heat, so that roasting is an absolute necessity.

### **45915 to 45918**—Continued.

45916. Artocarpus communis Forst. Moraceæ.

Breadfruit.

"Chestnut breadfruit. The large fruit contains about 40 chestnuts which are fine to eat after being boiled in salted water."

45917. Blighia sapida Koen. Sapindaceæ.

Akee.

"Akee fruit from India. Should not be used until the fruit opens, showing the seeds and the yellow edible portion. It is dangerous to eat the closed fruit, as it contains a poison which produces uncontrollable vomiting."

Valued in Jamaica as a highly flavored, wholesome food, the bright yellow, fleshy arillus being the part eaten. The arillus is prepared in various ways, often stewed in milk, and afterwards browned in a frying pan with butter. It is also boiled and mixed with salt fish, onions, and tomatoes as a breakfast food.

45918. Chrysophyllum cainito L. Sapotaceæ.

Caimito.

"Silk star-apple. Green color."

A tree up to 45 feet in height and a foot in diameter, bearing an edible fruit about the size of an apple. The wood is dark violet in color and is rather coarse, but is suitable for shingles and bowls and for general carpenter work.

# 45919. Rubus sp. Rosaceæ.

Blackberry.

From Colombia. Presented by Hermano Apolinar-Maria, Instituto de la Salle, Bogota, at the request of Mr. F. M. Chapman. Received March 19, 1918.

# **45920** and **45921**. Syringa spp. Oleaceæ.

Lilac.

From Rochester, N. Y. Presented by Mr. John Dunbar, Assistant Superintendent of Parks. Received February 19, 1918.

45920. Syringa reflexa C. Schneid.

A bush, 6 to 9 feet in height, growing at altitudes of 4,500 to 7,500 feet. The reddish flowers are borne in long pendulous inflorescences which give the species a distinct appearance quite different from that of all other lilacs. Found at Fanghsien, western Hupeh, China. (Adapted from Sargent, Plantae Wilsonianae, pt. 1, p. 297.)

45921. Syringa tomentella Bur. and Franch.

A bush,  $1\frac{1}{2}$  to 5 meters in height, forming thickets at altitudes of 9,000 to 10,000 feet. The flowers are white to rose-pink in color. Collected in western Szechwan, China. (Adapted from Sargent, Plantae Wilsonianae, pt. 1, p. 301.)

## 45922. Juglans regia L. Juglandaceæ.

Walnut.

From New York. Presented by Dr. Robert T. Morris, New York, N. Y. Received March 20, 1918.

Scions from a walnut tree sent to Dr. Morris by the Office of Foreign Seed and Plant Introduction under S. P. I. No. 17946. Mr. Frank N. Meyer, who collected this walnut in China, described it as a genuine paper-shelled walnut which sells for three times as much money as the hard-shelled varieties. The nuts can be shelled like peanuts. .

45923. Telfairia pedata (J. E. Smith) Hook. Cucurbitaceæ.

From East Africa. Presented by Mr. M. Buysman, Lawang, Java. Received March 20, 1918.

Mr. Charles Telfair, for whom the plant is named, says of it: "It is diœcious. The fruit is 3 feet long, 8 or 10 inches in diameter, and full of seeds as large as chestnuts (264 in one fruit), which are as excellent as almonds and have a very agreeable flavor; when pressed they yield an abundance of oil equal to that of the finest olives. It is a perennial plant and grows at the margins of forests, enveloping the trees with its branches, while its trunk is frequently seen with a circumference of 18 inches." Its name among the Indians of Zanzibar is koumé. (Adapted from Curtis's Botanical Magazine, pls. 2751 and 2752.)

For an illustration of the so-called "nuts" of this cucurbit, see Plate II.

45924. Ceratonia siliqua L. Cæsalpiniaceæ. Carob.

From Valetta, Malta. Scions procured by Mr. Wilbur Keblinger, American consul. Received February 13, 1918.

"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 more than 40 per cent of sugar and some 8 per cent of protein, more than 75 per cent of the total weight being digestible. Unusually large trees may reach a height of 60 feet, with a crown 75 feet in diameter, and they may produce as high as 3,000 pounds of pods. These pods are a concentrated feed for horses, milk 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." (W. T. Swingle.)

For previous introduction, see S. P. I. No. 3112.

**45925.** Alectryon subcinereum (A. Gray) Radlk. Sapindaceæ. (Nephelium leiocarpum F. Muell.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 21, 1918.

A shrub or small tree, native to New South Wales, Australia, which has compound leaves composed of one to three pairs of shining, coarsely serrate, oblong leaflets 2 to 4 inches long and very small flowers in short axillary panicles; the two to three lobed capsules inclose globose seeds with fleshy arils. (Adapted from A. Gray, U. S. Exploring Expedition, vol. 15, Botany, p. 258, as Cupania subcinerea.)

See S. P. I. No. 44520 for previous introduction.

# 45926. PITHECOLOBIUM BIGEMINUM (L.) Mart. Mimosaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received March 25, 1918.

A medium-sized tree found on the lower slopes of the Himalayas up to an altitude of 3,000 feet and eastward to the Philippines. The bipinnate leaves are divided into two to four pinnæ, each bearing four to six coriaceous leaflets 4 to 6 inches long. The small heads of cream-colored flowers are borne in large axillary and terminal panicles, and the spirally twisted reddish pods are 3 to 6 inches long. (Adapted from Cooke, Flora of Bombay, vol. 1, p. 455.)

Received as Inga bigeminum, which is now referred to Pithecolobium.

## 45927. Lathyrus sativus L. Fabaceæ.

Bitter vetch.

From North Bend, Wash. Presented by Mr. J. E. Erdmand. Received March 25, 1918.

"Wedge peas obtained from local Indians. I have found these peas when dry are excellent for cooking. The foliage is long and grasslike, and the flowers are white. Very hardy and productive." (Erdmand.)

# 45928 and 45929. Botor tetragonoloba (L.) Kuntze. Fabaceæ. (Psophocarpus tetragonolobus DC.) Goa bean.

From the Philippine Islands. Presented by the College of Agriculture, Los Banos. Received March 25, 1918.

"When these square green pods with 'frills' at each corner are 'strung' (just as snap beans are treated) and cooked in the same way, they make an excellent vegetable. At Brooksville, Fla., the season may be too short for their profitable culture, but the plant deserves a wider test in southern Florida. Its flowers are very attractive and would almost pass for sweet peas." (Fairchild.)

45928. Big Calamismus. 207-F-5.

45929. Ilocano Pal-lang. 6337-F.

# 45930 to 45939. CITRUS spp. Rutaceæ.

From China. Scions collected by Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Quoted notes by Mr. Meyer.

45930. CITRUS NOBILIS LOUR.

King orange.

"(No. 1287. Changyang, Hupeh, China. December 10, 1917.) Tsung pi gan (furrow skin orange.) A mandarin of medium size, with wrinkled skin and of a beautiful deep-orange color; very juicy, of slightly bitterish flavor, and containing few seeds. In general, a good mandarin of the tonic class,"

45931. CITRUS ICHANGENSIS Swingle.

Ichang lemon.

"(No. 1288. Changyang, Hupeh, China. December 10, 1917.) Hsiang yuan. A large variety of Ichang lemon, mostly shipped to Shasi, a run of a few days down the river. The fruits sell wholesale at 1 cent (Mexican) apiece and retail at 2 to 3 cents (Mexican), 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

# **45930 to 45939**—Continued.

and resembles orange peel in flavor and appearance. The fruits ripen during the month of October; since they do not possess long-keeping qualities, they disappear very quickly. In fruit stores in Ichang they all have disappeared during December. The trees grow to medium large size and resemble pummelos 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 fruit of economic importance. Around Ichang trees have withstood temperatures of 19° F."

45932. Citrus nobilis Lour.

King orange.

"(No. 1289. Changyang, Hupeh, China. December 10, 1917.) Chun gan (spring orange) and Loba gan (turnip orange). A large mandarin of a fine light-orange color, with a corrugated skin; it contains few seeds and has a sweet refreshing flavor."

45933. CITRUS NOBILIS DELICIOSA (Ten.) Swingle.

Tangerine.

"(No. 1290. Changyang, Hupeh, China. December 10, 1917.) Chuan chü tze (Szechwan orange). A large flat tangerine of bright reddish color, with very loose skin. Very sweet but somewhat flat in taste. It is a poor keeper and shipper, but on account of its attractive appearance is very much in demand. It is supposed to have originated in Szechwan."

**45934.** CITRUS Sp.

"(No. 1291. Changyang, Hupeh, China. December 10, 1917.) Ba ehr gan (handle orange). An orange with the color and shape of a lemon, of fresh, sweet taste, and containing many seeds."

45935. Citrus sinensis (L.) Osbeck.

Orange.

"(No. 1292. Changyang, Hupeh, China. December 10, 1917.) *Hsiang gan* (fragrant orange). An orange of medium size, golden-orange color, firm flesh, and fresh, sweet taste, and containing, as a rule, a fair number of small seeds."

45936 and 45937. CITRUS ICHANGENSIS Swingle. Ichang lemon.

- 45936. "(No. 1293. Ichang, China. December 20, 1917.) A coarse variety of Ichang lemon, with a thick, dark-yellow skin, and containing very many large seeds. Possibly a hybrid with a pummelo. Obtained from the garden of the British Consulate at Ichang."
- 45937. "(No. 1294. Ichang, Hupeh, China. December 30, 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 is very dense. Obtained from the garden of the British Consulate at Ichang."

#### **45930 to 45939**—Continued.

45938. CITRUS NOBILIS LOUR.

King orange.

"(No. 1295. Ichang, Hupeh, China. December 28, 1917.) Pao gan (spongy, inflated, or vesicular orange). A medium large mandarin with a very wrinkled skin of beautiful deep-orange color; very juicy, and of an agreeably bitter flavor; seeds few. A fruit well worth cultivating in the United States as a tonic mandarin. Obtained from the garden of the Church of Scotland Mission."

45939. Citrus ichangensis Swingle.

Ichang lemon.

"(No. 1296. Ichang, China. December 28, 1917.) A large variety of Ichang lemon, said to be a very heavy bearer; fruits medium large. Obtained from the garden of the Church of Scotland Mission."

## 45940. Stizolobium niveum (Roxb.) Kuntze. Fabaceæ.

Lyon bean.

From Rhodesia, Africa. Presented by Mr. J. O. S. Walters, Director of Agriculture, Salisbury. Received March 25, 1918.

"Lyon or Dedman's bean. One of the principal advantages that this variety has over the Florida velvet bean is the absence of the fine prickly hairs on the stem and leaves, which make the curing of the latter plant for hay a difficult operation. It also seems to be more resistant to frost. For these reasons Dedman's bean, or as it is more commonly known here, stingless velvet bean, is gradually replacing the Florida variety." (Walters.)

#### 45941 to 45951.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Quoted notes by Mr. Meyer.

45941. CITRUS AURANTIUM L. Rutaceæ.

Sour orange.

"(No. 1297. Tsentze, near Ichang, China. December 22, 1917.) A large orange with the shape and color of a lemon; quite juicy but having a bitter aftertaste. The fruits are said to acquire their best flavor in spring. Possibly a hybrid between an orange and a pummelo. Obtained from the garden of the R. C. Boys' Training School, across the Yangtze River."

45942. Schizophragma sp. Hydrangeaceæ.

"(No. 1299. Tsungchiatsui, Hupeh, China. Altitude 3,000 feet. December 14, 1917.) An evergreen vine found trailing over rocks and bowlders 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."

45943. Ulmus sp. Ulmaceæ.

Elm.

"(No. 1300. Totzewan, Hupeh, China. December 12, 1917.) An uncommon elm growing to a large size and found in mountain districts at low altitudes. Young branches often corky, bark of old trunks grayish brown and fissured. Possibly a desirable shade and avenue tree for mild-wintered regions."

45944. Prunus glandulosa Thunb. Amygdalaceæ.

Plum.

"(No. 1301. Ichang, China. December, 1917.) A shrubby flowering plum growing to a height of 3 to 5 feet. It can be trained to one stem,

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#### **45941 to 45951**—Continued.

but grows naturally 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."

45945. CITRUS ICHANGENSIS Swingle. Rutaceæ. Ichang lemon.

"(No. 2455a. Santsako, Hupeh, China. November 24, 1917.) A very spiny wild tree, found in a field on a mountain slope at an altitude of about 4,000 feet above sea level. Height 18 feet; foliage dense, but individual leaves small; winged petioles quite minute. Fruits fairly juicy, the size and shape of tangerines; rind of bright-yellow color and corrugated, but not excessively so; odor very pleasing. Seeds large but not very numerous. In regions where this wild Ichang lemon occurs one also finds coir palm, loquats, bamboos, large-leaved evergreen privets, and Cunninghamia lanceolata. Temperatures probably never go lower than 10° F. The local name of this wild lemon was given me as Chü gan tze, meaning 'maggot orange,' since maggots are said to be attracted by the very sour juice. No other cultivated citrus fruits occurred near-by, though a few hundred feet lower down several large pummelo trees were seen. The natives have little use for the fruit; they keep a few in the room to perfume the air, and occasionally they use the dried rind in a medicinal tea. In breeding experiments it may be of value, since it seems to be the hardiest of all the true species of citrus (Poncirus trifoliata not being a true citrus)."

45946. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

"(No. 2456a. Near Lungtoping, 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 setting one's teeth on edge, as does the use of nonselect pineapples and some 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 climbing 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 dessert when skinned, sliced, and sprinkled over with sugar; excellent preserves can also be made from The Chinese, with their extensive vegetable diet and their abhorrence of sour fruits, do not care for this fruit and let it waste mostly; Caucasians, however, seem universally to enjoy highly this unique berry, which combines the flavor of the gooseberry, strawberry, pineapple, 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 is as inappropriate as our name pineapple is for the ananas."

45947 and 45948. Castanea mollissima Blume. Fagaceæ. Chestnut. 45947. "(No. 2457a. Ichang, Hupeh, China. December, 1917.) Tapan li tze (large board oak seeds), a classical name for the chest-

### **45941 to 45951**—Continued.

nut. Large Chinese chestnuts from trees cultivated in neighboring mountain districts."

45948. "(No. 2458a. Wantiaoshan, Hupeh, China. November 30, 1917.) Wa li tze (bean chestnut). Chestnuts from wild trees occurring at altitudes between 3,000 and 6,000 feet above sea level. There is considerable variation among the trees and bushes from which these seeds were collected, and perhaps there is more than one species among them. If so, there may be the chinquapin, Castanea seguinii, which seems to be wholly resistant to the chestnut blight, Endothia parasitica. Purchased from a local collector."

45949. Castanea seguinii Dode. Fagaceæ. Chinquapin.

"(No. 2459a. Ichang, Hupeh, China. November 16, 1917.) Moh pan li (hairy board oak). A shrubby chinquapin, occasionally growing into a tree 25 to 40 feet high; it occurs 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. Walter Van Fleet has been conducting for several years. This species seems to be more moisture loving than Castanea mollissima, but it grows well on the most barren mountain slopes."

For an illustration of a fruiting branch of this shrub, see Plate III. **45950.** EUCOMMIA ULMOIDES Oliver. Trochodendraceæ.

"(No. 2460a. Suilokua, Hupeh, China. November 13, 1917.) Tu chung shu (ease of heart tree) and Sheh mien shu (floss silk tree). The so-called Chinese rubber tree, which has proved to be more hardy and more drought resistant in the United States than was at first expected. In China the bark, with its silky threads (when broken), is used as a high-class drug."

45951. CITRUS ICHANGENSIS Swingle. Rutaceæ. Ichang lemon.

"(No. 2461a. Ichang, Hupeh, China. December, 1917.) Cultivated strains of Ichang lemons. To be sown to obtain bearing trees for all-round purposes. There is considerable variation in the Ichang lemon, and some seedlings might produce remarkably good fruits."

# **45952.** Tamarix aphylla (L.) Karst. Tamaricaceæ. **Athel.** (T. articulata Vahl.)

From Tucson, Ariz. Cuttings presented by Prof. J. J. Thornber, University of Arizona. Received March 26, 1918.

"The athel or evergreen tamarisk of northern Africa. Trees with erect habit and ascending branches. Branchlets numerous, threadlike, drooping, bluish green, and appearing as if jointed or segmented on account of the character of the small leaves. The plants grow readily from cuttings, which may be made at almost any season. Cuttings often develop into trees 6 to 10 feet tall in a year, while trees 4 to 6 years old under favorable conditions attain heights of 40 to 50 feet. Thrives in sandy and calcareous soils and in those with considerable alkali and is very drought and heat resistant. Young trees with well-matured wood were only slightly injured with a temperature of 6° F. Excellent for windbreaks and very popular on account of its rapid growth, symmetrical form, and evergreen foliage." (J. J. Thornber.)

"In March, 1917, Prof. J. J. Thornber, a collaborator of the Office of Crop Physiology and Breeding Investigations, sent to Mr. Bruce Drummond, superIntendent of the date gardens at Indio and Mecca, Calif., a few unrooted cuttings about 1 foot long and one-fourth to one-half inch in diameter, of Tamarix articulata, received in March, 1909, by Prof. Thornber from Dr. L. Trabut, Government botanist of Algiers. These cuttings made phenomenal growth and by the fall of 1918 were attracting attention all over the Coachella Valley, the original cuttings then being, some of them, more than 20 feet high. This species, called athel by the Arabs, is an excellent windbreak provided the lower branches are not cut off. It grows so rapidly that it makes effective windbreaks inside of two years. After a growth of five years the original trees are several of them well over 50 feet high, having a maximum diameter at the ground of 14 to 17 inches. Without question this is one of the most important windbreaks ever found for use in the great irrigated valleys of the Southwest.

"This species, unlike many other species of Tamarix, is gray-green in color, evergreen, and pyramidal in shape, making a very handsome ornamental tree, especially when young.

"The athel not only grows very rapidly, but has hard wood which when dry makes excellent fuel. Prof. S. C. Mason reports that in Egypt this wood is prized by the Arabs for construction purposes, as it is not attacked by borers such as so greatly damage acacia and other hardwoods in Egypt. Dr. Trabut informed me in 1899 that it was the largest and most important tree of the Sahara Desert, frequently attaining a circumference of 6 feet and rarely as much as 17 feet.

"To Mr. Bruce Drummond belongs the credit for having discovered the great value of this species for windbreaks and for ornamental plantings in the hot, irrigated valleys of the Southwest. The original plantings of this species at Tucson, Ariz., made much slower growth and had not made obvious the extraordinary value of this species as a windbreak in the date-growing regions of the Southwest. Because of Mr. Drummond's prompt recognition of the value of this species and active dissemination of cuttings, it is estimated that 25,000 trees are now growing in the Coachella Valley alone, all propagated from less than a dozen original cuttings sent to Mr. Drummond by Prof. Thornber in 1917.

"In March, 1899, when I had the good fortune to make the acquaintance of Dr. L. Trabut, the eminent physician, botanist, and agriculturist of Algeria, he called my attention to this important tree and gave me cuttings from the trees growing in the botanical garden at the University of Algiers, together with information which was published in Inventory No. 7, under No. 3343. Unfortunately, the steamship Strathleven on which I shipped this material on March 6, 1899, did not proceed directly from Algiers to New York, as the captain expected, but was ordered back to Smyrna and spent nearly three months in making the trip from Algeria to New York. As a result, many of the plants, among them Tamarix articulata, died on the way to this country.

"The spectacular character of this extraordinary plant and its rapid utilization in a practical way is a proof of the value of thorough botanical studies such as Prof. Thornber has been making on Tamarix for some years past. Doubtless most of the species are of little practical value, but among numerous untested species which Prof. Thornber obtained was the athel, which promises to be worth millions to the farmers of the southwestern United States." (Walter T. Swingle.)

For an illustration showing the use of the athel tree as a windbreak, see Plate IV.



FRUITING BRANCH OF A NEW DISEASE-RESISTANT CHINQUAPIN FROM CHINA. (CASTANEA SEGUINII DODE, S. P. I. No. 45949.)

Th ree important facts have been established in regard to the chestnut bark disease: First, that all species of Castanea are not equally susceptible to the fungus; second, that hybrids between the different species are fertile: and, third, that the factor which produces immunity, whatever that is, appears to be heritable and by breeding and selection can be incorporated with other characters such as size and quality of the nut, size of the tree, etc. This Chinese chinquapin, occurring near Ichang, is a shrubby species, occasionally growing to 40 feet in height. Frank N. Meyer, who discovered the chestnut bark fungus, Endothia parasitica, in China, reports this species as apparently totally resistant to the disease. It grows well on barren mountain slopes but appears to be more moisture loving than the chestnut, Castanea mollissima. Introduced primarily for breeding purposes. (Photographed by Frank N. Meyer, Tzewuhsien, Shensi, China, September 1, 1914; P12248FS.)



A WINDBREAK OF ATHEL PROTECTING A DATE GARDEN AT INDIO, CALIF. (TAMARIX APHYLLA (L.) KARST., S. P. I. No. 45952.)

The photograph here reproduced was taken only 18 months after the unrooted cuttings were planted. The athel branches widely near the ground and makes an effective windbreak by the middle of the second summer after the cuttings are planted. It roots deeply and so does not injure crops grown near by. It is the most promising windbreak yet found for the hot irrigated valleys of the Southwest, and it is, in addition, a very handsome evergreen ornamental, gray-green in color, of upright pyramidal growth. This species was introduced by Prof. J. J. Thornber, Director of the Arizona Agricultural, Experiment Station. The cuttings were sent to him in March, 1909, by Dr. L. Trabut, Government Botanist of Algeria. The great value of this species as a windbreak, especially for date orchards, was discovered by Mr. Bruce Drummond, Superintendent of the Government Date Garden, Indio, Calif. (Photographed by Mr. Peter Bisset, Indio, Calif., October 10, 1919; P25993FS.)

## 45953. Solandra Longiflora Tussac. Solanaceæ.

From Sydney, New South Wales. Plants presented by Mr. J. H. Maiden, director, Botanic Gardens. Received March 26, 1918.

A West Indian evergreen shrubby vine, with ovate to obovate sharply pointed leaves on purplish petioles and yellow fragrant flowers usually a foot long. If left untrimmed it is a rampant climber, but it can be grown as a dwarf shrub by constant pruning. It is an adaptive plant, as it grows well in the driest and poorest places and does not appear to object to gross feeding. The foliage of this plant produces a valuable drug called solandrin, which has the same active principles as atropin derived from the leaves and roots of Atropa belladonna L. The best method of propagation is by cuttings, which should be taken from the flowering branches just after the flowering season is over and planted in a well-drained light sandy soil. (Adapted from The Agricultural Gazette of New South Wales, vol. 28, p. 670.)

# 45954. Acacia catechu (L. f.) Willd. Mimosaceæ. Catechu.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received March 26, 1918.

A medium-sized tree, with opposite, recurved spines and bipinnate leaves made up of 10 to 40 pairs of pinnæ, each bearing 30 to 50 pairs of linear leaflets about one-fourth of an inch long. The spikes of yellow flowers are solitary or fascicled, and the flat rich brown pods are reticulate veined. A powerful astringent extract prepared from the wood is the catechu of medicine and the cutch of tanning. (Adapted from Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 189, and Lyons, Plant Names, Scientific and Popular, p. 9.)

# 45955. Annona reticulata L. Annonaceæ. Custard-apple.

From Colombia. Presented by Mr. W. O. Wolcott, Medellin. Received March 27, 1918.

"The tree grows about 15 feet high, is very thrifty, thriving best in a hot climate from sea level to about 3,000 feet altitude, and apparently wants rich soil and plenty of moisture. The fruit is about the size and shape of a bullock's heart and has a thin, light greenish yellow skin. It is cut open and eaten with a spoon, there being no core, though many seeds. The flavor is very sugary and fine." (Wolcott.)

#### 45956 to 45964.

From Peradeniya, Ceylon. Presented by Mr. George F. Mitchell, Washington, D. C., and procured (except No. 45964) at the Botanical Gardens, near Kandy, Ceylon. Received March 18, 1918.

45956. Areca triandra Roxb. Phænicaceæ.

Palm.

A medium-sized palm, native to India, reaching a height of 25 feet, usually having several trunks and sending out basal offshoots. The trunks are cylindrical, and each bears a crown of pinnate leaves 4 to 6 feet long. The orange-scarlet fruits are about the size of an olive. (Adapted from Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 388.)

45957. CALYPTROCALYX SPICATUS (Lam.) Blume. Phœnicaceæ. Palm.

This stately palm, native to Amboina and other islands of the Molucca group, attains a height of 40 feet. The pinnate leaves have valvate leaflets with reflexed margins, and the flowers, arranged on long spike

#### **45956 to 45964**—Continued.

like spadices, produce orange-colored 1-seeded fruits. The wood is used for timber, and the seeds serve as a substitute for betel nuts. (Adapted from Gardeners' Chronicle, June, 1870, p. 765.)

45958. Dypsis madagascariensis W. Wats. Phænicaceæ. Palm.

A graceful Madagascar palm, about 15 feet high, with leaves 10 feet long. The pinnate leaves, with 18-inch segments arranged in fascicles of six or eight, seem to be arranged on the stem in threes, giving it a triangular appearance. This arrangement of the leaves and the fascicled arrangement of the leaflets is peculiar to the genus Dypsis, not being found in any other pinnate-leaved palms. (Adapted from Gardeners' Chronicle, new ser., vol. 24, p. 394.)

45959. Elaeis guineensis Jacq. Phænicaceæ.

Oil palm.

The fleshy outer layer and the kernels of the fruit each yield a commercial oil. Palm oil, that from the fleshy outer layer, is used in the manufacture of soap and candles; white or nut oil, that from the kernels, is used for making margarine or artificial butter. Palm oil is an important food product which is utilized in Brazil by all classes of people. (Adapted from note of *Dorsett*, *Shamel*, and *Popenoe*.)

For previous introduction, see S. P. I. No. 45766.

45960. Latania commersonii Gmel. Phœnicaceæ.

Palm.

An unarmed palm from Mauritius, 40 feet high, having leaves with petioles 4 to 6 feet long, the fan-shaped blades being about 5 feet in diameter and divided into lanceolate-acuminate segments 2 feet long by 3 inches wide. It is a particularly striking palm, the long, smooth petioles and the ribs of the fanlike leaves being colored a bright crimson, which is especially brilliant in the young foliage. (Adapted from Baker, Flora of Mauritius and the Seychelles, p. 381.)

45961. Oncosperma fasciculatum Thwaites. Phænicaceæ. Palm.

A spiny palm, 40 feet or more in height and 6 inches in diameter. The leaves, 18 feet in length, are made up of lanceolate long-pointed leaflets 18 inches long by 2 inches broad. The paniculately branched spadix, 2 feet long, bears large numbers of black-purple fruits about half an inch in diameter. This palm is a native of the Central Province of Ceylon, where it grows from sea level to an altitude of 5,000 feet. (Adapted from Hooker, Flora of British India, vol. 6, p. 415.)

45962. Oncosperma filamentosum Blume. Phænicaceæ. Palm.

A stoloniferous palm with a trunk 30 to 40 feet high, armed with long black spines. The drooping pinnate leaves are 10 to 12 feet long, with narrow acuminate, coriaceous leaflets 2 feet long. The pendulous redpurple fruiting spadix is about 2 feet long and bears small globose fruits one-third of an inch in diameter. This species is found in swamps in the Malay Peninsula and also in Borneo and Cochin China. (Adapted from Hooker, Flora of British India, vol. 6, p. 415.)

45963. Dendrocalamus giganteus Munro. Poaceæ. Bamboo.

One of the largest of the bamboos, growing to a height of 100 feet, with a stem diameter of 8 inches, the stem walls being half an inch thick. It is probably indigenous in the hills of Martaban and is cultivated in Burma and also in most tropical countries. The stems are used for posts and rafters and for piping water. (Adapted from Brandis, Indian Trees, p. 678.)

### **45956 to 45964**—Continued.

45964. Magnolia globosa Hook. f. and Thoms. Magnoliaceæ.

"From Lloyd Botanical Garden, Darjiling. I obtained seed of *Magnolia globosa*, which is found at 10,000 feet elevation and requires a moist climate." (*Mitchell.*)

A small tree with brown branches and ovate leaves 9 inches long by 6 inches wide. The globose flower buds, which appear with the young leaves, are about 2 inches in diameter and open into fragrant white flowers 5 inches across. (Adapted from Hooker, Flora of British India, vol. 1, p. 41.)

# **45965.** Nephrosperma van-houtteanum (Wendl.) Balf. f. Phœnicaceæ. **Palm.**

From Ivoloina, Madagascar. Presented by Mr. Eugene Jaeglé, director, Madagascar Agricultural Experiment Station, through Mr. James G. Carter, American consul, Tananarivo. Received March 23, 1918.

A palm about 35 feet tall with a trunk 6 inches in diameter, found in open places and along streams up to an altitude of 1,000 feet in the Seychelles Islands. The leaves, 5 to 7 feet long, are divided into pinnate segments 3 to 4 feet long, broad segments alternating irregularly with narrow ones, the terminal segments being joined together. The orange-red fruits are borne in clusters 3 to 4 feet long. (Adapted from Baker, Flora of Mauritius and the Seychelles, p. 386.)

# 45966 and 45967. Cymbopogon Martini (Roxb.) Stapf. Poaceæ. (Andropogon martini Roxb.) Rusa-oil grass.

From India. Presented by Mr. R. S. Hole, Forest Botanist, Forest Research Institute and College, Dehra Dun. Received March 28 and 29, 1918.

A stout perennial grass found in northern India. It grows to a height of 6 feet and has long, perfectly smooth leaves of a soft delicate texture and rich green color. The slender panicles, 6 to 12 inches long, turn to a bright reddish brown color in ripening.

The distinction between the two kinds of Rusa oil procured from this grass, viz, motia and sufia, which the distillers of Khandesh and the neighboring districts recognize, apparently depends on similar conditions, although the accounts concerning them are to some extent conflicting. The authors of the Pharmacographia Indica (vol. iii, p. 558) say: "The oil distillers in Khandesh call the grass motiya when the inflorescence is young and of a bluish white color; after it has ripened and become red it is called sufiya. The oil obtained from it in the first condition has a more delicate odor than that obtained from the ripened grass."

On the other hand, Mr. E. G. Fernandez reports in a letter to Kew: "The motia species (or variety) is usually confined to the higher slopes, while the sufia grass is more common on the plains and on the plateau land in the hills; but they are not infrequently found growing together. The sufia is much more strongly scented, but the odor of motia is preferred, and this latter commands double the price of the former." The samples of both forms supplied by Mr. Fernandez do not show any morphological differences, and as to age, some of the motia samples are in a more advanced stage than the sufia. (Adapted from Stapf, The Oil Grasses of India and Ceylon, in The Kew Bulletin of Miscellaneous Information, 1906, p. 341.)

The letter accompanying these seeds stated that both *sufia* and *motia* were being sent but the packets were not labeled.

## 45968. VITIS VINIFERA L. Vitaceæ.

Grape.

From Tokio, Japan. Cuttings purchased from the Tokio Plant, Seed, & Implement Co. Received March 29, 1918.

"Koshu. A very sweet variety of grape which seems to be especially suited to the Tokio climate." (F. N. Meyer.)

# 45969. Brassica Pekinensis (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

From Peking, China. Procured by Dr. Yamei Kin. Received March 2, 1918.

A selection of a northern strain.

#### 45970 and 45971.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received March 30, 1918. Quoted notes by Mr. Hamilton.

45970. Arachis hypogaea L. Fabaceæ.

Peanut.

"Chinese peanuts. They grow quite a large upright leafy top and could be cut with a mowing machine for fodder. The nuts are produced closely clustered around the base of the stem."

45971. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato. "General Grant sweet potato which, to our fancy, is absolutely the best variety for the table. As a rule, the vines do not run very much."

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