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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1916.

(No. 49; Nos. 43391 to 43979.)

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INTRODUCTORY STATEMENT.

This inventory is the third to be issued since the declaration of war in April, 1917, and although it covers only 588 numbers it includes a very considerable range of new plants, some of which are not only new to this country as crop plants, but appear to be new to science.

It is my sad task to record in this inventory the death of our agricultural explorer, Frank N. Meyer, whose unique and interesting descriptions of plants, particularly from China, Siberia, and Turkestan, have formed for the past 10 years so important a part of the reading matter of these inventories.

The particulars regarding Mr. Meyer's death will probably never be known. The cabled advices show that he fell overboard into the Yangtze River on the evening of June 1, 1919, from the steamer *Feng Yang Maru* while en route from Hankow to Shanghai and that his body was discovered 30 miles above the town of Wuhu, near Nanking. The facts that his wanderings in search of plants are over and his contributions to these inventories at an end are chronicled with great regret. It is perhaps a significant coincidence that his only contribution to this number is a weeping variety (No. 43791) of the dry-land elm, which was one of his substantial additions to our list of useful trees.

In this inventory are included accounts of some of Wilson Popenoe's interesting discoveries in Guatemala, where, as an agricultural explorer for the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry, he spent over 16 months, traveling more than 2,000 miles on horseback over the Guatemalan highlands, in search, primarily, of promising seedlings of the thick-skinned Guatemalan race of avocado.

Perhaps nothing that has occurred in recent years could more strongly emphasize the fact that the horticulturists of southern California and southern Florida are pioneering in the field of tropical horticulture than this search for seedling avocados in Guatemala; and it is a striking spectacle that one country in the very beginning of a plant industry is hunting for promising seedlings in another where that industry, still on a seedling basis, is one of the main sources of food. In Guatemala there does not appear to be a single

orchard of grafted or budded trees, whereas in the United States there is scarcely a seedling orchard to be found.

Mr. Popenoe, whose familiarity with American grafted varieties of avocados enabled him to select commercially promising sorts, inspected thousands of avocado trees growing in dooryards and coffee plantations. After judging the productivity and vigor of the trees, sampling the fruits, and noting the time of their ripening, he photographed both trees and fruits and sent in bud wood for propagating purposes, with a careful pomological description of each variety. In this number he describes the following avocado introductions: Nos. 43476, 43486, 43487, 43560, 43602, and 43932 to 43935. Descriptions of other varieties will be found in other inventories.

To the best varieties established as budded trees in our greenhouses and field stations, special names have been given. These names are all taken from the Maya language, the native language of the aborigines of Guatemala, and, as they are not difficult to pronounce, it is believed that they should be retained by American horticulturists. They will serve to identify the varieties as of Guatemalan origin, obviate the difficulty which always arises from an indiscriminate naming by growers, and stand as an acknowledgment on our part of the right of one country to have its gifts to another bear the characteristic names of the country of their origin. The time has gone by when international courtesy should permit us to bring in from a foreign country a new plant variety, strip it of the name it bears in its native home, and give it either the name of its introducer or some commonplace English name.

It is particularly desired to record here our Government's appreciation of the courtesies extended to Mr. Popenoe by the officials and the people of Guatemala. The plants which his expedition brought in can not fail to become more important as the years pass, and the Guatemalan avocado will constitute a most valuable gift from our sister Republic, rivaling perhaps even the gift of the orange from China to Italy or the potato from Peru to Ireland.

With the rapid advance being made in avocado culture in America, Mr. Popenoe's discovery in Guatemala of a new and remarkable and hitherto undescribed relative of the avocado becomes a historical fact of more than usual importance. The anay (*Hufelandia anay*, No. 43432), as it is called, is a tall forest tree of low altitudes and therefore tender. Its fruits are edible, but not comparable to avocados.

The Guatemalan coyó (*Persea schiedeana*, No. 43931), produces fruit that rivals even the avocado in quality, though it is apparently strictly tropical in character.

The chayote, or "mirliton" as it has been called for years by the Creoles of New Orleans, was represented in this country until recently by two, or at most three, rather distinct varieties. Messrs. Cook and

Collins called attention to the existence of several varieties in Guatemala as early as 1901; and it appears from Mr. Popenoe's investigations that this vegetable is not only a most important one to the Guatemalans, but that it is represented by a large number of very distinct sorts. The success of our large plantings in Florida is demonstrating the economic advantages of this remarkable vegetable, which is capable of being kept perfectly in cold storage from November to July. In Guatemala it is called "güisquil," and two main classes are distinguished—the peruleros or small, smooth sorts and the ordinary, large, sutured varieties. Some of these varieties (No. 43398, for example) are free from sutures and consequently easier to pare than the varieties with which we have so far experimented; others have a distinctive flavor (Nos. 43393 to 43401 and 43422).

The cherry has been looked upon by the Europeans living in the Tropics as a fruit limited to the Temperate Zone. It is especially interesting, therefore, to call attention to the cereza of Guatemala (No. 43425), which in its wild state is almost as large as an English Morello, with a meaty texture and the flavor of an oxheart mixed with a trace of bitterness. It is esteemed by the Guatemalans as a fresh fruit and for preserving purposes and deserves to be known throughout the Tropics.

The success of anona culture in Florida through the production of hybrids by Simmonds, Wester, and others, the quickness with which the trees recover when injured by frost, and the delicious character of the fruits make the introduction of the sincoya (*Annona purpurea*, No. 43426) from Guatemala of peculiar interest. This tree, already in cultivation in Guatemala, produces fruit the size of a pummelo, with orange-colored flesh and an aroma resembling that of our native papaw (*Asimina triloba*). It can hardly fail to contribute valuable characters to the hybrid fruits which are evidently coming when the plant breeders really get to work in a comprehensive way on the genus Annona.

Sicana odorifera (No. 43427) is a tropical cucurbit which deserves the consideration of our plant breeders because of its remarkable aroma and its striking color. Mr. Popenoe's introductions from Guatemala include a black-fruited one and also a carmine one which is as strikingly beautiful a fruit as the writer has ever seen.

The tropical papaya has come to stay in Florida, and every year more northern visitors learn to like it. The introduction of a very beautiful variety (No. 43428), with a deep reddish salmon-colored flesh of excellent texture, can not fail to interest Florida growers.

A fruit tree such as the nance (*Byrsonima crassifolia*, No. 43429), which is deemed worthy of a place in the dooryards of Guatemala, certainly deserves distribution to other tropical mountain regions.

The manzanilla, or tropical hawthorn (No. 43430) of Guatemala, discovered at Mazatenango, like the Chinese haw brought to our

attention by the late Frank N. Meyer, appears to be a fruit highly prized by the people who grow it. In size and flavor it rivals the Chinese species, *Crataegus pinnatifida*, and the conserve made from it is quite as delicious.

With such materials as these Guatemalan and Chinese introductions to work with, it would seem possible to produce hybrids with our hardy species of Crataegus that would prove valuable in our Southern States.

The injerto, or green sapote (*Achradelpha viridis*, Nos. 43439 and 43788), unlike its relative, the sapote, is an inhabitant of high altitudes and therefore may be expected to thrive in Florida and California, although in both places the true sapote has failed. It is reported by Mr. Popenoe as having a better flavor than the sapote.

Three selected hybrids between the Chinese and European pears, produced by Dr. Van Fleet and because of their attractive shape, color, texture, and flavor now considered by him worthy of a wide trial throughout the country to determine their productiveness and their resistance to pear blight, are here described (Nos. 43442 to 43444).

Enterolobium timbouva (No. 43455), a characteristic tree of northern Argentina, sent in by Mr. H. M. Curran, is reported as being of such beauty that it is used as an ornamental in Buenos Aires. It is of very rapid growth and is an important timber tree. It is probably hardy enough to grow in California and Florida.

The introduction of seeds of the Paraguayan tea, or maté (Nos. 43456 and 43598), and their easy germination bring up again the whole question of this important crop from which millions of South Americans obtain a beverage corresponding to our tea and coffee, since it contains the same alkaloid. As pointed out by Mr. George F. Mitchell, maté differs from tea and coffee in that the theine which it contains is more easily extracted by hot water, and in the preparation of the drink much less tannin becomes dissolved in the brew than is the case with either tea or coffee. Just why the British Army and the Japanese Army should be tea-drinking armies, whereas the American is essentially a coffee-consuming one, is a question probably traceable to the vagaries of taste.

Pinus merkusii (No. 43462), from Java, has the distinction of being the only true pine known to be a native of the Southern Hemisphere, the so-called Kauri pine of New Zealand being a species of Dammara. It may thrive in California and Florida.

Mangifera verticillata (No. 43479), from the Philippines, introduced as of possible value as a stock for the mango, turns out to be a violently poisonous species, producing water blisters like those caused by the poison ivy or the tropical poison wood, *Hippomane mancinella*.

Whether *Persea azorica* (No. 43480), from St. Michaels, will be as refractory as our *Persea pubescens* as a stock or whether crosses can

be produced between it and the avocado are questions for the breeders to decide. It is certain that breeders ought to have a chance to cross these various species under all sorts of conditions.

A remarkable collection of field and garden beans (Nos. 43492 to 43543), particularly from the Northern Circle, Burma, is presented by the Deputy Director of Agriculture at Mandalay.

The pickled mume of Japan (No. 43558), although forming part of the army ration of the Japanese, is as little known in America as though it were produced by a tree growing on some other planet. Interest in it is being aroused mainly because of the remarkable picturesqueness of the tree when in flower, but the value of its pickled fruits deserves our consideration.

Plants of the tussock grass (No. 43564), of the Falkland Islands, are presented by Mr. W. A. Harding, manager of the Falkland Islands Company. It is there considered not only an excellent forage grass, but is used like asparagus for human food, the young shoots having a nutty flavor.

The chufa industry of southeastern Spain is an important one, and the use of the small tubers for the production of the favorite beverage called horchata de chufa has already attracted the attention of American travelers. Consul Sprague gives a description of the culture under irrigation of this peculiar tuber (No. 43578), which contains a very appreciable amount of vegetable fat and a form of mannite. Apparently the main obstacle to growing this tuberous-rooted sedge in this country has been the difficulty of harvesting the tubers. Grown as they are in Spain, this difficulty seems largely to be reduced.

The so-called bonavist bean (*Dolichos lablab*) has begun to attract some attention in Florida as a cover crop for avocado and citrus orchards, making a dense growth and covering the ground well without climbing into the trees. It produces quantities of excellent beans, which when properly cooked are extremely palatable. The variety "Nankinicus" from Georgetown, British Guiana (No. 43594) and the large collection from Burma (Nos. 43505 to 43517) introduced at Mr. Piper's solicitation may bring forward varieties of better quality than the common one now grown in Florida, which came from the Bahamas. The bonavist bean appears to be peculiarly adapted to culture in Florida and deserves the serious consideration of horticulturists there.

A collection of rare and promising shrubs and ornamental trees presented by Prof. C. S. Sargent, of the Arnold Arboretum, includes many hardy and beautiful species from China and Japan collected by Mr. E. H. Wilson and other explorers (Nos. 43675 to 43701, 43703 to 43736, and 43810 to 43925). Sixty-one species of the genus Rosa form a part of this collection, and these are at the disposal of the rose breeders of the country both for trial as stocks and for pur-

poses of hybridization. The six species of jasmine (Nos. 43802 to 43807) should stimulate among plant breeders the production of new forms of these sweet-scented plants. This collection also includes such valuable new plants as *Castanea henryi* (No. 43832), a tree closely related to the chinquapin but larger in dimensions, which is already being used by Dr. Van Fleet in his work on the hybridization of the occidental and oriental chestnuts; *Larix potanini* (No. 43851), the most valuable timber tree in China; a low-growing, profuse-fruiting mulberry with delightfully acid fruits, *Morus acidosa* (No. 43859); *Prinsepia uniflora* (No. 43863), a new hardy fruiting shrub from Shensi; and eight rare species of Prunus (Nos. 43864 to 43871) for the plant breeders of this genus.

Through the kindness of Dr. D. Duncan Main we have secured a quantity of the new species of Chinese hickory, *Carya cathayensis* (No. 43952), which Mr. Meyer discovered near Hangchow several years ago.

Two cultivated species of the genus Canarium (Nos. 43959 and 43960) furnish the U-lam or "black olives" and the Pak-lam or "white olives" of Kwangtung Province, China. These two fruits are so much prized that a man who attempted to steal them was tied to the tree he had climbed and periodically beaten by the owner of the tree. The fruits somewhat resemble dried olives when preserved, but have a distinct flavor of turpentine. They are used, however, in immense quantities in the Province of Kwangtung and deserve to be investigated.

The Australian quandong (No. 43423), bearing edible fruits and oily seeds, is likely to thrive in California and Florida and to add another oil-yielding tree to our flora.

The introduction of the ucuúba tree (No. 43424) of the Amazon Valley, which is considered by Huber one of the most useful trees of the region because of its easily worked timber, emphasizes a fact well recognized by foresters that sooner or later systematic culture of tropical timber trees on a vast scale will prove to be a profitable business, just as plantation rubber has become a great plant industry.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Mrs. Ethel H. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 30, 1919.

INVENTORY.[1]

43391. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

From Maryland. Presented by Mr. H. A. Ernst, Youngstown, Ohio. Received October 2, 1916.

"Colored Lima beans, which I secured in Maryland several weeks ago. I was informed there that this bean has been grown by three or four generations of the Ernst family in Frederick and Carroll Counties, and they refer to it as the *Ernst* bean. There can be no doubt but that it will produce true to type. The sample is somewhat undersized, owing to the unfavorable season." (*Ernst.*)

43392. ALBIZZIA JULIBRISSIN Durazz. Mimosaceæ.

From Fruitland Park, Fla. Presented by Mr. Louis P. Bosanquet. Received October 2, 1916.

"Seeds of what seems to be a red-flowered form. I have been growing this tree here for a long time. The flowers are much handsomer than the usual form of *Albizzia julibrissin*, and the new growth is a bluer green." (*Bosanquet.*)

See S. P. I. No. 36810 for a description of this species.

43393 to 43401. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 6, 1916. Quoted notes by Mr. Popenoe.

"(No. 25a. September 16, 1916.) The chayote, here called *güisquil*, is one of the commonest vegetables in this part of Guatemala and exists in a number of varieties. The following set includes those which have been seen commonly in the market during the past two weeks.

"Two classes of chayotes are distinguished in the markets as *güisquiles* proper and *güisquiles peruleros* or Peruvian *güisquiles*. The former includes practically all of the larger fruits; they vary from green to white in color, some are prickly and some smooth, and the surface is usually roughened, sometimes with deep sutures from base to apex. The second class, *güisquiles peruleros*, includes small fruits, white to green in color, with the surface smooth and free from prickles or soft spines. Both classes are exceedingly abundant in the market."

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[1] Each introduction consists 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 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 in American literature becomes necessary, the designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

43393 to 43401—Continued.

43393. "*Güisquiles* proper. Pyriform, light green. This seems to be a very good variety, both because of its large size and its flavor, which is said to be good. It is pear shaped, flattened on both sides, the surface slightly rough and marked by several deep sutures. It is about 6 inches in length and weighs a pound and a quarter. In color it is a pale waxy green, and there are a few spines toward the apex of the fruit. It is the largest variety which I have seen here."

43394. "*Güisquiles* proper. Pyriform, deep green. This variety is slightly smaller than the last [S. P. I. No. 43393], but of the same form. It is 5½ inches long and weighs a pound. The surface is rich green, practically smooth, and without spines."

43395. "*Güisquiles* proper. Small, prickly, white. This is a smaller fruit than the last two [S. P. I. Nos. 43393 and 43394], measuring about 4 inches in length and weighing about 7 ounces. It is obovate to pyriform, flattened on the sides, white, the surface marked with shallow sutures and thickly covered with short, soft spines. While the quality is said to be good, the small size and spiny surface of this variety probably prevent its being considered among the best."

43396. "*Güisquiles* proper. Smooth, round, green. This variety is nearly spherical in outline, flattened on both sides, rich green in color, the surface slightly furrowed and nearly free from spines, having only a few toward the apex. It measures 4 inches in length and weighs about 10 ounces. It is one of the commonest varieties in the market, but is said not to be of the best quality."

43397. "*Güisquiles* proper. Prickly, round, green. Slightly smaller than the last [S. P. I. No. 43396], but of the same form. It measures 3 inches in length and weighs about 7 ounces. The surface is bright green, slightly furrowed, and covered thickly with spines. This seems to be rather inferior."

43398. "*Güisquiles peruleros.* Large white *perulero.* This is the best which I have seen and seems worthy of attention in the United States. Its attractive appearance, the absence of deep sutures (which render its preparation for the table easier, since the sutures make it difficult to pare some of the varieties), and its good quality combine to make this sort worthy of special notice. The variety is large for its class, measuring 3½ inches in length and weighing 9 ounces. It is broadly ovate in outline, very plump, the surface nearly smooth, waxy white in color, and entirely free from spines, as are all the *peruleros.*"

43399. "*Güisquiles peruleros.* Small white *perulero.* Much the same shape as the last [S. P. I. No. 43398], but slightly more tapering at the base. It is 2¾ inches in length and weighs about 3 ounces. The surface is similar to that of the large white *perulero.* This and the following two varieties are probably too small to be worthy of much attention in the United States."

43400. "*Güisquiles peruleros.* Light-green *perulero.* Similar in size and shape to the last variety [S. P. I. No. 43399], but differing in color. This one is whitish green and has rudimentary spines, almost too small to be noticed at first glance."

43401. "*Güisquiles peruleros.* Dark-green *perulero.* Slightly smaller than the last two [S. P. I. Nos. 43399 and 43400], but of the same form. The surface is quite smooth and of deep-green color. This is a very common variety in the markets and sells at a very low price."

43402 to 43409.

From Constantinople, Turkey. Received through Mr. Hoffman Philip, secretary of the American Embassy, at the request of Mr. W. Stanley Hollis, consul general, Beirut, Syria, October 3, 1916. Quoted notes by Mr. George M. Young, consular agent, Beirut.

43402 to 43404.[2] AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"Peach seeds from Damascus. It is said that the peaches here are usually very good. The seeds are planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on. Grafts are usually made in the springtime and from other and better varieties on the worst variety, *Kelabi.*"

43402. "*Zihri,* summer; thus named from the approximate time of ripening."

43403. "*Shetawi,* winter; thus named from the approximate time of ripening."

43404. "*Kelabi,* large seed."

43405 to 43408.[2] PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

"Apricot seeds from Damascus. Nothing could be more beautiful than the Damascus gardens of apricot trees in blossom time. Apricots thrive here and attain great perfection. Their taste is excellent. The seeds are planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on. Grafts are usually made in the springtime and from the other and better varieties on the worst variety, *Kelabi.* The crop of apricots is so abundant and of such excellent quality that its exportation in the form of apricot paste enriches the locality."

43405. "*Beledi.*"
43406. "*Lozi.*"
43407. "*Kelabi.*"
43408. "*Ajami,* meaning Persian."

43409. AMYGDALUS COMMUNIS L. Amygdalaceæ. **Almond.**
(*Prunus amygdalus* Stokes.)

"Almond seeds from Damascus. It might be possible to successfully cultivate these nuts in America. Here they grow well and are eaten everywhere. A little donkey loaded with them may be seen in the streets almost any time during the season. They seem to thrive best on the higher ground. The seed is planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on."

43410. ROSA RUBIGINOSA L. Rosaceæ. Sweetbrier.

From Medford, Oreg. Seeds collected by Dr. B. T. Galloway, of the Bureau of Plant Industry. Received October 9, 1916.

"A wild rose growing on the hillside. A fine plant in Mr. F. C. Reimer's yard at Talent, Oreg. Plant 5 to 6 feet high, forming a dense globose bush, covered with brilliant red fruit, very striking; stems one-half to 1 inch in diameter; leaves slightly scarlet. Mr. Reimer says the fruit hangs on all winter." (*Galloway.*)

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[2] See footnote, p. 11.

43411. AMARANTHUS PANICULATUS L. Amaranthaceæ. **Amaranth.**

From Cuzco, Peru. Presented by Mr. Albert A. Giesecke. Received October 9, 1916.

"A very special type of the popping variety, which is eaten as a confection or pop corn. It is rare even in Peru." (*Giesecke.*)

43412. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung-oil tree.**

Plants grown at the plant introduction field stations from seed received from various sources. Numbered for convenience in distribution, October 16, 1916.

43413 to 43421.

From Tierras de Loba, Bolivar, Colombia. Seeds collected by Mr. H. M. Curran. Numbered October 17, 1916. Quoted notes by Mr. Curran unless otherwise indicated.

43413. ALIBERTIA EDULIS A. Rich. Rubiaceæ.

"(Nos. 42 and 336.)" A tropical and extratropical shrub found in Central and northern South America, with white flowers. The yellow fruit, which is about the size of a small lemon, is called *Marmeladinha* and the entire plant is called *Puruhy*, both of these being Brazilian names. The fruit is edible and very agreeable in taste. (Adapted from *Mueller, Select Extra-Tropical Plants*, from *Pittier, Plantas Usuales de Costa Rica, p. 110*, and from *Correa, Flora do Brazil, p. 112.*)

43414. BOMBACOPSIS sp. Bombacaceæ.

"(No. 29.)" The species of this genus are from tropical America and are described as medium-sized deciduous trees, either spiny or unarmed, with five to seven leaflets in each leaf. The white or purplish flowers occur in loose terminal panicles. The fruit is a woody capsule, dehiscent, with dense wool inside, and the seeds are subglobose and small. (Adapted from *Pittier, Contributions from the U. S. National Herbarium, vol. 18, p. 162, 1916.*)

43415. BROWNEA BOLIVIENSIS Pittier. Cæsalpiniaceæ.

"(No. 34.) *Arisa.* Low shrub or small tree with red flowers; very ornamental."

43416. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

"(No. 18.) *Cando dunga.* Ornamental tree with pink flowers and large fruit; seeds embedded in edible paste. From the Magdalena River; cultivated in Bolivar."

43417. CEDRELA FISSILIS Vell. Meliaceæ. **Cedro.**

"(No. 14.)" A tree with pinnate leaves 10 to 15 inches long, densely pubescent beneath, and 18 to 24 opposite, nearly sessile leaflets. The panicles of whitish flowers are longer than the leaves, and the fruit is a dehiscent capsule containing many flat, winged seeds. According to Franceschi, it does better at Santa Barbara than any other species of this genus. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 697.*)

43418. CLAVIJA sp. Theophrastaceæ.

"(No. 39.) A low shrub with edible, small, dry, yellow pods. Seed pulp edible."

43413 to 43421—Continued.

43419. ENTADA POLYSTACHYA (L.) DC. Mimosaceæ.

"(No. 25.) *Bejuco de garza.*" A woody vine, entirely glabrous, with bipinnate leaves and terminal panicles of white almost sessile flowers. Most of these flowers, which are about a millimeter long, fall immediately after opening, only a very few forming fruit. The smooth, slightly curved pod reaches 9 or 10 inches in length. Seeds oval, compressed, with calloused margins. (Adapted from *DeCandolle, Memoires sur la Famille des Légumineuses, pp. 421 and 434–436.*)

43420. PITHECOLOBIUM LIGUSTRINUM Klotzsch. Mimosaceæ.

"(No. 5.) *Payandé.*" A stout tree found in the hot regions of Colombia, called by the natives *payandé* in Magdalena and *gallinero* in Socorro. (Adapted from *Cortés, Flor de Colombia, p. 144.*)

This plant is without spines or thorns, and the leaves are composed of only one pair of leaflets, with oblong-lanceolate pinnæ. The flowers occur in spikes, are slender and glabrous, and the pods are flattened. (Adapted from *Bentham, London Journal of Botany, vol. 3, p. 213.*)

43421. STYLOGYNE RAMIFLORA (Oerst.) Mez. Myrsinaceæ.
(*Ardisia ramiflora* Oerst.)

"(No. 46.) May be valuable possibly as a dye plant."

A woody plant, with dark, terete, smooth branches and papery, short-petioled, entire, oblong-lanceolate acute leaves. The sessile axillary panicles of 5 to 10 flowers are in umbellike clusters at the end of the branches. The fruits, about the size of those of the genus Piper, are subglobose drupes. In habit this species is close to *Stylogyne cauliflora* and S. *longifolia*, differing in the inflorescence. (Adapted from *Oersted*, in *Videnskabelige Meddelelser Naturhistoriske Forening Kjöbenhavn, p. 132.*)

43422. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 14, 1916.

"(No. 26a.) Large white *perulero.* Undoubtedly one of the very best varieties of chayote or güisquil grown in Guatemala. Its attractive appearance, smooth surface, freedom from spines and deep sutures, and its excellent quality make it seem worthy of a careful trial in the southern United States. This variety belongs to the class known as *perulero*, or Peruvian chayote, a group which includes a good many small to medium sized smooth varieties, as distinguished from the *güisquiles* proper, larger fruits, usually with sutures on the surface and often spiny. This large white *perulero* is considered of superior quality, the flavor being very delicate. Owing to the absence of spines and sutures it is very easily prepared for the table." (*Popenoe.*)

43423. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ.
(*Fusanus acuminatus* R. Br.) **Quandong.**

From Sydney, Australia. Seeds presented by Mr. Fred Turner, of the Linnean Society, through the American consul general. Received October 9, 1916.

"Var. *chrysocarpa*. A rare Australian tree. From an economic point of view the yellow quandong is a fruit superior to the red quandong and grows under precisely similar climatic conditions." (*Turner.*)

A beautiful evergreen tree, up to 30 feet in height, with opposite lanceolate leaves, mostly 2 or 3 inches long, and rather numerous insignificant flowers appearing on small terminal branches. The reddish globular fruits are about three-fourths of an inch in diameter and are eaten as preserves and jelly and in the dried condition. The kernels, which are spherical, are quite palatable and so full of oil that they will burn entirely away with a clear light. The tree, when full of fruits, is decidedly ornamental. The bark contains a large amount of tannic acid, and the wood is used for turnery, carving, and cabinet-work. In cultivating this tree it is best raised from seeds planted in the places where it is intended that the trees are to grow permanently. This tree is found throughout Australia, except Tasmania and Queensland. (Adapted from *F. Turner, Sydney Morning Herald, December 16, 1911.*)

43424. VIROLA SURINAMENSIS (Roland) Warb. Myristicaceæ.

(*Myristica surinamensis* Roland.) **Ucuúba.**

From Para, Brazil. Seeds presented by Mr. George H. Pickerell, American consul. Received October 16, 1916.

"Myristicaceæ are more important as timbers than the Annonaceæ, in spite of being represented by a much smaller number of species. The commonest species of the Amazon region are *ucuúba branca* (*Virola surinamensis* Warb.) and *ucuúba vermelha* (*Virola sebifera* Aubl.). The first, especially, is one of the most useful trees of the Amazon region, not only for its easily worked moderately hard wood, but also for its seeds, which furnish a kind of vegetable wax rich in stearin. While the *ucuúba branca* is found principally in the tillable plains, it is not excluded from the uncultivated parts of the country; the *ucuúba vermelha*, which is distinguished by its large leaves and smaller fruits, is a tree of the dry lands and is found principally in the forests. Both these species, especially when young, have a characteristic manner of growth, with slender whorled branches furnished with regularly distichous leaves. The regularity of its branching reminds one of the European conifers. Without doubt other Amazonian species of Virola and probably also some species of Iryanthera furnish wood which could be utilized, but I have no positive knowledge in regard to this." (*J. Huber, Mattas e Madeiras Amazonicas, Boletim de Museu Goeldi, vol. 6, p. 173.*)

The wood of this Brazilian tree is used for interior work and general carpentry. The bark is medicinal and the fruits contain 55 per cent of myristin, a waxy substance of the consistency of beef tallow, used in the trade for candles and soap. (Adapted from *Correa, Flora do Brazil, p. 70.*)

43425 to 43440.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 14, 1916. Quoted notes by Mr. Popenoe.

43425. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Capùli.**

"(No. 27a. Mazatenango, Guatemala, September 27, 1916.) *Cereza.* Seeds of a wild cherry brought to the market of Mazatenango from the tierra fria, or high lands.

"In the highlands of Guatemala, at elevations of 4,000 to 9,000 feet, occurs, both wild and cultivated, a fruit which possesses more than ordinary interest to those occupied with the cultivation and improve-

43425 to 43440—Continued.

ment of tropical and subtropical fruits. This is the wild cherry, *Prunus salicifolia* H. B. K., commonly known as *cereza* among Spanish-speaking Guatemalans and as *capulin* by the Indians. While not a tropical species, that is, not adapted to the tropical littoral, it is distinctly subtropical in nature and may perhaps be found to thrive in such sections as the extreme southern portion of the United States and similar regions bordering upon the Tropics, as well as in the Tropics themselves, when grown at elevations of a few thousand feet. In its present wild state a fruit of fairly good quality, it would seem that with a little attention on the part of plant breeders it might become a most valuable addition to the list of fruits suitable for moist subtropical countries. Arid or semi-arid sections, such as California, produce European cherries, of the Bigarreau type, to perfection, but as yet there is no cherry for the moist subtropical regions, such as Florida, northern India, and southern Brazil. It is in such regions that attention should be devoted to this species.

"As commonly seen in the Guatemalan highlands, this species is an erect tree, somewhat slender at times, reaching a height of about 30 feet, the trunk stout, occasionally as much as 3 feet thick, and the bark rough and grayish. The young branchlets are dotted with minute grayish lenticels. The leaves, which are borne upon slender petioles three-quarters of an inch long, are commonly 4½ inches in length, 1¼ to 1½ inches in breadth at the widest point, oblong-lanceolate in outline, with a long slender tip. The upper surface is dull green, the lower surface glaucous, while the margin is rather finely serrate. The flowers, which are produced from January to May, are white, about three-eighths of an inch broad, very numerous, on slender racemes 2 to 4 inches in length. As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that two to five ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September—a remarkably long period. The ripe fruits, which are slightly oblate in form and up to three-quarters of an inch in diameter, separate readily from the short fruit stalks, leaving the green 5-toothed calyx attached to the fruit stalk in every instance. In color the fruit is a deep, glossy maroon-purple. The skin is thin and tender, though sufficiently firm so that the fruit is not easily injured by handling, and the flesh is pale green, meaty, but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison to the size of the fruit, being about the same size as in some of the cultivated cherries of the North, whose fruits are considerably larger than those of this species. Cultivation, however, would probably increase the bulk of the edible portion of the fruit without greatly increasing the size of the stone. It may be remarked that trees of this species which are found "in cultivation" in Guatemala are merely growing in dooryards, and do not receive any of the attention connoted by the word "cultivation" as it is commonly understood by European and North American horticulturists. Pruning is never practiced, fertilizers are not applied, the soil is not tilled, and no water is supplied during the long dry season.

"Pleasant to eat out of hand, this cherry can also be eaten in various other ways, stewed, made into preserves, or used for the manufacture of

43425 to 43440—Continued.

jam. In Guatemala it is most commonly eaten as a fresh fruit or made into a sweet preserve. While, naturally enough, it can not be claimed that this cherry is equal to any of the excellent cultivated varieties of the North, which have been produced by generations of selection and vegetative propagation, it must be said in all fairness that it is a fruit of remarkably good quality for one which has never had the benefit of intelligent cultivation and has been propagated only by seed. When put into the hands of intelligent horticulturists in a region suited to its cultivation and subjected to a few generations of selection it should become a fruit worthy of taking rank alongside its relatives of northern orchards."

For an illustration of this wild cherry, see Plate I.

43426. ANNONA PURPUREA Moc. and Sessé. Annonaceæ. **Soncoya**

"(No. 28a. Seeds procured at Escuintla, Guatemala, September 22, 1916.)

"The *soncoya* (here called *soncuya, suncuya,* or rarely *chincuya*) is a remarkable species of Annona which appears to be fairly common in the foothills of the western slope of Guatemala. Fruits and trees were seen from Escuintla to Ayutla, on the Mexican frontier, the elevation varying from 200 to 1,200 feet. The *soncoya* is an immense fruit, often larger than a child's head, and covered with short conical protuberances. It is almost perfectly spherical in form, measures about 6 inches in length, and weighs 3 pounds or more. In color it is a light russet brown, sometimes greenish; the protuberances are about one-fourth of an inch long, corky and sharply pointed. The rind also is corky, about one-fourth of an inch thick, rather pliable, granular, and easily broken. The flesh is pale orange, cottony in texture, rather juicy and with an aroma and flavor almost identical with that of the North American papaw (*Asimina triloba*). The seeds are very numerous, brown, shaped like those of the cherimoya, but much larger, being fully 1 inch long.

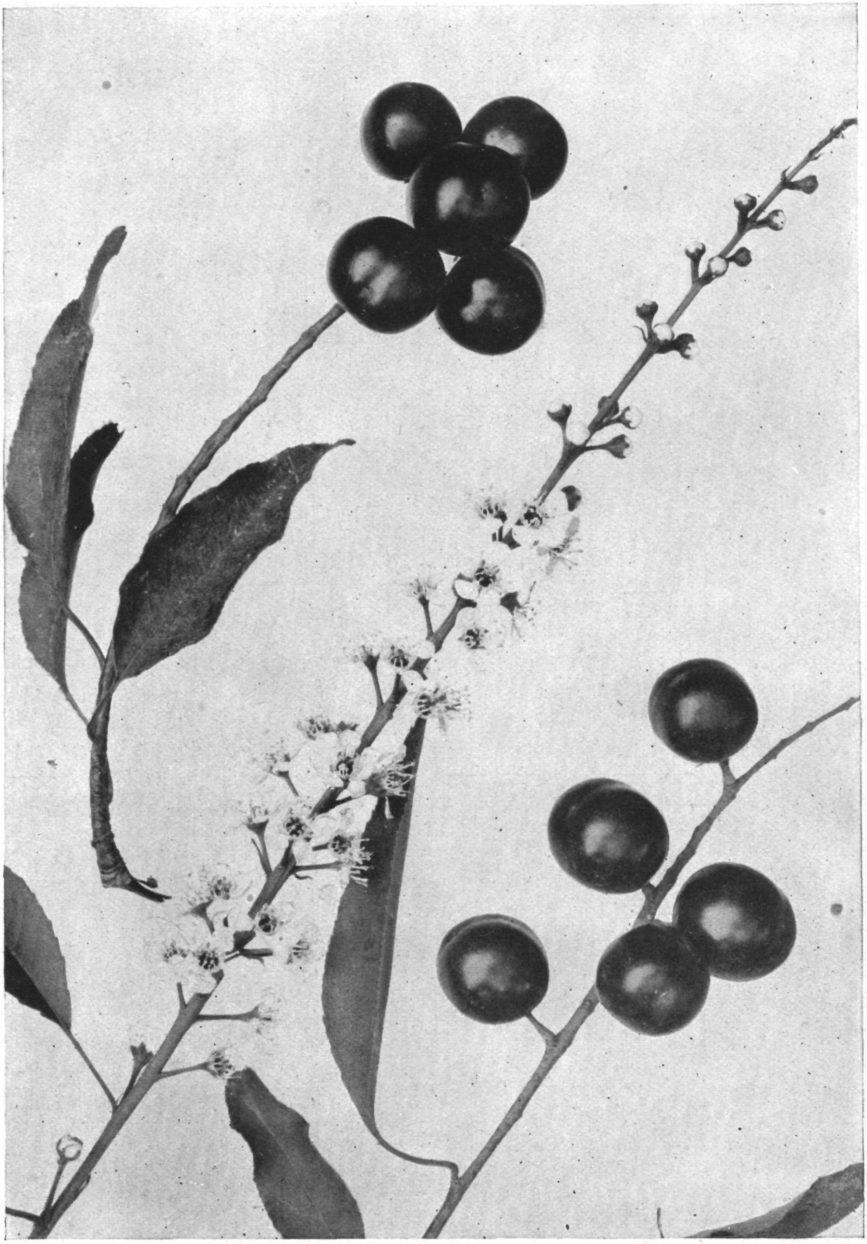
"The tree is grown in dooryards and is said also to occur wild in the forests, but up to the present I have only seen it in cultivation. It grows to about the same size as the cherimoya and is of the same form, but the foliage is much larger and makes the tree a striking object in gardens. The fruit is common in markets and fruit stalls and seems to be generally used by the Indians, though an overindulgence in it is said to superinduce *paludismo,* or malarial fever.

"The tree grows on deep loamy, usually moist soils. It probably is suited only to regions with a very warm climate. If it succeeds at all in Florida it will probably be only in the extreme southern end of the State.

"The *soncoya,* which is unknown in cultivation outside of Central America, is a fruit of much better quality than most of the wild Annonas. It seems to be especially worthy of attention because of its thick outer rind, which makes it easier to handle than the cherimoya."

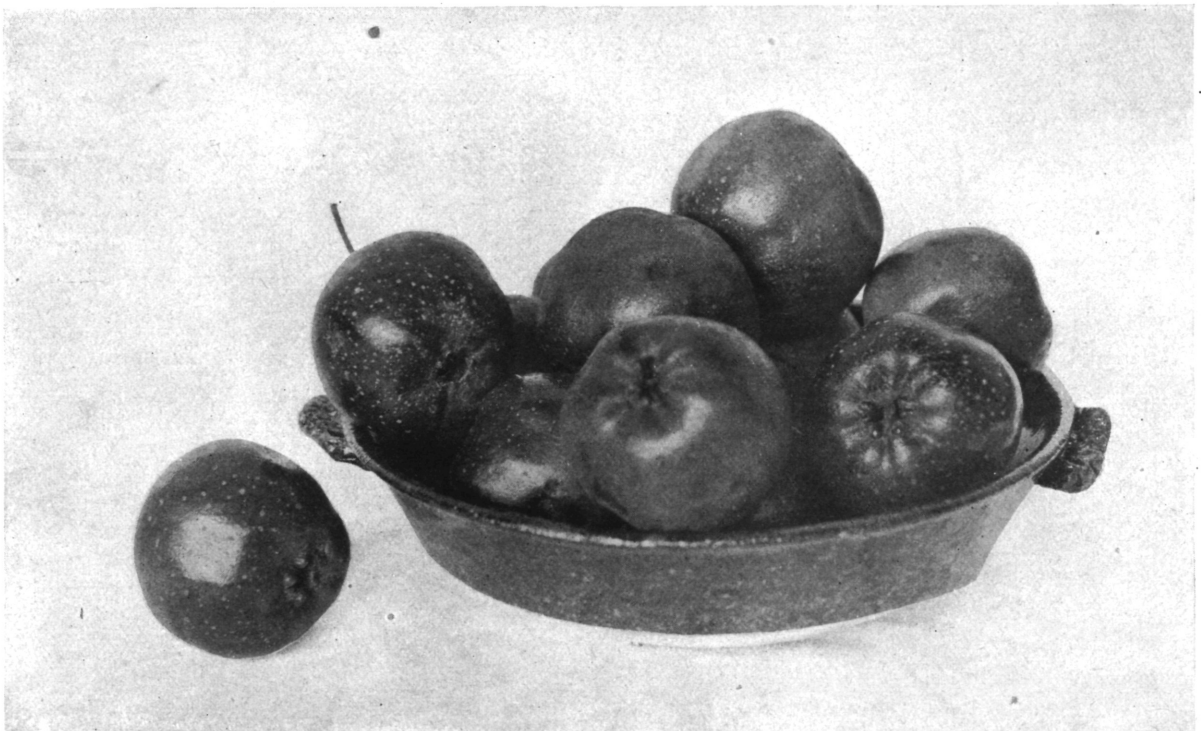
43427. SICANA ODORIFERA (Vell.) Naud. Cucurbitaceæ. **Melocoton**

"(No. 29a. Mazatenango, Guatemala, September 23, 1916.) A peculiar melon called here *melocoton* (peach). It is not commonly cultivated and is rarely seen in the market. The fruit is cylindrical, a foot in length, about 4 inches in diameter, with a smooth surface shining black in color. On cutting it in halves lengthwise one finds a narrow zone of flesh next the skin and the rest of the space occupied principally by seeds, which resemble considerably those of the watermelon. The flavor is rather



THE WILD CHERRY OF GUATEMALA. (PRUNUS SALICIFOLIA H. B. K., S. P. I. No. 43425.)

The cereza, or wild cherry, is common in the highlands of Mexico and Central America. Its fruits are of pleasant flavor and almost as large as some of the cultivated cherries of temperate regions. Because of its adaptability to subtropical conditions this species merits introduction into the southern United States and similar regions. (Photographed, natural size, by Wilson Popenoe, May 6, 1917, at Antigua, Guatemala; P17279FS.)



A TROPICAL RELATIVE OF THE APPLE. (CRATAEGUS STIPULOSA (H. B. K.) STEUD., S. P. I. No. 43430.)

The manzanilla grows wild in the highlands of Guatemala. Several closely allied species are common in Mexico. The fruits are as large as crab apples, deep yellow flushed with red, and attractive in appearance. In preserved form they are popular. They merit cultivation in other regions where conditions are subtropical and not favorable to the apples of the temperate zone. (Photographed by Wilson Popenoe, Nov. 16, 1917, at Antigua, Guatemala; P17422FS.)

43425 to 43440—Continued.

strong and suggests that of a cantaloupe. Not to be recommended for cultivation as a comestible, but may be of interest to those studying the cucurbits. Seeds from one melon."

See also S. P. I. No. 43440.

43428. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"(No. 30a. City of Guatemala, Guatemala, September 20, 1916.) Red-fleshed papaya. A remarkable variety of papaya which seems to be fairly common in the markets here and is said to come from Escuintla. The fruit from which these seeds were taken was cylindrical in form, 13½ inches long by 6 inches thick, pointed at the apex. The flesh was thick, varying from 1½ to 1¾ inches, firm, and not at all musky in flavor. It was rather lacking in sweetness, but this may have been due in part to the fact that the fruits are sometimes picked before fully ripe, to permit shipment. The great peculiarity of this variety lies in the color of the flesh, which was a deep reddish salmon. The seeds were oval in form and quite numerous. Other specimens of this same variety which have been seen in the market were similar to the one described but smaller. This interesting form should be tried in connection with the investigations in papaya culture now being carried on in southern Florida."

43429. BYRSONIMA CRASSIFOLIA (L.) H. B. K. Malpighiaceæ. **Nance.**

"(No. 31a. City of Guatemala, Guatemala, September 20, 1916.) *Nance*, a small tree frequently seen in gardens, especially in villages along the west coast, where it is a common dooryard tree. It is erect, with a slender trunk sometimes dividing near the base and up to 35 feet in height. The leaves are oblate-elliptic to elliptic, acute, 3 to 4 inches long, thickly chartaceous, deep green and glabrous above, covered with thick tawny hairs beneath. The fruits are borne in short terminal racemes 2 to 3 inches long. Individually they are the size of cherries, bright yellow in color when fully ripe. The single rough seed is about the size of a cherry stone. The flavor is acid, sometimes rather strong. The *nance* grows here at elevations from sea level up to 4,000 feet or more, usually on rich loamy soils. It may succeed in California when grown at such places as Santa Barbara which do not experience a great deal of frost, and it ought to succeed in southern Florida."

43430. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. **Manzanilla.**

"(No. 32a. Seeds procured in Mazatenango, Guatemala.) *Manzanilla*, a common fruit in the markets of Guatemalan towns and villages, coming, it is said, from the highlands. I have seen no plants as yet. The fruits look like small apples; they are nearly spherical in form, 1 to 1¼ inches in diameter, deep yellow in color, with russet dots and one cheek frequently blushed with red. The thin skin incloses a rather dry, mealy pulp and three irregularly shaped seeds. The flavor resembles that of some of the northern haws, but is, perhaps, better; the fruit is extensively used here for the preparation of dulces of various sorts, such as jams and jellies. This plant would probably succeed both in California and Florida."

For an illustration of the manzanilla, see Plate II.

43431. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

"(No. 33a. City of Guatemala, Guatemala, September 29, 1916.) Seeds of a curious variety of avocado found in the market. It is said to have

43425 to 43440—Continued.

come from Antigua. It appears to belong to the Guatemalan race, but may possibly be a cross between this and some other race. It is not to be recommended as a fruit, but is of interest in connection with the experiments now being carried on to obtain the best stocks for the commercial varieties of avocado. The fruit is unusually small for this region, being no more than 2½ inches in length and frequently not more than 2 inches. It is obovate or broadly pyriform in outline. The surface practically smooth and shining purplish maroon in color. The skin is quite thin, but thicker than is common in the Mexican race. The flesh is pale green, very rich in flavor, but lacking in quantity, due to the very large size (comparatively) of the seed, which has the characteristic closely adhering seed coat of the Guatemalan race."

43432. HUFELANDIA ANAY Blake. Lauraceæ. **Anay.**

" No. 34a. Mazatenango, Guatemala, September 23, 1916.) Seeds of an interesting species of Persea which occurs in this region as a large forest tree and is called *anay* by the natives. It so closely resembles an avocado of the Mexican race in the external appearance of the fruit as to lead one to suspect at first that it must be a form of *Persea americana* but on a closer examination of the tree and fruit one finds numerous characters which indicate that it must be entirely distinct from Persea.

"In clearing the forest for planting coffee, a few large trees are left to provide shade for the coffee plants, and it was due to this fact that we found the *anay*. Two large trees are standing close to the entrance of the finca 'El Compromiso,' about one-half mile from Mazatenango. Others are said to occur in the forest and are known to the natives, who eat the fruits in the same way as avocados and consider them a variety of avocado, '*tipo de aguacate*,' as they say.

"The *anay* is a tall, rather slender tree, reaching a great height in the forest. The two which were seen were between 60 and 70 feet in height. The bark is nearly smooth and of a rich red-brown color, grayish in places. The young branchlets are light brown, finely pubescent. The leaf blades are broadly elliptic to oblong-lanceolate in outline, 8 to 15 inches long, 3 to 6 inches broad, acute to shortly acuminate at the apex rounded to broadly acute at the base, rigidly chartaceous, bright green and glabrous above (with the exception of the costa and primary transverse veins, which are sparsely hairy), the lower surface being slightly lighter in color and glabrate. The young leaves are softly pubescent below and sparsely hairy above. Petiole 1½ to 2½ inches long, terete slender, but swollen just below the point of union with the lamina. The foliage when crushed has no aromatic odor, like that of the Mexican race. The fruits ripen in August and September. In form they are slender pyriform, sometimes curved and sometimes pointed at the apex Often the neck is long and sharply defined. The body of the fruit is slightly compressed on two sides. The length varies from 4 to 6 inches The surface is smooth, glossy, and purplish black. The epicarp is exceedingly thin and membranous and adheres closely to the firm, oily flesh, which is divided into two zones of color, the outer being pale green and the inner, which is of the same thickness as the outer, a greenish cream color. The two zones are more sharply defined than they ordinarily are in the cultivated avocados. The flavor of the flesh is rich

43425 to 43440—Continued.

and bland, like that of a very good avocado, but with a faint suggestion of sweetness. The outer seed coat is developed into a thick husk which may practically be considered an endocarp. Within lies the seed, which is long and pointed, with the inner seed coat, thin and membranous, surrounding the cotyledons closely. While the outer seed coat is extended clear to the base of the fruit, the inner does not always reach the apices of the cotyledons. The embryo lies immediately at the base of the cotyledons, while the avocado has the embryo located some distance above this point. From a practical standpoint the *anay* can not be considered of great value, inasmuch as the flesh is scanty in quantity. If the flesh were more abundant its excellent flavor would make the fruit of great value. The fruit falls to the ground while still hard and requires two or three days to soften and be in condition for eating. The seeds germinate on the ground beneath the trees, and the young plants start off lustily. The larva of some insect attacks the fallen fruits and tunnels through the seeds. Very few fruits found on the ground had not been attacked in this manner. The remarkable similarity of this species to the cultivated avocado and the fact that its fruit is edible and is used by the natives make it a subject of particular interest in connection with the study of the cultivated avocados. It is to be hoped that specimens can be reared and fruited in the United States. The region where the tree is found lies at an elevation of about 1,200 feet and is quite moist. On this account it seems doubtful whether the *anay* will succeed in California. It might be tried in the most protected localities. In southern Florida its chances of success seem good."

For an illustration of the anay, see Plate III.

43433. HUFELANDIA ANAY Blake. Lauraceæ. **Anay.**

"(No. 34. Mazatenango, Guatemala.) *Anay.* Young seedlings collected under a large tree in the finca 'El Compromiso,' where the fruit had fallen. See 34a [S. P. I. No. 43432] for a description of this plant."

43434 to 43436. NEPHROLEPIS spp. Polypodiaceæ. **Fern.**

43434. "(No. 36. Mazatenango, Guatemala, September 23, 1916.) *Cola de quetzal* (quetzal's tail). Plants of a fern very common on large forest trees of this region (1,200 feet elevation). It grows usually at some height above the ground. The fronds hang down to a length of 6 feet or more."

43435. "(No. 37. Mazatenango, Guatemala, September 23, 1916.) *Palmito.* Plants of a coarse fern with stout rootstocks, which grows in this region (1,200 feet elevation) on the trunks of large forest trees. The pinnæ are long and rather coarse. Commonly grows closer to the ground than the *Cola de quetzal* (No. 36), being found within 8 to 10 feet."

43436. "(No. 38. Mazatenango, Guatemala, September 23, 1916.) Plants of a small fern found clinging to the trunks of large forest trees, usually close to the ground and in very moist situations."

43437. PASSIFLORA LIGULARIS Juss. Passifloraceæ. **Sweet granadilla.**

"(No. 43a. Guatemala, Guatemala, October 7, 1916.) *Sweet granadilla.* Seeds of a species of Passiflora cultivated in the highlands of Guatemala, up to elevations of 6,000 feet or more. The fruit is the size of a hen's egg, orange yellow in color when fully ripe, with a thick, brittle

43425 to 43440—Continued.

shell inclosing a large number of small, thin seeds surrounded by white gelatinous pulp. The flavor is delicate, aromatic, almost perfumed, certainly more delicate and agreeable than most of the other Passifloras. This species should be given a more thorough trial in Florida and California than has been accorded it in the past."

For an illustration of the granadilla of Guatemala, see Plate IV.

43438. RUBUS TUERCKHEIMII Rydb. Rosaceæ.

"(No. 44a. City of Guatemala, Guatemala, October 7, 1916.) *Mora.* Seeds of a wild species of Rubus which is common in the vicinity of San Lucas at an altitude of nearly 7,000 feet. The fruits greatly resemble our cultivated blackberries, being about the same size, with the individual drupelets like those of the blackberry, but slightly lighter in color. The flavor is acid, suggesting both the blackberry and the loganberry. The fruit is gathered from the wild plants and brought by the Indians to the market of the city of Guatemala. It is used for preserves and for stewing."

43439. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook. Sapotaceæ.
Green sapote.

"(No. 46a. Palin, Guatemala, October 7, 1916.) *Injerto,* or *green sapote.* Seeds from fruits purchased in Palin, but said to have been grown at Santa Maria de Jesus, between Palin and Antigua. The *injerto* is a common tree in this part of Guatemala. Unlike its near relative, the sapote (*Achradelpha mammosa*), which seems to thrive only at comparatively low elevations in the Tropics, the *injerto* is grown as high as 5,000 or 6,000 feet, and therefore should stand a better chance of succeeding in California and Florida than the sapote, which has so far been a failure in those States. The tree grows to a height of about 40 feet in this region and has long, slender leaves suggesting those of the sapote. The fruits vary in shape, but are commonly round to oval, often pointed at the tip. They are 2 to 3½ inches in diameter, smooth, dull yellow-green in color, sometimes almost dull yellow. The skin is not thick. It adheres closely to the flesh, which is red-brown in color, soft and melting, sweet, with a pleasant flavor somewhat resembling that of the sapote, but better. The large seed (sometimes there are two) is hard and polished, deep brown in color, and easily removed from the pulp."

For an illustration of the green sapote, see Plate V.

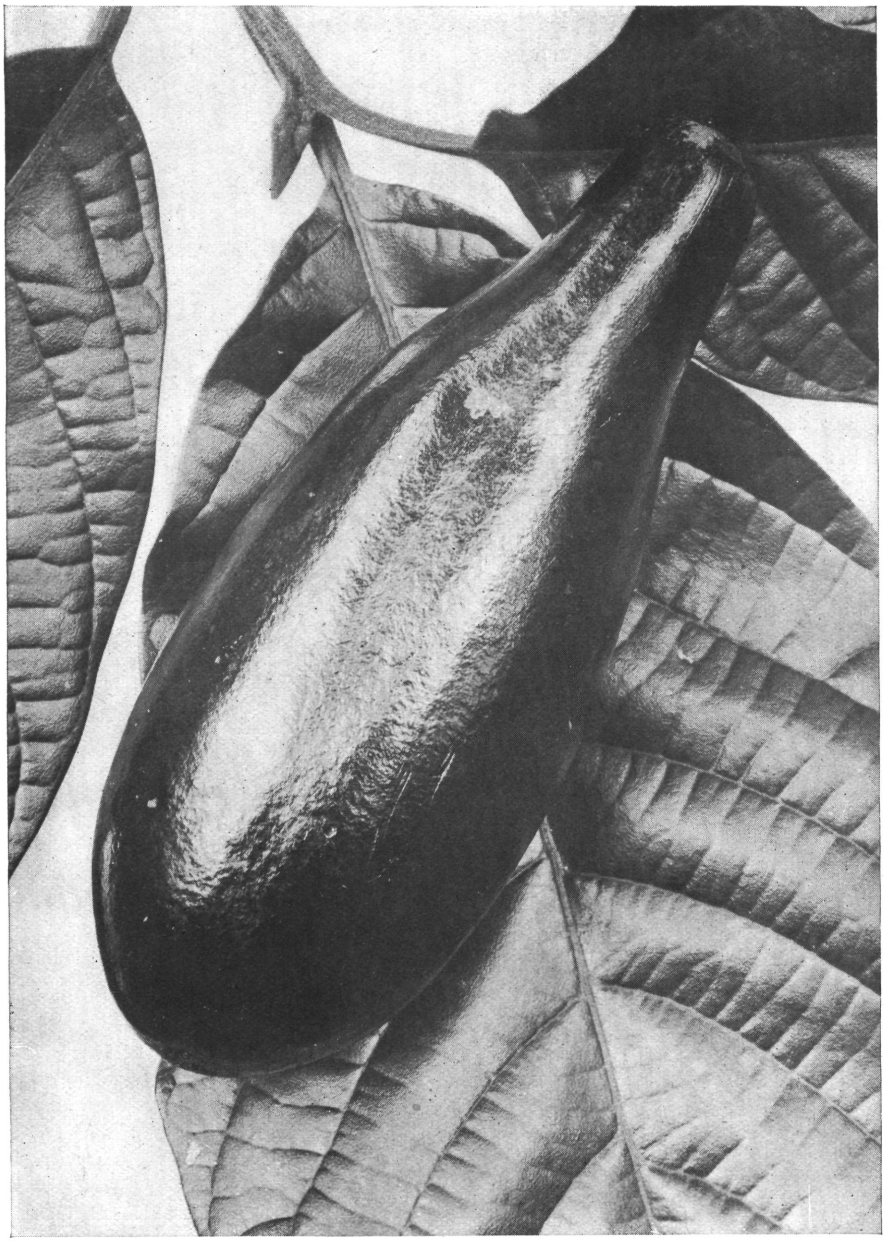
43440. SICANA ODORIFERA (Vell.) Naud. Cucurbitaceæ. **Melocoton.**

"(No. 47a. Guatemala, Guatemala, October 7, 1916.) Seeds of a peculiar melon purchased in the market of Guatemala, but said to have come from Escuintla. It is identical with the one sent in under No. 29a [S. P. I. No. 43427] except in color; 29a was shining black, while this variety is bright red. See 29a [S. P. I. No. 43427] for description."

43441. Undetermined. Myrtaceæ.

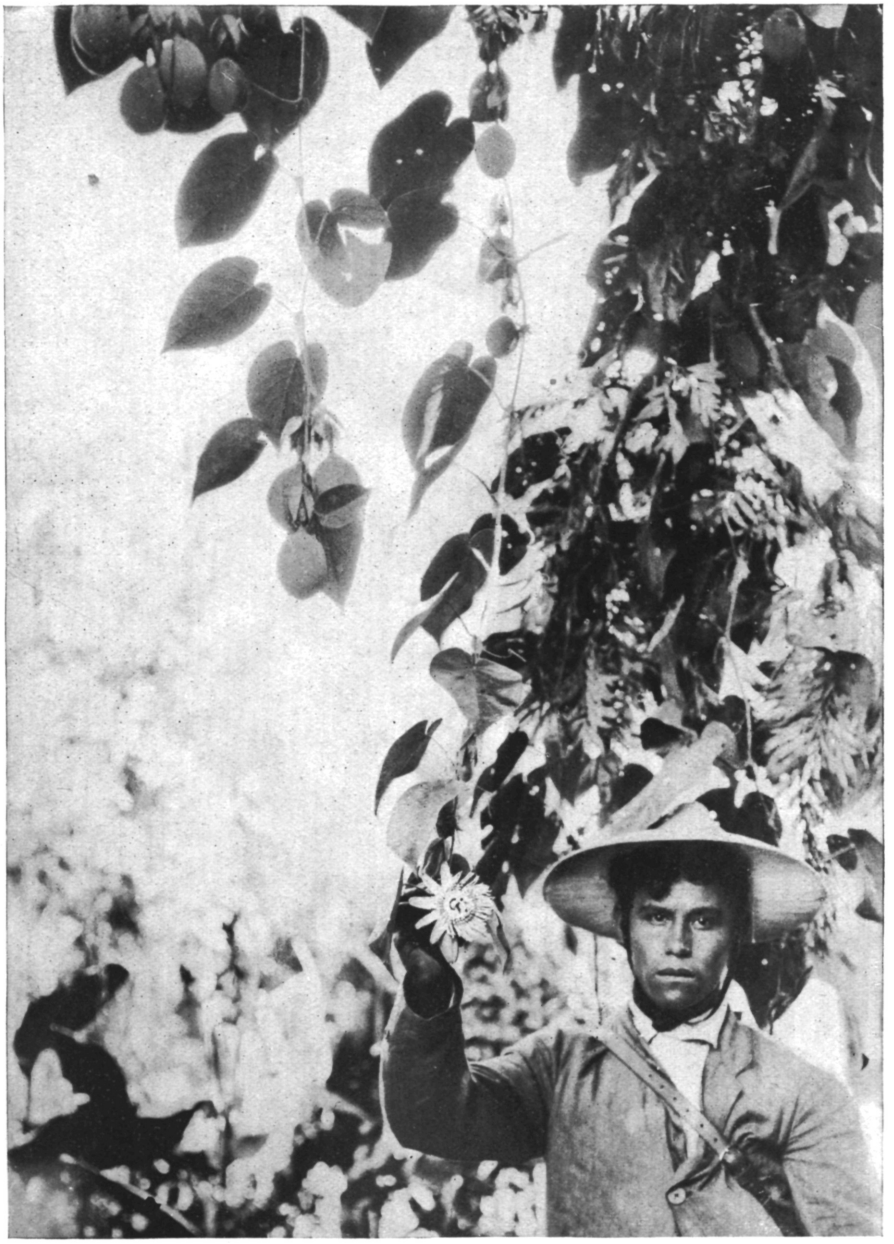
From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received October 18, 1916.

"A long black plum, quite good, but a little astringent (some sorts more, some less). It is a stately, very large, dense, evergreen tree; leaves large, dark



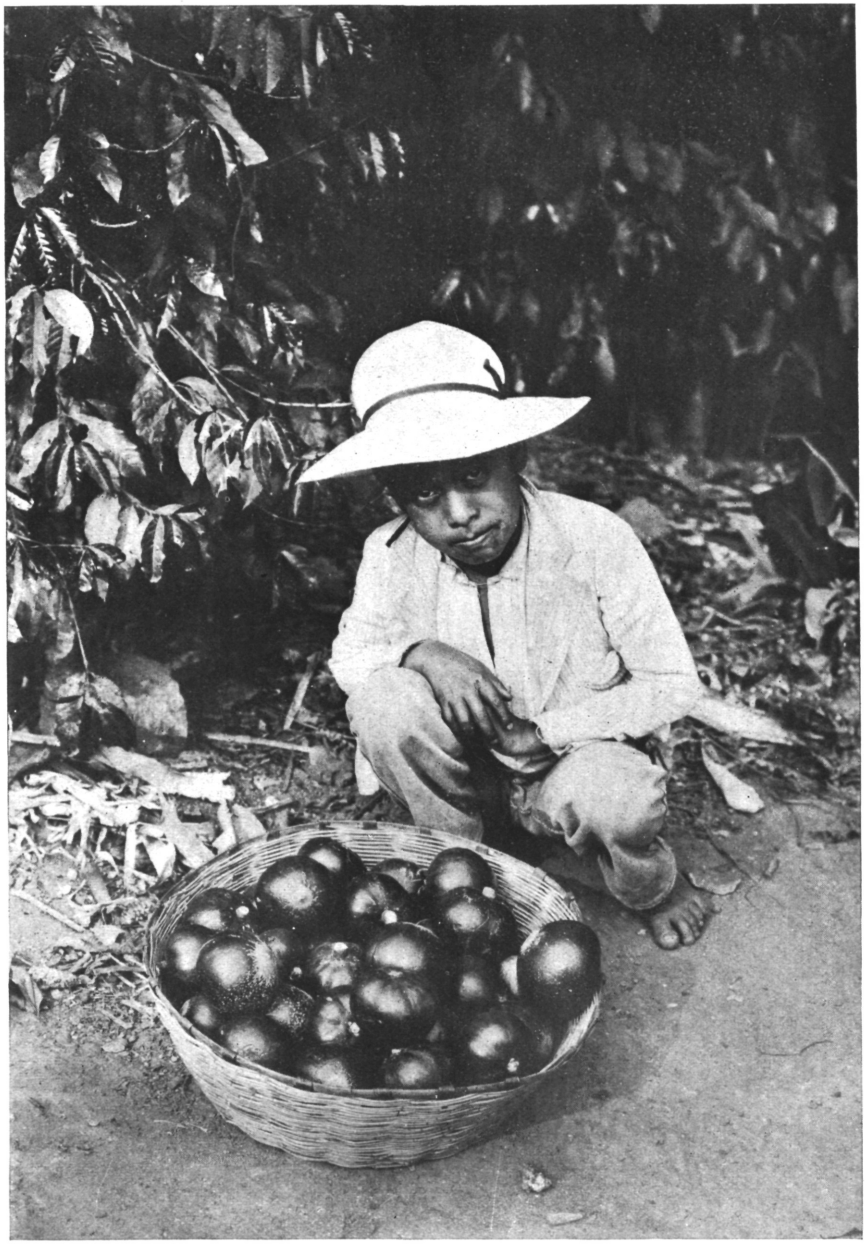
THE ANAY, A NEW RELATIVE OF THE AVOCADO. (HUFELANDIA ANAY BLAKE, S. P. I. No. 43432.)

The anay grows wild in northern and western Guatemala. Its fruit resembles an avocado of the Mexican race in general appearance. The flavor is exceedingly pleasant, but the flesh is rather scanty. This species may prove of value in connection with avocado breeding in the United States. (Photographed by Wilson Popenoe, Sept. 23, 1916, at Mazatenango, Guatemala; P16809FS.)



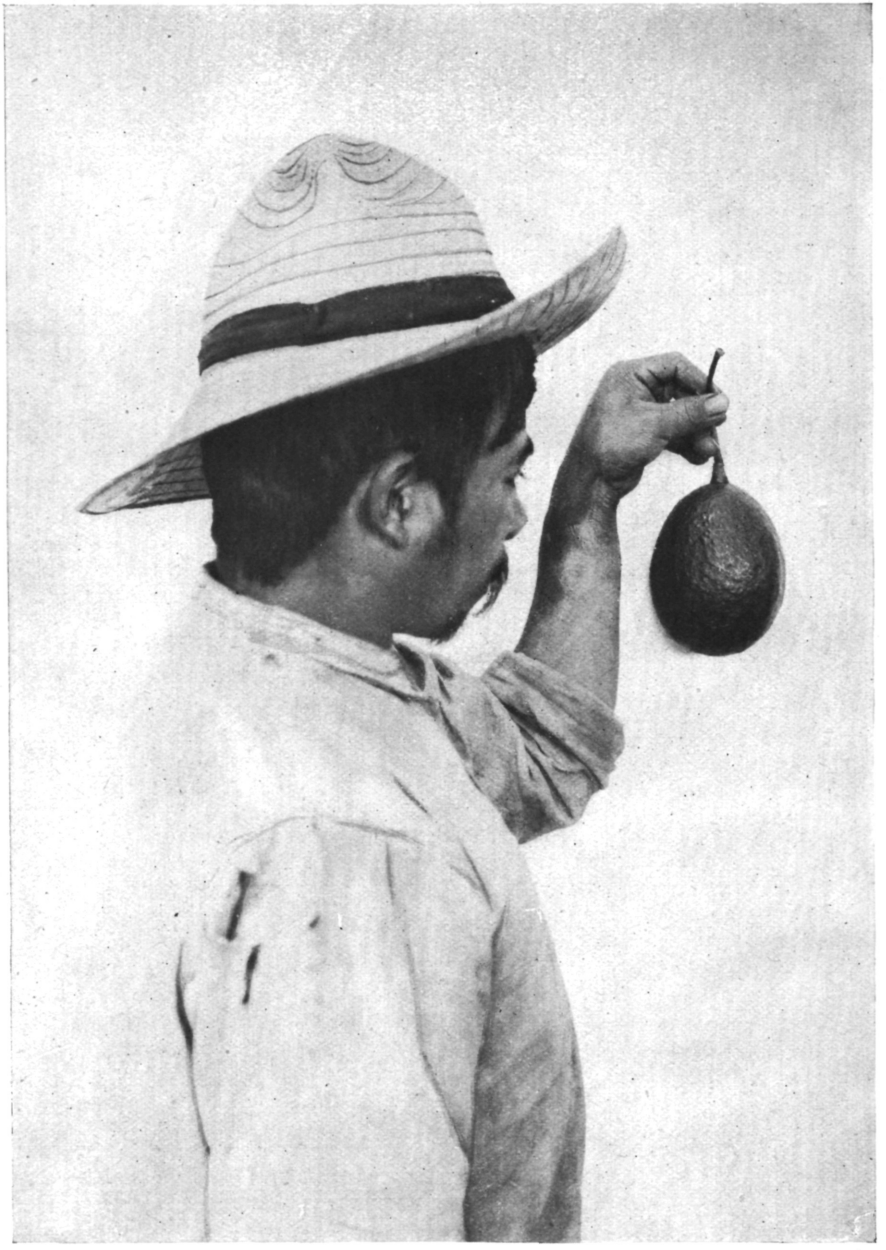
THE GRANADILLA OF GUATEMALA. (PASSIFLORA LIGULARIS JUSS., S. P. I. NO. 43437.)

Several species of Passiflora are commonly known as granadilla in tropical America. The one here shown is grown in the Guatemalan highlands. It is found at high altitudes; hence, it should be sufficiently frost resistant for cultivation in California and Florida. The white juicy pulp is sweet, delicately flavored, and faintly perfumed. (Photographed by Wilson Popenoe, Oct. 19, 1916, at San Lorenzo del Cubo, Guatemala; P16870FS.)



THE GREEN SAPOTE, A RARE TROPICAL FRUIT. (ACHRADELPHA VIRIDIS (PITTIER) O. F. COOK, S. P. I. No. 43439.)

The green sapote, or injerto, is found in the Guatemalan highlands. It is much superior in quality to its relative, the sapote or mamey sapote (*Achradelpha mammosa*). The fruits have orange-brown flesh inclosing one or two large seeds; the sweet, rich flavor resembles that of the sapodilla. The tree will probably succeed in Florida and will certainly grow in Porto Rico, Hawaii, and the Philippines. (Photographed by Wilson Popenoe, Apr. 2, 1917, at San Cristobal, Alta Vera Paz, Guatemala; P17192FS.)



THE LAMAT AVOCADO, FROM THE HIGHLANDS OF GUATEMALA. (PERSEA AMERICANA MILL., S. P. I. No. 43476.)

The Guatemalan avocados are remarkable for their fine quality and their habit of ripening in winter. The variety here shown, Lamat, comes from Amatitlan and is typical of the Guatemalan race. The form is attractive. The weight, about 1 pound, is desirable from a market point of view. Since the Guatemalan avocados are hardier than the West Indian varieties heretofore grown in Florida, they will make it possible for Florida to market avocados in quantity during the winter and spring. (Photographed by Wilson Popenoe, Nov. 5, 1917, at the city of Guatemala, Guatemala; P17401FS.)

bluish green; fruits bright yellow till they ripen, when they turn shining black in a short time. Tree loaded with yellow and black fruits for many weeks; very prolific. Said to be very good for sweet preserves." (*Wercklé.*)

43442 to 43444. PYRUS CHINENSIS × COMMUNIS. Malaceæ. **Hybrid pear.**

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered on October 24, 1916, for convenience in distribution.

43442. Hybrid pear, P. I. G. No. 6587, tree 3, row 42. Raised by Dr. W. Van Fleet, in 1907, and presented to the Plant Introduction Field Station, December 22, 1909.

"Fruit large and of attractive pyriform shape, somewhat resembling *Bartlett*, but with a deep red cheek on yellow ground. Flesh fine grained, tender, and juicy, with but few granules, flavor sweet and pleasant, quality very good. Should make an attractive market pear, It is hoped the usual resistance to oriental pear blight will be shown by this hybrid variety." (*Van Fleet.*)

43443. Hybrid pear, from S. P. I. No. 28497, raised by Dr. W. Van Fleet. On account of differences in the fruits this plant and the following have been assigned new S. P. I. numbers.

Mr. J. E. Morrow describes the fruit of this one as follows: "Row 27, tree 7, fruit large, long, and pyriform; rough greenish skin, dotted; stalk 1½ inches long, set between lips, fleshy at the base; calyx large in shallow basin; flesh granular, coarse, juicy; a late pear of excellent size and shape, but very coarse."

43444. Hybrid pear from S. P. I. No. 28497. Mr. J. E. Morrow describes the fruit as follows: "Row 28, tree 4, in the test orchard. Fruit large size, roundish, oblate; very short neck; skin rough, irregular, dotted; basin broad, deep, and furrowed. Flesh coarse, but sweet and juicy. A pear of promise."

43445. PYRUS CALLERYANA Decaisne. Malaceæ. **Callery's pear.**

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered on October 24, 1916, for convenience in distribution.

From a tree grown from seed introduced by Mr. George Compère, who collected it in 1908 in the vicinity of Hongkong, China. The parent tree from which these seedlings came is standing in the yard of Mrs. Lenora Williams, at Oroville, Calif. The plant may be described as follows: This wild Chinese pear is not uncommon in western Hupeh at an altitude of from 1,000 to 1,500 meters and is easily recognizable by its comparatively small crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions and might prove to be a very desirable blight-resistant stock. Also the woolly aphis, which attacks other species of pears, has not been known to touch this species. (Adapted from *Compère, Monthly Bulletin, California State Commission of Horticulture, vol. 4, pp. 313–314*, and from *Rehder, Proceedings of the American Academy of Arts and Sciences, vol. 50, pp. 237–238.*)

"The male parentage of these seedlings is naturally uncertain, as the tree at Oroville might have been cross-pollinated by bees flying from European or other oriental pear trees in the vicinity." (*Fairchild.*)

43446. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Dominica, British West Indies. Secured through Mr. Joseph Jones, curator, Botanic Gardens. Received October 24, 1916.

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color, with here and there a bright hardened drop of the yellow juice, which marks some injury to the rind when it was young. As these mangosteens are sold in the Dutch East Indies, heaped up on fruit baskets or made up into long, regular bunches with thin strips of braided bamboo, they are as strikingly handsome as anything of the kind could well be, but it is only when the fruit is opened that its real beauty is seen. The rind is thick and tough, and in order to get at the pulp inside it requires a circular cut with a sharp knife to lift the top off like a cap, exposing the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is of a most delicate pink color and is studded with small yellow points formed by the drops of exuding juice. As you lift out of this cup, one by one, the delicate segments, which are the size and shape of those of a mandarin orange, the light pink sides of the cup and the veins of white and yellow embedded in it are visible. The separate segments are between snow white and ivory in color and are covered with a delicate network of fibers, and the side of each segment where it presses against its neighbor is translucent and slightly tinged with pale green. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him the more, and he invariably stops to admire the rapidly deepening color of the cut rind as it changes on exposure to the air from light pink to deep brown. The texture of the mangosteen pulp much resembles that of a well-ripened plum, only it is so delicate that it melts in one's mouth like a bit of ice cream. The flavor is quite indescribably delicious and resembles nothing you know of and yet reminds you, with a long aftertaste, of all sorts of creams and ices. There is nothing to mar the perfection of this fruit, unless it be that the juice from the rind forms an indelible stain on a white napkin. Even the seeds are partly or wholly lacking, and when present are so thin and small that they are really no trouble to get rid of. Where cheap and abundant, as in Java, one eats these fruits by the half peck and is never tired of them; they produce no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*Fairchild.*)

43447 to 43449.

From El Coyolar, Costa Rica. Seeds presented by Mr. Carlos Wercklé. Received October 20, 1916.

43447. ANNONA MURICATA L. Annonaceæ. **Soursop.**

"*Guanábana.* From a good-sized fruit with only 17 seeds; a very good variety." (*Wercklé.*)

"One of the most valuable fruit trees of the Tropics. It is grown with especial excellence in Porto Rico and is common in the markets of Key West, whither it is shipped from the islands to the southward. A favorite drink is made from the juice, and the pulp yields excellent jelly, tarts, and preserves." (*W. E. Safford.*)

For further description, see Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 292.

43447 to 43449—Continued.

43448. ANNONA SQUAMOSA L. Annonaceæ. **Sugar-apple.**

"Delicious sherbets are made from its custardlike pulp, often with the addition of a little lemon juice, but it is never cooked or made into preserves or jelly, like the soursop. The fruit, when green, as well as the seeds and leaves, is used for destroying vermin; and in the West Indies the crushed leaves, in the form of poultices, are applied to ulcers and malignant sores. The root is a drastic purgative." (*W. E. Safford.*)

For further description, see Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 294–295.

43449. ARACHIS HYPOGAEA L. Fabaceæ. **Peanut.**

"*Cacahuete,* the variety from Rio Grande, which produces many pods with four perfect seeds. These seeds are from a very poor crop. Last year on the same land the pods were much larger, with four large seeds." (*Wercklé.*)

43450. CANARIUM AMBOINENSE Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received October 24, 1916.

This beautiful tree, which grows to a height of about 90 feet, so resembles *Canarium moluccanum* in general habit and in the leaves that the two can scarcely be distinguished, although the fruit is different. The bark is smooth and white. The fruit of this species is oblong, pointed at both ends, with the angles sharp toward the ends and somewhat flattened toward the middle. This tree is found in the island of Amboina, Celebes. (Adapted from *Hochreutiner, Plantae Bogoriensis Exsiccatae, p. 55.*)

43451 to 43461.

From Argentina. Collected by Mr. H. M. Curran. Received October 11, 1916.

43451 to 43453. ACACIA spp. Mimosaceæ.

43451. ACACIA FURCATA Gillies.

A glabrous, spiny shrub, with very remarkable stipular thorns, which are nearly of equal breadth throughout until they branch off at the apex into spreading horns. The leaves consist of three pairs of pinnæ, and each pinna consists of seven to nine pairs of pinnules. The white flowers appear in January, and the pods, which contain from five to eight seeds, are rather large, oblong, and flattened. The hard striped coffee-colored wood is not useful. In the Chaco Santafeción, Argentina, the shrub develops to a considerable size, but when the trunk is large it is usually decayed. This shrub occurs throughout the northern portion of Argentina. (Adapted from *Hooker, Botanical Miscellany, vol. 3, pp. 206–207,* and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, pp. 34, 35.*)

43452. ACACIA PRAECOX Griseb.

A stout tree, not very tall, well known in northern Argentina on account of its globose heads of aromatic flowers. The leaves consist of three to four pairs of pinnæ and 10 to 24 pairs of pinnules. The wood resembles that of *Ceratonia siliqua* L., or *St.-John's-bread,*

43451 to 43461—Continued.

forms excellent firewood, and is quite abundant. (Adapted from *Grisebach, Plantae Lorentzianae, p. 88,* and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 35.*)

43453. ACACIA VISCO Lorentz.

A tree, native of northern Argentina, commonly unarmed, but occasionally with recurved thorns. The leaves consist of three to six pairs of pinnæ; the flowers are sessile. The walnut-colored, striped hard wood is much appreciated on account of its resistance to moisture. It is not abundant and is used for all kinds of carpentry. (Adapted from *Grisebach, Plantae Lorentzianae, p. 122,* and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 36.*)

"A timber tree which yields a very hard durable wood. It is a small tree of the dry regions and should be useful for planting in the mesquite areas of the Southwest." (*Curran.*)

43454. CHRYSOPHYLLUM LUCUMIFOLIUM Griseb. Sapotaceæ.

Aguay. A tree found in Misiones and Corrientes, Argentina, with beautiful broad green leaves and axillary or lateral flowers. Only one seed matures in the oval fruit, which is 12 millimeters long. This tree sometimes attains considerable size, and the wood, which is flexible and easily split, is used for firewood and gunstocks. The fruit is edible and very sweet. (Adapted from *Grisebach, Plantae Lorentzianae, pp. 223–224,* and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 96.*)

43455. ENTEROLOBIUM TIMBOUVA Mart. Mimosaceæ. **Timbo.**

"This is a very important timber tree and one of the most rapid-growing trees of the Tropics. Much appreciated in Buenos Aires as a shade tree. Reaches its best development in tropical forests, but endures cold and drought in a moderate degree." (*Curran.*)

A tree found throughout all northern Argentina and used as an ornamental in Buenos Aires. It is unarmed, and the leaves consist of two to five pairs of pinnæ and ten to twenty pairs of pinnules. The greenish flowers occur in large heads or clusters, and the coriaceous, indehiscent, kidney-shaped pods are fleshy within and contain elliptic seeds. These pods are called *orejas de negro* in Argentina. From the trunks canoes are made, and the beautiful striped wood is used for a great many purposes, such as general construction work and furniture, for paper pulp, and as a source of saponin. The bark and leaves are said to be poisonous to fish; the pods are used to remove stains from clothes, and the seeds appear to be poisonous. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 41,* and from *Correa, Flora do Brazil, p. 70.*)

43456. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

"The Ilex is a plant of humid forest regions, but it will also endure the climate of Buenos Aires. It should be a good plant for Florida and perhaps the coast region as far north as the Cape Fear River, North Carolina. In nature it is a forest plant. In cultivation a light shade is often placed over the plants." (*Curran.*)

A small, bushy, evergreen tree with serrate alternate leaves, a native of Brazil, Paraguay, and the neighboring countries. The leaves are

43451 to 43461—Continued.

roasted and ground to make the Paraguay tea of commerce, which is said to possess the good properties of tea and coffee without their after-effects. In the hospitals of Paris it is used as a stimulant. The yerba groves are located in remote regions and grow best on high land at an elevation of 1,000 to 2,000 feet in soft alluvial soil or soil rich in humus. The seed is very difficult to germinate and without special treatment requires a year before it will come up. An opinion prevails that these seeds will germinate only after being eaten by birds, and a substitute for the gastric juice of the bird has been sought. By a method in use at San Ignacio, Argentina, seedlings have been obtained in five weeks. This plant might be grown in Texas and California. (Adapted from *Friderici, Tropenpflanzer, 1907, pp. 776–783.*)

43457. LONCHOCARPUS sp. Fabaceæ.

The species of this genus are either trees or shrubs, with alternate leaves and opposite leaflets. The papilionaceous flowers are white, pink, or purple, and occur in simple or branched racemes. The membranous or coriaceous pods are flat and dehiscent, containing one to four, or rarely more, flat kidney-shaped seeds. An indigo is said to be obtained from this genus, but it is not known in the trade and is little cultivated. (Adapted from *Humboldt, Bonpland, and Kunth, Nova Genera et Species, vol. 6, pp. 182, 383,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1904.*)

43458. PIPTADENIA EXCELSA (Griseb.) Lillo. Mimosaceæ.
(*P. communis excelsa* Griseb.)

"An important timber tree; also planted as a shade tree in Buenos Aires." (*Curran.*)

An unarmed tree, almost 100 feet high, with 15 to 20 pairs of leaflets in each leaf and spikes of flowers 2 or 3 inches long. The pods are linear. The rather thin bark is not used in tanning, as is that of the other species. The rosy wood, which resembles that of *Piptadenia macrocarpa*, is tough and straight grained and is used by the carpenters of Jujuy for various kinds of work. It is indigenous to the northern part of Argentina and is not exported to the south. (Adapted from *Grisebach, Plantae Lorentzianae, p. 121,* and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 48.*)

43459. PIPTADENIA MACROCARPA Benth. Mimosaceæ.

"Used the same as above number." (*Curran.*)

An unarmed tree, native of Brazil, with grayish tomentulose twigs and branches and 10 to 25 pairs of pinnæ, each with 20 to 40 pairs of pinnules, hardly 2 millimeters long. The flowers occur in peduncled heads in the axils of the leaves, sometimes at the ends of the branchlets. The pods are half a foot long and more than an inch wide, with thickened margins. (Adapted from *Hooker's Journal of Botany, vol. 4, p. 341,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2647.*)

43460. SACCELLIUM LANCEOLATUM Humb. and Bonpl. Boraginaceæ.

A tree, 2 to 4 meters in height, with many branches, and a trunk 3 decimeters in thickness. The alternate, lanceolate leaves are 10 to 16 centimeters in height, and the terminal racemes of inconspicuous diœcious flowers resemble minute bouquets. The fruit is a small drupe. The wood of this tree is about the same in color and texture as that of

43451 to 43461—Continued.

the ash (*Fraxinus excelsior*). This tree is found in the Peruvian Andes on the tributaries of the River Guancabamba. (Adapted from *Humboldt and Bonpland, Plantes Equinoxiales, pp. 41–44, pl. 13.*)

43461. SCHINOPSIS LORENTZII (Griseb.) Engl. Anacardiaceæ. (*Quebrachia lorentzii* Griseb.) **Quebracho.**

A tall timber tree, native of central South America, attaining a height of 50 to 75 feet and a diameter of 2 to 4 feet. The leaves are composed of 10 to 15 pairs of pinnæ and the flowers occur in panicles. The fruit is a dry, indehiscent samara. The heartwood of this tree is one of the hardest, heaviest, and most durable timbers in the region of its occurrence. It contains a large amount (20 to 24 per cent) of tannin, which acts as a preservative, and it is used extensively for railroad ties, wharves, dry docks, fence posts, etc. The wood is whiter than that of the *Quebracho colorado* of the Chaco. (Adapted from *Mell, Forest Service Circular 202*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 3.*)

43462. PINUS MERKUSII Jungh. and DeVr. Pinaceæ. **Pine.**

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received October 16, 1916.

This tree, which is the only pine found south of the Equator, attains a height of 100 feet and forms a flat, umbrellalike crown. It is found in Burma, Borneo, Sumatra, and the Philippines, chiefly at elevations of 3,000 to 4,000 feet. The leaves are in clusters of two, the cones are usually in pairs, and the seeds are small, much shorter than the unequal-sided wing. The wood is very resinous, and the trunks are used for masts and spars. (Adapted from *Brandis, Indian Trees, p. 691*, and from *Mueller, Select Extra-Tropical Plants, pp. 393–394.*)

43463 and 43464.

From the Himalaya Mountains. Collected by Mr. R. E. Cooper and presented by Mr. A. K. Bulley, Bees Ltd., Liverpool, England. Received October 16, 1916. Quoted notes by Mr. Cooper.

43463. CHENOPODIUM sp. Chenopodiaceæ.

(Cooper No. 5259.) "This plant grows in sandy soil at an elevation of 10,000 feet and forms a rosette of red-fruited sprays about 11 inches in diameter."

43464. DELPHINIUM sp. Ranunculaceæ. **Larkspur.**

(Cooper No. 5355.) "This plant grows at an altitude of 10,000 feet and was in fruit only under moist gravel banks."

43465. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

From Guayaquil, Ecuador. Presented by the American consul, through Mr. L. H. Dewey, of the Department of Agriculture. Received November 9, 1916.

"This is one of the silk-cotton trees, although not of such economic importance as the true kapok. The silk cotton is very nice and useful for stuffing pillows. The trunks of the young trees are spiny, but shed the spines with advancing age. I have seen trees of this species in the foothills of Salta with a diameter of 2 meters 40 centimeters, looking like immense onions. Some of the inhabitants there use the partly hollowed trunks of the live trees around

their houses for storing their cured meats and other supplies. Here in Tucuman the Chorisia is used quite a good deal for planting along suburban roads and avenues, and while it is not as beautiful a tree as some it is striking and interesting enough. The large flowers are yellowish white, the pods green at first, changing later on to dark brown. The tree resists quite a good deal of frost, about as much as the jacaranda, for instance, but probably can not be grown as far north as Washington. In California and the Gulf States it should do quite well. This species is quite scarce." (*E. F. Schultz.*)

43466 to 43470.

From the Himalaya Mountains. Collected by Mr. R. E. Cooper and presented by Mr. A. K. Bulley, Bees Ltd., Liverpool, England. Received October 16, 1916. Quoted notes by Mr. Cooper.

43466. EREMURUS HIMALAICUS Baker. Liliaceæ.

(Cooper No. 5196.) "This plant, which was found growing in a thin, turfy meadow over sand on river banks in extremely dry situations, is said to occur in only one place, Gonola, Labane, a stage below Kylung. It is 3 or 4 feet high, and the very showy white flowers appear in May."

43467. EREMURUS HIMALAICUS Baker. Liliaceæ.

"Probably the same as No. 5196 [S. P. I. No. 43466]."

43468. IRIS sp. Iridaceæ. **Iris.**

(Cooper No. 5357.) "This dwarf iris grew on sloping turf at an altitude of 10,000 to 12,000 feet. Its leaves are thin and narrow."

43469. SILENE sp. Silenaceæ.

(Cooper No. 5312.) "This plant grew to a height of 2 feet in the moist turf of a cornfield and bore white flowers."

43470. THYMUS sp. Menthaceæ. **Thyme.**

(Cooper No. 5265.) "This plant grows on moist shady slopes at an elevation of 10,000 feet. The flowers are small and yellow, and the fruits are very hairy."

43471. BOUGAINVILLEA sp. Nyctaginaceæ. **Bougainvillea.**

From Georgetown, Demerara, British Guiana. Cuttings presented by the Department of Science and Agriculture. Received October 3, 1916.

An attractive crimson-flowered bougainvillea, originally from Colombia, and now commonly cultivated in several of the British West Indian islands and also in British Guiana. In the latter place the Department of Science and Agriculture has been carrying on experiments with the culture of this ornamental. The crimson bougainvillea has been successfully raised from cuttings and flowers twice a year in British Guiana, once in April or May and once in October or November. (Adapted from note in *Agricultural News, July 1, 1916, vol. 15, p. 220.*)

43472 to 43474.

Collected by Dr. David Griffiths and grown at the Plant Introduction Field Station, Chico, Calif. Plants numbered October 27, 1916.

43472 and 43473. LEPARGYRAEA ARGENTEA (Pursh) Greene. Elaeagnaceæ.] (*Shepherdia argentea* Nutt.) **Buffalo berry.**

"Secured near Pierre, S. Dak. The buffalo berry is a native of the Missouri River valley and westward. In limited localities it has played

43472 to 43474—Continued.

a rather important rôle as a jelly fruit. It grows into a large shrub or small tree, resembling rather closely in leafage the so-called Russian olive belonging to the genus Elaeagnus. The fruit is about the size of a currant and varies in color from yellow to red. It is not at all palatable until very late in the season, after it has partly dried so that the skin is wrinkled and presents a withered appearance. To most tastes it is not palatable at all in the raw state, but it makes a jelly of very superior quality. The fruit is gathered by shaking the trees very late in the season and catching the falling berries upon sheets. The yellow form is usually preferred to the red for culinary purposes." (*Griffiths.*)

43472. Red-berried form. **43473.** Yellow-berried form.

43474. BERBERIS FREMONTII Torr. Berberidaceæ. **Barberry.**

"From Lyford and San Saba, Tex. A native of southern and central Texas. Like the other species of the genus, it has ornamental value. In its native regions the berries are used for culinary purposes. In localities where the species is very abundant jellies are prepared and offered for sale on the markets. The species is very variable." (*Griffiths.*)

43475. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Santiago, Chile. Seeds procured through Mr. W. A. Shelly, at the request of Mr. W. F. Wight, of the Bureau of Plant Industry. Received October 16, 1916.

"*Palta.* I am sending several of the varieties found here in Chile." (*Shelly.*)

43476. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 20, 1916, to June, 1917.

"(Nos. 48, 55, 82, 126, and 148. Avocado No. 3.) *Lamat.*[3] A variety combining unusual productiveness with good size, attractive appearance, and good quality of fruit. In addition, it seems to ripen earlier than many other avocados, which suggests it for trial as a winter-ripening variety in California. It has no claim to unusual hardiness, since it is grown at an elevation where frosts are not experienced.

"The parent tree is growing in the chacara of Angel Samayoa, in the town of Amatitlan (altitude 3,872 feet). It stands close to the corner of a small field in which tomatoes and maize are planted annually. The soil is a loose sandy loam, apparently of excellent fertility and considerable depth. The age of the tree is not definitely known, but judging from its size it is probably 5 or 6 years old. It stands about 20 feet high, with an erect crown, extending almost to the ground, about 10 feet broad, and well branched. The trunk is

[3] This and other varietal names for Mr. Popenoe's Gautemalan avocados have been taken from the Maya language, which in various dialectic forms is the one spoken in those parts of Guatemala from which these avocados have come. It has been thought that the use of these names, many of which have appropriate meanings, would serve to distinguish these varieties from others grown in the United States, as well as to indicate their origin.

6 inches thick at the base. The tree shows every indication of being a strong, vigorous grower, and its branches are stout and shapely and not so brittle as in many weak-growing varieties. The bud wood furnished by the tree is quite satisfactory; the growths are of suitable length, and the eyes are strong and well developed, showing no tendency to drop at an early date, as they do in some varieties.

"During the period in which this tree was under observation it showed a peculiarity in flowering which was not noticed elsewhere in Guatemala. In November, 1916, flowers were produced and a few fruits set. Since a heavy crop was produced in 1916, it was thought that the fruits set from the November bloom were all that would be developed during 1917, but in January the tree flowered again and set a very heavy crop of fruit.

"The crop produced in 1916 amounted to over 100 fruits, which can be regarded a heavy crop when the size of the fruits and the small size of the tree are considered. The crop for 1917 promises to be considerably larger. In 1916 the fruits were practically all picked in November, at which time they were considered by the owner to be mature.

"The fruit is broadly oval, quite uniform in shape, with a smooth green surface when ripe. The weight varies from 14 to 20 ounces. The skin is about as thick as in the average variety of the Guatemalan race, which is one-sixteenth of an inch or slightly more. The flesh is free from fiber, clear, of good texture, and pleasant flavor. Specimens sampled in November, 1916, were not as rich as would be desired, but it may reasonably be assumed that they would have been much better if they had been left on the tree two or three months longer. Perfectly ripened specimens of this variety have not been tested; hence, the quality of this fruit when at its best must remain somewhat in doubt until it comes into bearing in the United States. The seed is comparatively small and always tight in its cavity.

"Form uniformly oval; size above medium to large, weight 14 to 18 ounces, at the time up to 20 ounces, length 4½ inches, greatest breadth 3½ inches; base rounded, with the stem inserted obliquely without depression; stem stout, about 6 inches long; apex rounded, with the stigmatic point to one side and slightly elevated; surface nearly smooth, slightly undulating and somewhat obscurely ribbed, deep green in color, almost glossy, with a few scattering large yellowish green dots; skin thick, slightly over one-sixteenth of an inch at base, nearly one-eighth of an inch at apex, coarsely granular, brittle; flesh cream color, pale green near the skin, of fairly rich flavor, and free from fiber or discoloration; quality very good; seed rather small in comparison to the size of the fruit, almost spherical, about 2½ ounces in weight, with both seed coats adhering closely to the nearly smooth cotyledons, tight in the seed cavity." (*Popenoe.*)

For an illustration of this avocado, see Plate VI.

43477. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Santo Domingo, Dominican Republic. Received through Mr. Carl M. J. von Zielinski, American vice consul in charge, October 19, 1916.

"Information from reliable sources states that the cultivation of this plant is very simple. It should be planted in a humid soil, preferably where there is plenty of shade. Its growth is said to be wonderful, and after 90 days it has been known to produce over 100 fruits. There are two kinds of *tallote* found in this country, but the difference is said to be only in the color of the skin, which may be either white or green. The fruit is very much liked by the

natives and is prepared in many ways. It is used in soup and meat dishes and also in the manufacture of candy. Native physicians prescribe it not only as food for children and old people, but the leaves after boiling are used externally to cure rheumatism. Animals are very fond of the fruit as well as the leaves." (*Von Zielinski.*)

43478. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received October 23, 1916.

This plant is the *bael tree* of India, ascending to 4,000 feet above the sea, and found here and there both wild and cultivated throughout India and also Burma. It finally attains a height of 40 feet. The leaves are trifoliolate and deciduous, and the greenish yellow, nearly globular fruit varies from 2 to 6 inches in diameter, being smaller in the wild trees. The hard shell is filled with a pale orange aromatic pulp, in which occur 10 to 15 long, narrow cells containing the seeds embedded in transparent gum. The Hindus are very fond of this fruit, which in its green state is a specific for dysentery. It is now being tested in several places in the United States with a view to introduction. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 222, 223,* and from *Mueller, Select Extra-Tropical Plants, p. 20.*)

43479. MANGIFERA VERTICILLATA C. B. Robinson. Anacardiaceæ.
Baúno.

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received October 24, 1916.

A very large tree, with gray bark and extremely poisonous juice. Missionaries in the Province of Moro, Philippine Islands, where this plant is native, say that if one seeks shelter from rain beneath this immense tree the water dripping from the leaves will cause him to have blisters and boils, and if the juice comes in contact with an open cut death results. The leaves are in whorls of four, and the nearly oval fruits are about 6 inches long and 4 inches in diameter, with white flesh containing a seed about 4 inches long. For detailed description of the fruit, see S. P. I. No. 34431. (Adapted from *Robinson, Philippine Journal of Science, sec. C, Botany, vol. 6, pp. 337–339.*)

43480. PERSEA AZORICA Seubert. Lauraceæ.

From St. Michaels, Azores. Presented by Mr. William Bardel, American consul. Received October 24, 1916.

"Seeds collected near Lagoa, at an altitude of 500 feet, and at Furnas, on a mountain rising about 1,800 feet above the level of the sea." (*Bardel.*)

A medium-sized tree, found in the forests of all the islands of the Azores, especially in the island of Pico, at altitudes ranging from 1,000 to 2,500 feet. The younger leaves are hairy margined, and all the leaves are generally oval with wedge-shaped bases. The fruits are quite small and egg shaped. (Adapted from *Seubert, Flora Azorica, p. 29, pl. 6.*)

43481. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Peradeniya, Ceylon. Presented by Mr. C. Drieberg, secretary, Ceylon Agricultural Society. Received October 30, 1916.

"A moderate-sized conical tree, with large leathery leaves, indigenous to Malaya. Its globular purplish brown fruit, about the size of an apple, is

famed as one of the most delicious fruits of the Tropics, some writers describing it as 'perhaps the most luscious fruit in the world, partaking of the flavor of the strawberry and the grape.' The delicate white juicy pulp surrounding and adhering to the seed is the part eaten. In striking contrast to it is the dense, thick, reddish rind, containing tannic acid and a dye. The tree is of very slow growth and does not usually come into bearing till about 9 or 10 years old. The essential conditions for it are a hot climate and deep, rich, well-drained soil. Propagation is usually by seed, but may also be effected by gootee or layering. Sow seeds in pots under cover. The plants are of very slow growth, taking about two years to become large enough for planting out, being then only about 12 inches high." (*Macmillan, Handbook of Tropical Gardening and Planting, pp. 164 and 165.*)

See S. P. I. No. 43446 for further description.

43482. SIMABA CEDRON Planch. Simaroubaceæ. **Cedron.**

From Cristobal, Canal Zone. Presented by Mr. O. W. Barrett. Received October 18, 1916.

"Mr. Sandberg believes that these nuts are high in tannic-acid content and also possess some good medicinal qualities, since they are used in several native remedies about here. The tree reaches some 15 to 25 feet in height and bears great quantities of these brownish fruits, consisting of the large seed and a layer, 5 to 15 mm. thick, of reddish yellow flesh, bitter and acrid." (*Barrett.*)

A short, erect, graceful tree with a trunk about 6 inches in diameter and large, alternate, pinnate leaves, composed of 20 or more pairs of leaflets. The white flowers occur in long racemes, similar to those of *Simaba trichilioides.* The oval fruits, which are 6 cm. (2½ inches) long, are edible. A bitter principle is found throughout the plant, but only the seeds are used medicinally. These seeds are inodorous but intensely bitter and are used as a remedy for snake bite, hydrophobia, and in treating fevers and dysentery. If more than 25 or 30 grains are given in a single dose, death may result. This tree is found in Colombia, Panama, and Costa Rica. (Adapted from *Héraud, Nouveau Dictionnaire des Plantes Médicinales, pp. 563–565,* and from *Hooker's Journal of Botany, vol. 5, p. 566.*)

43483 and 43484.

From Villahermosa, Tabasco, Mexico. Presented by Mr. G. Itié, director, Agricultural Experiment Station. Received October 24, 1916. Quoted notes by Mr. Itié unless otherwise stated.

43483. ACROCOMIA MEXICANA Karw. Phœnicaceæ. **Cocoyol palm.**

"*Coyol de sabana* or *cocoyol.* The inhabitants use the fruit in making a dessert, cooking it with brown sugar. Rings are made from the shells."

A prickly palm, about 20 feet high, with a brown woolly trunk up to 1½ feet thick and terminal leaves from 6 to 8 feet in length. The sheathing bases of the leaves are armed with long black spines, and the spathe is very spiny. The yellow flowers are very odorous, and the round fruits are about an inch in diameter. This palm is found in the cooler regions of Mexico up to 3,000 feet above the sea and is said to be hardy at Santa Barbara, Calif. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 19,* from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 211,* and from *Martius, Historia Naturalis Palmarum, p. 285.*)

43483 and 43484—Continued.

43484. ATTALEA sp. Phœnicaceæ. **Corozo palm.**

"*Corozo.* Very abundant, but little exploited because of the difficulty of breaking the shell."

"An undescribed species, closely related to the Cohune, or Corozo palm (*Attalea cohune*), of the Caribbean coast region of Central America; it differs from the Cohune palm in the smaller and more rounded fruits and the thinner and more brittle shell of the seed. The seed contains a single kernel, smaller than that of the Cohune. The kernels contain a high percentage of oil, said to be the equal of coconut oil and suitable for the manufacture of similar products. The palm is said to grow in great abundance in the vicinity of Mazatlan, Sinaloa, Mexico. The kernels are exported in considerable quantities from Mazatlan to the Pacific ports of the United States for oil extraction." (*C. B. Doyle.*)

43485 to 43487.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 2, 1916. Quoted notes by Mr. Popenoe.

43485. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

"(No. 49. Duenas, Departamento de Sacaterpequez, October 18, 1916.) Bud wood of an unusually choice variety of cherimoya, or *anona* as it is called here, from a garden in the village of Duenas, about 10 kilometers from Antigua. The cherimoya is very common in this region, which lies at an elevation of about 5,200 feet. There is great variation in the shape and character of the fruit, and the trees seem to vary in productiveness. Most of them bear very few fruits. The tree from which this bud wood was taken has a trunk about a foot in diameter, but at a distance of 10 feet from the ground the top has been removed, probably two years ago, and the sprouts which are to form the new top are now about 6 feet long. There are a good number of these sprouts and they are now in bearing, producing more fruit than is usually borne by the ordinary tree of mature size, although the latter would have a crown 10 to 20 feet broad and a vastly greater amount of fruiting wood. Whether the productiveness of this variety is an inherent characteristic or whether it has been induced by topping the tree, I am unable to determine, but on the chance that it may be inherently a heavy bearer I have secured bud wood for propagation and trial in Florida, and more especially in southern California, where cherimoya culture could undoubtedly be developed into a horticultural industry if prolific and otherwise desirable varieties were obtainable. The fruit of this variety is of excellent size and appearance. It varies from 3 to 7 inches in length and from about 6 ounces to nearly 3 pounds in weight. In form it is uniformly conical, blunt at the apex. The surface is nearly smooth, with the carpellary areas indicated by raised lines. The color is light green. The fruit begins to ripen about the first of October, but the season is not at its height until after the end of the year. Many of the fruits are attacked by an insect which burrows in the seeds. Its presence can be detected by small round holes on the surface of the fruit."

43486 and 43487. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

43485 to 43487—Continued.

43486. "(No. 50. From Santa Maria de Jesus, October 20, 1916.) Avocado No. 4. *Itzamna.* From the garden of an Indian, who refused to divulge his name. The garden is in the center of the village, toward the Volcan de Agua from the central plaza. Santa Maria de Jesus is a small village located upon the upper slopes of the Volcan de Agua, at an elevation of 6,700 feet. It is about 10 kilometers from Antigua. As one climbs up the broad slope of the volcano the character of the vegetation changes considerably, and many of the plants common in the gardens at Antigua are not grown here because of the cold. Among the plants which are conspicuous by their absence are the banana, the orange (and other citrus fruits), and the tender ornamental plants, such as the royal palm. In their stead, the gardens of the Indians are filled with peach trees, chayote vines, granadilla vines (*Passiflora ligularis*), and with vegetables such as peas. The hardy Abyssinian banana is a common ornamental plant. Among the plants of the lower elevations which persist are the cherimoya, the avocado, and the matasano (Casimiroa), though I saw only one tree of the latter. *Grevillea robusta* is one of the commonest ornamental trees. It can thus be seen that the vegetation is not at all tropical in character. The commandant assures me that the thermometer goes below the freezing point, but records are lacking. This avocado has been obtained in the hope that it may prove slightly hardier than those from the lower elevations. In the United States it may succeed in regions which are a trifle too cold for the average Guatemalan variety. It should at least be given a test to determine its hardiness. The fruit is not yet fully grown, so it can not be described. The tree is about 25 feet high and is carrying a fair crop. It has good, large wood and seems to be a stronger grower than some I have seen. The fruits are almost round, tending toward broadly obovoid, and obscurely ribbed. The surface is very light green, almost glossy, with numerous large yellowish dots. The skin is slightly over one-sixteenth of an inch thick. The fruit looks like a good avocado. The season of ripening could not be ascertained, but probably it is not earlier than April."

43487. "(No. 15. San Lucas, Departamento de Sacatepequez, October 22, 1916.) Avocado No. 5. *Batab.* From the garden of an Indian, near the center of the village, to the west of the church. This village is situated on the road between the city of Guatemala and Antigua, at an elevation of 6,850 feet. The principal fruit trees in the gardens of the Indians are peaches, cherimoyas, avocados, quinces, manzanillas (*Crataegus stipulosa*), and pomegranates. There are no bananas here, and I saw only two or three orange trees. The tropical fruits do not succeed at this elevation. This variety, like No. 4 [S. P. I. No. 43486], has been selected because of its possible hardiness. Coming from an elevation about 1,750 feet above Antigua, it may prove to be more frost resistant than varieties from the latter place. It should be given a trial in localities in California and Florida which are slightly too cold for the average variety of this race. The tree is about 20 feet high, with a good crown. According to the owner, it bears over 200 fruits in good seasons, but sometimes the crop is partly de-

43485 to 43487—Continued.

stroyed by frost. The last of the fruits of this year's crop are now being picked. The fruit of this tree seems to ripen later than most of the avocados in Antigua, but this may be due to the difference in elevation. The fruit is of good size and quality, oblong oval, weighing up to a pound, deep green in color, with flesh of good flavor and a seed rather large in size, tight in the cavity, form truncate oval, size medium to above medium, weight 10 to 16 ounces, length 3⅜ to 3⅞ inches, greatest breadth 3 to 3⅝ inches; base obliquely flattened, the stem inserted to one side in a shallow cavity; stem very stout, about 4 inches long; apex truncate to rounded, the stigmatic point slightly raised; surface pebbled or slightly rough, dull deep green in color, with a few yellowish dots and numerous rough russet scars; skin one-sixteenth of an inch thick at base, slightly thicker toward apex of fruit, coarsely granular, separating readily, brittle; flesh firm, oily, rich yellow near the seed, changing to pale green near the skin, very slightly discolored around the base of the seed with fiber traces; flavor very rich, nutty; quality very good; seed medium to rather large in size, oblate-conic in form, 1⅝ to 2 inches broad, tight in the cavity, with both seed coats adhering closely."

43488. DIOSCOREA PRAEHENSILIS Benth. Dioscoreaceæ. **Yam.**

From Ogbomosho, Nigeria, West Africa. Tubers presented by Dr. George Green. Received October 3, 1916.

"The dry season is from November to March, and during this time there usually comes one good shower of rain, about the end of January or early in February. (This year the rain came on February 3 and amounted to 2.03 inches—quite a good shower.) The native method of raising yams in Nigeria is as follows: The natives prepare the ground in hills or heaps about 3 feet in diameter, 2 feet in height, and 4 feet apart. These hills are made and the yams planted some time in January. The yams are cut into cross sections about 3 inches in thickness, and then these cross sections are cut into two pieces. One piece is planted in each hill, about 4 inches deep, and then covered with the soil; a tuft of grass is placed on top of the hill to protect the planted yam from the heat of the sun, and more soil is put on top of the grass to prevent the wind blowing the grass away. The yam sprouts through the sides of the hill, and the vines are supported by stout sticks placed perpendicularly or horizontally. Where the yams are being grown in a field that was used the year before for the raising of corn, the cornstalks that were left standing are broken and bent horizontally to the ground and the vines run on these stalks. The hills require frequent weedings and cultivation, and yams planted in January should be ready for digging in July. The yams require about 6 months to mature. When the vines die off, the yams are usually ready for digging. If the vines have died off entirely, it does not hurt the yams to leave them in the ground for a week or two. We use them entirely in the place of Irish potatoes; the method of cooking is quite similar to potatoes. Yams may be either boiled, baked, or steamed. The yam is cut into pieces of suitable size for cooking. I can recommend it as an article of food." (*Green.*)

43489. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Allahabad, India. Presented by Prof. P. H. Edwards, Ewing Christian College. Received October 27, 1916.

"*Papita.*"

43490 and 43491. HORDEUM VULGARE COELESTE L. Poaceæ. **Barley.**

From Tokyo, Japan. Presented by Mr. Teizo Ito, Chief of Plant Industry Division, Imperial Ministry of Agriculture and Commerce. Received November 1, 1916.

"Recently grown and forwarded to me from the Imperial Agricultural Experiment Station of this department at Nishigahara, Tokyo." (*Ito.*)

43490. "*Tashiro-Bozu.*" **43491.** "*Mochi-Hadaka.*"

43492 to 43543. Fabaceæ.

From Mandalay, Burma. Presented by the Deputy Director of Agriculture, Northern Circle, through Prof. C. V. Piper. Received October 31, 1916. Quoted notes from the labels received unless otherwise stated.

43492. BOTOR TETRAGONOLOBA (L.) Kuntze. (*Psophocarpus tetragonolobus* DC.) **Goa bean.**

A climbing legume grown in tropical and subtropical regions for the young tubers, which are eaten raw or cooked, and for the young pods, which are an excellent vegetable.

43493. CACARA EROSA (L.) Kuntze. (*Pachyrhizus angulatus* Rich.) **Yam bean.**

The large tuberous roots of this leguminous vine are used for food and as a source of starch. For previous introduction, see S. P. I. No. 42452.

43494 to 43496. CAJAN INDICUM Spreng. **Pigeon pea.**

A leguminous shrub, often grown as an annual in the Tropics and Subtropics for its edible pealike seeds.

43494. "Variety 1, race 1." **43496.** "Variety 3."

43495. "Variety 2."

43497 and 43498. CANAVALI GLADIATUM (Jacq.) DC. **Sword bean.**

A rambling leguminous vine, the young pods and seeds of which are said to make a "well-flavored and wholesome" dish. It is also used as a cover crop. For previous introduction, see S. P. I. No. 43380.

43497. "Variety 1, race 1." **43498.** "Variety 1, race 2."

43499. CANAVALI ENSIFORME (L.) DC. **Jack bean.**

A bushy, semierect, leguminous plant used as green feed in Hawaii and as a green-manure cover crop in Porto Rico.

43500 and 43501. CICER ARIETINUM L. **Chick-pea.**

A leguminous annual cultivated like bush beans. The peas are eaten boiled or roasted, like peanuts, often used in soups, or as a substitute for coffee. For previous introduction, see S. P. I. No. 43273.

43500. "Race 1." **43501.** "Race 2."

43502. CROTALARIA JUNCEA L. **Sunn hemp.**

A leguminous plant used in India for its fiber, as a catch crop, and as a cover crop and green manure. For full treatment of this plant, see Watt, Commercial Products of India, pp. 430–437.

43503. CYAMOPSIS TETRAGONOLOBA (L.) Taub. (*C. psoraloides* DC.) **Cluster bean.**

A robust annual pulse cultivated in many parts of India. The pods are used as a vegetable and served like French beans; the plant is raised as a shade plant for ginger and cucumbers; and it is sown as an

43492 to 43543—Continued.

ordinary dry crop and used extensively as cattle fodder. The cluster bean is specially suitable as a green-manure or green-fodder crop, owing to the amount of nitrogen it contains and its comparative freedom (when young) from fiber. (Adapted from *Watt, Commercial Products of India, p. 449.*)

43504. DOLICHOS BIFLORUS L. **Horse gram.**

"The interest in this pulse is mainly as an article of cattle food, the green stems and leaves being a valued fodder. The split peas may be reduced to meal, or boiled, or fried and eaten with rice or other articles of diet." (*Watt, Commercial Products of India, pp. 506–507.*)

The work cited above should be referred to for a more complete discussion of the uses of this plant.

43505 to 43517. DOLICHOS LABLAB L. **Bonavist bean.**

"It [the bonavist bean] is grown all over India, more or less, as a green vegetable (corresponding very largely with French beans and, as a ripe pulse, with the broad bean) and also as a fodder crop." (*Watt, Commercial Products of India, p. 510.*)

43505. "Variety 1, subvariety (a), race 1, subrace."

43506. "Variety 1, subvariety (a), race 1, subrace."

43507. "Variety 1, subvariety (a), race 2."

43508. "Variety 1, subvariety (a), race 3."

43509. "Variety 1, subvariety (b), race 1, subrace."

43510. "Variety 1, subvariety (b), race 1, subrace."

43511. "Variety 1, subvariety (c), race 1, subrace."

43512. "Variety 2, race 1, subrace."

43513. "Variety 2, race 1, subrace."

43514. "Variety 3, subvariety (a), race 1, subrace."

43515. "Variety 3, subvariety (a), race 2."

43516. "Variety 3, subvariety (b), race 1."

43517. "Variety 3, subvariety (a), race 1, subrace."

43518. LATHYRUS SATIVUS L. **Bitter vetch.**

"This vetch is cultivated throughout India as a cold-weather crop and has the reputation for germinating on land too dry for other rabi crops. It is cultivated chiefly as a fodder, but as it is cheap and easily grown it is considerably used as a food by the poorer classes, principally in the form of bread, dil, or porridge." (*Watt, Commercial Products of India, p. 704.*)

43519. LENTILLA LENS (L.) W. F. Wight. **Lentil.**
(*Lens esculenta* Moench.)

"The seeds are used chiefly for soups and stews. They are about as palatable as split peas and rank amongst the most nutritious of vegetables." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1839.*)

43520. PHASEOLUS AUREUS Roxb. **Mung bean.**

"Variety 2, subvariety (a)."

An erect or suberect, rather hairy much-branched plant cultivated throughout the southern half of Asia. The seeds are used almost exclusively for human food, and the straw is fed to cattle.

43492 to 43543—Continued.

43521 to 43523. PHASEOLUS CALCARATUS Roxb. **Rice bean.**

An annual half-twining plant cultivated in Japan, China, India, etc., for its edible beans and as a forage and cover crop.

43521. "Variety 2, race 1." **43523.** "Variety 2, race 2."

43522. "Variety 1, race 1."

43524. PHASEOLUS MUNGO L. **Urd.**

"Variety 1."

A plant very similar to the mung bean (*Phaseolus aureus*), but of lower growth and more spreading. It is used like the mung bean, the seeds for human food and the straw for fodder. It is also used as a green-manure crop.

43525. PHASEOLUS RADIATUS L.

"Variety 2, subvariety (c)."

A leguminous plant, native to India, of which the mung bean (*Phaseolus aureus*) is thought to be a cultivated derivative.

43526. PHASEOLUS TRILOBATUS (L.) Schreb.
(*P. trilobus* Ait.)

A trailing legume, native of India, the Malay Archipelago, and eastern Africa, allied to the mung and rice beans.

43527. PISUM ARVENSE L. **Field pea.**

"A."

A angular-seeded pea, often placed as a variety of *Pisum sativum*, grown largely for forage and green manure.

43528. PISUM SATIVUM L. **Garden pea.**

"B."

A strain that has proved valuable in Burma.

43529 to 43533. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

An important leguminous plant valuable for food and forage.

43529. "Variety 1, race 1." **43532.** "Variety 2."

43530. "Variety 1, race 2." **43533.** "Variety 3."

43531. "Variety 1, race 3."

43534. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. **Lyon bean.**

"Var. *utilis*. Race 1."

A climbing legume closely allied to the Florida velvet bean, but entirely devoid of stinging hairs. It is valued in India for its edible seeds.

43535. STIZOLOBIUM ATERRIMUM Piper and Tracy. **Mauritius bean.**

"Race 3."

A leguminous forage plant related to the Florida velvet bean.

43536. STIZOLOBIUM VELUTINUM (Hassk.) Piper and Tracy.

"Race 2." **Velvet bean.**

A species of velvet bean more or less extensively cultivated in Java.

43537. VICIA FABA L. **Broad bean.**

"Variety 1."

This plant is grown largely for cattle feed in America, but the beans are extensively used for human food in other countries.

43492 to 43543—Continued.

43538 to 43540. VIGNA CYLINDRICA (Stickm.) Skeels. **Catjang.**

A leguminous plant closely allied to the cowpea, but with erect pods and smaller seeds.

43538. "Variety 1, subvariety (a), race 1."

43539. "Variety 1, subvariety (a), race 2."

43540. "Variety 2, subvariety (a)."

43541. VIGNA SESQUIPEDALIS (L.) Fruwirth. **Yard-Long bean.**
(*Dolichos sesquipedalis* L.)

"Variety 2, subvariety (c)."

"This can be used as a forage plant or the green pods may be cooked as snap beans, since they are more tender and brittle than those of the cowpea or catjang." (*Bailey, Standard Cyclopedia of Horticulture, vol. 6 p. 3469.*)

43542 and 43543. VIGNA SINENSIS (Torner) Savi. **Cowpea**

An important leguminous forage crop with numerous agricultural varieties.

43542. "Variety 1, subvariety (b), race 1."

43543. "Variety 1, subvariety (b), race 2."

43544 and 43545.

From Manila, Philippine Islands. Presented by Mr. Mack Cretcher, acting director, Bureau of Agriculture. Received October 18, 1916.

43544. ANTIDESMA BUNIUS (L.) Spreng. Euphorbiaceæ.

Bignai. A small, evergreen tree found in India, the Malay Archipelago and China, with glabrous leaves and flowers in pubescent spikes. The very juicy red fruits turn black when ripe and are about one-third of an inch in diameter. The bark of this tree yields a fiber from which rope is made, and the leaves are used as a remedy against snake bites and in syphilitic affections. The wood, when immersed in water, becomes black and as heavy as iron. All the parts of the plant have a bitter taste. The fruits are subacid in taste and are used in Java for preserving, chiefly by Europeans, and formerly sold for about 2 pence a quart. (Adapted from *Brandis, Indian Trees, pp. 564, 565,* and from *Lindley, Treasury of Botany, vol. 1, pp. 75, 76.*)

43545. UVARIA RUFA (Dunal) Blume. Annonaceæ. **Banauac**

"*Banauac; Susong calabao.* Fruits of this species are oblong reniform 3 to 4 centimeters in length, in bunches of 18 to 20, averaging 115 grams in weight; surface bright red, velvety, ferruginous pubescent; skin thin brittle; flesh scant, whitish, juicy, aromatic, subacid without a trace of sugar; quality rather poor; seeds many. Season, September." (*Wester Philippine Agricultural Review, vol. 6, p. 321.*)

43546 and 43547. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.) **Chayote**

From Puerto Plata, Dominican Republic. Presented by the American consul. Received October 27, 1916.

"This fruit is known locally as *tayote,* and according to information obtained from farmers there are only two varieties existing in the district; these are known as white and green, probably due to the color of the fruit when ripe

The fruit is planted in a horizontal position, and the plant generally begins to bear about three months later and continues to do so throughout the whole year. Some plants are known to bear constantly for a period of eight years or more. The plant is a vine, both climbing and recumbent. The fruit is used as a food and sometimes for medicinal purposes." (*Edw. L. Zowe, American vice consul.*)

43548. SCHINOPSIS LORENTZII (Griseb.) Engl. Anacardiaceæ. **Quebracho.**
(*Quebrachia lorentzii* Griseb.)

From Buenos Aires, Argentina. Received through the Bureau of Chemistry, from the Food Research Laboratory, Philadelphia, originally secured from the director of the Botanical Gardens, Buenos Aires, October 28, 1916.

"*Red quebracho.* A tree with very hard wood and compound coriaceous leaves; flowers borne in branching clusters, fruit a samara. The products which are obtained from this tree constitute the principal source of income of the people where it grows. It is one of the Argentine woods which when exposed to the air, buried in part or wholly, or submerged in water, keeps for years in good condition, as is shown by the tests made with posts, beams, ties, etc., laid by the Argentine railways. From this timber are manufactured logs, beams, ties, telegraph poles, lamp-posts, etc., which are exported in large quantities to foreign countries. The charcoal is very compact, and the extract (tannin) is an important product. The sawdust is very much used in tanning." (*Buenos Aires Botanic Garden, letter of October 1, 1916.*)

43549 and 43550. ARALIA spp. Araliaceæ.

From Ottawa, Canada. Roots presented by Mr. J. Adams, Assistant Dominion Botanist, Central Experiment Farm. Received November 6, 1916.

43549. ARALIA NUDICAULIS L. **Wild sarsaparilla.**

A native American species.

43550. ARALIA RACEMOSA L. **American spikenard.**

A native American species.

43551. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Seharunpur, India. Presented by the superintendent, Government Botanic Garden. Received October 27, 1916.

See S. P. I. No. 43478 for previous introduction and description.

43552. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Peradeniya, Ceylon. Presented by Mr. T. H. Parsons, curator, Royal Botanic Garden. Received November 7, 1916.

"*Cho-cho.* These are from the type commonly grown in Ceylon." (*Parsons.*)

43553 to 43556.

From Russia. Presented by Mr. W. P. Kotchetkov, Russian Government Agricultural Agency, St. Louis, Mo., through Prof. C. V. Piper. Received November 7, 1916. Quoted notes by Mr. Kotchetkov.

43553. AGROPYRON CRISTATUM (L.) Beauv. Poaceæ. **Wheat-grass.**

"From the Krasnokut Experiment Station, Samara, Russia."

43553 to 43556—Continued.

43554. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 1. Supposed to be a very old local variety. It matured almost two weeks earlier than regular Russian varieties of *proso*. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43555 and 43556. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

43555. "No. 15. A typical representative of old field peas of Irkutsk. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43556. "No. 28. Very early form of field peas. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43557. × CRATAEGUS DIPPELIANA Lange. Malaceæ. Hawthorn.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received November 7, 1916.

This hybrid is a handsome shrub whose origin is unknown. It is spiny and has deep green, coarsely serrate, deeply lobed leaves. The white flowers are up to an inch in diameter and are produced very freely in June. The dull-red fruit is from one-half to five-eighths of an inch in diameter. This hybrid has been thought to be a cross between *Crataegus tanacetifolia* and *C. punctata* and resembles the former, although it has larger leaves and smaller fruits than this former species. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 428*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 888.*)

43558. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. Japanese apricot.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received November 6, 1916.

A tree of the dimensions of the common apricot, with sharply serrate leaves up to 4 inches long and pale-rose flowers a little more than an inch wide. The yellowish or greenish fruits are produced singly or in pairs, are scarcely edible, and are about an inch in diameter. This tree is a native of Chosen, and perhaps of China. It is much cultivated in Japan for ornament, and the double-flowered form was introduced into Europe in 1878. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 244*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2824.*)

See also description of fruit under S. P. I. Nos. 9211 to 9216.

The following recipe for pickling the fruits is taken from a letter from Mr. Frank N. Meyer, dated October 20, 1916: Pick fruits when full grown, but before they are quite ripe (they must be still hard); soak in a tub of water for 24 hours; drain off water, add salt, mixing one-third salt and two-thirds fruit in quantity; let them stand for a period of five to seven days. Should the weather be cool, seven days will make them right; should it be warm, five days is enough. Leaves of the red-leaved variety of *Perilla nankinensis* should be mixed among them. After this salting process the fruits are spread out in the sun to dry, and the juice of the salted red Perilla leaves is sprinkled over them by squeezing a handful of them, and the fruits turned over. Every day this process is repeated, and after three to five days they are put up in vessels in moderately weak brine with Perilla leaves mixed among them and in this way the product can be kept almost indefinitely. Mr. Watase was shown fruits said

to be 100 years old. Mr. Watase and I, when we were talking about it, both got the water freely flowing in our mouths. "Yes," he said, "our famous deceased General Nogi used to say to his soldiers, on a hot day in the Manchurian campaign when there was no water in sight, 'Boys, how would you like to have now some nice pickled mumes,' and nobody after that complained about thirst."

43559. TACCA PINNATIFIDA Forst. Taccaceæ. **Fiji arrowroot.**

From Donga, Nigeria, British West Africa. Presented by Rev. C. L. Whitman, Sudan United Mission. Received November 11, 1916.

"Has very starchy tubers, said to be somewhat poisonous. Leaves irregularly lobed, resembling a potato leaf. Seed stalk 1 foot to 8 feet high. Seed pods on a whorl of small pedicels 1 to 1½ inches in length. Grows wild in light upland soil near Donga. It is not cultivated here, but in its wild state is much sought after because of its starchiness. I have not learned the process by which it is made edible. It may be useful as a starch producer if it can be grown. Possibly it might be started under glass." (*Whitman.*)

43560. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November, 1916, to June, 1917.

"(Nos. 54, 109, 115, 137. Avocado No. 6.) *Kanola.* This variety possesses several valuable characteristics. It is the earliest one found in the Antigua region, commencing to ripen at the end of October. This makes it of particular interest to avocado growers in California, since early-ripening varieties are much desired in that State. The tree is exceedingly productive, and the fruit, though small, is of desirable round form and attractive glossy purple color. The flesh is yellow, free from fiber, and of rich flavor, while the seed is comparatively small for a fruit of round or oblate form.

'The parent tree is growing in the sitio of Victor Garcia, who keeps a small estanco on the road from Antigua to San Antonio Aguas Calientes, just above the church of San Lorenzo del Cubo. The elevation is approximately 5,600 feet. Beneath the tree, which stands on a rather steep hillside, coffee has recently been planted. The soil is very loose, black sandy loam, doubtless of volcanic origin. Judging from the crops grown in the vicinity, it must be quite fertile. The age of the tree is not definitely known. Victor Garcia says that it was already of large size when he was a lad, so it may be considered at least 40 years of age, most likely 50 or more. It stands about 35 feet in height, with a spreading but rather open crown 35 feet broad. The trunk is a foot and a half thick at the base. The first branches are about 8 feet above the ground. The young growths are stout, shapely, and vigorous. The indications are that the variety will be a strong grower. The bud wood is excellent, having strong, well-developed eyes well placed on the young twigs, which are round, smooth, and clean. There is no tendency for the eyes to drop from the young twigs, as there is in some varieties. The wood is not unusually brittle.

"Varieties growing at this elevation in Guatemala are not subjected to severe frosts, but should be as hardy as the average of the Guatemalan race.

"The flowering season of the parent tree is from the end of October to the first of December. It flowers very profusely and in good seasons sets heavy crops of fruit. The crop which ripened at the end of 1916 was enormous. It was impossible to make an accurate count, but a conservative estimate would place the number of fruits at 1,500 to 2,000. After such a heavy crop it is to be expected that a light crop will follow. Very few fruits are being carried

to ripen at the end of 1917. Victor Garcia states that at least a few fruits are always produced; some seasons the crop is small; in others it is very heavy, as it was in 1916. This is commonly the case with Guatemalan avocados.

"As already stated, the fruit commences to ripen at the end of October. Maturity is indicated by the appearance of a purple blush on one side of the fruit. At this stage it is considered ready for picking, but its flavor is much richer if left on the tree some months longer until the entire fruit is deep purple in color. Apparently this variety has an unusually long fruiting season, for a few fruits (which had been overlooked in picking) were found still hanging on the tree at the end of April, 1917.

"As observed during the past harvest, the ripening season appears to be as follows: First fruits maturing at the end of October; most of crop maturing in November and December, but better if left on the tree until January; a few fruits at least remaining on the tree until March and April.

"The fruit is uniformly oblate in form, resembling a grapefruit. In size it is small, weighing from 6 to 10 ounces. Under better cultural conditions, however, the weight will probably go up to 12 ounces. The color when the fruit is fully ripe is deep purple. The surface is pebbled, not distinctly roughened. The skin is of good thickness, hard, and brittle. The flesh is deep yellow in color, free from fiber, but with slight fiber discoloration (not, however, of an objectionable nature), of fine texture, and rich, oily flavor. The quality can be considered excellent. The seed is round, not large for a fruit of round or oblate form. It is generally found that fruits of this shape have seeds considerably larger in proportion to the size of the fruit than is common in the good varieties of pyriform or oval shape. As in nearly all Guatemalan varieties, the seed is quite tight in the cavity.

"Form roundish oblate; size small to below medium, weight 6 to 10 ounces; length 2¾ to 3 inches, greatest breadth 3 to 3¼ inches; base truncate, the stem inserted squarely without depression; stem fairly stout, 4 inches long; apex flattened, sometimes slightly oblique; surface pebbled, deep purple in color, sometimes almost glossy, with numerous small yellowish dots; skin one-sixteenth of an inch thick at basal end of fruit, about one-eighth of an inch thick at apex, separating readily from the flesh, rather finely granular, woody, brittle; flesh deep cream yellow to yellow near the seed, changing to very pale green near the skin, quite free from fiber and with unobjectionable fiber discoloration, firm in texture and of rich, oily flavor; quality excellent; seed small in comparison to size of fruit, oblate, about 1½ ounces in weight, sometimes excentric, tight in the seed cavity, with both seed coats adhering closely." (*Popenoe.*)

For an illustration of the Kanola avocado, see Plate VII.

43561. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, Department of Agriculture, through Mr. W. Henry Robertson, American consul general, Buenos Aires. Received November 6, 1916.

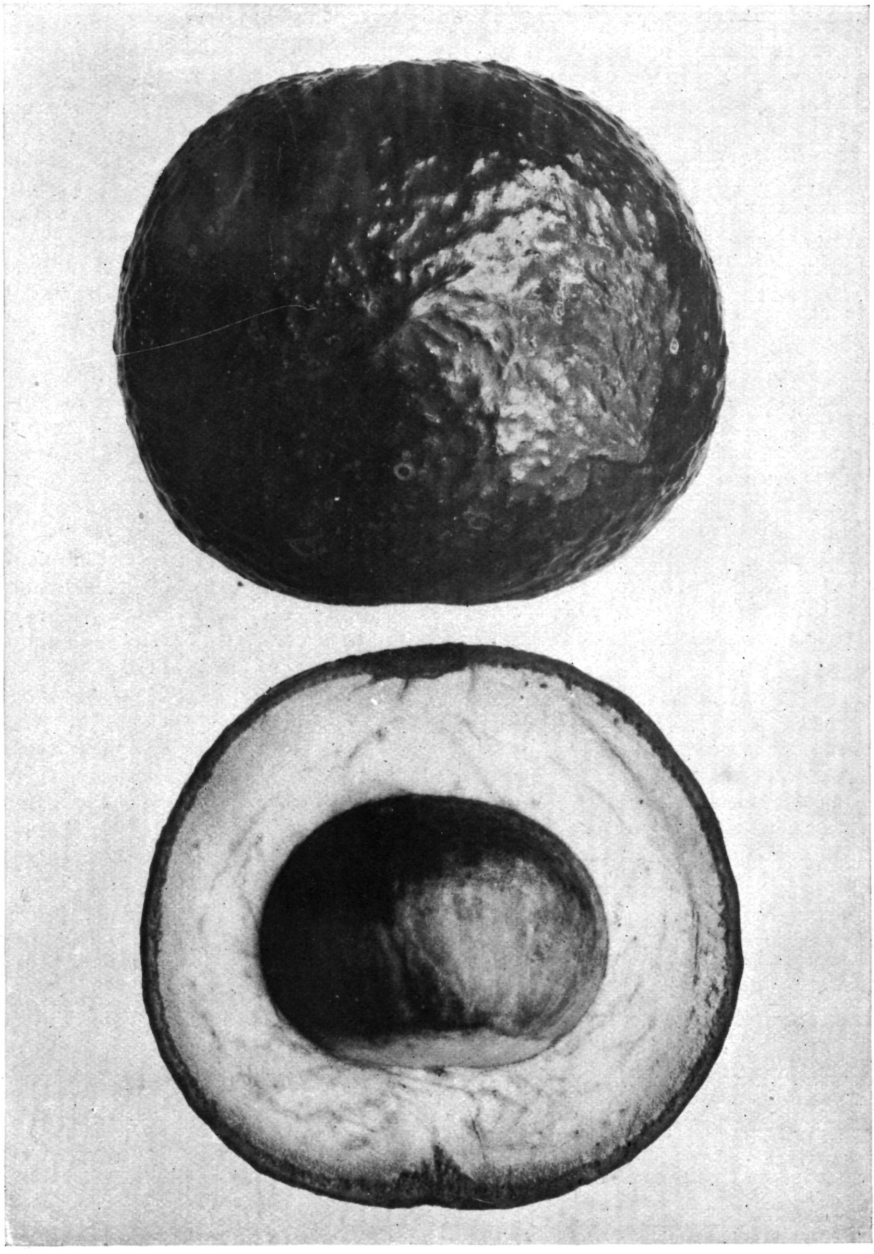
"Known throughout this country as *Palo borracho*, the drunken tree." (*Schultz.*)

See S. P. I. No. 42292 for previous introduction and description.

43562. PYRUS CHINENSIS × COMMUNIS. Malaceæ. **Hybrid pear**

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in distribution, November 17, 1916.

Hybrid pear, P. I. G. No. 6587, tree 3, row 46. Raised by Dr. W. Van Fleet in 1907 and presented to the Plant Introduction Field Station on December 22, 1909.



THE KANOLA AVOCADO, AN EARLY VARIETY. (PERSEA AMERICANA MILL., S. P. I. No. 43560.)

For southern California early-ripening varieties of the Guatemalan race are particularly desired, in order to have fruit available during the winter months. The variety here shown, from near Antigua, Guatemala, is considerably earlier than the average Guatemalan avocado and is at the same time an attractive fruit of excellent quality. (Photographed by Wilson Popenoe, Jan. 29, 1917, at Antigua, Guatemala; P17068FS.)

A BASKET OF FINE GUATEMALAN CHERIMOYAS. (ANNONA CHERIMOLA MILL., S. P. I. No. 43927.)

The cherimoya is recognized as one of the choicest fruits of the Tropics. It succeeds in southern California and other subtropical regions where the climate is cool and dry. Superior varieties, such as the one here shown, are not excelled in richness of flavor by the pineapple or the strawberry. They are now being introduced into this country by means of bud wood. (Photographed by Wilson Popenoe, Nov. 8, 1917, at the city of Guatemala, Guatemala; P17407FS.)

43563. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Livingston, Guatemala. Presented by Mrs. Lucie Potts. Received November 15, 1916.

"Seeds of the hard-shell 'pear.' This fruit was sent to me from the Vera Paz district and was cut on November 17. The inside was spoiled when I opened it on November 27. It was badly gathered. I think a small piece of stem should be left, since pulling it all off leaves a circular hole at the base of the fruit that permits a quicker decay." (*Mrs. Potts.*)

43564. POA FLABELLATA (Lam.) Hook. f. Poaceæ.
Tussock grass.

From Stanley, Falkland Islands. Roots presented by Mr. W. A. Harding, manager, Falkland Islands Company, at the request of the American consul, Punta Arenas, Chile. Received November 15, 1916.

A coarse grass, native of the Falkland Islands, growing on peat soils near the sea. The plant forms dense masses of stems, which frequently rise to the height of 4 to 6 feet, and the long, tapering leaves, from 5 to 8 feet long and an inch wide at the base, hang gracefully over in curves. The plant is much relished by cattle, being very nutritious. The inner portion of the stem, a little way above the root, is soft and crisp and flavored like a hazelnut. The inhabitants of the Falkland Islands are very fond of it; they boil the young shoots and eat them like asparagus. (Adapted from *Hogg, Vegetable Kingdom, pp. 823, 824.*)

43565. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From St. Lucia, British West Indies. Presented by the agricultural superintendent at the request of Hon. Francis Watts, Commissioner of Agriculture for the West Indies, Imperial Department of Agriculture, Barbados. Received November 10, 1916.

"White. The green and the white varieties appear to be the only ones known in these islands." (*Watts.*)

43566. FERONIELLA OBLATA Swingle. Rutaceæ. **Krassan.**

From Saigon, Cochin China. Presented by Mr. P. Morange, director, Agricultural and Commercial Services. Received November 13, 1916.

A spiny tree, 25 to 65 feet in height, native of Cambodia and Cochin China, growing rather commonly in forests, both on the plains and on the mountains. The leaflets of the pinnate leaves are oval with rounded or flattened tips, and the very fragrant white flowers appear in many-flowered panicles growing on the branches of the previous year's growth. The fruits are borne in clusters of three or four, are shaped like a flattened sphere, and are from 2 to 2½ inches in diameter. The pulp is edible and is subacid and pinkish. These fruits, which have a pronounced orange flavor when young, are used as a condiment in sauces. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 8, pp. 1219, 1220.*)

43567 to 43577.[4] Amygdalaceæ.

From Valencia, Spain. Procured through Mr. John R. Putnam, American consul. Received November 16, 1916.

Seeds introduced for the work of the Office of Horticultural and Pomological Investigations.

[4] See footnote, p. 11.

43567 to 43577—Continued.

43567 to 43572. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

43567. *Melocoton Bandera Española.*

43568. *Tardio Encarnado.*

43569. *Bresquillo Duraznos.*

43570. *Tardio Amarillo.*

43571. *Melocoton Murciano.*

43572. *Melocoton de Sagunto.*

43573. AMYGDALUS PERSICA NECTARINA Ait. **Nectarine.**
Abridor de Alginet.

43574 to 43577. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

43574. *Roquete San Jaime.* **43576.** *Temprano Pequeño.*

43575. *Pavia de Picasent.* **43577.** *Pavia Fina Encarnada.*

43578. CYPERUS ESCULENTUS L. Cyperaceæ. **Chufa.**

From Valencia, Spain. Tubers presented by Mr. R. L. Sprague, American consul, Gibraltar, at the request of Mr. George Eustis, Newport, R. I. Received November 16, 1916.

"With regard to the cultivation of chufas, there appears to be little to say. Similarly to peanuts, they require a light sandy soil, well worked, and periodical irrigation. In preparing for planting, the soil is well pulverized and mixed with sea sand and organic manure, supplemented occasionally with superphosphates and a little ammonium sulphate. The surface is leveled and irrigation ditches made at a distance of 2 or 3 palms (17 to 24 inches) apart. The spaces between, or rows, are flattened in spots at intervals of 2 or 3 palms, the seed being placed three or four to each hill on the surface and these hills lightly covered with loose earth. The seed is not buried, and the depth of the covering should not exceed 2 inches. The only attention required is occasional weeding and irrigation, as the tuber requires plenty of moisture." (*Sprague.*)

43579. CYRTOSTACHYS LAKKA Beccari. Phœnicaceæ. **Palm.**

From Singapore, Straits Settlements. Presented by Mr. I. H. Burkhill, director, Botanical Gardens. Received November 6, 1916.

A stately, elegant palm, producing suckers. The slender spineless stem is covered with a cluster of boldly arched leaves, 3½ to 4½ feet in length. The flowers are monœcious, and the dry fruits are elongate, egg shaped, and small, about 10 mm. (five-twelfths of an inch) long and half as wide. The ovate seeds are about one-sixteenth of an inch long. This species differs from *Cyrtostachys renda* in the more elongated and smaller fruits and in the oval seeds. (Adapted from *Beccari, Annales du Jardin Botanique de Buitenzorg, vol. 2, p. 141,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 947.*)

43580. TRICONDYLUS MYRICOIDES (Gaertn. f.) Kuntze. Proteaceæ.
(*Lomatia longifolia* R. Br.)

From Clarence, Blue Mountains, New South Wales. Presented by Mr. Harry B. Shaw, Federal Inspector, port of New York, through Dr. G. R. Lyman, of the Department of Agriculture. Received November 9, 1916.

A shrub 8 to 10 feet high, with very narrow lance-shaped leaves and terminal or axillary racemes of cream-colored flowers. The fruit is an oval-oblong

follicle, and the seeds are winged. The wood is light colored and very hard, with a beautiful small figure, well suited for turnery. (Adapted from *Edwards's Botanical Register, pl. 442,* and from *Maiden, Useful Native Plants of Australia, p. 564.*)

43581 to 43583.

From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Station of Ivoloina, near Tamatave. Received November 8, 1916.

43581. MEDEMIA NOBILIS (Hildebr. and Wendl.) Drude. Phœnicaceæ. (*Bismarckia nobilis* Hildebr. and Wendl.) **Bismarck's palm.**

A tall fan-shaped palm found in western Madagascar, with a stout columnar trunk. The compact foliage has a spread of 3 meters, and from the white-striped leafstalk hang immense clusters of light-brown fruits about the size of plums. (Adapted from *Wendland, Botanische Zeitung, vol. 39, pp. 94, 95.*)

43582. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ. (*L. flos-reginae* Retz.) **Crape myrtle.**

A tree, 50 to 60 feet in height, with leaves from 4 to 8 inches long and large panicles of flowers which vary from rose to purple from morning to evening. This is the chief timber tree in Assam and eastern Bengal, India, and also in Burma. It occurs along river banks and on low swampy ground and is commonly cultivated as an avenue tree. No special care is used in growing this tree, which is felled when from 30 to 50 years of age, and the timber is used for shipbuilding, boats, etc., being very durable under water. It has been introduced into southern California. (Adapted from *Watt, Commercial Products of India, p. 701,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1775.*)

43583. LINOMA ALBA (Bory) O. F. Cook. Phœnicaceæ. **Palm.**

A slender, spineless, Arecalike palm found in tropical Asia, where it grows to a height of 30 feet or more and a diameter of 8 or 9 inches, dilated at the base. The leaves are 8 to 12 feet long. Branches of the spadix 6 to 18 inches long, erect or slightly reflexed, zigzag when young. By far the best of the genus and when young a very desirable pinnate house and table palm, deserving to be well known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1004.*)

43584. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.** (*Sechium edule* Swartz.)

From Dorcyville, La. Presented by Mr. Leonce M. Soniat, Cedar Grove Plantation. Received November 20, 1916.

"Two of the fruits raised by a gentleman who lives on my place. These are a cross between the green and the white." (*Soniat.*)

43585. DIMOCARPUS LONGAN Lour. Sapindaceæ. **Longan.** (*Nephelium longana* Cambess.)

From Paget East, Bermuda. Presented by Mr. E. J. Wortley, director, Bermuda Agricultural Station. Received November 20, 1916.

Bud wood from the same tree as seed of S. P. I. No. 43338.

43586. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Nanking, China. Presented by Mr. Paul Jameson, American consul. Received November 22, 1916.

"A complete assortment of seeds of all peaches grown in this district. It is the custom to pick the fruit before it ripens." (*Jameson.*)

Introduced for the work of the Office of Horticultural and Pomological Investigations.

43587 to 43589. ROSA spp. Rosaceæ. **Rose.**

From Kew, England. Cuttings presented by Mr. W. Watson, curator, Royal Botanic Gardens. Received November 20, 1916.

43587. ROSA FERRUGINEA Vill.
(*Rosa rubrifolia* Vill.)

An erect shrub, 5 to 7 feet in height, whose stems are covered with a purplish bloom and are armed with small decurved prickles. The leaves are composed of five to seven beautiful purplish red, smooth leaflets, up to 1½ inches in length. The deep-red flowers are 1½ inches wide and occur a few in a cluster. The nearly globose red fruit is one-half an inch or more long and is smooth. This shrub is found in central Europe, especially in the Alps and Pyrenees and other mountainous regions. Its color makes it a most valuable ornamental in the vegetative condition, and it is very striking when planted in groups. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 440.*)

43588. ROSA MOYESII Hemsl. and Wils.

A shrub 6 to 10 feet in height, with erect stems armed with stout, pale, broad-based prickles. The leaves are from 3 to 6 inches long and are composed of 7 to 13 leaflets, which are dark green above and pale glaucous below. The flowers, which occur solitary or in pairs, are a lurid dark red and from 2 to 2½ inches in width. The red bottle-shaped fruits are 1½ inches or more long, with a distinct neck between the body of the fruit and the persistent sepals. This rose is a native of western China and was first found on the frontier of Tibet at an altitude of 9,000 feet and over. It is perfectly hardy in the British Isles and is remarkable for the color of its petals. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 435.*)

43589. ROSA VILLOSA L.
(*Rosa pomifera* Herrmann.)

A bush 4 to 6 feet high, armed with scattered, slender, but broad-based prickles up to one-half an inch long. The leaves, which are from 4 to 7 inches in length, are composed of five to seven leaflets, which are doubly serrate and downy on both surfaces. The deep rosy pink flowers are up to 2½ inches wide and are produced in clusters of from three to six. The rich red fruit is pear shaped or rounded and about 1½ inches long. This rose is a native of central Europe and has a larger fruit than any other hardy rose. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 439.*)

43590. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchc. Poaceæ. **Sorghum.**

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received June 22, 1915. Numbered November 25, 1916.

"Seeds of a wild sorghum collected at Anse aux Pins, Mahe, Seychelles." (*Dupont.*)

Seed separated from S. P. I. No. 40848 and grown during the season of 1916.

43591 and 43592. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Reading, England. Presented by Messrs. Sutton & Sons. Received November 21, 1916.

43591. "*Sutton's cow-grass*, which invariably gives only one cutting in the year in this country and lasts four to five years." (*Sutton.*)

43592. "*English red clover*, the ordinary stock of red clover." (*Sutton.*)

43593. PASSIFLORA NAPALENSIS Wall. Passifloraceæ. **Granadilla.**

From Lawang, Java. Presented by Mr. M. Buysman. Received November 18, 1916.

A glabrous climbing plant, found up to 6,000 feet in India, with slender angular branches and distant leaves. The leaves are deep green above and up to 4 inches in length. The small cup-shaped flowers occur in lax few-flowered cymes, and the nearly globular fruit is purplish and about the size of a large pea. (Adapted from *Hooker, Flora of British India, vol. 2, p. 600.*)

43594. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Georgetown, British Guiana. Presented by Mr. J. F. Waby. Received November 13, 1916.

"Var. *Nankinicus.* Secured through one of the traveling instructors of the Department of Science and Agriculture in the County of Berbice, adjoining the County of Demerara. We use them as a side dish, mixed with rice, and prefer them to all other bonavists for this purpose." (*Waby.*)

43595 to 43597. MELILOTUS spp. Fabaceæ. **Sweet clover.**

From Erfurt, Germany. Purchased from Messrs. Haage & Schmidt, through Mr. Julius G. Lay, American consul general, Berlin. Received November 14, 1916.

43595. MELILOTUS NEAPOLITANA Ten.
(*M. gracilis* DC.)

An herb with slender roots and a straight, slender, glabrous stem 6 to 9 inches high. The leaflets are slightly serrate, and the racemes are straight and slender with pale-yellow flowers. The pods are straight and almost globular and contain two seeds. This plant has been reported from Frejus and Perpignan, France. (Adapted from *DeCandolle, Flora Francais, vol. 5, p. 565.*)

43596. MELILOTUS SEGETALIS (Brot.) Seringe.

An herb, sometimes erect and sometimes lying along the ground, with ovate leaflets somewhat serrate near the bases. The flowers occur in lax

43595 to 43597—Continued.

racemes, and the glabrous pods are nearly round and contain but a single seed. This plant is found in Mediterranean countries from Spain to Palestine and in northern Africa. It differs from *Melilotus sulcata* in having fruits two or three times as large. (Adapted in part from *DeCandolle, Prodromus Systematis Naturalis, vol. 2, p. 187.*)

43597. MELILOTUS SULCATA Desf.

An annual herb with erect stems and lax, elongated racemes of small yellow flowers. The rather small pods are almost round and are keeled. This plant has been found growing in clay in various places in Asia Minor. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 106, 1872.*)

43598. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

From Concepcion, Paraguay. Presented by Mr. Thomas R. Gwynn. Received November 21, 1916.

A small evergreen tree, native of Paraguay and Brazil, whose leaves are roasted and ground to make the Paraguay tea of commerce. This plant might be grown in Texas and California. (Adapted from *Friderici, Tropenpflanzer, 1907, pp. 776–783.*)

See S. P. I. No. 43456 for further description.

43599. NOTHOPANAX ARBOREUS (Forst.) Seem. Araliaceæ.
(*Panax arboreum* Forst.)

From Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received November 22, 1916.

"Seeds of a very pretty evergreen shrub grown for its foliage. Height 15 feet." (*Wright.*)

43600. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Zamboanga, Philippine Islands. Presented by Mr. J. A. Tiffany, Philippine Constabulary. Received November 22, 1916.

"The present crop of mangosteens in Jolo is the poorest for several years. I found only two or three seeds in each fruit I selected and these were not so good as has been usual in former crops. The next crop should yield some excellent fruits." (*Tiffany.*)

43601. CANARIUM OVATUM Engl. Balsameaceæ. **Pili nut.**

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received November 21, 1916.

A tree, native of the Philippines, with compound leaves and triangular drupes containing one seed. These nuts are eaten throughout the eastern part of the world, and from them is extracted an oil which is used for table purposes and also for burning in lamps. (Adapted from notes of *H. H. Boyle, assistant horticulturist, Bureau of Agriculture, Manila.*)

See also S. P. I. No. 38372 for further data.

43602. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November, 1916, to June, 1917.

"(Nos. 71, 127, 149. Avocado No. 7.) *Ishkal.* Several people have recommended this variety as a fruit of unusually fine quality. Ripe fruits of the variety have not been seen by me.

"The parent tree is growing in the patio of the Masonic Building, 7a Avenida Norte No. 4, Guatemala. The elevation here is 4,900 feet. Apparently the tree is quite old, at least 50 years, as it is 60 feet high, with the trunk more than 2 feet thick at the base. The crown is dense and seems to be in vigorous condition. The bud wood is excellent, having well-developed eyes which are not inclined to drop and leave a blind bud. Everything seems to indicate that the variety is oval to broadly obovoid in form. The caretaker states that it is formed, vigorous, and not unusually brittle.

"Avocados growing at this elevation in Guatemala are not subjected to severe frosts, but should be as hardy as the average of the Guatemalan race.

"The tree did not produce any fruit in 1916, but it flowered heavily early in 1917 and set a large crop of fruit, which promises to remain on the tree to maturity. According to the caretaker who lives on the property, the season of ripening is from March to July. The fruit is not at its best until May. If this is actually the case, the variety can probably be considered rather late in season of ripening.

"Judging from the young fruits on the tree at this time (July 20, 1916), the variety is oval to broadly obovoid in form. The caretaker states that it is about a pound in weight when mature and dull purple in color when ripe. The surface is strongly pebbled, the skin moderately thick, woody, and brittle. I am inclined to suspect that the seed may be undesirably large, but this can not be definitely ascertained at the present time. Don Pedro Brunj and others tell me that the flesh is of rich yellow color, unusually buttery in consistency, and very rich in flavor.

"This variety should not be propagated extensively until it has fruited in the United States, since it is included in this collection solely on the recommendation of Guatemalans who are familiar with it." (*Popenoe.*)

43603 to 43606. PERSEA AMERICANA Mill. Lauraceæ. Avocado.

(*P. gratissima* Gaertn. f.)

From Tegucigalpa, Honduras. Presented by Mr. Clarence W. Martin. Received November 24, 1916. Quoted notes by Mr. Martin.

43603. "*Colorados.* Red aguacates, largest and hardiest variety of Honduras. Stands all degrees of climate in Honduras, cold and hot. Grown at 72° F., mean temperature. Pear shaped."

43604. "*Moreño.* A mottled green and brown skin. The fruit is almost perfectly round and not pear shaped. From 3,000 feet altitude. Mean temperature here 72° F."

43605. "*Negros.* Black aguacates. From a cool altitude of 3,500 feet. This is a round aguacate. Grown at 72° F., mean temperature."

43606. "*Verdes.* A small green aguacate. Most sought after of all, on account of its better flavor. Pear shaped, long necked. Grown at 72° F."

43607 to 43632.

From Mandalay, India. Presented by Mr. A. W. Sawyer, assistant botanist. Received November 20, 1916. Quoted notes by Mr. Sawyer.

43607 to 43628. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

43607 to 43632—Continued.

43607 to 43612. "Burmese dry-zone sorghums, from the Meiktila District."

43607. "No. 1A. *Pyaung-pyu-galè.* Used as fodder."

43608. "No. 2A. *Pyaung-ni-galè.* Used as fodder."

43609. "No. 3A. *Pyaung-shwè-wa.* Used as fodder."

43610. "No. 4A. *Sán-pyaung.* Used as grain and eaten by man and cattle."

43611. "No. 5A. *Kôn-pyaung,* white. Used as grain and fodder."

43612. "No. 6A. *Pyaung-net.* Used as fodder."

43613 to 43628. "Indian varieties of sorghum."

43613. "No. 1B. *Saloo.* From Central Provinces; used as grain."

43614. "No. 2B. *Collier.* From Central Provinces; used as fodder."

43615. "No. 3B. *Dukuri.* From Poona (Dekkan); used as grain."

43616. "No. 4B. *Hundi.* From Poona (Dekkan); used as grain."

43617. "No. 5B. *Nilwa.* From Poona (Dekkan); used as fodder."

43618. "No. 6B. *Peria Manjal Cholam.* From Madras."

43619. "No. 7B. *Palpu Jonna.* From Madras; used as fodder."

43620. "No. 8B. *Giddu Jonna.* From Kurnool (Madras); used as grain."

43621. "No. 9B. *Cherukupatsa Jonna.* From Kurnool (Madras); used as grain."

43622. "No. 10B. *Tella Jonna.* From Bellary (Madras); used as grain."

43623. "No. 11B. *Patcha Jonna.* From Bellary (Madras); used as grain."

43624. "No. 12B. *Pedda Jonna.* From Nandyal (Madras); used as fodder."

43625. "No. 13B. *Sweet Juar.* From Lyallpur (Punjab)."

43626. "No. 14B. *Andhri.* From Cawnpore (United Provinces); used for grain and fodder."

43627. "No. 15B. *Bawni.* From Cawnpore (United Provinces); used as grain."

43628. "No. 16B. *Dodania.* From Cawnpore (United Provinces); used as grain and fodder."

43629. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

"No. 10. *Sât-ni.* From Koilpatti (Madras); used for grain and fodder."

43630. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. **Millet.** (*Setaria italica* Beauv.)

"No. 2C. *Sât.* From Meiktila District, Burmese dry zone; used for grain and fodder."

43607 to 43632—Continued.

43631. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 3C. *Lū.* From Meiktila District, Burmese dry zone; used for grain and fodder."

43632. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 4C. *Lū.* From Monywa, Burmese dry zone; used as grain and fodder."

43633. JUNIPERUS PACHYPHLOEA Torr. Pinaceæ. **Juniper.**

From New Mexico. Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received November 23, 1916.

"Collected in the Organ Mountains, October 9, 1916." (*Griffiths.*)

A large tree, often 50 to 60 feet high, with a short trunk 3 to 5 feet in diameter and smooth, reddish brown bark. The leaves are bluish green, and the flowers appear in February and March. The large, reddish brown fruits contain a thick, dry, mealy flesh and are gathered and eaten by the Indians. The wood is light and soft and not strong. This tree is found on dry, arid mountain slopes at elevations of 4,000 to 6,000 feet in the southwestern part of the United States and northwestern Mexico. (Adapted from *Sargent, Manual of the Trees of North America, pp. 90, 91.*)

43634 and 43635. JASMINUM spp. Oleaceæ. **Jasmine.**

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received November 22, 1916.

43634. JASMINUM REVOLUTUM Sims.

A nearly evergreen shrub of a lax, spreading habit, being the stoutest of the cultivated jasmines. The dull, very dark green leaves are composed of from three to seven leaflets, and the fragrant, yellow flowers are produced in terminal corymbs of 6, 12, or more together. This shrub is a native of Afghanistan and the northwestern Himalayas. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 661, 662*).

43635. JASMINUM WALLICHIANUM Lindl.

A nearly evergreen shrub, with slender, angled, smooth branchlets and alternate leaves composed of from 7 to 13 leaflets up to 1½ inches in length. The yellow flowers are about five-eighths of an inch long and are produced either singly or in clusters of three. This shrub is a native of Nepal, India, and has been cultivated in England since 1812. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 626.*)

43636. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

From Westfield, N. J. Presented by Dr. R. S. Keelor. Received November 27, 1916.

"The Japanese eggplant of the long-fruited variety, grown from seed in my own garden at Westfield, N. J., from seed imported from Japan. This variety of eggplant is very fruitful and possesses fine keeping qualities. In fact, I still have some of them on hand and find them very good eating, although they were picked from the garden five weeks ago, after having been exposed to four or five rather severe frosts and a temperature as low as 36° F." (*Keelor.*)

43637. LEUCAENA GLAUCA (L.) Benth. Mimosaceæ.

From Miami, Fla. Presented by Mr. S. H. Richmond. Received November 28, 1916.

"A shrub which grows 10 feet high. The plants sprang up, grew 6 feet, and fruited after we supposed every root had been eradicated." (*Richmond.*)

43638. XANTHOSOMA sp. Araceæ. **Yautia.**

From Rama, Nicaragua. Presented by Mr. Carlos Berger. Received November 28, 1916.

"Tubers of the supposed *Palma yautia.* This plant has the peculiarity of drying up during the dry season, like *Dorstenia contrayerva* and several other plants, all of which dry up here in January, when it still rains, and stay so during the whole so-called dry season, even though it be really dry only a month or so, and despite the fact that the mounds seldom dry out, except in an unusually dry season, about once in ten years. This induces me to believe that these plants have emigrated from the interior of Nicaragua, where there is a well-defined dry season and where they may have acquired the habit of drying up at a certain season of the year." (*Berger.*)

43639 to 43641. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Canton, China. Presented by the American consul general, through the Department of Commerce. Received November 27, 1916.

"Four varieties of beans are grown in the Canton consular district: The black, the red, the yellow, and the so-called white. These beans are cultivated along the banks of the Tsochiang and the Yuchiang, in Kwangsi. The best varieties are said to come from near Siangshui and Lungchow in the southwestern part of the Province. The actual acreage under cultivation can not be estimated, on account of the fact that the beans are not cultivated in any one district but in many places and in small patches of from 1 to 3 mou. (The mou varies in different parts of China; in Canton 4.847 mou equal 1 acre.)" (From *Consular Report, November 7, 1916, p. 504.*)

43639. "*White bean.* The white bean is called by the Chinese *chutou* or *pearl-shaped* bean. It is grown principally in the Province of Kwangsi, although certain quantities are produced in Kwangtung, Yunnan, and Kweichow Provinces, which are within this consular jurisdiction." (*Consular Report, November 7, 1916, p. 504.*)

43640. "Black beans." **43641.** "Yellow beans."

43642 to 43671.

From Cairo, Egypt. Seeds presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received November 10, 1916.

43642. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ. **Babul.**
(*A. arabica* Willd.)

A shrub or small tree, with gray branchlets, and leaves composed of 10 to 20 pairs of leaflets. The flowers are in groups of two to five, and the flat, gray-downy pods are from 3 to 6 inches long. This plant is found extensively in India; also in Arabia and Europe. The gum (Indian gum arabic) which exudes from the tree is of great commercial value and is used for a variety of purposes. The gum is usually obtained without tapping. The pure pale gum comes only from healthy trees and under

43642 to 43671—Continued.

favorable circumstances; long exposure to dampness or rain darkens the gum, and gnarled or diseased stems produce only the inferior darker gum. This gum is used in calico printing and in all other industries where a mucilage is necessary. The bark of this tree as well as the pods is extensively used in India as a tanning material, and the wood is much valued on account of its hardness and durability. It may be raised from seeds. (Adapted from *Watt, Commercial Products of India, pp. 2–8,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 188–189.*)

43643. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*C. tinctoria* Domb.)

An erect shrub or small tree, native of Peru, where it grows at altitudes from 8,000 to 10,000 feet. In the vicinity of Lima, Peru, the pods are used as a tanning material.

See also S. P. I. No. 41323.

43644. CAESALPINIA SEPIARIA Roxb. Cæsalpiniaceæ.

A tree found ascending to 4,000 feet in the Himalayas, distributed throughout tropical Asia, and also introduced into tropical America. It is covered with numerous small pale-brown prickles and has rather narrow glabrous leaves about a foot long. The bright-yellow flowers occur in simple, lax racemes from 1 to 2 feet long, and the pods are less than 2 inches long, are hard, and clothed with very small deciduous bristles. (Adapted from *Hooker, Flora of British India, vol. 2, p. 256.*)

43645. CAILLIEA NUTANS (Pers.) Skeels. Mimosaceæ.
(*Dichrostachys nutans* Benth.)

A spiny much-contorted shrub or small tree, native of central Africa. The Acacialike leaves are composed of 5 to 10 pairs of pinnæ, each with 10 to 20 pairs of leaflets. The flowers occur in dense axillary spikes, the upper ones sulphur yellow and the lower ones rosy lilac. The pod is twisted and is about a third of an inch wide. This shrub has been introduced into southern California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1003.*)

43646. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon pea.**

A shrub 3 to 10 feet high, cultivated in the Tropics for the nutritious peas. The flowers are yellow and maroon, and the pods are hairy and pealike. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 613.*)

See S. P. I. No. 41646 for previous introduction.

43647. CALLISTEMON SPECIOSUS (Sims) DC. Myrtaceæ. **Bottle-brush.**
(*Metrosideros speciosus* Sims.)

A large shrub, native of New South Wales, Australia, but cultivated in the British Isles and in the United States. The leaves are lance shaped, with prominent midribs, and the bright red flowers occur in terminal spikes from 2 to 6 inches long. The golden yellow of the anthers contrasting with the dark red filaments makes this a beautiful ornamental. It may be grown anywhere, except in places subject to frosts. (Adapted from *Curtis's Botanical Magazine, pl. 1761,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 630.*)

43642 to 43671—Continued.

43648. CASSIA CORYMBOSA Lam. Cæsalpiniaceæ.

A very handsome shrub, native of Argentina, but introduced and cultivated in the British Isles and the middle portion of the United States. It attains a height of 4 to 10 feet, and the leaves are composed of three pairs of leaflets. In the spring the branches are clothed with numerous corymbs of bright-yellow flowers. This is one of the best-known garden species, being an excellent conservatory plant for spring, summer, and autumn bloom. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 680,* and from *Florists' Exchange, July 27, 1912.*)

43649. CASSIA DIDYMOBOTRYA Fres. Cæsalpiniaceæ.

A woody plant, native of Abyssinia, with leaves composed of five to seven pairs of leaflets. The flowers occur in racemes growing from the upper axils, the petals being painted by the thick, colored nerves and veins. The slender pods are compressed. (Adapted from *Fresenius, Flora, vol. 22, p. 53, 1839.*)

43650. CASSIA EREMOPHILA A. Cunn. Cæsalpiniaceæ.
(*C. nemophila* A. Cunn.)

A woody plant, found in all the colonies of Australia except Tasmania. The leaves are composed of two pairs of very narrow leaflets, and the pods are very smooth. In Australia both the pods and the leaves of this plant are eaten by stock. (Adapted from *Maiden, Useful Native Plants of Australia, p. 47.*)

43651. CITHAREXYLUM QUADRANGULARE Jacq. Verbenaceæ.

A large tree, native of the West Indies, with permanently 4-angled branches and opposite, entire, serrate leaves. The small white odorous flowers occur in racemes, and the fruit is a fleshy drupe. This tree might prove to be a good ornamental for the northern part of the United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 778.*)

43652. CLERODENDRUM INDICUM (L.) Druce. Verbenaceæ.
(*C. siphonanthus* R. Br.)

A shrub, 2 to 8 feet high, rather openly branched, with opposite or verticillate narrow notched leaves. The white flowers, which occur in very large terminal racemes, have tubes 3 to 4 inches long. The fruit is a showy red and purple berry, which persists a long time. This shrub is a native of the East Indies and is also hardy in Florida. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 801.*)

43653. ARECASTRUM ROMANZOFFIANUM (Cham.) Becc. Phœnicaceæ.
(*Cocos romanzoffiana* Cham.) **Palm.**

This coconut palm is found in Santa Catharina, Brazil, and bears a fibrous fruit, which is eaten, although containing insipid juice. But one seed is contained in this fruit, which is said to be about the size of a walnut. The spadix is about 6 feet in length. (Adapted from *Choris, Voyage Pittoresque Autour du Monde, p. 5.*)

43654. CORDIA MYXA L. Boraginaceæ. **Sebesten.**

A moderate-sized deciduous tree, found in tropical Asia and Australia, with oval leaves and thick, rough bark. The wood is soft and is said to have furnished the lumber from which the mummy cases were made. In India it is used for boat building, gunstocks, and agricultural imple-

43642 to 43671—Continued.

ments; it is an excellent fuel. The bark is made into ropes and the fiber is used for calking boats. The fruits are succulent and mucilaginous and when young are eaten as vegetables or pickled. They have also been employed as pectoral medicines. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 19, 165, 407, 620, 639,* and from *Gamble, Manual of Indian Timbers, p. 270.*)

43655. GENISTA RAETAM Forsk. Fabaceæ. **Retem.**
(*Retama raetam* Webb.)

A simple-leaved shrub, from 1 to 3 meters in height, found everywhere on the sand dunes in various places in Egypt; also in Tunis, Algeria, etc. It is densely branched, and the leaves are about 5 mm. long. The sessile white flowers, one to five in a cluster, are about a centimeter long; the pods are inflated and abruptly beaked. The bitter roots are made into a decoction which is used by the Arabs as a heart stimulant. The plant, after maceration in water, is applied to wounds as a curative. (Adapted from *Forskål, Flora Aegyptico-Arabica, p. 214,* and from *Muschler, Manual Flora of Egypt, vol. 1, p. 473.*)

43656. GMELINA ARBOREA Roxb. Verbenaceæ. **Gumhár.**

A large tree, occurring over a large part of India, but nowhere plentiful, being found up to 5,000 feet altitude in moist places. It reaches a height of over 100 feet and a diameter of about 5 feet and is found in deciduous forests in moist, fertile valleys. It has smooth gray bark and loses its leaves in hot weather. While the leaves are off, the flowers appear, followed a little later by the new leaves. The wood is yellowish or white, not very hard, but light and strong, with a handsome luster. As it is easily worked and takes varnish well, it is used for dugout canoes, furniture, carriages, toys, dolls, etc. In Madras the juice of the root is used in cases of dysentery. The tree is often planted in avenues and can readily be raised from seeds. (Adapted from *Rodger, Forest Bulletin (India) No. 16, 1913.*)

43657. JATROPHA CURCAS L. Euphorbiaceæ.

A large shrub or tree, up to 15 feet in height, found throughout tropical America and Africa. It has long-petioled leaves, somewhat three to five lobed, like the English ivy. The flowers are small and yellowish green, occurring in many-flowered cymes. From the seeds there is obtained by hot pressing an oil of great commercial value. Medicinally it is similar in its action to croton oil, but is a milder laxative. Large quantities are imported into Europe for soap manufacture and for lighting purposes. It is said to be especially used in the manufacture of a transparent soap for dressing woolen cloths. As a drying oil it is also very valuable. The chief supply of this oil (*Oleum infernale*) now comes from the Cape Verde Islands, where the Portuguese Government is making large plantations of *purgueira*, as it is known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1720,* and from the *Bulletin of the Bureau of Agricultural Intelligence, p. 278, April, 1911.*)

43658. KALANCHOE MARMORATA Baker. Crassulaceæ.
(*K. grandiflora* A. Rich.)

A very stout low-branching shrub, native to the mountains of Abyssinia. The oval succulent leaves are pale green, blotched with purple; the young leaves are orange-green with blood-red spots; all of the leaves are crenate.

43642 to 43671—Continued.

The creamy white flowers, each more than 2 inches long, are in large compound panicles. (Adapted from *Gardeners' Chronicle, vol. 12, Sept. 10, 1892*, and from *Curtis's Botanical Magazine, pl. 7333.*)

43659. MICROCOS LATERIFLORA L. Tiliaceæ.
(*Grewia asiatica* L.)

A small tree, native of tropical Africa and India, with roundish serrate leaves from 2 to 7 inches long. The flowers are yellow, and the fruit is a round, hairy drupe about the size of a pea. The leaves and the fruits are said to be used in the treatment of dyspepsia and diarrhea. (Adapted from *Hooker, Flora of British India, vol. 1, p. 386*, and from *Dragendorff, Heilpflanzen, p. 419.*)

43660. MONTANOA HIBISCIFOLIA (Benth.) C. Koch. Asteraceæ.

One of the tree daisies of Central America, which is easily distinguished by its five to seven lobed, opposite, entire leaves. It is easily cultivated, the seeds being started indoors and the plants transferred to the open for foliage effects. It may also be propagated by cuttings. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2064*, and from *Koch, Wochenschrift des Vereines zur Beförderung des Gartenbaues, vol. 7, p. 407.*)

43661. PAVONIA SPINIFEX (L.) Cav. Malvaceæ.

A weak-growing shrub, sometimes attaining the height of 20 feet, but with a slender stem and few upright branches. The alternate leaves are oval heart shaped, crenate, and hairy on both sides. The large yellow flowers are odorless. This shrub is a native of South America and is of horticultural value for its flowers. (Adapted from *Botanical Register, pl. 339*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2489.*)

43662. PONGAM PINNATA (L.) W. F. Wight. Fabaceæ.
(*Pongamia glabra* Vent.)

A tall, erect tree or climber with glabrous branches and leaves, the latter composed of five to seven opposite leaflets. The flowers occur in simple axillary racemes, and the woody, glabrous pods are up to 1½ inches long. This species is a native of tropical Asia and Australia and was first introduced into the United States in 1910. The yellow, tough, close-grained wood is prettily marked and might be used for chair making. In India an oil is extracted from the seeds, which is used as an illuminant and as an application in skin diseases. A poultice made of the leaves is used as a remedy for ulcers. The ash of the wood is a dyeing material. Owing to its handsome foliage, this tree is used as an ornamental in the Southern States. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 200, 591*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2753.*)

43663. SAPINDUS VITIENSIS A. Gray. Sapindaceæ.

A tree about 30 feet in height, with warty bark on the branchlets and with leaves composed of three to four pairs of shiny green leaflets about 4 inches long. The numerous flowers occur in large terminal panicles, but are small and white and apparently not of ornamental value. Found in the Fiji Islands on leeward coasts. (Adapted from *Gray, U. S. Exploring Expedition, Botany, vol. 1, pp. 251, 252.*)

43642 to 43671—Continued.

43664. SCHINUS TEREBINTHIFOLIUS Raddi. Anacardiaceæ.

A small evergreen tree, native of Brazil, with alternate leaves composed of two to seven pairs of oblong, sessile leaflets with serrate margins. The flowers occur in terminal panicles and are followed by globose vermilion fruits. All parts of this tree, and especially the bark, are more or less resinous; the native fishermen smear this resin on their nets to protect them from the water. The leaves are used as an application to wounds and sores. In Minas Geraes the young twigs are used as toothbrushes, cleaning the teeth and hardening the gums. (Adapted from *Rodrigues, Hortus Fluminensis, p. 102.*)

43665. SOLANUM MACRANTHUM Dunal. Solanaceæ.

An ornamental tree, native of Brazil, attaining a height of 12 to 14 feet and probably more. The ample, alternate leaves, with acutely lobed margins, have prickly veins. These prickles become large and stout on the lower surface, especially on the midrib. The flowers, which occur in axillary racemes, are large and pale lilac in color, with darker dashes and pale lines. This tree has long been cultivated at the Royal Botanic Gardens, Kew. It is readily propagated from cuttings. (Adapted from *Curtis's Botanical Magazine, pl. 4138.*)

43666. SPARTIUM JUNCEUM L. Fabaceæ. **Spanish broom.**

A tall shrub of rather gaunt habit, native of southern Europe, with erect, cylindrical, rushlike stems, smooth and dark green, which take the place of leaves. The leaves are very few and deciduous, and the fragrant flowers, which occur in terminal racemes up to 18 inches in length, are of a rich glowing yellow. The pods are from 1½ to 3 inches long and contain from 5 to 12 seeds. This shrub is grown for its showy flowers, which appear from June to September, and also for the fiber, which is obtained from the branchlets by maceration. This fiber is worked up into thread, cordage, etc. The plant must be raised from seeds and kept in pots until ready to be set out. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 522, 523.*)

43667. SPHAERALCEA UMBELLATA (Cav.) Don. Malvaceæ.
(*Malva umbellata* Cav.)

A woody plant, native of Mexico, attaining a height of a foot and a half, covered with dense hairs. The heart-shaped leaves are somewhat seven lobed and dark green, and its numerous scarlet flowers occur in clusters of three, or rarely of four or five. (Adapted from *Edwards's Botanical Register, vol. 19, p. 1608.*)

43668. TERMINALIA ARJUNA (Roxb.) Wight and Arn. Combretaceæ.

A very large tree with smooth green or whitish bark found on the banks of rivers and streams throughout central and southern India. The leaves are narrowly oblong and up to 9 inches in length. The flowers, which appear in April and May, occur in terminal panicles, and the fruit is a 5-winged drupe about 2 inches long. This tree yields a clear, transparent gum, which is used as a drug in northern India; the bark is used as a dye and for tanning, and the wood, which is apt to split in seasoning, is used for carts and agricultural implements. The ash from this wood contains a very high percentage of lime. (Adapted from *Watt, Commercial Products of India, p. 107*, and from *Beddome, Flora Sylvatica of India, vol. 1, pl. 28.*)

43642 to 43671—Continued.

43669. THRYALLIS BRASILIENSIS L. Malpighiaceæ.
(*Galphimia brasiliensis* Juss.)

A shrub, native of Brazil, with reddish, oval, lance-shaped leaves about 1 inch long and small yellow flowers in short, lax panicles. This ornamental plant has been introduced into California, where its bright flowers make it very attractive. In Brazil it is called *Rosedá amarello* and *Tintureira*. The flowering season is from September to December. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1312*, and from *Rodrigues, Hortus Fluminensis, p. 62.*)

43670. TOONA CILIATA Roemer. Meliaceæ. **Toon tree.**
(*Cedrela toona* Roxb.)

A large deciduous tree, found chiefly near streams in tropical sub-Himalayan regions. The wood obtained from this important timber tree is not eaten by white ants and is very durable.

See S. P. I. No. 43288 for further description.

43671. WIGANDIA CARACASANA H. B. K. Hydrophyllaceæ.

A shrubby tropical plant with a green hairy stem and alternate rusty hairy leaves 5 to 6 inches long. The large, pale-violet flowers are borne in loose terminal panicles and make the plant a very showy ornamental. It does not do very well indoors in greenhouses, but should be planted outside in frostless regions. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 6, p. 1975*, and from *Curtis's Botanical Magazine, pl. 4575.*)

43672. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.
(*P. juliflora* DC.) **Algaroba.**

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, agronomist, Hawaii Agricultural Experiment Station. Received November 20, 1916.

A leguminous tree with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies. (Adapted from *note of W. Harris, Kingston, Jamaica, April 7, 1916.*)

See also S. P. I. No. 42643 for further data.

The algaroba has become a very important forage tree in the Hawaiian Islands, where its dissemination has been fostered. The pods are used for fattening pigs.

43673 and 43674. Undetermined. Myrtaceæ.

From San Jose, Costa Rica. Presented by Mr. Carlos Werckle, Department of Agriculture. Received November 20, 1916.

43673. From tree No. 2. **43674.** From tree No. 3.

For previous introduction and description, see S. P. I. No. 43441.

43675 to 43701.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 20, 1916.

43675. ACANTHOPANAX SESSILIFLORUM (Rupr. and Maxim.) Seem. Araliaceæ.

An ornamental hardy shrub, found in eastern Siberia. The leaves are palmate, the brownish flowers occur in dense umbels on the spiny

43675 to 43701—Continued.

branches, and the fruits are blackish berries. (Adapted from *note of Frank N. Meyer, dated Nov. 24, 1906.*)

See also S. P. I. No. 19476 for further data.

43676. ACER ARGUTUM Maxim. Aceraceæ. **Maple.**

A small deciduous tree, with erect branches and doubly serrate leaves from 2 to 4 inches in length. The greenish yellow flowers are produced in April before the leaves, and the keys are borne in hanging racemes. This tree is a native of the mountain woods of Japan and makes an elegant appearance with its pale-green leaves in summer and its purplish brown branches in winter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 135.*)

43677. BUDDLEIA DAVIDII SUPERBA (DeCorte) Rehd. and Wils. Loganiaceæ.

A large shrub, from 8 to 10 feet high, with rather thick, slightly wrinkled leaves, and pale rose-colored flowers in dense panicles which appear from the axils of the uppermost leaves. This shrub is found in central and western China. (Adapted from *E. H. Wilson, Horticulture, Sept. 20, 1913*, and from *Journal of Horticulture, July 10, 1913.*)

43678. BUDDLEIA DAVIDII VEITCHIANA Rehder. Loganiaceæ.

A large shrub, having an erect habit and with 4-angled shoots. The flowers are bright mauve with orange-yellow throats, and they occur in rather dense panicles. This variety has a more erect habit and dense flower clusters than the typical species. (Adapted from *E. H. Wilson, Horticulture, Sept. 20, 1913.*)

43679. CAMPYLOTROPIS MACROCARPA (Bunge) Rehder. Fabaceæ. (*Lespedeza macrocarpa* Bunge.)

A shrub, up to 6 feet in height, with long-stalked leaves and oval leaflets. The purple flowers appear in many-flowered racemes about 3 inches long, and the glabrous pods are more than half an inch long. This shrub is found in northern and central China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1845.*)

43680. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

A deciduous shrub, about 8 feet high, with ovate leaves and flowers occurring three to seven in a cluster. The round or pear-shaped fruit is scarlet. This shrub is a native of central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408.*)

See also S. P. I. No. 40575 for further information.

43681. COTONEASTER HORIZONTALIS Decaisne. Malaceæ.

A low, flat, deciduous shrub, native of China, with branches spreading horizontally and branchlets covered with thick, brown wool. The dark, glossy green leaves are generally oval and up to one-half inch in length. The flowers are white, suffused with pink, are about one-fourth of an inch in diameter, and appear singly or in pairs in May. The globose fruit is bright red, about one-fifth of an inch in diameter. This is one of the handsomest of the cotoneasters and is easily propagated by cuttings. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

43675 to 43701—Continued.

43682. COTONEASTER HORIZONTALIS PERPUSILLA C. Schneid. Malaceæ.

A low Chinese shrub, with the branches almost horizontal and roundish oval leaves, less than one-third of an inch long. The flowers are erect and pink, and the bright-red, ovoid fruit has usually three stones. This variety differs from the typical species in having smaller leaves and fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 865.*)

43683. DEUTZIA DISCOLOR Hemsl. Hydrangeaceæ.

A shrub 5 or 6 feet in height, native of central and western China. The narrowly oval leaves are dull green and up to 4½ inches in length. The flowers, which vary in color from white to pink, occur in corymbs and are from half an inch to an inch in width. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 481.*)

43684. EUONYMUS BUNGEANUS SEMIPERSISTENS (Rehder) C. Schneid. Celastraceæ.

A large glabrous shrub or small tree, from 3 to 5 meters high, with bright-green leaves of a bluish or grayish hue, half evergreen. The yellowish white flowers appear in loose three to seven flowered cymes, and the few fruits are bright pink. This variety differs from the species in having leaves which remain on the plant until midwinter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1188,* and from *Sargent, Trees and Shrubs, vol. 1, p. 165.*)

43685. EUONYMUS EUROPAEUS LEUCOCARPUS DC. Celastraceæ.

A deciduous shrub or small tree, from 10 to 25 feet in height, forming a spreading, bushy head. The leaves are narrowly oval, and the white flowers occur in cymes about 1½ inches long. The red fruit is from one-half to three-fourths of an inch wide. This shrub is a native of Europe, including the British Isles, and is very striking in autumn when well laden with fruit. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 539.*)

43686. EUONYMUS RADICANS CARRIEREI (Vauv.) Nicholson. Celastraceæ.

A low, spreading shrub with no inclination to climb, with glossy leaves from 1 to 2 inches long. The greenish flowers occur in clusters of five or more at the end of a slender stalk, and the fruit, which is orange shaped and greenish white or tinged with red, is one-third of an inch in diameter. This may be only a stunted form of the typical species. It is a native of Japan and is cultivated in the New England States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 542.*)

43687. EUONYMUS RADICANS VEGETUS Rehder. Celastraceæ.

A low, spreading shrub up to 5 feet in height, climbing high if placed against a wall. The dull-green, thickish leaves are broadly oval and obtuse, and the greenish white flowers occur in rather dense cymes. The fruit is a greenish white capsule, inclosing a bright-orange aril. Both flowers and fruits appear in great profusion, and it can be recommended as a broad-leaved evergreen for cold regions. (Adapted from *Sargent, Trees and Shrubs, vol. 1, p. 130 and pl. 65.*)

43675 to 43701—Continued.

43688. EUONYMUS YEDOENSIS Koehne. Celastraceæ.

A deciduous shrub or small tree, growing 10 feet or more high, with pinkish purple fruit. This shrub is a native of Japan, and in autumn its leaves turn a brilliant red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 543.*)

43689. HYDRANGEA BOSTHORNII Diels. Hydrangeaceæ.

A shrub up to 12 feet in height, with roundish oval, slender-pointed leaves from 4 to 9 inches in length. The white or purplish sterile flowers occur in cymes 4 to 7 inches wide. This shrub is a native of western China, and the flowers appear in July. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1622.*)

43690. HYDRANGEA XANTHONEURA Diels. Hydrangeaceæ.

A deciduous shrub about 8 feet in height, of a loose, straggling habit. The leaves, dark green above and pale beneath, are in threes and of an oval shape. The creamy white sterile flowers are in flattish panicles of a width of about 6 inches, and the perfect flowers are dull white and one-fourth of an inch wide. This shrub is a native of central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 631.*)

43691. HYDRANGEA XANTHONEURA SETCHUENENSIS Rehder. Hydrangeaceæ.

A shrub up to 15 feet in height, with the last year's branchlets light brown. The narrow, elliptic, bright-green leaves are up to 8 inches long and 4 inches wide, and the white, fertile flowers are in rather loose corymbs from 5 to 10 inches wide, appearing in July. This shrub is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1620.*)

43692. HYPERICUM PATULUM HENRYI Bean. Hypericaceæ. **St.-John's-wort.**

A hardy evergreen shrub, native of northern India and the Himalayas, with very large dark-green leaves and large handsome yellow flowers. (Adapted from *Curtis's Botanical Magazine, pl. 4949.*)

See also S. P. I. No. 38153 for further information.

43693. LESPEDEZA FORMOSA (Vogel) Koehne. Fabaceæ.
(*L. sieboldii* Miquel.)

An herb, or in warm regions a shrub, up to 2 meters high, throwing up strong, wiry shoots each year from the crown. The stems are hairy, angled, reddish or brown, and the rosy purple flowers, nearly half an inch long, occur in very numerous long, drooping racemes. The pod is about half an inch long and pubescent. This plant, which is a native of Japan and China, is a very desirable late bloomer. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1845.*)

43694. LIGUSTRUM ACUTISSIMUM Koehne. Oleaceæ. **Privet.**

A much-branched shrub, with the branches often extending almost horizontally. The leaves are narrowly oval, with slender pointed tips. The white flowers occur in dense panicles from three-fifths of an inch to 1⅛ inches long. This shrub has been found in Hupeh, China. (Adapted from *Urban und Graebner, Festschrift zur Feier Herrn Aschersons, p. 198, 1904.*)

43675 to 43701—Continued.

43695. LIGUSTRUM OBTUSIFOLIUM REGELIANUM (Koehne) Rehder. Oleaceæ. **Privet.**

A dwarfed shrub of dense habit, with the branches spreading horizontally. The oblong or narrowly oval leaves are downy beneath, and the white flowers, produced in July, are in terminal, nodding clusters. The glabrous fruit, at first covered with a purplish bloom, is finally black and is smaller than that of the typical species. This shrub is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 24, 25.*)

43696. LONICERA FERDINANDI Franch. Caprifoliaceæ. **Honeysuckle.**

A very robust deciduous shrub of spreading, open habit, attaining a height of 8 or 9 feet. The oval dull-green leaves are from 1½ to 4 inches long and are hairy on both sides. The yellow flowers are produced in pairs during June, and the fruit is red. This shrub is a native of Mongolia and China, and it flowers very freely. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 43.*)

43697. LONICERA HENRYI Hemsl. Caprifoliaceæ. **Honeysuckle.**

An evergreen climbing plant, with oblong leaves and purplish red flowers, produced in clusters of 2 or 3 inches across. The fruit is blackish purple. The plant is a native of China and Tibet. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 45.*)

See also S. P. I. No. 40585 for further information.

43698. LONICERA MAACKII ERUBESCENS Rehder. Caprifoliaceæ. **Honeysuckle.**

A rather low, spreading shrub, with broadly oval leaves which are dark green above and paler beneath. The flowers are large and tinted with pink, and the fruit is dark red. This variety is found in central China. A very desirable late bloomer. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1910.*)

43699. LONICERA MAACKII PODOCARPA Franch. Caprifoliaceæ. **Honeysuckle.**

A low, spreading shrub with broadly oval, short-tipped, dark-green leaves. The flowers are white, fading to yellowish, and the fruit is dark red. This shrub, which is a native of central China, is most beautiful in the fall, for the dark-green foliage and the fruits last until November. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1910.*)

43700. MALUS ARNOLDIANA Rehder. Malaceæ. **Crab apple.**

This is a hybrid of *Malus floribunda* with one of the hybrids of *M. baccata*, and appeared spontaneously in the Arnold Arboretum several years ago. It makes a smaller tree than *M. floribunda*, but its long, spreading and arching branches are very graceful and the flowers produced on long stems are more than twice as large as those of *M. floribunda*. These flowers are a beautiful pink, and it is considered by some persons to be the most beautiful of the crab apples. (Adapted from the *Arnold Arboretum Bulletin of Popular Information, Nos. 3, 1911, and 39, 1913.*)

43675 to 43701—Continued.

43701. MALUS BACCATA CERASIFERA (Spach) Takeda. Malaceæ. **Crab apple.**
(*Pyrus cerasifera* Tausch.)

This crab apple, very probably a hybrid, makes a large tree with a spreading head. The flowers are large and pure white, and the fruit is variable in size, shape, and color. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5. 2872.*)

43702. GUILIELMA UTILIS Oerst. Phœnicaceæ. **Palm.**
(*Bactris utilis* Benth. and Hook.)

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 7, 1916.

"The most valuable palm, besides *Cocos nucifera* and the date. One of the heaviest bearers per acre of all the fruit trees, the fruit ripening during the greater part of the year. The fruit is orange color, is eaten boiled, generally in salt and water; and is very good. Mixed with sugar many kinds of sweet cakes can be made from it; it is more mealy than the farinaceous tuber roots. This palm grows fairly well on the coast up to 1,100 feet; prefers a damp climate, mountain slopes, and deep soil with plenty of humus. These seeds were taken from well-ripened fruits and dried for two hours in the sun under cover of sackcloth." (*Wercklé.*)

43703 to 43736.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 20, 1916.

43703. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder. Malaceæ. **Apple.**
(*Pyrus prunifolia rinki* Bailey.)

A wide-spreading small tree, up to 18 feet high, with pink or pinkish flowers and oval, serrate leaves. This tree yields an edible fruit, sometimes reaching a diameter of 1½ inches, of a greenish or yellowish color and with a bitter-sweet flavor. It was formerly cultivated in Japan for its fruit, but is now chiefly used as a stock for the imported varieties. It is a native of China, where it is sparingly cultivated. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2873.*)

43704. MALUS SIEBOLDII ARBORESCENS Rehder. Malaceæ. **Apple.**
(*Pyrus sieboldii arborescens* Bailey.)

A shrub or tree, up to 30 feet high, with slightly pubescent oval-oblong leaves which become red in autumn. The flowers are often nearly white, and the red or yellow fruits are about the size of peas. The typical species has pink flowers and is always a shrub. This tree is a native of Japan and is cultivated both for ornament and as a stock for breeding purposes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2874.*)

43705. MALUS ZUMI (Mats.) Rehder. Malaceæ. **Apple.**
(*Pyrus zumi* Mats.)

A small tree of pyramidal habit, with oval or oblong leaves from 1½ to 3½ inches long. The flowers are pink in the bud, becoming white after opening, are 1 to 1¼ inches in diameter, and are produced in clusters of four to seven. The globose, red fruits are half an inch in diameter. This

43703 to 43736—Continued.

tree is a native of Japan and was introduced into North America in 1892. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 300.*)

43706. ROSA ABIETINA Grenier. Rosaceæ. **Rose.**

A compact shrub, 5 to 7 feet in height with straight, slender, very prickly branches. leaves five, seven, or sometimes nine parted, leaflets from half an inch to 1¾ inches long, three-eighths of an inch to 1 inch wide, and rather small rose-colored flowers in one to eight flowered clusters. Known only from Dauphiny and Switzerland. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 567.*)

43707. ROSA AMBLYOTIS Meyer. Rosaceæ. **Rose.**

A stout-branched rose, with dark-purple bark covered with prickles and bristles. The leaves are usually composed of seven leaflets. The flowers are pink and solitary, and the fruits are about half an inch long. This rose has been found in Kamchatka, Siberia. (Adapted from *Meyer, Mémoires L'Académie Impériale des Sciences de St. Petersbourg, vol. 6, Botanique, pp. 30, 31, 1849.*)

43708. ROSA BAICALENSIS Turcz. Rosaceæ. **Rose.**
(*R. acicularis* Lindl.)

A low-growing rose with densely prickly stems and leaves composed of three to seven leaflets up to 2 inches in length. The solitary deep-rose flowers are from 1½ to 2 inches wide and fragrant. The fruit is pear shaped. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2993.*)

43709. ROSA CANINA L. Rosaceæ. **Dog rose.**

A robust shrub from 6 to 13 feet high, with stems armed with scattered hooked bristles and leaves composed of five to seven leaflets, sometimes downy. The fragrant white or pinkish flowers occur in clusters, and the egg-shaped or roundish fruits are bright red. This rose, in one or another of its numerous varieties, is found throughout most of the cooler parts of Europe and western Asia and has been naturalized in North America. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 422.*)

43710. ROSA CAUDATA Baker. Rosaceæ. **Rose.**

This rose is a tall, vigorous shrub, native of western China. It has stout, arching stems, dark-green foliage, and flowers about 2 inches in diameter. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 42.*)

See also S. P. I. No. 42976 for further information.

43711. ROSA CHINENSIS MANETTI Dipp. Rosaceæ. **Manetti rose.**

An upright, vigorously growing rose, with slender branches usually armed with more or less hooked prickles and leaves composed of three to five dark-green shining leaflets. The deep pink flowers are single or semidouble and the fruit is more or less top shaped. This variety has been recommended as a stock for forcing roses, but is not entirely hardy. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2988.*)

43712. ROSA CINNAMOMEA L. Rosaceæ. **Rose.**
(*R. pendulina* L.)

A strong-growing bush, 6 to 9 feet high, stems erect, much branched near the top, with usually a pair of hooked prickles at the base of the

43703 to 43736—Continued.

leafstalks and numerous others scattered on the stems, especially near the ground. Leaflets usually five or seven, oblong or slightly obovate, 1 to 1½ inches long. Flowers produced either singly or few in a cluster, of varying shades of red, 2 inches across. Fruit globose, or slightly elongated, red, half an inch wide. A native of Europe, Siberia, and northern China; cultivated in England for more than 300 years, but not, as was once believed, a native. The flowers have a somewhat spicy odor, from which the species derives its name. It is regarded as the type of a large group of roses whose leading distinctions are prickles, often in pairs just below the leafstalks, and red, smooth fruit, with a thin skin. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 423.*)

43713. ROSA CORIIFOLIA Fries. Rosaceæ. **Rose.**

A low shrub, up to 5 feet high and thickly branched, with a bluish bloom often appearing on the bark and many hooked spines. The leaves are composed of five to seven roundish oval, hairy leaflets, and the flowers are pink. This rose is found in mountainous parts of Europe and western Asia. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 566.*)

43714. ROSA FEROX Bieb. Rosaceæ. **Rose.**

A dwarf, compact little bush, from 1 to 2 feet high, of a rounded form, with numerous decurved prickles. The leaves are composed of five to seven leaflets, coarsely but evenly serrate, and the white flowers, which are either solitary or in clusters of two or three, are from 1 to 1¼ inches long. The roundish fruit is red. This rose is a native of the Crimea and Caucasus. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 426.*)

43715. ROSA GAYIANA Wall. Rosaceæ. **Rose.**

A European rose closely allied to *Rosa villosa* L., from which it appears to differ chiefly by its larger, oblong-ovate leaflets. The thorns are straight and the flowers solitary. (Adapted from *Wallroth, Rosae Plantarum Generis Historia Succincta, p. 171, 1828.*)

43716. × ROSA HIBERNICA J. E. Smith. Rosaceæ. **Rose.**

Var. *grovesii.*

A low shrub with glaucous green foliage and small pink flowers. This rose is a hybrid between *Rosa spinosissima* and *Rosa canina.* (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2995.*)

43717. ROSA JUNDZILLI Besser. Rosaceæ. **Rose.**

A bush from 3 to 9 feet in height, the stems armed with scattered, slightly curved prickles. The leaves are composed of five to seven leaflets, densely serrate, and the pink flowers, which are produced singly or in threes, are 3 inches wide. The globose or slightly egg-shaped fruit is bright red. This rose is a native of central Europe and is remarkable for the abundance of sticky glands on the midribs and petioles of the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 431.*)

43718. ROSA LHERITIERANEA Thory. Rosaceæ. **Rose.**

This rose, supposed to be a hybrid between *Rosa pendulina* and *Rosa chinensis,* climbs to a height of 12 feet, and has slender, sparingly prickly branches. The leaves are composed of three to seven leaflets,

43703 to 43736—Continued.

and the purple flowers, which are double or semidouble, occur very plentifully in nodding corymbs. The color of the flowers varies with lighter and darker shades. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2993.*)

43719. ROSA MOSCHATA Mill. Rosaceæ. **Musk rose.**

A tall climbing species reaching to the tops of lofty trees, the stems and branches armed with short, scattered, stout-hooked prickles. The leaves are up to 8 inches in length and consist of five to nine narrowly oval leaflets. The flowers are at first pale yellow, changing to almost pure white, are about 1½ inches wide, and are produced in corymbose clusters, often forming an inflorescence over a foot wide. The fruits are red and about one-third of an inch in width. This rose, which has long been cultivated in England, is found from southern Europe to northern India and China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 434.*)

43720. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils. Rosaceæ. **Rose.**

A vigorous, hardy, and handsome rose with the habit of the Japanese *Rosa multiflora*. The pink flowers are produced in large many-flowered clusters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 35.*)

See also S. P. I. No. 42981 for further information.

43721. ROSA MURIELAE Rehd. and Wils. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with bristles and slender prickles. The leaves are composed of 9 to 15 glabrous, serrate leaflets. The solitary flowers are pink. This rose is found in eastern three to seven flowered corymbs. The orange-red fruit is from one-half to three-fourths of an inch long. This rose is a native of southwestern China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43722. ROSA OXYODON Boiss. Rosaceæ. **Rose.**

A prickly stemmed shrub with leaves composed of five to seven oval leaflets. The solitary flowers are pink. This rose is found in eastern Caucasia, Russia. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 674.*)

43723. ROSA PRATTII Hemsl. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with numerous bristles and slender prickles. The leaves are composed of 7 to 15 obtuse, serrate leaflets, and the pink flowers, which occur one to three in a cluster, are three-fourths of an inch wide. The scarlet fruit is about one-third of an inch long. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43724. ROSA SPINOSISSIMA L. Rosaceæ. **Scotch rose.**

A dwarf bush, rarely more than 3 or 4 feet high, with erect short-branched stems covered with slender spines and stout bristles intermixed. The leaves are composed of five, seven, or nine round or oval leaflets, which are dark green and quite smooth. The white or pale-pink solitary flowers are from 1½ to 2 inches wide, and the globose fruit is dark brown, finally blackish, from one-half to three-fourths of an inch

43703 to 43736—Continued.

in diameter. This rose is very widely spread in Europe and northern Asia and is frequently found in England on dry hills near the sea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 445.*)

43725. ROSA SPINOSISSIMA L. Rosaceæ. **Scotch rose.**

Var. *fulgens* Bean.

A dwarf bush, from 3 to 4 feet high, with erect short-branched stems. The leaves are composed of five, seven, or nine round or oval leaflets, which are dark green and quite smooth. The bright rose-colored solitary flowers are from 1½ to 2 inches wide, and the globose fruit is dark brown, finally blackish. This rose is widely spread in Europe and northern Asia. The typical species has white or pale-pink flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 445, 446.*)

43726. ROSA VILLOSA L. Rosaceæ. **Rose.**
(*R. pomifera* Herrmann.)

Var. *multiplex.*

A short-branched, stout rose from 4 to 6 feet high, with scattered, slender, broad-based prickles up to half an inch long and leaves up to 7 inches in length. The deep rosy pink flowers are from 1½ to 2½ inches wide, produced in clusters of three to six or more, and the pear-shaped or roundish rich-red fruits are from 1 to 1½ inches long, bristly, and surmounted by the erect sepals. This rose is a native of central Europe. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol, 2, p. 439.*)

43727. SORBARIA ARBOREA C. Schneid. Rosaceæ.

A tree, from 10 to 35 feet high, with the young twigs olive gray. The leaves are lance shaped or more often oblong, with the lower surfaces more or less hairy and the margin serrate. The white flowers are about one-fourth of an inch wide, and the fruit is probably one-sixteenth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 490,* and from *Sargent, Plantae Wilsonianae, vol. 1, pp. 47, 48.*)

43728. SORBUS COMMIXTA Hedl. Malaceæ.

A shrub or tree, native of central and northern Japan, with bright-green, serrate, very variable leaves, usually composed of five to six pairs of glabrous leaflets. The white flowers occur in terminal corymbs, and the bright red, nearly globular fruits are about one-fourth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, pp. 677, 678.*)

43729. SYRINGA JAPONICA (Maxim.) Decaisne. Oleaceæ. **Lilac.**

A deciduous tree or shrub up to 30 feet in height, of erect habit. The oval leaves are from 3 to 8 inches long, with a long tapering point, and the white flowers, which are not fragrant, are usually produced at the end of the branch in a pair of broad pyramidal panicles, 8 to 12 inches long. This tree or shrub is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 567, 568.*)

43703 to 43736—Continued.

43730. VIBURNUM BUREJAETICUM Regel and Herd. Caprifoliaceæ.

A shrub, 4 to 10 feet high, native of Chosen (Korea). The small light-green leaves and the small umbels of white flowers, followed by the jet-black berries, make this plant very ornamental. (Adapted from a *note of Frank N. Meyer, dated Aug. 20, 1906.*)

See also S. P. I. No. 20115 for previous introduction.

43731. VIBURNUM DILATATUM Thunb. Caprifoliaceæ.

A deciduous shrub, 6 to 10 feet high, with broadly oval, pointed, hairy leaves. The pure white flowers are all fertile and are produced in June in a hairy 5-rayed cyme, 3 to 5 inches wide. The fruit is bright red and roundish oval in shape. The shrub is a native of Japan and China and is a very profuse bloomer. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 647.*)

43732. VIBURNUM HUPEHENSE Rehder. Caprifoliaceæ. **Honeysuckle.**

A deciduous shrub, native of Hupeh, China, with coarsely serrate, roundish oval leaves and flowers in large flat corymbs. The red fruit is egg shaped, from one-third to two-fifths of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 650.*)

See also S. P. I. No. 42197 for further information.

43733. VIBURNUM ICHANGENSE (Hemsl.) Rehder. Caprifoliaceæ.

A slender-branched shrub, with yellowish green, oval, acuminate leaves. The white flowers occur in terminal and lateral corymbs up to 1⅜ inches wide, and the fruit is an ovoid drupe about one-fourth of an inch long and is red. The seed is brown. This shrub is a native of China. (Adapted from *Sargent, Trees and Shrubs, vol. 2, p. 105, pl. 150.*)

43734. VIBURNUM SARGENTII Koehne. Caprifoliaceæ.

A shrub, growing to a height of from 5 to 8 feet, with roundish leaves and flowers in flat corymbs. The rounded fruits are scarlet or orange-scarlet and ripen in September. (Adapted from *Florists' Exchange, May 20, 1911.*)

See also S. P. I. No. 37612 for further information.

43735. VIBURNUM THEIFERUM Rehder. Caprifoliaceæ. **Honeysuckle.**

A deciduous shrub of erect habit, up to 12 feet in height, with smooth, gray stems. The narrowly oval leaves are sharply serrate, taper pointed, and dark green above. The white flowers are all perfect and are produced in terminal cymes 1½ to 2 inches in width. The red fruit is egg shaped and nearly half an inch long. This shrub is a native of central and western China. The specific name refers to the use of the leaves by the monks of Mount Omei as a kind of tea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 657.*)

43736. VIBURNUM WRIGHTII Miquel. Caprifoliaceæ.

A deciduous shrub, 6 to 10 feet high, with erect stems. The bright-green leaves are 2 to 5 inches in length and are slenderly pointed. The white flowers are all perfect and are produced in May on smooth, downy stalked, 5-rayed cymes, 2 to 4 inches in width. The roundish oval red fruits are one-third of an inch long. This shrub is a native of Japan and China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 660.*)

43737 to 43739. PYRUS COMMUNIS L. Malaceæ. **Pear.**

From Ottawa, Canada. Cuttings presented by the director, Central Experiment Farm. Received December 6, 1916.

"Prof. A. J. Logsdail, assistant in plant breeding at the Central Experiment Farm, tells me that the varieties of Russian pears constitute a part of an original introduction by the late William Saunders 25 to 30 years ago. Out of a large number of pears brought in from Russia, the following three varieties are the only survivors. They have proved to be very hardy as far as cold resistance is concerned, and have also proved, in a large measure, blight resistant. I saw the three trees growing while at Ottawa last September; they were vigorous specimens, the trunks being 8 to 10 inches in diameter, and they had a fine growth of wood and foliage. I saw no evidence of blight on the trees. The fruit of all three varieties is said to be fairly good. They here partake of all the characteristics of the Russian types." (*B. T. Galloway.*)

43737. "*Bessemianka* (°–7753). Blight resistant and very hardy." (*W. T. Macoun.*)

43738. "*Kurskaya* (°–7705). Particularly blight resistant and very hardy." (*W. T. Macoun.*)

43739. "*Zuckerbirne* (°–7729). Particularly blight resistant and very hardy." (*W. T. Macoun.*)

43740. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*P. sargentii* Rehder.) [Amygdalaceæ. **Sargent's cherry.**

From Tokyo, Japan. Purchased from the Tokyo Plant, Seed, & Implement Co. Numbered December 9, 1916.

A deciduous tree, 40 to 80 feet in height, with a trunk sometimes 3 feet in diameter and with sharply serrate oval leaves which are often reddish when young. The deep-pink flowers are from 1¼ to 1½ inches wide, and are produced in short-stalked umbels with two to six flowers in each umbel. The fruit is a small black cherry, one-third of an inch in diameter. This tree is a native of Japan and is cultivated in England and in the United States. It is probably the finest timber tree among the true cherries and is also remarkable for its beautiful flowers, which appear in April. The seeds germinate freely after lying dormant for a year. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 250, 251.*)

43741. TECOMA ARGENTEA Bur. and Schum. Bignoniaceæ.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received December 1, 1916.

"Seeds of a tree called in Spanish *Para todo* and in Guarani *quirai*. This tree is found in abundance in open fields among palmeras along the upper Paraguay River, both in Paraguayan Chaco and Matto Grosso. The bark is accredited among natives as 'a great remedy' and is also said to be used like quinine. The timber has merit for certain construction purposes." (*Mead.*)

43742. LONICERA SIMILIS DELAVAYI (Franch.) Rehder. Caprifoliaceæ. **Honeysuckle.**

From Paris, France. Plants purchased from Messrs. Vilmorin-Andrieux Co. Received December 9, 1916.

A half-evergreen climbing shrub, entirely glabrous except for the under surface of the leaves. The leaves are narrow-oval to lance shaped, and the

white flowers are about 2 inches long. This variety, which is found in central and western China, is the only one of this species in cultivation, and it differs from the typical species in the absence of the pubescence. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1914*, and from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 729.*)

43743 and 43744.

From Darmstadt, Germany. Purchased from Mr. Conrad Appel, through Mr. Julius G. Lay, American consul general, Berlin. Received December 7, 1916.

43743. AGROSTIS STOLONIFERA L. Poaceæ. **Creeping bent-grass.**

"Seeds of the true German creeping bent, 1916 crop." (*Appel.*)

43744. FESTUCA RUBRA L. Poaceæ. **Red fescue.**

"Seed of the true German red fescue, 1916 crop." (*Appel.*)

43745. PASSIFLORA MALIFORMIS × EDULIS VERRUCIFERA. Passifloraceæ. **Hybrid granadilla.**

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered December 14, 1916.

"A cross between S. P. I. Nos. 39224, *Passiflora maliformis*, and 35215, *Passiflora edulis verrucifera*." (*R. L. Beagles.*)

43746. MUCUNA sp. Fabaceæ.

From Berea, Durban, Natal. Presented by Mr. P. van de Bijl, mycologist, Natal Herbarium. Received December 11, 1916.

"Seeds collected at Umbilo, Durban, Natal, October 29, 1916." (*Van de Bijl.*)

Received as *Canavalia bonariensis.*

43747 to 43753. AMYGDALUS spp. Amygdalaceæ. **Peach.**

From Fancheng, Hupeh, China. Seeds presented by Mr. Edwin S. Cunningham, American consul general, Hankow, who procured them from Mr. C. Stokstad. Received December 11, 1916. Quoted notes by Mr. Stokstad.

43747. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"A large peach."

43748. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker.
(*Prunus persica platycarpa* Bailey.)

"A small disk-shaped peach."

43749 to 43753. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

43749. "A large luscious peach."

43750. "A large peach."

43751. "A downy peach, good for cooking."

43752. "A very large and most luscious peach, from our own orchard."

43753. "A large peach."

43754. PYRUS AMYGDALIFORMIS Vill. Malaceæ. **Pear.**

From Fresno, Calif. Presented by Mr. George C. Roeding, Fancher Creek Nurseries. Received December 13, 1916.

"Seeds of a pear growing on my place, the bud wood of which I secured in Smyrna, Asia Minor, in 1901, and a portion of which I forwarded to your Department [S. P. I. No. 7669]." (*Roeding.*)

43755. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. **Tipu.**

(*T. speciosa* Benth.)

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received December 6, 1916.

A tall, handsome tree, with rose-colored or creamy white wood, native of the subtropical, temperate, and cool regions of Argentina. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 58.*)

See also S. P. I. No. 42331 for further description.

43756 to 43758.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received October 23, 1916.

43756. AMPELOPSIS sp. Vitaceæ.

An ornamental woody vine with handsome, deciduous foliage.

43757. COTONEASTER MULTIFLORA CALOCARPA Rehd. and Wils. Malaceæ.

A shrub, up to 6 feet in height, with usually slender, arching branches and rather large, narrowly ovate leaves. The white flowers occur in many-flowered cymes, and the numerous red fruits are nearly half an inch in diameter. This shrub is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, pp. 866, 867.*)

43758. COTONEASTER RACEMIFLORA SOONGORICA (Regel and Herd.) C. Schneid. Malaceæ.

An erect shrub, up to 4 feet in height, but rarely prostrate. The leaves are oval and usually somewhat obtuse, and the white flowers, 3 to 12, occur in short-peduncled cymes. The fruit is red. This variety is found in northern China, Caucasia, etc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867,* and from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 754.*)

43759 to 43762.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received December 13, 1916. Quoted notes by Mr. Bircher.

43759. BRIDELIA RETUSA (L.) Spreng. Euphorbiaceæ.

"A small Indian tree which grows in every kind of soil. It flowers in November, and the black berries hanging in long racemes ripen early in spring. There is not much pulp on them, but they might be improved by continuous culture. A sauce can be prepared with the dry fruits."

43760. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

"This tree does well here and stands 110° F. and light frosts. These seeds come from imported trees which are only 4 years old; they germinate in a much shorter time (two to three months) than the seeds from wild trees, which need two or three years to come forth."

43759 to 43762—Continued.

43761. MORINGA OLEIFERA Lam. Moringaceæ. **Horse-radish tree.**
(*M. pterygosperma* Gaertn.)

"The pods of this variety are free of the bitter taste of the common horse-radish tree and are eaten like French beans if gathered when in a young state."

43762. PSIDIUM PUMILUM Vahl. Myrtaceæ.

"A small shrub with small yellow fruits resembling those of *Psidium araca* in size and color, but with dry calyx segments. The fruit is very aromatic, with a much accentuated strawberry flavor. The leaves resemble the common guava, but are broader."

43763 to 43766.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, Washington, D. C., who received them from Mr. G. E. Child, of Bogota. Received December 4, 1916.

43763. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

This is the common form of the cherimoya as sold in the markets of Bogota.

43764. CARICA PAPAYA L. Papayaceæ. **Papaya.**

Seeds of the ordinary papaya sold in the markets at Bogota.

43765. PASSIFLORA LIGULARIS Juss. Passifloraceæ. **Sweet granadilla.**

The common form of granadilla sold in the markets at Bogota.

43766. PASSIFLORA MALIFORMIS L. Passifloraceæ. **Curubá.**

This is the common *curubá* or Colombian granadilla sold in the markets of Bogota.

43767 to 43783.

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received November 27, 1916.

43767. AESCHYNOMENE ELAPHROXYLON (Guill. and Perr.) Taub. Fabaceæ.
(*Herminiera elaphroxylon* Guill. and Perr.)

A leguminous tree, with compound leaves and yellow flowers, found growing on river banks with its stems in the water in many places in tropical Africa. The hairy pods are often sickle shaped, with two or more joints. When in flower this tree is very ornamental. The wood is exceedingly light and is used by the natives for making small boats and rafts. The only purpose for which this wood might be used commercially is for paper pulp, although it is strong and durable. (Adapted from *Kew, Bulletin of Miscellaneous Information, Additional Series IX, pp. 199, 200,* and from *Engler and Prantl, Natürlichen Pflanzenfamilien, III, 3, p. 319.*)

43768. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

This is the *bael* tree of India, where it attains a height of 40 feet. The leaves are deciduous, and the greenish yellow fruit reaches a diameter of 6 inches. The Hindus are very fond of this fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 222, 223.*)

See also S. P. I. No. 43478 for further description.

43767 to 43783—Continued.

43769. BIGNONIA UNGUIS-CATI L. Bignoniaceæ.

A woody climber, with compound evergreen leaves and trumpet-shaped orange-yellow flowers about 2 inches long. This plant, which is a native of Argentina, will stand a little frost if grown in the open in the southern United States and is conspicuous and interesting because of the beauty and profusion of its flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 502.*)

43770. CAESALPINIA GILLIESII (Hook.) Wall. Cæsalpiniaceæ.

A shrub or small tree, native of Argentina, with leaves composed of 6 to 10 pairs of leaflets. The yellow flowers, with red stamens, are in large terminal panicles, and the fruit is a sickle-shaped pod. This plant is of value as an ornamental. (Adapted from *Löfgren, Notas sobre as Plantas Exoticas Sao Paulo, p. 39.*)

43771. CANAVALI ENSIFORME (L.) DC. Fabaceæ. **Jack bean.**

Var. *nanus*. This is a dwarf variety of the common jack bean and is apparently an unpublished garden variety, cultivated at Cairo, Egypt.

43772. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. **Carissa.**

A handsome shrub, originally from South Africa, now cultivated in southern Florida and southern California as an ornamental and for its scarlet edible fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2114.*)

See also S. P. I. No. 41504 for further description.

43773. CASSIA BONARIENSIS Colla. Cæsalpiniaceæ.

An ornamental shrub with handsome compound leaves composed of four pairs of leaflets and racemes of bright-yellow flowers.

43774. DATURA METEL L. Solanaceæ.

An herbaceous plant, found in the western Himalayas and the mountains of West Dekkan Peninsula, and probably introduced into India. The leaves are heart shaped, almost entire, and pubescent, and the flowers are white. This plant is said to possess the same medicinal properties as the other species of this genus. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, pp. 39, 40.*)

43775. HAEMATOXYLUM CAMPECHIANUM L. Cæsalpiniaceæ. **Logwood.**

A tree, up to 40 feet in height, found in the Tropics from southern Mexico to Venezuela. It yields the Campeche wood or logwood of commerce, from which are made dyes and inks and also the chemical reagent hæmatoxylin. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 248.*)

43776. INDIGOFERA DOSUA Buch.-Ham. Fabaceæ.

A shrub, found in the central and eastern Himalayas at altitudes ranging from 6,000 to 8,000 feet. The flowers are said to be eaten as a pot herb in Kangra, India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 385.*)

See also S. P. I. No. 39119 for further description.

43777. MORINGA OLEIFERA Lam. Moringaceæ. **Horse-radish tree.**
(*M. pterygosperma* Gaertn.)

A small tree, cultivated as an ornamental in Cuba, usually about 15 to 20 feet in height, erect, with compound leaves nearly a foot long. The

43767 to 43783—Continued.

white flowers are borne in panicles, and the slender pods are often a foot long. (Adapted from *notes of Wilson Popenoe, July 16, 1915.*)

See also S. P. I. Nos. 40913 and 43761 for further description.

43778. OPERCULINA TUBEROSA (L.) Meisn. Convolvulaceæ. (*Ipomoea tuberosa* L.)

A perennial stout-stemmed herbaceous vine, with large, compound leaves and three to six yellow flowers on a long peduncle. The entire plant is used as a purgative. It is a native of Brazil. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, pp. 398 and 567.*)

See also S. P. I. No. 43385 for further description.

43779. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. **Algaroba.** (*P. juliflora* DC.)

A leguminous tree, with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies. (Adapted from a *note of W. Harris, Kingston, Jamaica, dated April 7, 1916.*)

See also S. P. I. No. 42643 for further description.

43780. SOLANUM TORVUM Swartz. Solanaceæ.

A shrub, from 8 to 10 feet in height, or sometimes flowering as an herb. The stems are prickly, and the unarmed hairy leaves are 4 inches long and 6 inches wide. The white flowers occur in many-flowered racemes and are about 1¼ inches in diameter. This shrub is distributed throughout tropical America, the Philippines, China, and the Malay Archipelago. (Adapted from *Hooker, Flora of British India, vol. 4, p. 234.*)

43781. TECOMA STANS (L.) Juss. Bignoniaceæ.

A shrub found in the West Indies and Central America and sometimes cultivated as far south as Argentina. The leaves are composed of 5 to 11 pairs of lance-shaped leaflets, and the large yellow flowers occur in terminal panicles. The fruit is a silique, bearing a large number of winged seeds. This shrub is valued as an ornamental, both its flowers and its foliage being very attractive, and it readily adapts itself to many kinds of environment. (Adapted from *Löfgren, Notas sobre as Plantas Exoticas Sao Paulo, pp. 195, 196.*)

53782. TITHONIA ROTUNDIFOLIA (Mill.) Blake. Asteraceæ. (*Helianthus speciosus* Hook.)

A Mexican sunflower, growing to a height of about 5 feet, with a round stem and rather coarse lobed leaves, which are very susceptible to attacks by aphids. The orange-colored flowers of this plant make it very charming. (Adapted from *Curtis's Botanical Magazine, pl. 3295.*)

43783. TRISTANIA CONFERTA R. Br. Myrtaceæ.

A tall tree, with smooth, brown, deciduous bark and dense foliage. The alternate leaves are from 3 to 6 inches long, and the rather large flowers occur in 3 to 7 flowered cymes. This tree is a native of Australia, and the timber, which is very strong and durable, is used in shipbuilding and for making wharves and bridges. The bark is occasionally used for tanning. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 330, 608. 609,* and from *Bailey, Queensland Flora, part 2, p. 636.*)

43784. DIMOCARPUS LONGAN Lour. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Foochow, China. Presented by Dr. W. B. Schober, Cocoanut Grove, Fla., who received them from Mr. F. F. G. Donaldson. Received December 12, 1916.

"*Dragon's eyes*. *Lung leng*. A very delightful fruit." (*Donaldson.*)

43785. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*P. ocymoides* L.)

From Yokohaha, Japan. Procured from the Yokohama Nursery Co., at the request of the Institute of Industrial Research. Received December 21, 1916.

Numbered and distributed to determine where the seeds can be successfully grown and used for the extraction of oil.

43786. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. **Catjang.**

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received November 13, 1916.

"Used for making *tong pu*. Boil half an hour and season with salt." (*Wambold.*)

43787 to 43790.

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 28, 1916. Quoted notes by Mr. Popenoe.

43787. ZEA MAYS L. Poaceæ. **Corn.**

"No. 45a. White flint corn purchased in the market of the city of Guatemala. It is said to have been raised near by in the highlands. The ears are large, measuring fully 12 inches in length, and taper gradually toward the tips. There are 12 to 14 rows of hard, white, translucent kernels. October 7, 1916."

43788. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook. Sapotaceæ. **Green sapote.**

"No. 69a. Fifty seeds from fruits purchased in the market of the city of Guatemala. November 12, 1916."

For description, see S. P. I. No. 43439.

43789. ZEA MAYS L. Poaceæ. **Corn.**

"No. 67a. One ear of corn, presented by Señor Don Manuel Lemus, Director of Agriculture. This is of an interesting variety, called by Señor Lemus *Zea guatemalensis*. It originated in the Department of Zacatepequez, but this seed was grown in the vicinity of Guatemala. According to Señor Lemus this corn contains very little gluten, grows to a great height, and has proved to be a very valuable strain. November 12, 1916."

43790. ZEA MAYS L. Poaceæ. **Corn.**

"No. 68a. One ear of corn, presented by Señor Don Manuel Lemus, Director of Agriculture. This is the variety called by Señor Lemus *Zea guatemalensis*. It is a selected strain, slightly improved over the form sent under No. 67a [S. P. I. No. 43789], the ears being somewhat larger and having 14 rows of kernels. According to Señor Lemus as many as 16 rows have been found on some ears. November 12, 1916."

43791 to 43796.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 21, 1916. Quoted notes by Mr. Meyer.

43791. ULMUS PUMILA L. Ulmaceæ. **Elm.**

"Var. *pendula* Hort. (No. 1258. Peking, China. November 9, 1916.) Cuttings of a weeping form of the ordinary, very drought and alkali resistant elm from North China and Manchuria. The Chinese graft this variety on the trunk of the common form, generally from 5 to 8 feet above the ground. See S. P. I. No. 40507 for further information. Obtained from the Botanic Garden at Peking."

43792. WISTARIA VENUSTA Rehd. and Wils. Fabaceæ.

"(No. 1259. Peking, China. November 6, 1916.) Cuttings of a vigorously growing hardy species of wistaria, blooming at the end of April and early May, bearing multitudes of rather short and dense racemes of individually large flowers, which are of a purplish violet color when first coming out, but when fading away become of pale bluish color. They exhale a delightful scent. This species is quite drought resistant and tolerates a fair amount of alkali. The Chinese most often train it as an arbor over a garden walk or over an open space, underneath which seats and tables can be arranged for enjoyment of the beauty and fragrance of the flowers in spring and the shade of the foliage during the hot summer months. Chinese name *Teng lo*, meaning 'Winding rattan.' Obtained from the Botanic Garden at Peking."

43793. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"(No. 1260. Peking, China. November 9, 1916.) Plants of a very dwarf form of pomegranate cultivated as an ornamental pot plant, said to bear sometimes as many as 100 fruits on one specimen. The fruits are too small to be of any economic value. Chinese name *Pai tze sheh liu*, meaning 'One hundredfold bearing pomegranate.'"

43794. WISTARIA VENUSTA Rehd. and Wils. Fabaceæ.

"(No. 2321a. Peking, China. November 9, 1916.) The same as No. 1259 [S. P. I. No. 43792]. The Chinese claim that among plants raised from seeds one obtains a great variety of colors in the flowers, ranging all the way from pure white to dark purple. Obtained from the Botanic Garden at Peking."

43795. WISTARIA VENUSTA Rehd. and Wils. Fabaceæ.

"(No. 2322a. Tientsin, China. November 1, 1916.) The same species as the preceding number [S. P. I. No. 43794], but coming from a colder locality. Collected in Victoria Park, Tientsin."

43796. PINUS BUNGEANA Zucc. Pinaceæ. **Pine.**

"(No. 2323a. Lungen Temple, Sankiatien, near Peking, China. October, 1916.) The well-known Chinese white-barked pine; 100 catties of seeds, collected for the department through the kindness of Mr. J. V. A. MacMurray, First Secretary of the American Legation at Peking."

43797. ROSA XANTHINA Lindl. Rosaceæ. **Rose.**

Grown at the Plant Introduction Field Station, Rockville, Md. Numbered December 27, 1916.

Seedlings of S. P. I. No. 21620 from a plant grown in Mr. Edward Goucher's garden.

43798. ACACIA CONSTRICTA Benth. Mimosaceæ.

Collected west of the Organ Mountains of New Mexico by Dr. David Griffiths, of the Bureau of Plant Industry. Received December 21, 1916.

"A spiny shrub 3 to 6 feet high. It is one of the most common of our desert covers from southwestern Texas to southern Arizona and thrives even in regions receiving but 8 to 9 inches of rainfall. The inflorescence is yellow, globular, prolific, and exceedingly attractive for several weeks when the shrub is in blossom. It is one of the good bee plants of the Southwest, being closely related to the *cat's-claw* and *huajillo*. The shrub will be a useful ornament in California, and possibly farther north in the coast country. It habitually withstands a temperature of zero without injury." (*Griffiths.*)

43799 to 43801. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Srinagar, Kashmir, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens, Seharunpur, who secured these walnuts from Mr. H. C. Koul, manager, Koul's Fruit Gardens. Received December 19, 1916.

43799. "*Kaghazi.* These are not very good walnuts. The best ones are expected shortly and we fear they, too, will not be the best, as all Kashmir fruit has been more or less injured this year by a long drought followed by excessive rain. Such a season occurs here once in 12 or 24 years." (*Koul.*)

43800. "*Burzul.* These are the larger of the two kinds. They are about the best, but not the very best." (*Koul.*)

43801. "*Wantu.* These are not very good, but the kernel is good enough and more oily than the other varieties." (*Koul.*)

43802 to 43807. JASMINUM spp. Oleaceæ. **Jasmine.**

From Ventimiglia, Italy. Cuttings presented by the La Mortola Gardens. Received December 26, 1916.

43802. JASMINUM AZORICUM L.

A climbing shrub from the island of Madeira with opposite, evergreen, compound leaves, and terminal clusters of white, fragrant flowers, which appear throughout the year under favorable circumstances. It has been long cultivated in temperate greenhouses and is propagated by cuttings. (Adapted from *Curtis's Botanical Magazine, vol. 44, pl. 1889,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1718.*)

43803. JASMINUM HETEROPHYLLUM Roxb.

A stout shrubby jasmine from Natal, with shiny, alternate, narrowly oval leaves, up to 5 inches long. The flowers are yellow, up to one-third of an inch long, and occur in compound cymes. (Adapted from *Hooker, Flora of British India, vol. 3, pp. 601, 602.*)

43804. JASMINUM ODORATISSIMUM L.

A diffuse shrub from the Madeira Islands, becoming rather large at times, with straight, stiff branches, alternate leaves composed of three to five shining oval leaflets, and terminal clusters of yellow flowers, which appear in summer. It is odorous, though not more so than many jasmines. It is comparatively hardy and may be propagated by cuttings. (Adapted from *Curtis's Botanical Magazine, vol. 7, pl. 285,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1719.*)

43802 to 43807—Continued.

43805. JASMINUM OFFICINALE L.

A long, slender, scarcely self-climbing plant, native of India and Persia, but now widely cultivated throughout the warmer portions of the earth. The leaves have two or three pairs of sharp-pointed leaflets, and the white flowers occur in terminal more or less leafy clusters. In the southern United States the glossy foliage and the white summer-blooming flowers make the plant very attractive, and with protection it will grow as far north as Philadelphia. (Adapted from *Curtis's Botanical Magazine, vol. 1, pl. 31,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1718.*)

43806. JASMINUM SIMPLICIFOLIUM Forst. f.

A climbing shrub or sometimes a tree, found in Australia and the Friendly Islands, with opposite, shiny, oval leaves usually less than 3 inches long and white flowers about half an inch long, in terminal, branched, many-flowered clusters. It may be propagated by cuttings; it flowers in June and July. (Adapted from *Curtis's Botanical Magazine, vol. 25, pl. 980,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1717.*)

43807. JASMINUM SINENSE Hemsl.

A climbing shrub from central and southern China, with papery leaves composed of three oval or narrowly oval leaflets up to 3, or, occasionally, 6 inches long. The white flowers are 1½ inches long and occur in dense cymose panicles. (Adapted from *Forbes and Hemsley, Jour. Linn. Soc., vol. 26, pp. 80, 81.*)

43808. CORCHORUS CAPSULARIS L. Tiliaceæ. Jute.

From Amoy, China. Presented by Messrs. E. F. Spears & Sons, Paris, Ky., who received it from Mr. Chan Goan Sin, Amoy. Received December 22, 1916.

"Jute is an annual plant, requiring a rich, moist, well-drained, alluvial soil and a warm, moist climate, free from frost for at least six months. It will grow in sandy loam or alluvial soils from Maryland to Florida and Texas, but will not ripen much seed north of the cotton belt. The seed is sown broadcast, the crop harvested by hand, retted in water, and the fiber cleaned by hand from the wet stalks in the water. It could be grown profitably in this country if there were satisfactory methods of removing the fiber from the stalks and preparing it for market. The fiber is used for burlaps, bagging, and gunny sacks." (*L. H. Dewey.*)

43809. ZIZIPHUS JUJUBA Mill. Rhamnaceæ. Jujube.

(*Z. sativa* Gaertn.)

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received November 13, 1916.

"*Tai chu.* Eaten as they are and much used at feasts." (*Wambold.*)

43810 to 43925.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 23, 1916. The following plants and cuttings:

43810 to 43925—Continued.

43810. ACER CISSIFOLIUM (Sieb. and Zucc.) Koch. Aceraceæ. **Maple.**

A deciduous Japanese maple of compact, rounded habit, becoming 30 feet or more high, with leaves composed of three leaflets up to 3½ inches in length. The minute flowers are produced in May with the leaves, and the keys, which are about an inch long, occur in long racemes. In autumn the foliage turns red and yellow. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 137, 138.*)

43811. ACER MIYABEI Maxim. Aceraceæ. **Maple.**

A deciduous Japanese maple growing from 30 to 40 feet high, with a trunk up to 1½ feet in diameter and deeply 3-lobed leaves. The flowers are yellow and downy, appearing in corymbs 2 to 3 inches long, and the keys are up to an inch in length. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 148.*)

43812. ACER RUFINERVE Sieb. and Zucc. Aceraceæ. **Maple.**

A small, deciduous Japanese maple, with smooth, bluish white, young shoots and dark-green, irregularly serrate, 3-lobed or obscurely 5-lobed leaves. The flowers occur in erect racemes about 3 inches long, and the keys are up to three-fourths of an inch long. Occasionally the young foliage, the leafstalks, and the midribs are red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 157, 158.*)

43813. ACER TETRAMERUM Pax. Aceraceæ. **Maple.**

A tree from central and western China, with oval or oblong leaves from 2 to 3½ inches long and staminate flowers in few-flowered sessile racemes. The keys are slender stalked and the nutlets are thick and strongly veined. It is graceful, hardy, and variable, and reaches a height of 25 feet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 202.*)

43814. AMYGDALUS NANA L. Amygdalaceæ. **Russian almond.**
(*Prunus nana* Stokes.)

A bush from Russia and western Asia, growing to a height of 3 to 5 feet, with thick, rather stiff, sharply serrate, lance-shaped leaves. The pinkish or white flowers are usually solitary and about an inch wide, and the small, hard fruit is hairy and bitter and contains a large, wrinkled, sharp-pointed pit. In Europe this bush is cultivated for its flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2832.*)

43815 and 43816. AMYGDALUS PERSICA L. Amygdalaceæ.
(*Prunus persica* Stokes.) **Flowering peach.**

43815. A double, pale pink-flowered ornamental variety of the common peach.

43816. A double, red-flowered variety.

43817. BERBERIS AGGREGATA C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 1050. From thickets in the Min Valley, western Szechwan, at altitudes of 1,300 to 2,300 meters. October, 1908.)

A shrub from western China, 3 to 5 feet high, with yellowish brown spines in clusters of threes, rather small oval-oblong leaves with a few

43810 to 43925—Continued.

distant serrations, yellow, almost sessile flowers about a quarter of an inch wide in dense racemes, and salmon-red fruits. (Adapted from *Schneider, Bulletin L'Herbier Boissier, series 2, vol. 8, p. 203,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

43818. BERBERIS BRACHYPODA Maxim. Berberidaceæ. **Barberry.**

(No. 7175.)

A bush from western China, 4 to 7 feet high, with 3-parted spines, oval serrate leaves, yellow flowers in long slender panicles, and scarlet fruits which are up to half an inch in diameter. In its native country this barberry grows at elevations of 5,200 to 11,700 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375,* and *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 922.*)

43819. BERBERIS CIRCUMSERRATA C. Schneid. Berberidaceæ. **Barberry.**

"No. 604 Purdom. Originally from the Tai-pei-shan, Shensi, China."

A bush from central China, up to 7 feet high, with roundish oval leaves with very numerous and slender spine-tipped serrations. The spines are 3-parted, about half an inch long, and the bright-yellow flowers, half an inch wide, are solitary or in twos or threes on a common stalk. The scarlet fruits are oblong, slightly bloomy, and nearly a half inch long. In autumn the leaves turn scarlet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 354,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 491,* as *Berberis diaphana.*)

For a later and more complete technical description, see *Plantae Wilsonianae, vol. 3, p. 435.*

43820. BERBERIS JULIANAE C. Schneid. Berberidaceæ. **Barberry.**

A western Chinese shrub up to 7 feet in height, with 3-cleft spines up to 1⅝ inches long; thick, leathery, narrowly oval leaves up to 3 inches long; small yellow flowers; and, probably, pruinose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 361.*)

43821. BERBERIS POIRETI C. Schneid. Berberidaceæ. **Barberry.**

A shrub found in northern China and Amurland, with slender, arching branches and spines about one-third of an inch long. The leaves are narrowly lance shaped, about an inch long and green beneath. The yellow flowers occur in many-flowered racemes from 1 to 2 inches long, and the deep blood-red fruits are oval oblong. This shrub is hardy and handsome, but is not often found in cultivation. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 490.*)

43822. BERBERIS POIRETI C. Schneid. Berberidaceæ. **Barberry.**

"Purdom No. 250."

See previous number, S. P. I. 43821, for description.

43823. BERBERIS SARGENTIANA C. Schneid. Berberidaceæ. **Barberry.**

A black-berried barberry from western Hupeh, China, reaching a height of 7 feet. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359.*)

For further data, see S. P. I. No. 42973.

43810 to 43925—Continued.

43824. BERBERIS SUBCAULIALATA C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 1267. From thickets at Mupin, western Szechwan, at altitudes of 2,000 to 2,300 meters, October, 1908.)

A thickly branched shrub from Tibet, up to 4½ feet high, with spines up to an inch in length, thick-skinned, lance-shaped leaves about an inch long, and globular, reddish yellow fruits one-fourth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 919.*)

43825. BERBERIS TISCHLERI C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 4385. From thickets at Tatsienlu, western Szechwan, at altitudes of 3,200 to 3,400 meters, October, 1910.)

A shrub from western China, 7 to 14 feet high, with spines in threes, papery spine-tipped leaves up to 1¼ inches in length, and yellow flowers about two-fifths of an inch wide, occurring in dense racemes. The somewhat pruinose egg-shaped red fruits appear in October and are up to two-fifths of an inch long. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 355.*)

43826. BERBERIS YUNNANENSIS Franch. Berberidaceæ. **Barberry.**

A deciduous shrub, from 3 to 6 feet high, with dense, rounded spines and nearly circular leaves. The flowers are pale yellow, and the berries are bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

See also S. P. I. No. 40153 for further description.

43827. BETULA GROSSA Sieb. and Zucc. Betulaceæ. **Birch.**

A tree found on the higher mountains of Japan, attaining a large size, with stout branches and wide-spreading crowns. The leaves are oval and from 2 to 4 inches long, unequally serrate, and hairy in the lower surfaces. The strobiles are oval egg shaped and are nearly sessile. The bark of the branchlets has a cherry flavor. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 478.*)

43828. BETULA SCHMIDTII Regel. Betulaceæ. **Birch.**

A large tree with thick branches, found only in the Province of Shimotsuke, Hondo, Japan. It grows up to 65 feet tall, with a trunk 3½ to 7½ feet thick and black bark which falls off in thick, rather small plates. The finely serrate leaves are short stemmed, and the catkins are narrow, stiff, and erect. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pp. 475, 476.*)

43829. BUDDLEIA STENOSTACHYA Rehd. and Wils. Loganiaceæ.

A shrub of western China with narrowly oblong leaves 2 to 6 inches long and usually three long, slender, terminal panicles of fragrant lavender flowers with orange-colored eyes. This species is tender and flowers during the winter in the greenhouse. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 585, 586.*)

43830. BUXUS MICROPHYLLA JAPONICA (Muell. Arg.) Rehd. and Wils. Buxaceæ. **Japanese box.**

An evergreen Japanese shrub of loose habit, from 3 to 4 feet high, with the young stems conspicuously winged. The roundish leaves are up to three-fourths of an inch long, and the flowers, which are produced very freely in March and April, are of no beauty. Owing to its ungainly

43810 to 43925—Continued.

habit and unhealthy aspect it is one of the least ornamental of the boxes. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 277.*)

43831. CARAGANA ARBORESCENS Lam. Fabaceæ. **Pea tree.**

A deciduous Siberian shrub of erect habit, up to 20 feet in height, which by pruning may be made to take the form of a small tree. The pinnate leaves are from 1½ to 3 inches long, and the yellow flowers are up to seven-eighths of an inch long and are produced singly on thin downy stalks. The pods are about 2 inches long and contain from three to five oblong seeds. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 287, 288.*)

43832. CASTANEA HENRYI (Skan) Rehd. and Wils. Fagaceæ. **Chestnut.**

A tree from 50 to 65 feet in height, found in the Province of Shantung, China. It is closely related to the common American chinquapin, but has larger dimensions throughout, including the nuts, which are edible. (Adapted from *Dode, Notes Dendrologiques*, in *Bulletin de la Société Dendrologique de France, No. 6, pp. 156, 157, 1908.*)

See also Plantae Wilsonianae, vol. 3, pp. 196–197, for full discussion and description.

43833. CLEMATIS TANGUTICA (Maxim.) Korsh. Ranunculaceæ.

A deciduous, woody, climbing plant from central Asia growing 8 or 10 feet high, with raggedly serrate gray-green leaflets. The rich yellow flowers are solitary, and the fruits are crowned with long feathered styles. This is said to be the handsomest yellow-flowered clematis in cultivation, the flowers sometimes being 4 inches wide. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 367.*)

43834. CLETHRA BARBINERVIS Sieb. and Zucc. Clethraceæ. **White alder.**

A shrub or tree from eastern Asia, up to 30 feet high, with oval-oblong, pointed, sharply serrate, hairy veined leaves from 3 to 6 inches long and panicled racemes of white fragrant flowers, which appear from July to September. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 802.*)

43835. COTONEASTER BULLATA Bois. Malaceæ.

A deciduous shrub from western China and Tibet, from 10 to 12 feet high, with a few long arching branches. The dark-green oval or oblong leaves are up to 3½ inches long, and the rosy white flowers are in corymbs of from 10 to 30. The brilliant red fruit is pear shaped or round and one-third of an inch wide. The beauty of this plant lies in the fruit and not in the flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 407.*)

43836. COTONEASTER BULLATA FLORIBUNDA (Stapf) Rehd. and Wils. Malaceæ. (*C. moupinensis floribunda* Stapf.)

A shrub with nearly oval, dark-green, bullate leaves up to 3 inches in length. The flowers are white tinged with pink, but are of little ornamental value because they fall soon and are of small size. The globose red fruits occur abundantly in September on the upper side of the long arching shoots and give the plant a very beautiful appearance. This shrub is found in western China. (Adapted from *Curtis's Botanical Magazine, vol. 135, pl. 8284.*)

43810 to 43925—Continued.

43837. CRYPTOMERIA JAPONICA (L. f.) D. Don. Pinaceæ.

An evergreen pyramidal tree, 100 to 180 feet high in Japan. The general aspect of the tree is yellowish green in summer and dark green in winter. It is one of the great timber trees of the world, more used in Japan than any other. It likes a deep, good soil, a sheltered position, and abundant rainfall. It is a variable tree. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 438.*)

43838. CYTISUS NIGRICANS ELONGATUS Borkh. Fabaceæ. **Black broom.**

"Var. *Carlieri* Hort."

A deciduous European shrub, from 2 to 4 feet high, with erect, pubescent branches and long-stemmed leaves composed of oval, pubescent leaflets up to an inch in length. The yellow flowers occur in very slender racemes from 3 to 8 inches in length. This variety differs from the typical species in that it blooms a second time in the autumn at the top of the elongated fruiting racemes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 948.*)

43839. DECUMARIA SINENSIS Oliver. Hydrangeaceæ.

A climbing shrub from central China with generally oblong or obtuse leaves up to 3 inches in length and small white flowers in terminal corymbs. The fruit is a capsule filled with numerous minute seeds. This shrub is very ornamental because of its handsome, glossy foliage and its white flowers, which are very fragrant. It thrives in almost any humid soil and is propagated by greenwood cuttings in summer under glass, and rarely by seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 974.*)

43840. DEUTZIA HYPOLEUCA Maxim. Hydrangeaceæ.
(*D. discolor* Maxim., not Hemsl.)

A Japanese shrub with sharp-pointed, serrulate, oval leaves with hairy lower surfaces and flowers either solitary or in clusters of two or three. The fruits are capsules about one-eighth of an inch long. (Adapted from *Maximowicz, Bulletin Academie Imperiale, vol. 32, pp. 487.*)

43841. DIERVILLA CORAEENSIS (Thunb.) DC. Caprifoliaceæ.
(*D. grandiflora* Sieb. and Zucc.)

A Japanese shrub from 6 to 10 feet high, with oval, long-pointed leaves 3 to 5 inches long, with bristly leafstalks. The flowers are pale pink at first, changing to carmine, and are produced during June in corymbs of three flowers each. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 491.*)

43842. DIERVILLA JAPONICA SINICA Rehder. Caprifoliaceæ.

A shrub from central China, up to 20 feet high, with oval-oblong, serrate, slender-stemmed leaves. The rose-pink bell-shaped flowers are usually in 3-flowered cymes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1008.*)

43843. DIERVILLA MIDDENDORFFIANA Carr. Caprifoliaceæ.

A low shrub from Siberia, northern China, and Japan, with serrate leaves and yellowish white flowers which are spotted orange or purplish inside and occur in small terminal or axillary clusters. It is hardy, but rarely does well in cultivation and should have a cool and moist climate and be sheltered from strong winds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1009.*)

43810 to 43925—Continued.

43844. DIERVILLA MIDDENDORFFIANA Carr. Caprifoliaceæ.

"Var. *Maximowiczii.*"

Apparently an undescribed horticultural variety.

43845. ENKIANTHUS CAMPANULATUS (Miquel) Nicholson. Ericaceæ.

A Japanese shrub, 15 or occasionally 30 feet high, with elliptic leaves up to 3 inches long and yellowish or pale-orange flowers with darker veins borne in drooping racemes. One of the handsomest species and the most vigorous grower. In autumn the foliage turns a brilliant red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1115.*)

43846. ENKIANTHUS CERNUUS RUBENS (Maxim.) Makino. Ericaceæ.

A Japanese shrub up to 15 feet high, with bright-green, serrate leaves from 1 to 2 inches long, red flowers one-third of an inch long, and capsules on hanging stalks turned upward at the end. In the typical species the flowers are white. It is hardy in Massachusetts and is propagated by seeds sown in the spring, by cuttings of ripe wood under glass in spring, by greenwood cuttings in summer, and by layering. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1115.*)

43847. EUONYMUS RADICANS ACUTUS Rehder. Celastraceæ.

A low, procumbent shrub from central China, with climbing and rooting branches and elliptic, sharp-pointed leaves having dull-green upper surfaces and white veins. The greenish white flowers are in slender cymes, and the fruit is a pale pink, globular capsule. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1188.*)

43848. HYDRANGEA OPULOIDES SERRATA (Thunb.) Rehder. Hydrangeaceæ. (*H. serrata* DC.)

A Japanese bush growing about 1½ feet high, with elliptic, serrate, sharp-pointed leaves from 2 to 4 inches long and pinkish or bluish flowers in flat cymes. (Adapted from *Dippel, Handbuch der Laubholzkunde, vol. 3, pp. 325, 326, fig. 173.*)

43849. HYPERICUM PATULUM HENRYI Bean. Hypericaceæ. St.-John's-wort.

A spreading evergreen Chinese shrub, 1½ to 3 feet high, with smooth, purplish, 2-edged branches, oval, obtuse leaves 2 to 3 inches long, and yellow flowers 2 to 2½ inches wide. This variety is hardier than the other forms of this species and grows more vigorously. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1631.*)

43850. INDIGOFERA AMBLYANTHA Craib. Fabaceæ. Indigo.

An upright shrub from central China, 3 to 6 feet high, with compound bright-green leaves from 4 to 6 inches long, very numerous small pink flowers in slender, axillary racemes and linear, hairy pods. The pink flowers bloom all summer long, and the shrub is propagated by cuttings and seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1646.*)

43851. LARIX POTANINI Batal. Pinaceæ. Larch.

A tree from western China, from 60 to 70 feet high, with yellowish young shoots and somewhat pointed leaves about an inch long. The cones are egg shaped and about 1½ inches long. This tree has much the

43810 to 43925—Continued.

aspect of the common larch, and, according to Mr. E. H. Wilson, yields the most valuable timber in China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 9.*)

43852. LIGUSTRUM ACUTISSIMUM Koehne. Oleaceæ. **Privet.**

Seeds of this plant were introduced under S. P. I. No. 43694.

43853. LIGUSTRUM QUIHOUI Carr. Oleaceæ. **Privet.**

A small or medium-sized privet, native of Shensi, China, found growing in rocky banks. The masses of small black berries contrast well with the evergreen foliage. (Adapted from a *note of Frank N. Meyer, dated July 10, 1914.*)

See also S. P. I. No. 38807 for further description.

43854. LONICERA CHAMISSOI Bunge. Caprifoliaceæ. **Honeysuckle.**

An upright shrub up to 1 meter tall. The branchlets are smooth; the leaves are oval to ovate, rounded at both ends, seldom pointed, distinctly veined. The corolla is smooth, deep violet, and about 12 mm. long; the red berries are profusely produced. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 713.*)

43855. LONICERA RAMOSISSIMA Franch. and Savat. Caprifoliaceæ. **Honeysuckle.**

A very handsome Japanese honeysuckle with oval, hairy leaves up to an inch in length and long-stemmed yellowish flowers. The fruits are scarlet and give the plant a striking appearance. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1914.*)

43856. LONICERA TRICHOSANTHA Bur. and Franch. Caprifoliaceæ. **Honeysuckle.**

A deciduous bush, reaching a height of 8 feet, with oval, dull-gray leaves. The flowers are pale yellow, and the berries are red. It is a native of Szechwan, China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

See also S. P. I. No. 40185 for further description.

43857. MALUS ARNOLDIANA Rehder. Malaceæ. **Crab apple.**

Seeds of this plant were introduced under S. P. I. No. 43700.

43858. MALUS SARGENTI Rehder. Malaceæ.

A bushy shrub from 3 to 5 feet high, with oval leaves up to 3 inches in length. The pure white flowers are an inch wide, and the fruit is bright red. It is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 293.*)

See also S. P. I. No. 41572 for further description.

43859. MORUS ACIDOSA Griffith. Moraceæ. **Mulberry.**

Usually a broad shrub from 3 to 16 feet high, found in Hupeh and Szechwan, China, but occasionally it forms a tree up to 25 feet in height. The leaves are variable in size and shape and are not used for feeding silkworms. The fruits when ripe are shining black or dark red and are palatable. A native name is *Ai-sang.* (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 300.*)

43860. PHILADELPHUS SATSUMANUS Siebold. Hydrangeaceæ.

An erect, Japanese shrub, from 6 to 8 feet high, with oval, long-pointed leaves up to 6 inches in length. The slightly scented flowers are white,

43810 to 43925—Continued.

about 1¼ inches wide, and are produced in erect racemes, with 5 to 11 flowers in each raceme. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 140.*)

43861. PINUS ARMANDI Franch. Pinaceæ. **Pine.**

A medium-sized pine, native of Shensi, China, producing large cones full of large edible seeds, which are collected by the priests in the temples. (Adapted from a *note of Frank N. Meyer, dated June 8, 1914.*)

See also S. P. I. No. 38468 for further description.

43862. POPULUS MAXIMOWICZII A. Henry. Salicaceæ.

A magnificent poplar, the largest in eastern Asia, becoming 100 feet high and 6 feet in diameter. The pale-brown branchlets are densely pubescent, and the nearly circular leaves, which are whitish or rusty beneath, are about 4 inches long. The fruiting catkins are from 7 to 10 inches long, remaining on the tree unopened until late summer or autumn. The shapely head and attractive foliage make this hardy poplar very desirable. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2763.*)

43863. PRINSEPIA UNIFLORA Batal. Amygdalaceæ.

A spiny shrub, native of Shansi, China, growing to a height of 3 to 5 feet. The pale rosy flowers appear in early May, and the dark-red fruits are juicy but sour. (Adapted from a *note of Frank N. Meyer, dated Nov. 17, 1914.*)

See also S. P. I. No. 39432 for further description.

43864. PRUNUS APETALA (Sieb. and Zucc.) Franch. and Savat. Amygdalaceæ.

A shrub or tree from Japan, with oblong or oval-oblong leaves which are deeply and doubly serrate and 1 to 2 inches long. The flowers have deep purple calyces and petals which are very small and which fall off very soon. In this country this cherry is little known in cultivation. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2842.*)

43865. PRUNUS CERASIFERA DIVARICATA (Ledeb.) C. Schneid. Amygdalaceæ.

A small tree, native of Caucasia, reaching a height of 10 or 12 feet. The white flowers are solitary, and the yellowish fruit is about an inch long. (Adapted from *Nicholson, Dictionary of Gardening, vol. 3, p. 235.*)

See also S. P. I. No. 37463 for further description.

43866. PRUNUS GRAYANA Maxim. Amygdalaceæ. **Gray's bird cherry.**

A small tree from 20 to 30 feet high, native of Japan. The leaves are finely serrate, and the white flowers are borne in erect racemes up to 4 inches long. The fruit is black, about the size of a pea. This cherry grows in the mountain forests in its native country and is very uncommon in cultivation. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 237.*)

43867. PRUNUS MAXIMOWICZII Rupr. Amygdalaceæ.

A deciduous tree, up to 20 or 30 feet high, with oval leaves and dull yellowish white flowers. The globose fruit is one-sixth of an inch in diameter and black when ripe. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

See also S. P. I. No. 40189 for further description.

43810 to 43925—Continued.

43868. PRUNUS PILOSIUSCULA BARBATA Koehne. Amygdalaceæ.

A shrub or tree of western China, sometimes up to 40 feet in height, with deeply serrate, oval, or oblong leaves with tufts of hair on the lower surfaces, pink, usually solitary flowers, and oblong red fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2836,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 203.*)

43869. PRUNUS PROSTRATA Labillard. Amygdalaceæ. **Bush cherry.**

A bush cherry found on stony and sterile mountain slopes in the Province of Samarkand, Turkestan. It bears multitudes of small red cherries of a sour taste. (Adapted from a *note of Frank N. Meyer, dated July 9–11, 1910.*)

See also S. P. I. No. 28945 for further description.

43870. PRUNUS SUBHIRTELLA ASCENDENS (Makino) Wilson. Amygdalaceæ.

A tall, strong tree, native of central China and probably also in Chosen (Korea) and Japan, with wide-spreading branches but few branchlets, causing the head to have a thin appearance. The flowers are rosy pink with red calyces, and the very small, globular, blackish red cherries are somewhat astringent. It is cultivated in Japan and has been recently introduced into the United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2841.*)

43871. PRUNUS TOMENTOSA ENDOTRICHA Koehne. Amygdalaceæ.

A deciduous shrub from 4 to 8 feet high or a tree up to 22 feet in height found in western Hupeh and northern Shensi, China. The flowers are white, tinted with rose. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 256,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 225.*)

See also S. P. I. No. 42576 for further description.

43872. AMYGDALUS TRILOBA (Lindl.) Ricker. Amygdalaceæ. (*Prunus triloba* Lindl.)

Var. *Simplex.* A flowering peach much cultivated in the gardens of northern Chihli. The colors of its flowers range from pale pink to a dark violet rose. (Adapted from a *note by Frank N. Meyer, dated July 23, 1913.*)

See also S. P. I. No. 36718 for further description of the species.

This seems to be an unpublished garden variety with single flowers.

43873. RHAMNUS DAVURICUS NIPPONICUS Makino. Rhamnaceæ.

A large, spreading Japanese shrub with stout thorny branches and narrowly oblong leaves, with pale-green lower surfaces, up to 6 inches in length. The flowers occur in 2 to 5 flowered clusters, and the fruit is black. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2924.*)

43874. RHAMNUS JAPONICUS Maxim. Rhamnaceæ.

A Japanese shrub up to 8 or 9 feet in height, with glossy, pale-green leaves from 1 to 3 inches long and greenish brown flowers produced in May in dense clusters at the ends of short branches. The round fruit is a quarter of an inch in diameter. This shrub flowers with great freedom, and the flowers have a faint, pleasant fragrance. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 334.*)

43810 to 43925—Continued.

43875. RHUS TRICHOCARPA Miquel. Anacardiaceæ.

A deciduous tree, native of Japan, growing from 20 to 25 feet high, with compound leaves from 12 to 20 inches long, very downy on both sides. The inconspicuous flowers occur in slender long-stalked panicles, and the fruits are large, pale, prickly drupes, ripening in August and September. This tree is hardy in the United States, where the leaves turn a deep orange red in autumn. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 395.*)

43876. RIBES FASCICULATUM CHINENSE Maxim. Grossulariaceæ.

This shrub from northern China grows to a height of 4 feet, with somewhat heart shaped, 3 to 5 lobed leaves up to 5 inches in width, persisting until the beginning of the winter. The small greenish flowers are dicœcious, and the bright scarlet berries remain on the branches all winter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2960.*)

43877. RIBES LURIDUM Hook. f. and Thoms. Grossulariaceæ.

An unarmed shrub from the Himalayas and western China, with glabrous red branchlets and 3 to 5 lobed leaves up to 2 inches in width. The dark purple flowers occur in upright racemes, and the fruits are black and glabrous. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2964.*)

43878. ROSA AMBLYOTIS Meyer. Rosaceæ. **Rose.**

The seeds of this plant were introduced under S. P. I. No. 43707.

43879. ROSA BANKSIOPSIS Baker. Rosaceæ. **Rose.**

A very common rose in western Hupeh, China, found on mountain slopes at altitudes of from 4,000 to 7,000 feet. The flowers are rose red, and the fruits are coral red. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322.*)

See also S. P. I. No. 42974 for further description.

43880. ROSA BELLA Rehd. and Wils. Rosaceæ. **Rose.**

A shrub, up to 8 feet in height, with leaves composed of seven to nine leaflets. The solitary pink flowers are 1¾ to 2 inches wide, and the scarlet fruit is ovoid and three-quarters of an inch long. This rose is a native of northwestern China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43881. ROSA BELLA Rehd. and Wils. Rosaceæ. **Rose.**

"Purdom No. 314. Mountains in northwest Shansi, April, 1910."

See previous number, S. P. I. No. 43880, for description.

43882. ROSA CAUDATA Baker. Rosaceæ. **Rose.**

The seeds of this plant were introduced under S. P. I. No. 43710.

43883. ROSA CAUDATA Baker. Rosaceæ. **Rose.**

"Wilson No. 4418. From thickets, Fanghsien, western Hupeh, at an altitude of 6,500 feet, October, 1910."

This rose is a tall, vigorous shrub up to 13 feet in height, native of western China. It has stout, arching stems, dark-green foliage, flowers about 2 inches in diameter, and orange-red fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 321.*)

See also S. P. I. No. 42976 for further information.

The seeds of this plant were introduced under S. P. I. No. 43710.

43810 to 43925—Continued.

43884. ROSA CORYMBULOSA Rolfe. Rosaceæ. **Rose.**

An unarmed or sparingly prickly rose from central China. The numerous small flowers, which are deep rose above and white at the base, are from three-quarters to an inch wide. (Adapted from *Kew Bulletin of Miscellaneous Information, New Garden Plants of the Year, 1915, p. 80.*)

See also S. P. I. No. 42977 for further description.

43885. ROSA CORYMBULOSA Rolfe. Rosaceæ. **Rose.**

"Wilson No. 625 (7170–1). From thickets at Hsingshanhsien, western Hupeh, at altitudes of 1,300 to 3,600 feet, November, 1907."

See S. P. I. No. 43884 for description.

43886. ROSA DAVIDII Crép. Rosaceæ. **Rose.**

A pink-flowered rose from western Szechwan, China, reaching a height of 16 feet and growing at altitudes of 1,600 to 3,000 meters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322.*)

See also S. P. I. No. 42978 for further description.

43887. ROSA DAVURICA Pall. Rosaceæ. **Rose.**

This rose, which is allied to the Cinnamon rose, is found in Manchuria, Dahuria, and Sakhalin, and has slender, straight prickles. The flowers are purple and the fruit scarlet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43888. ROSA ECAE Aitch. Rosaceæ. **Rose.**

A very spiny, shrubby rose, flowering in early summer, with an abundance of small, deep-yellow flowers. Recommended for hybridization to create perfectly hardy yellow roses. (Adapted from a *note of Frank N. Meyer, dated July 10, 1910.*)

See S. P. I. 28978 for further description.

43889. ROSA EGLANTERIA L. Rosaceæ. **Rose.**

A dense shrub, originally from Europe, of compact habit and with bright-green foliage, giving off a very agreeable aromatic odor. The flowers are bright pink and the fruit is orange-red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2990.*)

43890. ROSA FEDTSCHENKOANA Regel. Rosaceæ. **Rose.**

A very handsome rose from the Turkestan and Kokand regions of central Asia. It is a much-branched, very prickly shrub, with compound leaves 4 to 5 inches long and large white flowers occurring singly or as many as four in a cluster. The red fruits are somewhat pear shaped. When introduced into England this rose developed into a rambling, free-growing shrub, which flowered in the month of June. (Adapted from *Curtis's Botanical Magazine, vol. 127, pl. 7770.*)

43891. ROSA FILIPES Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 1228. From thickets near Wenchuan Hsien, western Szechwan, at altitudes of 4,000 to 7,000 feet; November, 1908."

A shrub producing long runners, reaching a height of 15 feet, with a few hooked prickles. The leaves are composed of five to seven serrate leaflets, and the fragrant, white flowers occur in large, loose corymbs, the individual flowers being about an inch across. The scarlet, globose fruits are up to half an inch in diameter. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43810 to 43925—Continued.

43892. ROSA FILIPES Rehd. and Wils. Rosaceæ. **Rose.**

See previous number, S. P. I. No. 43891, for description.

43893. ROSA FOETIDA Herrmann. Rosaceæ. **Austrian briar rose.**

A shrub with long, slender runners or climbing stems, becoming 10 feet high, usually with straight thorns. There are from five to nine dark-green, doubly serrate leaflets in the compound leaves, and the bright-yellow flowers, which have an unpleasant odor, are from 2 to 2½ inches wide. The fruits are globular. This rose is a native of western Asia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2995.*)

43894. ROSA GENTILIANA Lev. and Van. Rosaceæ. **Rose.**

A shrub with long runners, growing up to 2 feet in height, with scattered hooked thorns. The leaves are composed of five glabrous serrate leaflets, and the white, fragrant flowers are up to 1½ inches wide and occur in corymbs. The fruits are globose and dark red. This rose is a native of central China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43895. ROSA HELENAE Rehd. and Wils. Rosaceæ. **Rose.**

A vigorous, hardy shrub with bright-green foliage, native of western China. The pure white flowers are 1½ inches in diameter and delicately fragrant. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 39.*)

See also S. P. I. No. 42979 for further description.

43896. ROSA HELENAE Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 666. From woodlands, Wushanhsien, western Hupeh, at altitudes of 3,300 to 5,000 feet, December, 1907."

See previous number, S. P. I. No. 43895, for description.

43897. ROSA HELENAE Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 431b. From thickets at Patunghsien, western Hupeh, at altitudes of 2,000 to 4,000 feet, June, 1907."

See S. P. I. No. 43895 for description.

43898. ROSA JACKII Rehder. Rosaceæ. **Rose.**

A long-stemmed rose with the stems lying flat on the ground. It is a native of Chosen (Korea), and has pure white flowers 2 or more inches in diameter. (Adapted from *Arnold Arboretum Bulletin of Popular Information, vol. 1, p. 43.*)

See S. P. I. No. 42980 for further description.

43899. ROSA LAXA Retz. Rosaceæ. **Rose.**

This rose, which is found from Turkestan to Songaria and Altai, is an upright shrub with paired, hooked thorns. The leaflets are small and light green, and the flowers are small and white. The small fruits are oval-oblong. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43900. ROSA MACROPHYLLA Lindl. Rosaceæ. **Rose.**

A shrub, native of the Himalayas and western China, becoming 8 feet or more in height, with erect stems and arching branches, usually furnished with straight prickles up to half an inch in length. The leaves, which are composed of 5 to 11 leaflets, are up to 8 inches in length. The

43810 to 43925—Continued.

deep pink or red flowers are up to 3 inches in width and are produced singly or in clusters of varying number. The elongated pear-shaped fruit is bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 433.*)

43901. ROSA MOYESII Hemsl. and Wils. Rosaceæ. **Rose.**

"Wilson No. 1495a."

This rose from western China grows from 6 to 10 feet in height and has erect stems armed with scattered broad-based spines. The compound leaves are from 3 to 6 inches long, and the flowers, which are a lurid dark red, are from 2 to 2½ inches wide and occur singly or in pairs. The bottle-shaped fruits are red and crowned by the erect persistent sepals. This is a very hardy rose, and in its native country it is found at elevations of 9,000 feet and over. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 435.*)

43902. ROSA MULTIBRACTEATA Hemsl. and Wils. Rosaceæ. **Rose.**

A rose from western China growing about 6 feet high, with straight paired thorns. The leaves are composed of seven to nine broadly oval leaflets, and the pink flowers, which occur in corymbs or singly, are 1¼ inches wide. The ovoid fruit is orange-red with persistent sepals. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43903. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils. Rosaceæ. **Rose.**

The seeds of this plant were introduced under S. P. I. No. 43720.

43904. ROSA OMEIENSIS Rolfe. Rosaceæ. **Rose.**

A stout, branched shrub, from 3 to 10 feet high, with the young shoots covered with dense bristles and the older stems armed with stout, straight thorns. The long, green leaves are composed of 9 to 13 sharply serrate leaflets, and the white flowers, which are over an inch in diameter, occur singly on short lateral twigs. The bright-red fruits are up to half an inch in length, and their yellow stalks are very striking in autumn. These fruits are said to be eaten in China, where the plant grows at elevations of 8,000 to 9,000 feet. It thrives in good loamy soil and may be propagated from the freely produced seeds. (Adapted from *Curtis's Botanical Magazine, pl. 8471.*)

43905. ROSA OMEIENSIS PTERACANTHA (Franch.) Rehd. and Wils. (*R. sericea pteracantha* Franch.) Rosaceæ. **Rose.**

This Chinese rose is found in the Province of Yunnan and differs from the typical species in having the stems covered with much-flattened spines, which are short and compressed and whose bases are very broad. The white flowers are solitary, and the fruit is pear shaped and bright red. (Adapted from *Franchet, Plantae Delavayanae, p. 220,* and from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 438.*)

43906. ROSA POUZINI Tratt. Rosaceæ. **Rose.**

This rose, from southern Europe and northern Africa, rarely exceeds 7 feet in height. The leaves are composed of five to seven or sometimes nine serrate leaflets, and the small flowers are pale or deep pink, rarely white. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 563.*)

43810 to 43925—Continued.

43907. ROSA PRATTII Hemsl. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with numerous bristles and slender prickles. The leaves are composed of 7 to 15 obtuse, serrate leaflets, and the pink flowers, which occur one to three in a cluster, are three-quarters of an inch wide. The scarlet fruit is about one-third of an inch long. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

The seeds of this plant were introduced under S. P. I. No. 43723.

43908. × ROSA RUBELLA J. E. Smith. Rosaceæ. **Rose.**

This is a hybrid between *Rosa spinosissima* and *Rosa pendulina*. It has dark-green foliage, red flowers, and pendulous, oval-oblong, scarlet fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2995.*)

43909. ROSA RUGOSA × MACROPHYLLA. Rosaceæ. **Rose.**

This is apparently a hybrid of recent origin, from the Arnold Arboretum.

43910. ROSA SATURATA Baker. Rosaceæ.

This rose from central China is a shrub about 8 feet in height, nearly unarmed, with compound, sharply serrate leaves. The solitary flowers are dark red with purplish anthers and are about 2 inches wide. The nearly round fruit is coral red and three-quarters of an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43911. ROSA SATURATA Baker. Rosaceæ. **Rose.**

"Wilson No. 316. A bush 3 to 7 feet tall with rose-red flowers and coral-red fruits from thickets at Fanghsien, western Hupeh, at elevations of 5,000 to 7,000 feet, July and September, 1907."

See previous number, S. P. I. No. 43910, for description.

43912. ROSA SERTATA Rolfe. Rosaceæ. Rose.

A shrub of elegant habit, up to 5 or more feet in height. The flowers are purplish rose, and the fruit is bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 443.*)

See also S. P. I. No. 40193 for further description.

43913. ROSA SPINOSISSIMA L. Rosaceæ. **Scotch rose.**

"Yellow."

The seeds of this plant were introduced under S. P. I. No. 43724.

43914. ROSA SPINOSISSIMA HISPIDA (Sims) Koehne. Rosaceæ. **Rose.**

This rose, which is probably a native of Siberia, has stems thickly covered with straight thorns and attains a height of 4 or 5 feet. The leaves are compound and serrate, and the solitary flowers are pale yellow. This rose is cultivated in England and is said to be perfectly hardy. (Adapted from *Curtis's Botanical Magazine, vol. 37, pl. 1570.*)

43915. ROSA SWEGINZOWII Koehne. Rosaceæ. **Rose.**

A rose from western Szechwan, with deep pink flowers, growing to a height of 16 feet at altitudes of 2,300 to 3,600 meters. The stems are covered with short, stout, flattened prickles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 324.*)

43810 to 43925—Continued.

43916. ROSA XANTHINA Lindl. Rosaceæ. **Rose.**

A remarkably hardy yellow rose, found in the vicinity of Peking, Chihli, China. It resists drought and extremes of heat and cold to an unusual degree. (Adapted from a *note of Frank N. Meyer, dated March 31, 1908.*)

See also S. P. I. Nos. 17469, 22452, and 23034 for further description.

43917. RUBUS PILEATUS Focke. Rosaceæ.

A woody climber from the Province of Hupeh, China, reaching 4 feet in height, with pinnate leaves composed of five pairs of leaflets. The flowers, two to four, occur at the ends of the branches, and the fruits, which are about an inch in diameter, are edible and pleasant in taste. (Adapted from *Hooker's Icones Plantarum, vol. 20, p. 3, under pl. 1952.*)

43918. SAGERETIA PYCNOPHYLLA C. Schneid. Rhamnaceæ.

A climbing, spiny shrub from western China, up to 7 feet high, with opposite branches, small, opposite oval leaves up to three-quarters of an inch long, and small sessile flowers in spikelike terminal and axillary racemes. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pp. 226, 227.*)

43919. SAMBUCUS CALLICARPA Greene. Caprifoliaceæ.
Red-berried elder.

A shrub, very common in wet ground on the coast of the northwestern United States, attaining a height of 7 to 15 feet, with smooth, brown bark, leaves composed of five to seven lance-oblong, serrate leaflets 2 to 5 inches long, pyramidal panicles of cream-colored flowers, and bright scarlet, sometimes chestnut-colored, rarely yellow berries. (Adapted from *Piper and Beattie, Flora of the Northwest Coast, p. 337.*)

43920. SPIRAEA LUCIDA Dougl. Rosaceæ.

A low shrub found at low elevations in the mountains of the western United States. It reaches a height of about 24 inches and has small white flowers and coarsely serrate leaves. It is hardly distinguishable from the typical species found in the East. (Adapted from *Piper and Beattie, Flora of the Northwest Coast, p. 202.*)

43921. SPIRAEA MEDIA Schmidt. Rosaceæ.

An erect shrub, found from eastern Europe to Japan and Sakhalin and growing to a height of 6 feet, with oval or oblong, more or less serrate leaves up to 2 inches in length. The small white flowers are produced late in the spring in long-stalked racemes. It is an ornamental species, but is liable to be injured by late spring frosts. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 639.*)

43922. SYRINGA REFLEXA C. Schneid. Oleaceæ. **Lilac.**

A bush from western China, 7 to 10 feet high, with oval, sharp-pointed leaves and violet flowers in long, hanging racemes. On account of the remarkable inflorescence of this lilac it is quite distinct from all others of its kind. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 779,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 297.*)

43810 to 43925—Continued.

43923. THEA JAPONICA (L.) Baill. Theaceæ. **Camellia.**
(*Camellia japonica* L.)

An evergreen shrub, native of Japan and China, sometimes becoming a small tree up to 40 feet in height, with deep, glossy green leaves 3 to 4 inches long and solitary red flowers, 2½ to 4 inches wide, appearing at the end of the branchlets. The oil expressed from the seeds is used by the Japanese women for dressing their hair. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 284, 285.*)

43924. VIBURNUM HUPEHENSE Rehder. Caprifoliaceæ. **Honeysuckle.**

Seeds of this plant were introduced under S. P. I. No. 43732.

43925. VIBURNUM THEIFERUM Rehder. Caprifoliaceæ. **Honeysuckle.**

The seeds of this plant were introduced under S. P. I. No. 43735.

43926. CARICA PAPAYA L. Papayaceæ. **Papaya.**

Grown at the Plant Introduction Field Station, Miami, Fla. Received December 19, 1916.

"Seeds from selected fruits." (*Simmonds.*)

43927. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 28, 1916.

"No. 66a. Seeds of the cherimoya, or *anona* as it is called here. These are from choice fruits, mainly from Antigua, but are sent in principally for the purpose of producing stock plants on which to bud superior varieties of the cherimoya. In Florida this may not be the best stock for the cherimoya, but in California it seems to be the only species so far tested which is suitable. November 12, 1916." (*Popenoe.*)

For an illustration of the Guatemalan cherimoyas, see Plate VIII.

43928 to 43930. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received December 18, 1916.

"Probably in no other region has systematic improvement of the papaya been given so much attention as in Hawaii. Mr. J. E. Higgins and others have attempted to breed superior strains which would reproduce themselves when propagated by seed and strains which would remain regularly hermaphroditic, thus eliminating the necessity of planting staminate trees. The papaya is an important breakfast fruit in Hawaii. In few other regions is it so highly esteemed and in few are there varieties of such excellent quality." (*Popenoe.*)

43928. "No. 2355 : 1."

43929. "No. 3681."

43930. "No. 4325."

43931. PERSEA SCHIEDEANA Nees. Lauraceæ. **Coyó.**

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 29, 1916.

"No. 73. From Sepacuite, Department of Alta Vera Paz. The *coyó*, a fruit closely allied to the avocado, which is evidently the same species as the *chucte*, or *shucte*, sent in from El Rancho under No. 72. It is said to vary greatly in

character of fruit, some being inferior and others very choice, as in the avocado. The tree from which this bud wood was taken stands by the porch of the old house at Finca Sepacuite and is said by Mr. Kensett Champney to produce fruits of very good quality." (*Popenoe.*)

43932 to 43935. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.** (*P. gratissima* Gaertn. f.)

From Guatemala. Bud sticks collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December, 1916, to July, 1917.

43932. "(Nos. 74, 95, 155. Avocado No. 8.) *Coban.* This variety enjoys something of a reputation in Coban as an avocado of unusually fine quality. In addition, it has a small seed and other good characteristics, which combine to make it a promising sort.

"The parent tree stands in the sitio of Filadelfo Pineda, in Coban, Department of Alta Vera Paz. The elevation is 4,325 feet. The ground beneath the branches is given out to a vegetable garden, with the exception of that to the east side, which is cut off by a tall hedge of chichicaste (*Loasa speciosa*). The soil is a heavy clay loam, probably underlain by stiff clay. According to the owner, the tree is 30 or more years of age. It is about 40 feet high, with a dense, dome-shaped crown fully 40 feet broad. The trunk is 18 inches in diameter at the base, branching some 10 feet from the ground. At the present time the tree is badly attacked by several insect pests and does not appear to be in good condition. It appears normally to be reasonably vigorous in growth, the young branches being somewhat slender, but not very brittle. The bud wood furnished by the tree is fairly good, the eyes being well developed and showing no tendency to drop at an early stage. The twigs are at times slender and angular.

"The climate of Coban is mild; hence, there is nothing to indicate that this variety will be any hardier than the average of the Guatemalan race.

"The flowering season is February and March. Up to a few years ago the tree is said to have borne large crops of fruit, but at present it does not seem to be doing so well, perhaps owing to the weakened condition of the tree as a result of the attacks of insects and other pests. When first examined in December, 1916, there were only a few fruits on the tree, perhaps a dozen, and after the flowers which were produced in 1917 had fallen only a few fruits were found to be left on the tree for the next season, most of them having fallen before they attained the size of walnuts. They were malformed, as though from the attacks of some parasite. The ripening season is said to be February to March, a few fruits being picked in December and January and some hanging on the tree until April or May.

"This is a fruit of medium size, weighing about 15 ounces. In form it is pear shaped, tending to obovoid. The surface is slightly rough, deep green in color, while the skin is moderately thick, hard, and woody. The flesh is of unusually deep yellow color, quite free from discoloration of any kind, smooth and oily, and of unusually rich flavor. The seed is rather small in comparison to the size of the fruit and is perfectly tight in the seed cavity.

43932 to 43935—Continued.

"The variety may be formally described as follows: Form obovoid, obovoid-pyriform, slightly oblique; size above medium, weight 15 ounces, length 4⅝ inches, greatest breadth 3⅜ inches; base rounded, the stem inserted obliquely without depression; apex rounded; surface slightly rough, deep green in color with a few small yellowish dots; skin moderately thick, one-eighth of an inch or slightly more, coarsely granular; woody and brittle; flesh deep yellow in color, changing to pale green near the skin, of fine, smooth texture and free from discoloration of any sort, the flavor rich and pleasant; quality excellent; seed rather small in comparison to the size of the fruit, roundish oblate in form, about 1¾ ounces in weight, with both seed coats adhering closely and fitting tightly in the seed cavity." (*Popenoe.*)

43933. "No. 75. From San Cristobal Vera Paz, December 14, 1916. *Chilan.* Avocado No. 9, from the dooryard of an Indian in the southwest quarter of the village of San Cristobal. A very attractive small fruit, selected first for its earliness in ripening and secondly for its productiveness and good quality.

"It is more or less pear shaped, weighs about half a pound, is nearly smooth externally and of a bright green color, while the seed is unusually small and the flesh is of a good quality for an early-ripening variety. It is noteworthy that nearly all the early varieties I have found in Guatemala are inferior in richness of flavor to those which ripen later, and it also seems that a great many of them have large seeds. This was especially notable in the fruits examined around Antigua. Form elliptic pyriform, not distinctly necked; size below medium, weight 8 to 9 ounces, length 3¾ inches, breadth 2¾ inches; base narrowly pointed, the stem inserted almost squarely without depression; apex obliquely flattened though not conspicuously so; surface nearly smooth, bright green in color, with numerous minute yellowish dots; skin one-sixteenth to nearly one-eighth of an inch thick, coarsely granular and woody, brittle; flesh cream color, tinged with pale green near the skin, free from fiber, and of smooth, firm texture; flavor nutty, pleasant, not so oily as in some of the later varieties; quality good; seed small in comparison with the size of the fruit, broadly elliptic to spherical in form, weight 1 ounce, both the seed coats rather thin and adhering closely to the smooth cotyledons. The parent tree is about 45 feet high, with a spread about equal in height. The trunk is 2 feet thick at the base. Apparently the fruits must commence to ripen in October or November, since a great many have already fallen, as indicated by the quantity of fresh seeds beneath the tree. A large proportion of the fruits left on the trees seem still to be immature, so that this variety can probably be considered to have a very long season. The tree is carrying an enormous crop, as may be expected of one whose fruits are of this size. It is probably safe to say that it will produce more than 2,000 fruits this season. This has every appearance of being a very desirable variety." (*Popenoe.*)

43934. "(Nos. 76, 96, 156, 188. Avocado No. 10.) *Kashlan.* In quality this is one of the finest avocados in the set. It has the additional advantage of good size, convenient shape for handling, and a seed which is unusually small in size. Taken all round, this is an exceptionally

43932 to 43935—Continued.

promising variety, and it ripens earlier than many others, which makes it particularly worthy of trial in California, where early-ripening varieties of the Guatemalan race are greatly desired.

"The parent tree stands among coffee bushes in the sitio of Diego Muus, in the town of San Cristobal Vera Paz. The elevation here is 4,550 feet. Close to the tree, on the west, is a much larger avocado tree which crowds it considerably, and there is an Inga tree a few feet away on another side. The tree must be considered, therefore, to be growing under unfavorable surroundings. The soil is a heavy clay loam, blackish, and very fertile. While the owner is not certain as to the exact age of the tree, it is thought to be 8 or 10 years old. It stands about 25 feet high, with a slender, open crown rather sparsely branched. The trunk is 8 inches thick at the base, branching about 8 feet above the ground. The tree bears every indication of being a strong grower; the young branchlets are stout, long, and extremely healthy in appearance. The wood is no more brittle than the average. The bud wood furnished by the tree is excellent, having strong, vigorous eyes which are not inclined to drop at an early stage. The twigs are smooth, round, stout, with the eyes conveniently placed for cutting buds, i. e., not too close together.

"No frosts occur in San Cristobal Vera Paz; hence, there is no means of determining whether varieties growing here are hardier than the average or not. Until further evidence is obtained in the United States it must be assumed that varieties from elevations such as that of San Cristobal Vera Paz are of average hardiness.

"The flowering season is February. The tree is said to have come into bearing three years ago. It produced an excellent crop the past season, considering the size of the fruit and the unfavorable conditions under which the tree is growing. In 1917 it set no fruit. The crop which developed in 1916 was picked in January and February, 1917, when the fruit was considered to be mature. None were left on the tree, so it is impossible to say how late the fruits might hang on if they were allowed to do so.

"This fruit is broadly oval in form, slightly oblique, and weighs 20 to 22 ounces. It is green in color when ripe, practically smooth on the surface, with hard, brittle, but not unusually thick skin. The flesh is smooth, deep yellow in color, clean, and free from fiber. The flavor is very rich and pleasant. The seed is unusually small, weighing but 2 ounces, and fits tightly in its cavity.

"Following is a formal description of the variety: Form broadly oval, slightly oblique; size very large, weight 20 to 22 ounces, length 4½ inches, breadth 4 inches; base obliquely flattened, the stem inserted without depression; apex obliquely flattened, slightly depressed around the stigmatic point; surface pebbled, deep green in color, with numerous rather large yellowish dots; skin one-sixteenth of an inch thick, slightly thicker over some portions of the fruit, coarsely granular, and brittle; flesh of an unusually rich yellow color, changing to pale green near the skin, free from fiber or discoloration and of very rich flavor; quality excellent; seed very small in proportion to the size of the fruit, oblate, weighing 2 ounces, tight in the cavity, with both seed coats adhering closely to the cotyledons, which are slightly rough for this race." (*Popenoe.*)

43932 to 43935—Continued.

43935. "(Nos. 77, 97, 157, 189. Avocado No. 11.) *Chisoy.* As a commercial variety this avocado seems to be particularly promising. In form and size it is almost identical with the *Trapp* avocado of Florida, but it has a smaller seed. The quality is excellent, and the tree has borne two heavy crops in succession, which indicates that it will probably be as satisfactory in this respect as any in the set. Taken all around, No. 11 seems to be one of the best of all.

"The parent tree is growing in the cafetal (coffee plantation) of Señor Don Eusebio de la Cruz, in the town of San Cristobal Vera Paz. The elevation is 4,550 feet. Señor de la Cruz is the alcalde or mayor of San Cristobal and owns coffee plantations containing many aguacate trees, but he always reserves the fruits of this particular one for his private consumption and to present to his friends. Beneath the broad-spreading branches of this tree are numerous large coffee bushes, which benefit by the shade cast by the avocado. The soil is a heavy, blackish, clay loam of excellent fertility. No one knows the exact age of the tree; it is very large and probably very old. Fifty years can probably be set as the minimum. It is fully 50 feet high, with a broad-spreading, much-branched crown which is 60 feet in diameter. The trunk of the tree is 4 feet thick at the base. It branches about 12 feet above the ground. The growth seems to be quite vigorous, though the young branchlets are not so long as they would be if the tree were much younger. The wood is no more brittle than the average, and the branchlets are well formed and stout. The bud wood furnished by this tree is good; owing to the age of the tree the twigs are not so long as would be desired for most convenient handling, but the eyes are well formed and show no tendency to drop at an early stage.

"The hardiness of the variety can not be ascertained, since there is no frost at San Cristobal. Until subjected to cold weather in the United States it can only be assumed that the variety is of an average hardiness for the Guatemalan race.

"The flowering season is slightly later than the average, the tree being in full bloom on April 1, 1917. The crop produced from the 1916 bloom was very large. No count could be obtained, but it may be said that the bearing habit of the tree, as indicated by the 1916 and 1917 crops, seems highly satisfactory. In spite of the heavy crop from the 1916 bloom, the 1917 bloom was an equally heavy one, which is being carried to maturity. The fruits can be picked in February, but they are probably not really at their best until the first of March. The season is therefore a month or more later than the average. If allowed to remain on the tree, many of the fruits will hang on until April or perhaps even later.

"The fruit is handsome, and its quality does not belie its looks. It is as large as a good grapefruit (20 to 24 ounces), with a slightly rough skin of yellowish green color, somewhat thicker than the average, so that the fruit is bruised with difficulty. The flesh is of deep yellow color, firm and rather dry in texture, entirely free from discoloration of any sort, and of the richest possible flavor. No better avocado, in point of flavor, has been found in all Guatemala. The seed, in large specimens of the variety, is comparatively small, while in smaller specimens it appears to be a trifle large; the seed appears to develop to more or less the same size in every case, independent of

43932 to 43935—Continued.

the size of the fruit. Under good cultural conditions in North America the fruit should be of large size, and if the seed remains small, as it does in the large specimens produced by the parent tree, this will almost surely be one of the choicest avocados of the set. It is scarcely necessary to add that the seed is tight in the cavity, for this is the case with all of the avocados included in the set.

"The variety may be described formally as follows: Form spherical to oblate; size large to very large, weight 17 to 24 ounces, length 3⅞ to 4⅛ inches, greatest breadth 4 to 4½ inches; base rounded, the stem, which is about 5 inches long and moderately stout, inserted somewhat obliquely without depression; apex slightly flattened; surface uniformly pebbled, somewhat coarsely so, deep green to yellow green in color, with numerous large pale yellow green dots; skin moderately thick for this race, varying from one-sixteenth to one-eighth of an inch, hard and woody; flesh rich cream yellow to yellow in color, changing to pale green near the skin, free from fiber or discoloration, not watery, but very oily, smooth, and of rich, very pleasant flavor; seed oblate, 2 to 3 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons, which are slightly rough for this race." (*Popenoe.*)

43936 to 43944.

From Bhutan, Asia. Collected by Mr. R. E. Cooper in the Himalaya Mountains and presented by Mr. A. K. Bulley, of Bees Ltd., Liverpool, England. Received December 13, 1916. Quoted notes by Mr. Cooper.

43936. CARAGANA sp. Fabaceæ.

"No. 5533. Shrub of rounded form on sand; flowers not seen, but fruiting on exposed hillsides at 11,000 feet altitude, Lahoul."

43937. THERMOPSIS sp. Fabaceæ.

"No. 5601. Tufted plant on alpine pasture with low herbs at 13,000 feet. Flowers not seen, but similar plant in Bhutan has Vandyke brown flowers. Plant 1 foot in diameter."

43938. COTONEASTER sp. Malaceæ.

"No. 5353. Stunted bush on exposed, sandy slopes in Lahoul at 10,000 feet altitude."

43939. GAULTHERIA sp. Ericaceæ.

"No. 5627 and 5599. Growing on peat nodules and among low scattered herbs on large rock faces at 13,000 feet altitude. Fruits blue."

43940. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"No. 5625. Bush common on stony slopes near birch forests at 13,000 feet altitude; fruits red; flowers not seen. Plants dwarf, 10 inches, but spreading."

43941. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"No. 5654. Six-inch bush with red fruit in pairs in sheltered bare hollows in Quercus forest at 11,000 feet."

43942. ROSA sp. Rosaceæ. **Rose.**

"No. 5391. Splendid bush, growing on dry walls at 10,000 feet altitude in Lahoul. Bush 10 feet through; sprays 6 to 8 feet long, full of flowers and showy red fruits in autumn."

43936 to 43944—Continued.

43943. SPIRAEA sp. Rosaceæ.

"No. 5633. Herb in alpine meadow in hollow with taller herbs. One foot high, only found in fruit, but remarkable for meal below leaves. Growing at 12,000 feet altitude."

43944. VIBURNUM sp. Caprifoliaceæ.

"No. 5640. Bush 2 to 4 feet, found below scattered and stunted oaks at 12,000 feet altitude. Fruit black, in pairs; flowers not seen."

43945 and 43946.

From Liverpool, England. Collected in the mountains of California and presented by Mr. A. K. Bulley, of Bees Ltd. Received December 13, 1916. Quoted notes by the collector.

43945. AMORPHA CALIFORNICA Nutt. Fabaceæ.

"No. 26. A leguminous shrub with narrow racemes of blue flowers. Grows at 5,000 to 6,000 feet altitude in mesophytic to xerophytic conditions. The pinnate leaves and the architecture of the shrub are ornamental."

43946. CALYCANTHUS OCCIDENTALIS Hook. and Arn. Calycanthaceæ.

"No. 3. Spice bush. A handsome shrub, 5 to 10 feet tall, with maroon flowers. Foliage fragrant. Growing along the banks of streams."

43947. KOELREUTERIA FORMOSANA Hayata. Sapindaceæ.

From Formosa, Japan. Presented by the Experimental Station of Forestry. Received December 27, 1916.

A tree, native of Formosa, Japan, up to 60 feet high, with oval-oblong leaflets with nearly entire margins, up to 4 inches in length. The yellow flowers are in large terminal panicles, and the fruit is a bladderlike, inflated, 3-lobed capsule about 1⅜ inches long, containing black roundish seeds.

43948 to 43950.

From Paramaribo, Dutch Guiana. Seeds collected by Dr. J. A. Samuels. Received November 1, 1916.

43948. ALPINIA EXALTATA (L. f.) Roem. and Schult. Zinziberaceæ. (*Renealmia exaltata* L. f.)

A plant belonging to the ginger family widely spread in tropical America. The fleshy oval fruit is finally black and yields a dye of some importance. (Adapted from a *note of W. E. Safford, May 8, 1916.*)

See S. P. I. No. 42799 for further information.

43949. ANACARDIUM OCCIDENTALE L. Anacardiaceæ. **Cashew.**

A small tree, about 20 feet high, found in the West Indies and South America, with rounded, oval leaves and rosy-tinted fragrant flowers in terminal clusters. The fruit is kidney shaped, about the size of a very large bean, and is borne on a fleshy receptacle 3 inches long and more, which contains a sweetish-sour edible pulp. The nuts are eaten like chestnuts, either raw or roasted, and contain a milky juice which is extremely acrid and corrosive. The tree yields a gum which is the basis of a varnish. (Adapted from *Hogg, Vegetable Kingdom, p. 245,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 279.*)

43948 to 43950—Continued.

43950. ASTROCARYUM sp. Phœnicaceæ. **Palm.**

"Astrocaryums are elegant palms of medium height, very suitable for moderate-sized conservatories. In a young state the plants require the temperature of the stove, and after attaining the height of a few feet they may be best grown in a warmhouse and given plenty of water; also a humid atmosphere. Specimens 8 to 10 feet high fruit freely." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 425.*)

43951. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Received December 18, 1916.

See S. P. I. Nos. 43446 and 43481 for previous introductions and descriptions.

43952. CARYA CATHAYENSIS Sarg. Juglandaceæ. **Hickory.**

From Hangchow, China. Presented by Dr. D. Duncan Main. Received December 18, 1916.

The only hickory so far found in China, a tall tree, 40 to 65 feet high, with grayish bark and leaves composed of five to seven lance-shaped or oval leaflets with upper surfaces soft green and the lower rusty brown. The nuts, which are thick shelled and elliptic in shape, are collected and sold as a sweetmeat; a fine clear yellow oil is extracted from them and used in fancy pastry. The wood is tough and strong and is used for tool handles. The tree thrives best at the foot of the mountains in narrow, moist valleys; it becomes crippled when exposed to much wind and can not stand much frost. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, pp. 187, 188.*)

43953. TETRAZYGIA BICOLOR (Mill.) Cogn. Melastomaceæ.

(*Miconia bicolor* Triana.)

From Littleriver, Fla. Presented by Mr. Charles A. Mosier. Received December 13, 1916.

A West Indian shrub from 7 to 10 feet high, with narrowly oblong, sharp-pointed leaves, with the upper surfaces bright green and the lower golden yellow. The white flowers occur in many-flowered panicles up to 8 inches in length. (Adapted from *DeCandolle, Monographia Phanerogamarum, vol. 7, pp. 724, 725.*)

43954. LATHYRUS WATSONI White. Fabaceæ. **Vetchling.**

From Chico, Calif. Collected by Mr. Heller and transmitted to this office by Mr. R. L. Beagles, superintendent, Plant Introduction Field Station. Received December 18, 1916.

A perennial Californian herb with stout erect stems, 1½ to 2½ feet high, zigzag branches, light-green leaves, recemes of white flowers veined with purple, and pods about 2 inches long. (Adapted from *Jepson, Flora of Western Middle California, pp. 298, 299.*)

43955. QUERCUS SUBER L. Fagaceæ. **Cork oak.**

From Gibraltar, Spain. Secured through Mr. Richard L. Sprague, American consul. Received December 21, 1916.

"Spanish acorns gathered in the Almoraima corkwoods, district of Castellar, Spain." (*Sprague.*)

43956. FERONIA LIMONIA (L.) Swingle. Rutaceæ. **Wood-apple.** (*F. elephantum* Correa.)

From Peradeniya, Ceylon. Seeds presented by Mr. T. H. Parsons, curator, Royal Botanic Gardens. Received December 18, 1916.

A spiny, deciduous tree, native of India and Indo-China, with compound leaves and nearly globular fruits filled with pinkish, edible pulp, which is used for making jelly. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1219.*)

See also S. P. I. No. 42268 for further information.

43957. EUCALYPTUS MARGINATA J. E. Smith. Myrtaceæ.

From Sydney, New South Wales, Australia. Seeds presented by Dr. J. H. Maiden, director, Botanic Gardens. Received December 21, 1916.

An Australian tree, becoming tall under favorable circumstances, with lance-shaped leaves 3 to 6 inches long, and thick, hard, smooth, nearly globular fruits. A valuable hardwood tree in Australia, but not yet a success in America. The timber is easily worked, takes a fine polish, is not attacked by teredo, is almost incombustible, and is used in England for street paving and in Australia for piles, telegraph poles, shingles, etc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1159.*)

43958. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Santiago de las Vegas, Cuba. Cuttings presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received December 20, 1916.

"*Cristalina.* Noel Deerr in his 'Cane Sugar,' p. 26, says that the *Cristalina* is a Batavian cane and is the lighter of the two purple Batavia canes. It is known in Hawaii as *Rose Bamboo*, in the British West Indies at *White Transparent*, in Cuba as *Cristalina*, and in Louisiana as *Home Purple.* It is of no distinctive color, sometimes being a pale or ash color and at other times wine colored. Its color depends upon its age and environments; the younger the cane the more color it contains, and the younger parts of the cane are more colored than the older parts. It is a comparatively thin cane with long joints and has a longitudinal channel running from the eye to the next joint above. It is prone to fall down from the effects of high winds, is comparatively soft, and when mature furnishes a juice of high sucrose and purity. It is a comparatively hardy cane and will give remunerative crops on soil and under conditions where many other canes would fail. While not immune to the attacks of insects and diseases, it is among the canes which most successfully resist them." (*Crawley.*)

43959 to 43963.

From Canton, China. Obtained by Mr. E. D. Merrill, botanist, Manila Bureau of Science, Manila, Philippine Islands. Received December 26, 1916.

43959 and 43960. CANARIUM spp. Balsameaceæ.

The following observations relate exclusively to the fruit vended everywhere in the south of Kwangtung Province, of which there are two kinds: The *U-lam*, or "black olive," and the *Pak-lam*, or "white olive," produced, respectively, by *Canarium pimela* and *C. album.*

43959 to 43963—Continued.

Both white and black olives are a good deal grown around Wampoa. Since I have seen none in the immediate neighborhood of Canton nor in Hongkong and their cultivation is therefore apparently local, I can gain no intelligence of their occurrence in a wild state. They are trees 20 to 30 feet high, with a whitish trunk, and a close, round crown of foliage, which in hot sunny days exhale a pleasant balsamic odor, in which respect, as well as in general aspect, they resemble our common walnut. The two species, though perfectly distinct, are singularly alike.

I should remark that, when dried, the leaves of both species have the veinlets prominent, but the network is much closer and finer in those of the "white olive." The "white olive" is either eaten fresh, in which state its strongly resinous flavor renders it disagreeable to the European palate, or is placed when quite ripe in tubs filled with salt, stirred about continually, and after the lapse of a day taken out and dried. In this state it is hawked about in great abundance. It tastes much as the European olive might be expected to do if removed from the brine in which it is kept and allowed to dry, with an appreciable soupçon of turpentine superadded. I have been told it is regarded as a preventive of seasickness. The "black olive" is never eaten raw, but only after having been steeped for a few moments in boiling water. Thus prepared (and packed in jars, with the addition of a little salt, when desired to be preserved) it is of a fine purplish red color, like well-made freshly pickled mango. This fruit is held in much higher esteem than the other, and it is usual to keep a strict watch over it as it ripens, to prevent depredation. I have seen a man who was found luxuriating in the umbrageous coma of a tree to which he could lay no claim, with a basket full of fruit in his possession, tied "spread eagle" fashion to the trunk for nearly a day, the monotony of his durance being varied by periodical flagellations. (Adapted from *Hance*, in *Journal of Botany, British and Foreign, vol. 9, pp. 38, 39.*)

43959. CANARIUM ALBUM (Lour.) DC.

"Canarium fruits are commonly sold in Canton. This species is less expensive than the large one, *C. pimela*. The pericarp is eaten. They are pickled by the Chinese; I have seen them among imported Chinese foodstuffs in Manila." (*Merrill.*)

43960. CANARIUM PIMELA Koen.

"This species has a fleshy pericarp which is eaten. The seeds are also said to be edible. They are pickled by the Chinese; I have seen them among imported Chinese foodstuffs in Manila." (*Merrill.*)

43961. CITRUS AURANTIFOLIA (Christm.) Swingle. Rutaceæ. **Lime.**

A small tree, with irregular branches, found in all tropical countries, often in a semiwild condition. It has very sharp, short, stiff spines, small, rather pale green leaves, small white flowers, and an oval or round greenish yellow fruit from 1¼ to 2½ inches in diameter, with thin skin and very acid pulp. Large quantities of limes are shipped to the United States from the West Indies for making limeade, and the lime juice is shipped bottled from Montserrat and Dominica in the West Indies. The juice is said to prevent scurvy, and hence is often carried on ships making long voyages. The trees are very sensitive to frost, and they are usually cultivated from seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 782.*)

43959 to 43863—Continued.

43962. CITRUS AURANTIUM L. Rutaceæ. **Sour orange.**

A small tree, native of southeastern Asia, growing 20 to 30 feet high, with sweet-scented flowers and orange-colored or reddish fruit with an acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 10.*)

See also S. P. I. No. 41713 for further description.

43963. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Sweet orange.**

A medium-sized tree, widely cultivated in all of the tropical and subtropical regions of the world. It has a rounded top and regular branches, rather small white flowers, and oval or nearly globular fruit, with solid pith, sweet pulp, and membranes which are bitter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 783.*)

43964 and 43965.

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, Director of Agriculture. Received December 29, 1916.

43964. CECROPIA PALMATA Willd. Moraceæ.

Yaruma. A West Indian tree, up to 50 feet in height. At the top of the single, long, thin, weak trunk are a few horizontal or deflected awkward branches bearing large palmate leaves divided like thumbs, with white, hairy lower surfaces. The branches and trunk are hollow, with partitions at the nodes, and ants often make their homes in them. The juice is milky, the flowers are very small, and the fruits are small 1-seeded nuts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 697.*)

43965. GENIPA AMERICANA L. Rubiaceæ. **Genipap.**

A large stately tree, native of the American Tropics, growing 60 feet in height, with dark-green leaves a foot or more long. The edible fruits are about the size of an orange. (Adapted from the *notes of Messrs. Dorsett and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37833 for further description.

43966 and 43967. FURCRAEA spp. Amaryllidaceæ.

From Rio Hacha, Colombia. Bulbils presented by Mr. M. T. Dawe, Ministerio de Agricultura y Comercio, at the request of Mr. L. H. Dewey, of the Bureau of Plant Industry. Received December 23, 1916.

The species of this genus are succulent desert plants from tropical America. Some of them have spiny leaves like the century plant; others have leaves with very minute serrations on the margins, while many have entirely smooth margins. The flowers are whitish, and as a rule these plants bear fruit only once, after which they die. However, while flowering they produce an immense number of bulbils, which may be used for propagation. The method of propagating is similar to that for century plants, except that Furcraeas requires more heat and water. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1305.*)

43966. "No. 1." **43967.** "No. 2."

43968. FERONIELLA OBLATA Swingle. Rutaceæ. **Krassan.**

From Saigon, Cochin China. Presented by Mr. P. Morange, director, Agricultural and Commercial Services. Received December 30, 1916.

For a description, see S. P. I. No. 43566.

43969 to 43979. CUCURBITA PEPO L. Cucurbitaceæ.

From San Juan Bautista, Tabasco, Mexico. Seeds presented by Mr. G. Itié, director, Agricultural Experiment Station. Received December 16, 1916.

43969. No. 1.
43970. No. 2.
43971. No. 2 bis.
43972. No. 3.
43973. No. 4.
43974. No. 5.
43975. No. 6.
43976. No. 6 bis.
43977. No. 7.
43978. No. 9.
43979. No. 10.

INDEX OF COMMON AND SCIENTIFIC NAMES.

Bael. See Bel.
Banauac, *Uvaria rufa*, 43545.
Barberry. See *Berberis* spp.
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