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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 JANUARY 1
TO MARCH 31, 1916.

(No. 46; Nos. 41685 to 42383.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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BUREAU OF PLANT INDUSTRY.

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CONTENTS.

	Page.
Introductory statement.....	5
Inventory.....	9
Index of common and scientific names.....	87

ILLUSTRATIONS.

	Page.
PLATE I. The service tree, a neglected Mediterranean fruit tree (<i>Sorbus domestica</i> L. S. P. I. Nos. 41703 and 41804).....	12
II. The jequitiba, a giant forest tree of Brazil (<i>Cariniana legalis</i> (Mart.) Kuntze. S. P. I. No. 41933).....	12
III. The dago haya, the best tropical yam, from the island of Guam, growing at Miami, Fla. (<i>Dioscorea alata</i> L. S. P. I. No. 39705)...	50
IV. The Manawá yam, from the Republic of Panama (<i>Dioscorea</i> sp. S. P. I. No. 42052).....	50
V. Tubers of the white yampee, a variety of yam grown in the Canal Zone (<i>Dioscorea trifida</i> L. f. S. P. I. No. 42053).....	50
VI. Another form of yampee, from the Canal Zone (<i>Dioscorea</i> sp. S. P. I. No. 42054).....	50

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1916 (NO. 46; NOS. 41685 TO 42383).

INTRODUCTORY STATEMENT.

This forty-sixth inventory of seeds and plants covers a period when no official agricultural explorer was in the field, so the descriptions are all of material sent in by correspondents or collaborators.

The most interesting of the introductions, judged before they are tested, appear to be the following:

Thirty-five selected varieties of wheat (Nos. 42102 to 42136), the result of much work in selection and acclimatization by the plant breeders of Victoria, some of them being of recent introduction into Australia, while others are selections from types of old Australian wheats. These were supplied by Mr. A. E. V. Richardson. Twenty-six varieties of wheat (Nos. 41991 to 42016) from the United Provinces of India, representing some old Indian types, were presented by Mr. H. Martin Leake, of Cawnpore. While none of these may prove especially valuable, it should be kept in mind that it was out of a cross between an Indian wheat, Ladoga, and the Red Fife that the famous Marquis wheat of Canada came.

The discovery by the plant breeders of the Southeastern Agricultural College of England of a nematode-resistant variety of hops, *Humulus lupulus* (No. 42024), should call the attention of growers to the resistance of this variety to the disease known as nettlehead, or skinkly, and it may prove valuable in our hop fields.

Since Mr. C. V. Piper's preliminary study of forage plants during his trip to India in 1911, he has continued to test many of the wild and cultivated grasses of that region, and Nos. 41885 to 41900, 41902 to 41907, 41910 to 41915, and 41918 to 41921 represent a remarkable collection of these grasses presented by Mr. William Burns, the economic botanist of the station at Kirki, India. Among them are included: *Andropogon annulatus* (No. 41885), a species well adapted to the Gulf States; *Cenchrus biflorus* (No. 41894), related to our sand bur, but considered in northern India as one of their most nu-

trititious grasses; *Chloris paraguayensis* (Nos. 41759 and 41897), related to Rhodes grass, but native of Burma and Ceylon, considered a good fodder grass in northern India and in Australia one of the best grasses for pasturage and hay; *Chrysopogon montanus* (No. 41899), a handsome species 3 to 5 feet tall, which already shows promise in Florida and Mississippi; *Iseilema wightii* (No. 41914), a natural pasture grass of India; *Pennisetum ciliare* (No. 41915), a most valuable pasture and hay grass there; and *Thelepogon elegans* (No. 41918), which grows in the Indian rice fields and can scarcely be distinguished from rice until it flowers.

The bread-nut tree of Yucatan, *Brosimum alicastrum* (No. 41880), the leaves of which are extensively used for forage purposes there, deserves trial in southern Florida, according to Dr. Lavedan, who sends the seeds.

Through Mr. Roland McKee, who secured it at the Australian exhibit of the Panama-Pacific Exposition, a collection of Australian fodder grasses (Nos. 41744 to 41762) is now being tested. It includes the extremely productive kangaroo grass, the cockatoo grass, the rice-grass, sugar grass, three species of grasses related to Rhodes grass, and *Panicum distachyon* (No. 41746), which ranks as one of the best of the indigenous grasses of northern Australia.

The true tropical yams (*Dioscorea* spp.) have grown so well in Florida and the quality of their tubers is so excellent that the introduction from Panama by Mr. O. W. Barrett of three selected strains (Nos. 42052 to 42054) is of special interest.

A palm, *Chamaedorea tepejilote* (No. 41705), the inflorescence of which forms a regular source of excellent food in the State of Vera Cruz, Mexico, according to Dr. C. A. Purpus, will grow on sandy soil and might accommodate itself to conditions in Florida.

A tall-growing variety of the ordinary bean, the tawana, or taguana (No. 42049), which climbs 15 to 20 meters into the tops of the high trees in Paraguay and produces heavy crops of beans, will be interesting to bean growers, even though it may not be a valuable acquisition.

The existence in the Dominican Republic of an indigenous walnut, *Juglans domingensis* (No. 41930), related to our black walnut, will interest those engaged in the hybridization of the species of *Juglans*; and the gathering together for propagation and distribution by Mr. C. A. Reed of the hardiest and best seedlings of the Persian or English walnut, *Juglans regia* (Nos. 42022 and 42023 and 42041 to 42045), from New York State and Canada, can not fail to attract attention to the neglect which the horticulturists of our Eastern States have shown to the possibilities of walnut culture on this side of the Rockies.

The Queensland nut, *Macadamia ternifolia* (No. 41808), has grown and fruited so well in California and Florida and its nuts are so delicious that it is a wonder more has not been done with it, especially

in Hawaii, where trees planted 30 years ago have borne good crops, according to Mr. C. S. Judd, of the Board of Commissioners of Agriculture and Forestry, who sends in a quantity of seeds.

Although it is extremely doubtful whether the Tangutian almond, *Amygdalus tangutica* (Nos. 41708 and 41709), can be used as a stock for almonds, it should certainly be hybridized with the ordinary almond, if possible, and the production of a bush almond at least attempted. The large number of seeds sent in by Rev. C. F. Snyder from Kansu, China, may bring about this hybrid.

Although in quality American varieties of the peach lead the world, there may yet be found varieties less susceptible to the many peach diseases than those we have, and the collection (Nos. 41731 to 41743) from Seharunpur, India, may contain such varieties.

The search for grapes suited to the conditions of the Southern States and possibly capable of breeding with the Muscadine has brought in *Vitis tiliifolia* (No. 41707) from Vera Cruz, Mexico, and *Vitis davidii* (No. 41877), from central China.

The subtropical and East Indian plum, *Prunus bokhariensis* (No. 42057), from Simla, which resembles *Prunus salicina*, may play a rôle in the production of a plum for our Southern States.

The service tree of southern Europe, *Sorbus domestica* (No. 41703), which grows into such a stately, beautiful tree and bears palatable fruits, appears to have been strangely neglected by horticulturists.

Although very many varieties of the Japanese persimmon have already been introduced, the extensive collections from Okitsu (Nos. 41691 to 41702, 41779 to 41793, and 42138 to 42165) may contain some better suited to our conditions or less astringent than those we are testing.

The Brazilian expedition sent out by this office in 1913 discovered in the campo near Lavras a strange and quite remarkable fruit, *Eugenia klotzschiana* (No. 42030), characterized by a marked fragrance. Through the kindness of Mr. Hunnicutt a quantity of seeds has been secured and the species will be given a thorough trial.

Solanum quitense (No. 42034), the naranjilla of Quito, with fruits the size and color of small oranges, which form the principal article of food of the settlers during certain seasons, should certainly be given a trial in this country.

So much interest has been aroused in the Japanese flowering cherry trees through the gift to the city of Washington by the mayor of Tokyo of a collection of them and through the satisfactory growth which specimen trees have made in Maryland, Massachusetts, and California, that a demand for them has grown up which nurserymen find it difficult to meet. It is of interest, therefore, to point out that 54 varieties (Nos. 41817 to 41870) from the municipal collection of Tokyo, near Arakawa, which represent the loveliest of the hundreds

of varieties known to the Japanese, have been secured through the mayor's courtesy, and these will be propagated and distributed under the same varietal names as those they bear in the Arakawa collection.

Paulownia tomentosa has become such a feature in our parks that a new species of this tree, *Paulownia fortunei* (No. 42036), with larger flowers, from Formosa, will be watched with interest. Bentham's cornel from Nepal, *Cornus capitata* (No. 42287), with dense heads of yellowish flowers and deep-orange fruits, the size of nectarines, will interest those with whom the American dogwood is a favorite.

The oriental species are not the only bamboos of value for timber, and those living in the Tropics will want to test the takuara of Paraguay, *Bambos guadua* (No. 42066), a species evidently too tender for Florida.

Those interested in tropical timber trees will find some remarkable ones in the collections introduced from Madagascar (Nos. 42355 to 42376), Argentina (Nos. 42321 to 42332), or in the famous jequitiba of Brazil (No. 41933), one of the largest and most beautiful of all tropical forest trees, now introduced for the first time by the forest expert, Mr. H. M. Curran, from Bahia.

The manuscript of this inventory has been prepared by Miss Ethel M. Hipkins, 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, as of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., May 31, 1919.

INVENTORY.¹

41685. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ. Plume-grass.
(*Erianthus fulvus* Nees.)

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Gardens, at the request of the superintendent, Royal Botanic Gardens, Sibpur, near Calcutta. Received January 20, 1916.

A perennial grass, 6 to 8 feet high, found in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. The narrow leaves are 2 to 3 feet long and the panicles are 8 to 18 inches long, gray-white or tinged with purple. (Adapted from Collett, *Flora Simlensis*, p. 595.)

See S. P. I. No. 39689 for previous introduction.

41686. BUTIA CAPITATA PULFOSA (Barb.-Rodr.) Becc. Phœnicicææ. Palm.

From Fruitland Park, Fla. Presented by Mr. Louis P. Bosanquet. Received January 21, 1916.

Stems 30 to 40 feet high, somewhat fusiform above; leaves about half as long as the caudex, the withered ones deflexed, pendent, the upper ones spreading, often arching. In southern Brazil, near the sea, according to recent characterizations, it comprises a wide variety of forms. Probably the *Cocos flexuosa* planted in this country is not *Cocos flexuosa* of Martius, but of Hort., a hardy form of *romanzoffiana*, which, according to the late Barbosa-Rodrigues, is a polymorphic species, including, besides this *flexuosa* type, all our garden forms known as *C. plumosa* Hook., *C. coronata* Hort. (not Mart.), *C. botryophora* Hort., *C. datil* Griseb. and Drude, and *C. australis* Mart. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 2, p. 814.)

See S. P. I. No. 37745 for previous introduction.

41687. LILIUM GIGANTEUM Wall. Liliacææ. Lily.

From Boulder, Colo. Presented by Mr. Theodore D. A. Cockerell. Received January 24, 1916.

"Seeds of *Lilium giganteum* sent by Mr. J. Henry Watson, Withington, Manchester, England. They were grown in 1915 by Sir Herbert Maxwell, of Wigtownshire, Scotland." (Cockerell.)

"A beautiful, stately lily, rarely cultivated in this country, but hardy as far north as Boston and easily grown in light well-drained soil; should be heavily mulched during the winter; also excellent for greenhouse benches or large tubs. After once flowering, the old bulb decays and disappears, leaving several offsets." (Bailey, *Standard Cyclopædia of Horticulture*, vol. 4, p. 1877.)

¹ Each introduction consists of seeds, except where otherwise stated.

41688. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*Persea gratissima* Gaertn. f.)

From Guatemala, Guatemala. Presented by Mr. William Owen, American vice consul in charge. Received January 13, 1916.

"Seeds of a very large aguacate, which I consider the finest product of Guatemala in that line. They are high grown, which will enable the tree to thrive better in a northern climate." (Owen.)

41689. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From New Orleans, La. Presented by the J. Steckler Seed Company. Received January 24, 1916.

"Green, spiny."

41690. CUPRESSUS GLABRA Sudw. Pinaceæ. Smooth cypress.

From Sedona, Ariz. Purchased from Mr. J. F. Derrick. Received January 25, 1916.

"Collected in Oak Creek Canyon."

In general appearance the foliage of smooth cypress resembles that of Arizona cypress (*Cupressus arizonica* Greene), though the former species can be distinguished from the latter by the compact, narrowly oval, or somewhat pyramidal crown. The branches of the smooth cypress, particularly of younger trees, are strongly upright. Old trees grown in the open develop long lower branches, which from their great weight are less upright than those of trees of the same age in a close stand. In height the trees range from 25 to 30 feet and in diameter from 10 to 14 inches, though much larger trees probably exist. The trunk is slightly tapering, while the upper portion is sometimes divided into several branches, differing in this respect from the usual undivided stem of Arizona cypress. Only about one-fourth to one-third of the trunk is clear of branches. The most distinctive characteristic of this tree is its thin, smooth, dark purple-red bark. The foliage is a bright blue-green (glaucous). The small spherical cones, composed of six to eight scales and armed with large incurved, somewhat flat-pointed bosses, are borne on short stout stems and mature at the end of the second season. The large size of the seeds at once distinguishes them from those of Arizona cypress, though in color and form the two are similar. Thoroughly seasoned wood is moderately durable in contact with the soil, fence posts lasting about 20 years and corral poles 30 to 35 years. Cabins built of the logs 40 years ago are still in a good state of preservation. The small size of the trees and the limited supply have confined the use of the wood mainly to local needs. The extreme age attained by this species has not yet been determined, but it is probably as long lived as Arizona cypress. The largest trees found so far are at least 200 or 250 years old. (Adapted from *Bulletin No. 207, U. S. Dept. of Agriculture, The Cypress and Juniper Trees of the Rocky Mountain Region, p. 9.*)

41691 to 41702. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received January 8, 1916. Notes by Mr. T. Kiyono, Semmes, Ala.

41691. "No. 1. *Anzai*. Sweet. Kiyoto Province."

41692. "No. 2. *Kubo*. Sweet. Kiyoto Province."

41691 to 41702—Continued.

41693. "No. 3. *Hon-gosho*. Sweet. Nara Province."
 41694. "No. 4. *Toyo-oka*. Sweet. Nara Province."
 41695. "No. 5. *Fijuwara-gosho*. Sweet. Nara Province."
 41696. "No. 6. *Chiomatsu*. Astringent. Kanagawa Province."
 41697. "No. 7. *Osoraku*. Astringent. Chiba Province."
 41698. "No. 8. *Ibogaki*. Astringent. Miyagi Province."
 41699. "No. 9. *Benigaki*. Astringent. Miyagi Province."
 41700. "No. 10. *Hira-sanenashi*. Astringent. Yamagata Province."
 41701. "No. 11. *Sakushu-mishirazu*. Astringent. Okayama Province."
 41702. "No. 12. *Hiragaki*. Astringent. Wakayama Province."

41703. SORBUS DOMESTICA L. Malaceæ.**Service tree.***(Pyrus sorbus Gaertn.)*

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received January 3, 1916.

"A deciduous tree, usually 30 to 50 feet (occasionally 60 to 70 feet) high. Native of south and east Europe. Flowers white, about one-half inch across, produced in May in panicles at the end of short branches and from the leaf axils, the whole forming a rounded or rather pyramidal cluster $2\frac{1}{2}$ to 4 inches wide. Fruit pear shaped or apple shaped, 1 to $1\frac{1}{4}$ inches long, green or brown tinged with red on the sunny side. As an ornamental tree this is inferior to its ally, the mountain ash, but is well worth growing for the beauty of its foliage and for its flowers, which are larger than usual in this group. It also attains to greater dimensions than any of its immediate allies. The largest tree whose dimensions are recorded by Elwes is growing at Woodstock, Kilkenny, Ireland, which in 1904 was 77 feet high and 10 feet 8 inches in girth. The fruit of the service tree is sometimes eaten in a state of incipient decay, especially in France. Mr. E. Burrell, late gardener to H. R. H. the Duchess of Albany, at Claremont, in a letter dated November 11, 1883, observes that 'we are sending good fruits of the pear-shaped service for dessert at the present time.' This Claremont tree was blown down in 1902, and was then close upon 70 feet high. The timber is of fine quality, being very hard and heavy, but too scarce to count for much." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 295.*)

For an illustration of the service tree, see Plate I.

41704. PRUNUS HORTULANA Bailey. Amygdalaceæ.

From Courtney, Mo. Presented by Mr. B. F. Bush. Received January 4, 1916.

"The species was first distinguished in 1892 to designate varieties of plums intermediate between *Prunus americana* and *P. angustifolia* (the two species at that time clearly separated); these intermediate varieties were then said to 'represent at least two other species, and perhaps even more,' one of which it was proposed to separate as *P. hortulana*. Later students have separated *P. munsoniana* from these varieties and have redefined other species. Subsequently it was supposed that *P. hortulana* represents a range of hybrids between *P. americana* and *P. angustifolia*, and it is not yet known what part hybridization has played in the origin of these forms, although the evidence accumulates that separate specific types are involved." (*Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2828.*)

41705 to 41707.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received January 5, 1916. Notes from Dr. Purpus.

41705. *CHAMAEDOREA TEPEJILOTE* Liebm. Phenicaceæ. Palm.

"The undeveloped flower makes an excellent vegetable and is eaten everywhere in the State of Vera Cruz. Besides, it is a fine little palm. Grows in shady places."

41706. *PSIDIUM GUAJAVA* L. Myrtaceæ. Guava.

"Wild guava; in dry and sunny places."

41707. *VITIS TILIAEFOLIA* Humb. and Bonpl. Vitaceæ. Grape.
(*Vitis caribaea* DC.)

"This *Vitis* has a very sour fruit, but it makes a most excellent jelly-like currant jelly, and is adapted to a tropical country; grows in sunny places in brush woods. *Vitis vinifera* can not be raised here at all."

41708 to 41710.

From Taochow (Old City), Kansu, China. Presented by Rev. C. F. Snyder, at the request of Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 3, 1916.

41708 and 41709. *AMYGDALUS TANGUTICA* (Batal.) Korsh. Amygdalaceæ.
(*Prunus tangutica* Koehne.) Tangutian almond.

"*Amygdalus tangutica* is a variable species of bush almond, and though its kernels are bitter and it throws up a lot of stems and is spiny, still I believe it has a decided value as a factor in breeding experiments, for it seems to be very hardy and drought resistant. One finds it mainly on sheltered rocky and loess slopes at elevations from 4,000 feet above the sea up to about 10,000 feet. In these higher regions, however, it does not get as cold as one would surmise, for the mountains all around keep off the intense cold. As a stock for almonds and for other stone fruits I scarcely would recommend this Tangutian almond, since it suckers badly and these suckers are very hard to remove." (Meyer.)

41708. "Rough shelled."

41709. "Smooth shelled."

41710. *PAEONIA SUFFRUTICOSA* Andrews. Ranunculaceæ. Tree peony.
(*Paeonia moutan* Sims.)

"Seeds of the real wild mountain peony, which occurs in very inaccessible mountain valleys in Tibet proper, where white men are not allowed to go under ordinary circumstances. Ripens its seeds in the Chinese eighth moon (about September 15 to October 20)." (Meyer.)

41711. *CITRUS GRANDIS* (L.) Osbeck. Rutaceæ. Pummelo.

From Amoy, China. Presented by Miss K. M. Talmage, at the request of Mrs. L. W. Kip. Received January 8, 1916.

"I got this back from the Haicheng." (Talmage.)

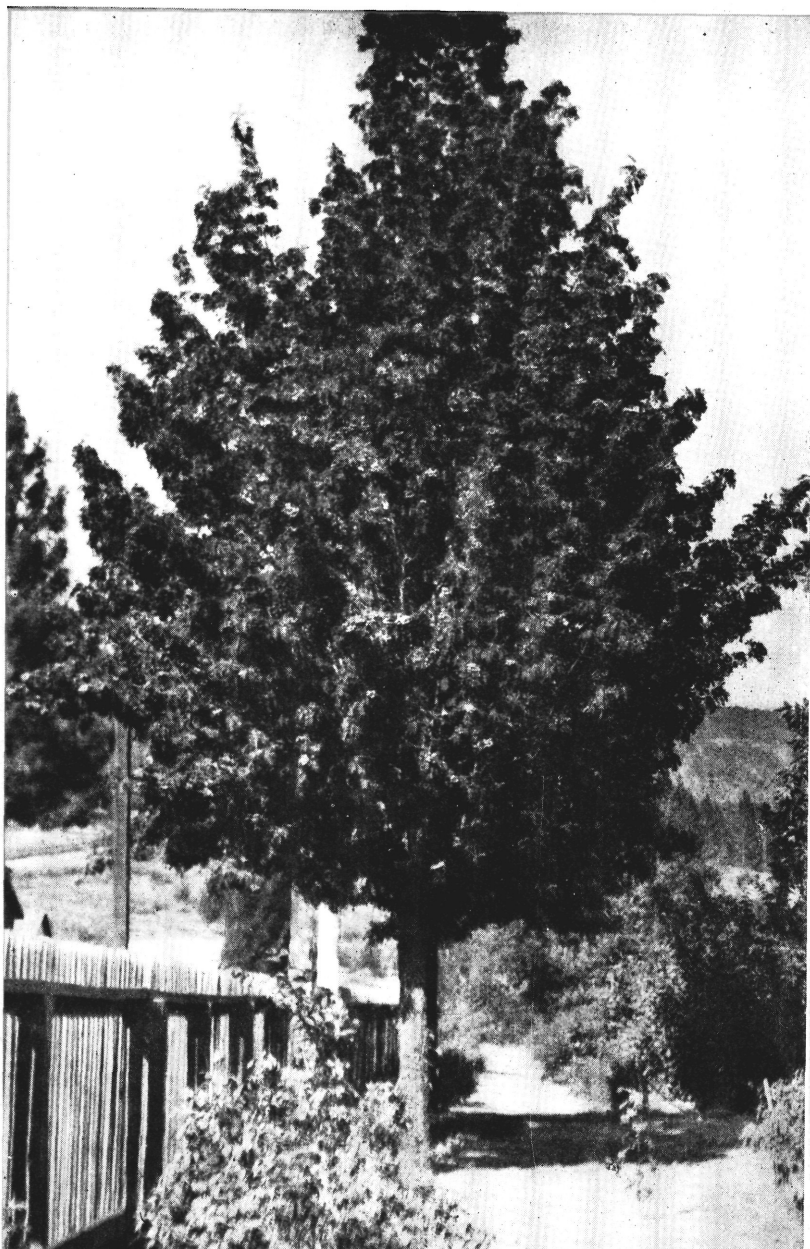
41712 to 41717.

From Lamao, Bataan, Philippine Islands. Presented by the Lamao Experiment Station. Received January 10, 1916.

41712. *CACARA EROSA* (L.) Kuntze. Fabaceæ. Yam bean.
(*Pachyrhizus angulatus* Rich.)

"*Sincamas* (wild)."

"The plant, which in both Guam and the Philippines bears its Mexican name, was probably brought [to Guam] from Mexico. The young root



**THE SERVICE TREE, A NEGLECTED MEDITERRANEAN FRUIT TREE. (SORBUS
DOMESTICA L. SEE S. P. I. NOS. 41703 AND 41804.)**

In Italy the sorbo, as this fruit is called, is sold in large quantities by the fruit vendors on the streets. Like the European medlar, it is good to eat only when overripe, and even then it has an astringent taste which some people find objectionable. In the old Italian works on agriculture at least six distinct varieties are recognized. They ripen their fruits in September and October, and after pickling these are stored in fruit houses or cellars until overripe. This illustration shows a young tree planted by the French nurseryman, Felix Gillet, in his Barren Hill Nursery, at Nevada City, Cal. From its behavior there it is believed to be capable of cultivation in many places in California. As a tree it is most attractive. (Photographed by David Fairchild, 1902; P1488FS.)



THE JEQUITIBA, A GIANT FOREST TREE OF BRAZIL. (*CARINIANA LEGALIS* (MART.) KUNTZE., S. P. I. NO. 41933.)

Although smaller than the sequoia, the giant eucalyptus, or the California redwood, this superb tree deserves to rank with them in magnificent proportions, because of its perfect columnar trunk, which rises like a Corinthian column and supports a magnificent crown of immense branches, each one of which is large enough to make a good-sized tree. Such a wonderful species as this should not be allowed to perish from the face of the earth, and plantings of it deserve to be attempted in our own tropical possessions. There are records of trees of this species which measure 130 feet in height. The jequitiba is related to the tree which bears Brazil nuts, but its nuts are not edible. (Photographed by Señor E. N. de Andrade, Rio Claro, Brazil, whose collections of Brazilian trees, and especially his extensive plantations of eucalyptus, have become world known.)

41712 to 41717—Continued.

is much like a turnip in shape and consistency and is easily peeled like a turnip. It is usually eaten raw and may be prepared with oil and vinegar in the form of a salad. According to Dr. Edward Palmer, it is extensively cultivated in Mexico, where the natives pinch off the blossoms and seed pods, giving as a reason that if the seeds are allowed to mature the roots are not good. In Mexico the roots are much eaten raw, but are also pickled, boiled in soup, and cooked as a vegetable. As they come from the ground they are crisp, sweet, juicy, and of a nutty flavor. They are nourishing and at the same time quench the thirst, so that they are much liked by travelers. One way of preparing the raw roots is to cut them in thin slices and sprinkle sugar over them. They may also be boiled and prepared with batter in the form of fritters, and in Mexico they are often minced or grated, and with the addition of sugar, milk, eggs, and a few fig leaves for flavoring made into puddings." (*Safford, Useful Plants of Guam, p. 204.*)

41713. CITRUS AURANTIUM L. Rutaceæ.

Sour orange.

A small tree 6 to 9 meters in height, with a compact head, young shoots light green, thorny; leaves unifoliate, evergreen, alternate, ovate, pointed, strongly and peculiarly scented; petiole 12 to 18 millimeters long, broadly winged; flowers in small, axillary cymes, white, strongly sweet scented, somewhat larger than those of *Citrus sinensis*; fruit orange colored or frequently reddish when well matured, inclined to be rough; rind strongly aromatic, bitter; pulp acid; juice sacs spindle shaped, rather small; seeds flattened and wedged toward the micropylar end, marked with ridged lines. Native of southeastern Asia, probably in Cochin China. Hardier than the sweet orange. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 10, under Citrus vulgaris.*)

41714. CITRUS EXCELSA Wester. Rutaceæ.

Limon-real.

A tall, thorny shrub of vigorous growth, straggly habit, and interlocking branches with stout, long, sharp thorns; leaves 9.5 to 16 centimeters long, 4.5 to 7 centimeters wide, thick and leathery; petiole quite broadly winged, in large leaves the wings frequently exceeding 2 centimeters in width; flowers three to seven, in axillary, rather loose cymes, 36 millimeters in diameter; petals showing a trace of purple on the outside; fruit 5 to 7.3 centimeters, 5.5 to 7.5 centimeters in equatorial diameter, weight 115 to 225 grams; form subglobose; base rounded; apex flattened; surface smooth, greenish to clear lemon yellow; skin thin; pulp greenish to grayish, in good varieties very juicy, mildly acid, and of excellent flavor; juice cells long, slender, and pointed. Plant material of the *limon-real* has been collected in Tarlac, Bontoc, and Bohol, and the fruit is at rare intervals offered for sale in small quantities in Manila. The name of the plant, *royal lemon*, indicates the esteem in which the fruit is held by the people, and while it is unfortunately true that most of the fruits tested have been too dry to be of any value, yet in the best types the fruits surpass in quality and aroma all lemons and limes that the writer has had the opportunity to sample. Considering the robust, thorny growth, large leaves, and broad-winged petioles, together with the roundish oblate fruit with its 10 to 14 locules, and the flowers with 34 to 35 stamens, as against the 20 to 26 in the lime and lemon, this plant is apparently as distinct from these species as they are from each other. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 26.*)

41712 to 41717—Continued.

41715. CITRUS LIMETTA AROMATICA Wester. Rutaceæ.

A spiny shrub, with rather slender, willowy, drooping branches and sharp spines; young growth light green, of pleasant and distinct odor when bruised; leaves 7.5 to 10 centimeters long, 3.5 to 5 centimeters broad, dull green above; petioles 6 to 19 millimeters long with a narrow wing margin; flowers solitary or in cymes of four, terminal or axillary, 28 to 35 millimeters across; calyx rather large, petals four to five, white with a trace of purple on the outside; style not distinct, as in *Citrus aurantium*, but rather similar to that of *Citrus medica*; fruit 5 centimeters long, 4 to 4.5 centimeters across, roundish to roundish oblong; skin thin, smooth, lemon yellow, pulp pale green, juicy, sharply acid, sometimes almost bitter; juice cells long, slender, and pointed; seeds very numerous, small, and plump, polyembryonic. This form seems to be fairly well distributed, and material has been propagated at Lamao from such distinct points as Mindoro, Palawan, and Bangued. Unquestionably a lime, it is quite distinct from the ordinary lime in habit and in the aromatic tender foliage, in the purplish petaled flowers, which are larger than those of the lime, and in the greater number of stamens. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, pp. 25 and 26.)

41716. CITRUS MEDICA L. Rutaceæ.

Citron.

41717. CITRUS MEDICA ODORATA Wester. Rutaceæ.

Tihi-tihi. A small thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; young growth bright green; leaves 7.5 to 11 centimeters long, 4.3 to 6.5 centimeters broad, elliptical, rather thick and leathery, serrate, of distinct fragrance; base rounded; apex notched; petioles very short, 4 to 6 millimeters long, not winged; flowers one to four in axillary compressed cymes, sessile, rarely exceeding 38 millimeters in diameter; petals four to five, fleshy, white, with a tinge of purple on the outside; fruit 60 to 65 millimeters long, 7 to 10 centimeters in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammilate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised; skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis, Mindanao. The plant is very precocious, fruiting as early as the third year from seed, ever-bearing, and the fruit is used by the Filipinos in washing the hair. It is not eaten and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, pp. 22 and 23.)

41718 to 41721.

From Chungking, China. Presented by Mr. E. Widler. Received January 8, 1916. Quoted notes by Mr. Widler.

41718. CITRUS SINENSIS (L.) Osbeck. Rutaceæ.

Orange.

"Large orange. This orange grows plentifully in Szechwan, is about 11 inches in circumference, of very good flavor, contains a small number of seeds, has a very thin skin and practically no pith."

41718 to 41721—Continued.**41719. CITRUS NOBILIS DELICIOSA** (Ten.) Swingle. Rutaceæ.**Mandarin orange.**

"*Chü tzü*. Has no pith and is of very good flavor. The skin is dried and boiled and the infusion drunk as a medicine."

41720. FICUS LACOR Buch.-Ham. Moraceæ.

"*Huang ko shu*. A tree 150 feet high, 12 feet in circumference, grows best among rocks in a subtropical climate. It takes about 15 to 20 years to mature in good soil; flowers white. It is used principally for shading purposes on the highroad and in the temples. It is of no commercial value. Seeds yellow, inclosed in a pod."

41721. MOMORDICA CHARANTIA L. Cucurbitaceæ.**Balsam pear.**

"*K'u kua*. A creeping plant 10 feet or more, grows best in a climate of 70° to 90° F. It takes about two months to mature; bears white and yellow fruits in autumn. The fruit is about 1 foot long and 3 or 4 inches in circumference. It is used in soups and as a vegetable and is prepared by boiling. It sells in the market for about 20 cash each. Seeds yellow."

41722. PARMENTIERA CEREIFERA Seem. Bignoniaceæ. **Candle tree.**

From Mayaguez, Porto Rico. Presented by Mr. C. F. Kinman, horticulturist, Agricultural Experiment Station. Received January 4, 1916.

A tropical American tree, with simple or trifoliate leaves, white flowers, and fleshy, cylindrical, yellow fruits, often 4 feet long, resembling wax candles and having a peculiar applelike odor. Cattle are sometimes fattened on these fruits. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 848.*)

See S. P. I. Nos. 26206 and 28674 for previous introductions.

41723. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received January 4, 1916.

"The *zapote prieto* or *zapote negro* (black sapote) of Mexico, an interesting fruit belonging to the persimmon family. The tree grows in compact, shapely form and is of very ornamental appearance with its oblong-oval glossy leaves about 4 inches long. In appearance the fruit greatly resembles some varieties of the kaki or Japanese persimmon; instead of being bright orange, however, they are light green when ripe, and measure 2½ to 3 or even 4 inches in diameter. In shape they are oblate or distinctly flattened, and the persistent light-green calyx is quite prominent. The interior of the fruit, when ripe, is anything but attractive in appearance, the flesh being dark brown or almost black in color and of a greasy consistency. The flavor is sweet, but rather lacking in character; for this reason the Mexicans frequently serve the fruit cut up, or mashed up, with orange juice; it is a first-rate dish. The seeds look like those of the persimmon and are not very numerous." (*Wilson Popenoe.*)

See S. P. I. Nos. 39719, 40338, and 41568 for previous introductions.

41724. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. **Okra.**
(*Hibiscus esculentus* L.)

From Athens, Greece. Presented by the director of the Royal Agricultural Society. Received January 11, 1916.

"A half-hardy plant introduced into the United States and West Indies from Africa and cultivated for its fruit pods, which are used in soups, stews, catsups,

and the like. In soups and catsups it gives body to the dish; stewed it is mucilaginous, and while at first not agreeable to many persons a taste for it is easily acquired. It is also dried and canned for winter use. When ripe the black or brown white-eyed globular seeds are sometimes roasted and used as a coffee substitute." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2332.*)

41725. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*Persea gratissima* Gaertn. f.)

From Altadena, Cal. Purchased from Mr. F. O. Popenoe, West India Gardens. Received January 12, 1916.

Seeds of a hardy type of avocado, purchased for fumigation experiments.

41726. ARBUTUS ARIZONICA (A. Gray) Sarg. Ericaceæ. Madroña.

From the Santa Rita Mountains, Arizona. Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received January 12, 1916.

"This is a tree commonly a meter in circumference and 10 meters high, but often much larger. The old trunks have a bright, light-gray bark and the branches are light osier red. The contrast with the permanent light-green leaves and coral-red berries is very striking. To my mind this is one of the most ornamental of native southwestern trees and should be propagated and widely distributed. Indeed, the whole group of manzanita-arctostaphylos arbutus trees and shrubs are very ornamental broad-leaved evergreens, and our native ones are all but unknown in the trade. It is going to take some careful experimentation to make them ready for handling, but they will probably be found to be no more difficult than the rhododendrons. We need to know how best to propagate them. Some of the manzanitas are easily transplanted, and probably the closely related plants may also be handled in the same way, but trees small enough are not numerous in parts where I have traveled. They are said to grow from hardwood cuttings with difficulty. The trees are usually found under typical forest conditions where the floor is covered with a great deal of débris. They probably require an acid soil. This particular lot of seed comes from an altitude of 6,000 to 7,000 feet in the Santa Rita Mountains, Ariz., where snows are frequent and I judge temperatures must often touch the zero mark. I suggest, since the quantity of seed is small, that the germination be tried under greenhouse conditions. This is transmitted for propagation at Chico, Cal." (*Griffiths.*)

41727. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker. Amygdalaceæ. Peach.
(*Prunus persica platycarpa* Bailey.)

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received January 12, 1916.

"Flat China peach, or *Peen-to.*"

41728. CANNABIS SATIVA L. Moraceæ. Hemp.

From Keijo, Chosen (Korea). Presented by Mr. Kosuke Honda, director, Agricultural and Industrial Model Station, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received January 12, 1916.

"Seed of the 1914 crop grown at this station."

41729. PYRUS SALICIFOLIA Pall. Malacææ. Willow-leaved pear.

From the Caucasus. Presented by Mr. Theodore Kryshstofovich, Russian Government Agricultural Commissioner. Received January 12, 1916.

"It is the most ornamental of all true pears. Its leaves and flowers often open simultaneously, and it then presents a very charming picture, the willow-like leaves being of a conspicuous silky white." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 292.*)

See S. P. I. No. 40497 for previous introduction.

41730. VACCINIUM OVATUM Pursh. Vacciniacææ. Huckleberry.

From Ucluelet, Vancouver Island, B. C. Collected by Mr. David Fairchild, of the Bureau of Plant Industry. Received January 12, 1916.

An evergreen shrub of bushy habit, 10 to 12 feet high in England. Leaves small, of firm leathery texture, dark glossy green above, paler beneath, nearly smooth. Flowers produced in September, four to six together in short, nodding racemes from the leaf axils, white, roundish, bell shaped; berry black. Native of western North America. While hardy enough to survive the hardest winters experienced at Kew, it often suffers in severe frost through the cutting back of the younger growth. At Bearwood, in Berkshire, there is a specimen 10 to 12 feet high, which is one of the finest in the country. It is a handsome bush when seen at its best. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 628.*)

41731 to 41743.

From India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur. Received January 12, 1916. Descriptive notes by Mr. Hartless.

41731 to 41736. AMYGDALUS PERSICA L. Amygdalacææ. Peach.
(*Prunus persica* Stokes.)

41731. "Mixed. From Quetta."

41732. "White Kashmiri. From Kashmir. Ripens about two weeks after the early variety *Silver* peach [S. P. I. No. 41734]. An indigenous variety, pulp sweet, but the fruit is somewhat smaller than *Large Red*. It is grown from seed."

41733. "*Seharunpur* or *Country*. From Seharunpur. Similar to *Hardoi* [S. P. I. No. 41738] and *Large Agra* [S. P. I. No. 41740], varying according to the localities in which they are grown."

41734. "*Silver* peach. From Kashmir. Early variety. White skin; large fruit, sweet in taste. A grafted foreign variety."

41735. "*Large Red*. From Kashmir. Ripens two weeks after *Large Red* [S. P. I. No. 41736]. The skin and pulp are both red. Commonly known as *Seharunpur*. Grafted."

41736. "*Large Red*. From Kashmir. The skin and pulp are both red. Early variety. Commonly known as *Seharunpur*."

41737. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricket. Amygdalacææ. Peach.
(*Prunus persica platycarpa* Bailey.)

"*Flat China* peach, or *Pecn-to*. From Seharunpur. A peculiar Chinese variety, very hardy and of fair quality."

41731 to 41743—Continued.

41738. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)
"Hardoi. From Seharunpur. Similar to *Seharunpur* or *Country* [S. P. I. No. 41733] and *Large Agra* [S. P. I. No. 41740], varying according to the localities in which they are grown."
41739. *AMYGDALUS PERSICA NECTARINA* Ait. Amygdalaceæ. Nectarine.
"A nectarine from Kashmir. A French variety; grafted, late."
- 41740 to 41743. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)
41740. "*Large Agra*. From Seharunpur. Similar to *Seharunpur* or *Country* [S. P. I. No. 41733] and *Hardoi* [S. P. I. No. 41738], varying according to the localities in which they are grown."
41741. "Small white *Kashmiri*. From Kashmir. Indigenous late variety grown from seed. Not much taste, though sweet."
41742. "Small red *Kashmiri*. From Kashmir. Indigenous late variety; ripens last of all. Grown from seed."
41743. "*Mai-Cha*. From Seharunpur. A Chinese variety. One of the first to come into bearing; it remains long on the trees."

41744 to 41762. Poaceæ.

Grass.

Procured by Mr. Roland McKee, of the Bureau of Plant Industry, from the Australian exhibit of the Panama-Pacific Exposition, San Francisco, Cal. Received January 14, 1916. Descriptive notes by Mr. McKee except where otherwise indicated.

41744. *CHAETOCHELOA MACROSTACHYA* (H. B. K.) Scribner and Merr.
(*Setaria macrostachya* H. B. K.)
"Grows 4 feet tall, leafy, shatters easily. A good fodder."
41745. *MANISURIS COMPRESSA* (L. f.) Kuntze.
(*Rottboellia compressa* L. f.)
"For swamp lands and margins of rivers; 5 feet tall, leafy, coarse; fair seed habit."
41746. *PANICUM DISTACHYON* L.
"Excellent pasture and hay grass; 2½ feet tall, leafy; fine seed habits for a *Panicum*."
"The stems of this grass creep and root at the joints; it is an immense yielder and is grown for hay in the northern districts. This is one of several indigenous grasses tested at Gracemere, near Rockhampton, and considered best for the purpose of haymaking." (*Maiden, Useful Native Plants of Australia*, p. 98.)
41747. *ARUNDINELLA NEPALENSIS* Trin.
"Grows 5 feet tall, erect, fairly leafy; good seed habit; wants tropical climate and good soil."
41748. *THEMEDA GIGANTEA AVENACEA* (F. Muell.) Hack.
(*Anthistiria avenacea* F. Muell.) Kangaroo grass.
"A good fodder grass, 6 feet tall, rather coarse, medium leafy; fair seed habit. Tall oat-grass of the downs country."
"In parts it is one of the most productive grasses in Australia, and (unlike other kangaroo grasses) it possesses the advantage of being a

41744 to 41762—Continued.

prolific seeder. It is nutritious and perennial and produces a large amount of bottom fodder. It seeds in November and December, is peculiar to the back country, and is found only on the richest soil, only in a few places, and there over a limited area. It grows in small detached tussocks; the leaves or blades are eaten by stock, but the seed stalks are left standing. All of the colonies except Tasmania." (*Maiden, Useful Native Plants of Australia, p. 74, under Anthistiria avenacea.*)

41749. ISCHAEMUM AUSTRALE VILLOSUM (R. Br.) Hack.

"Grows 5 feet tall, leafy to top; good seed habit; found on swampy land."

41750. HOMALOCENCHRUS HEXANDRUS (Swartz) Kuntze. Rice-grass.
(*Leersia hexandra* Swartz.)

"Grows 3 to 3½ feet tall, very leafy; liked by cattle; found on swampy land; poor seed habit."

41751. ALLOTEROPSIS SEMIALATA (R. Br.) Hitchc. Cockatoo grass.
(*Panicum semialatum* R. Br.)

"Cockatoo grass; excellent pasturage; 2 to 3 feet tall, leafy at base; good seed habit. *Lo-thi* of Batavia River natives."

41752. DANTHONIA PALLIDA R. Br. Silver grass.

"White-topped grass; good pasturage; 2 feet tall."

41753. PANICUM FOLIOSUM R. Br.

"Handsome broad-leaved grass found usually on broken land; of straggling habit, 2½ feet tall; leafy; fair seed habit."

41754. POLLINIA FULVA (R. Br.) Benth. Sugar grass.
(*Pollinia cumingii* Nees.)

"*Brown-top*. Considered by stock owners to equal the Mitchell grass as a drought resister; on account of its sweetness is often called sugar grass; 3 feet tall; leafy, fine stems; good seed habit."

41755. HOLCUS FULVUS R. Br.

(*Andropogon serratus* Thunb.)

"Excellent fodder; 5 feet tall."

41756. HOLCUS PLUMOSUS R. Br.

(*Andropogon australis* Spreng.)

"Grass not liked by sheep farmers, but for cattle run it is a very good grass; 2½ feet tall; leafy fine stems; shatters seeds freely."

41757. THEMEDA FORSKALII Hack. Kangaroo grass.
(*Anthistiria vulgaris* Hack.)

"Common form of kangaroo grass. There are several forms of this species, but all are equally good fodder grasses; 3 feet tall; fine stems; medium leafy; fair seed habit."

41758. ARISTIDA CALYCINA R. Br.

"Good only when young; 2½ feet tall; fine stems."

41759. CHLORIS PARAGUAIENSIS Steud.

"An excellent fodder; one of the best grasses for pasturage and hay; 3 feet tall, about like Rhodes grass. Less common than *Chloris virgata*."

41760. CHLORIS VENTRICOSA R. Br.

"*Blue star* grass. Good pasturage; probably the long-awned form of Bentham, in *Flora Australiensis*; 2 feet tall; very fine stems."

41744 to 41762—Continued.

41761. *CHLORIS VENTRICOSA TENUIS* Benth.

"A good pasture plant, also used for hay; 3 feet tall, fine stems, medium leafy; poor seed habit."

41762. *ANDROPOGON ISCHAEMUM* L.

"Produces a large quantity of coarse feed; 3 to 4 feet tall, leafy; fair seed habit."

41763 to 41769.

From Salt Lake City, Utah. Presented by Mr. Ben Johnson, Utah Rare Plant Company. Collected in the Great Basin region. Received January 20, 1916.

41763. *ARCTOMECON HUMILE* Coville. Papaveraceæ. **Poppy.**

A small but handsome poppy, with somewhat hairy, long, wedge-shaped leaves and clusters of large white flowers.

41764. *BERBERIS FREMONTII* Torr. Berberidaceæ. **Barberry.**

A shrub 10 to 20 feet high with rigid, thick leaves, two or three pairs of leaflets, the lowermost spiny, racemes of yellow flowers, and dark-blue berries about the size of currants.

See S. P. I. Nos. 12242 and 28713 for previous introductions.

41765. *BERBERIS REPENS* Lindl. Berberidaceæ. **Barberry.**

A low shrub less than a foot high with bright-green leaves composed of three to seven leaflets and few terminal racemes of yellow flowers which produce attractive clusters of dark-blue berries.

41766. *DELPHINIUM SCAPOSUM* Greene. Ranunculaceæ. **Larkspur.**

A handsome larkspur with leafless flowering stems, rather thick, 3-parted, radical leaves, and terminal racemes of beautiful deep-blue flowers.

41767. *ECHINOCACTUS LECONTEI* Engelm. Cactaceæ. **Cactus.**

Large, ovate cylindrical cactus, often 5 feet high and 2 feet in diameter, with spines up to 2½ inches long, rather fleshy yellow flowers, and yellow fruits 2 to 2½ inches long.

41768. *GERANIUM FREMONTII* Torr. Geraniaceæ. **Crane's-bill.**

Diffuse plant 2 feet high with 3 to 7 parted, pubescent leaves, and clusters of light-purple flowers an inch or more across.

41769. *HEDYSARUM PABULARE* A. Nelson. Fabaceæ.

Perennial herb, with slender, drooping stems, compound leaves, and long racemes of attractive lilac or pale purplish flowers.

41770. *VICIA FABA* L. Fabaceæ. **Broad bean.**

From New Haven, Conn. Presented by Mr. Junzo Kishi. Received January 26, 1916.

"Japanese *sora mame* (sora beans)." (*Kishi.*)

41771 to 41775.

From Salt Lake City, Utah. Presented by Mr. Ben Johnson, Utah Rare Plant Company. Collected in the Great Basin region. Received January 20, 1916.

41771 to 41775—Continued.

41771. *PAROSELA JOHNSONI* (S. Wats.) Vail. Fabaceæ.

(*Dalea johnsoni* S. Wats.)

Diffusely branched shrub with smooth, gray bark, leaves 1 to 2 feet long, composed of 5 to 11 leaflets and loose racemes of deep-purple flowers terminating the leafy branchlets.

41772. *PENTSTEMON PALMERI* A. Gray. Scrophulariaceæ. **Beard-tongue.**

A very attractive species 1½ feet high, with narrow strap-shaped leaves and panicles of pale-purple flowers.

41773. *PENTSTEMON UTAHENSIS* Eastw. Scrophulariaceæ. **Beard-tongue.**

A beautiful and showy plant 1 to 2 feet high, with glaucous foliage and velvety carmine flowers.

41774. *SALAZARIA MEXICANA* Torr. Menthaceæ.

A shrubby plant 2 to 3 feet high, with soft hairy branches crowned with short racemes of purplish flowers. Leaves small, oblong.

41775. *YUCCA ANGUSTISSIMA* Engelm. Liliaceæ.

A very narrow-leaved species. Stemless; leaves three-fourths to 2 inches wide, white bordered; inflorescence 3 to 5 feet high; flowers bell shaped, pure white.

41776 to 41778. JUGLANS REGIA L. Juglandaceæ. Walnut.

From Sibpur, near Calcutta, India. Presented by Mr. C. C. Calder, curator, Royal Botanic Gardens, at the request of Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur, India. Received January 26, 1916.

41776. "No. 1. Common walnut."

41777. "No. 2. The large-leaved, large-seeded walnut. The tree of this kind is more spreading than the common kind and not so lofty. It attains a very large size (bulk)." (*Calder.*)

41778. "No. 3. The endocarp of this has three valves instead of two, as in the common species. The tree, though lofty, appears to be of more slender habit than either of the others." (*Calder.*)

41779 to 41793. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received January 22, 1916. Descriptive notes by Mr. T. Kiyono, Semmes, Ala.

41779. "No. 13. *Chijo*. Astringent. Kagoshima Province."

41780. "No. 14. *Moriya*. Astringent. Kagoshima Province."

41781. "No. 15. *Niyorodo*. Sweet. Fukushima Province."

41782. "No. 16. *Oranda-gosho*. Sweet. Fukushima Province."

41783. "No. 17. *Manzu-gaki*. Sweet. Fukushima Province."

41784. "No. 18. *Shyjozaemon*. Astringent. Fukushima Province."

41785. "No. 19. *Yotsumimi*. Astringent. Tomiyama Province."

41786. "No. 20. *Mompei*. Astringent. Tomiyama Province."

41787. "No. 21. *Hana-gosho*. Sweet. Tottori Province."

41788. "No. 22. *Yoroi-odoshi*. Astringent. Miyagi Province."

41789. "No. 23. *Gobangaki*. Astringent. Kanagawa Province."

41779 to 41793—Continued.

41790. "No. 24. *Sakata*. Sweet. Niligata Province."
 41791. "No. 25. *Jisha*. Astringent. Niligata Province."
 41792. "No. 26. *Handai*. Astringent. Gunba Province."
 41793. "No. 27. *Rendaiji-hiragaki*. Sweet. Miye Province."

41794 to 41799. CHAYOTA EDULIS Jacq. Cucurbitaceæ. *Chayote*.
 (*Sechium edule* Swartz.)

From Kingston, Jamaica. Presented by Mr. W. Harris, Department of Agriculture. Received January 24, 1916. Notes by Mr. Harris.

41794. "Hairy, or spring, green chayote or chocho."
 41795. "Large green chayote or chocho."
 41796. "Round white chayote or chocho."
 41797. "Small green chayote or chocho."
 41798. "Long white chayote or chocho."
 41799. "Ordinary green chayote or chocho."

41800 and 41801. CHAYOTA EDULIS Jacq. Cucurbitaceæ. *Chayote*.
 (*Sechium edule* Swartz.)

From Adjuntas, Porto Rico. Presented by Mr. Bartholomé Barceló. Received January 23, 1916. Quoted notes by Mr. Barceló.

"These varieties produce well in this country on the borders of ravines, in cool places, as in pits, and they are best produced in cool places which have a stream of water. In such places they yield abundantly. The white variety is more appreciated than the green. Here they are used for salads, and the country people also feed them to pigs."

41800. "Large white." 41801. "Large green."

41802. GARCINIA MESTONI F. M. Bailey. Clusiaceæ. *Meston's garcinia*.

From Cairns, Queensland, Australia. Cuttings presented by Mr. G. Williams, Department of Agriculture and Stock. Received January 31, 1916.

An erect, slender, graceful tree 20 feet or more high, with drooping branches, opposite, narrowly lanceolate, glossy, dark-green leaves, white flowers, and globular fruits possessing a sharp, pleasant, acid flavor. (Adapted from *Bailey, A Synopsis of the Queensland Flora, third supplement, 1890.*)

41803 and 41804.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received January 31, 1916.

41803. *MESPILUS GERMANICA* L. Malaceæ. Medlar.
 (*Pyrus germanica* Hook. f.)

"Growing wild here in the mountains. The fruits when soft [mellow] give perhaps the best juice which exists. It has an exquisite aroma, somewhat like vanilla." (*Proschowsky.*)

"A low deciduous tree of crooked, picturesque habit, usually under 20 feet high. Leaves almost without stalks, 2 to 5 inches long. Flowers solitary at the end of short leafy branches; about 1 inch across, white

41803 and 41804—Continued.

or slightly pink, produced in May or early June. Fruit apple shaped, brown. This wild medlar is a native of Europe and Asia Minor and is found wild in the woods of several counties in the south of England, but it is not believed to be truly indigenous. It has long been cultivated for its fruit in English orchards, and several named varieties exist. Although much esteemed by those who have acquired a taste for them, medlars are not a popular fruit. They should be left on the trees until the end of October or later, then stored in a fruit room until they are 'bletted,' a term given to indicate a state of incipient decay. A jelly made from the fruits meets a more general taste. It is very hardy, and not particular as to soil." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 81.*)

41804. *SORBUS DOMESTICA* L. Malaceæ.
(*Pyrus sorbus* Gaertn.)

Service tree.

"Wild here; very good when soft." (*Proschowsky.*)

See S. P. I. No. 41703 for previous introduction and description.

41805 to 41807. ANNONA CHERIMOLA Mill. Annonaceæ.

Cherimoya.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 28, 1916.

41805. "No. 1. Very good variety."

41806. "No. 2. Very good variety."

41807. "No. 3. In my opinion, this is the best variety we have in Costa Rica." (*Wercklé.*)

41808. MACADAMIA TERNIFOLIA F. Muell. Protaceæ.

Queensland nut.

From Honolulu, Hawaii. Presented by Mr. C. S. Judd, Board of Commissioners of Agriculture and Forestry. Received January 31, 1916.

"These nuts grew in Honolulu on trees introduced from either Queensland or New South Wales, Australia, about 30 years ago. The fruit on these trees ripens almost throughout the year. Younger trees of this species in Honolulu begin to bear at eight years from planting, and they are readily started from the nuts. The leaf of the tree, which seldom attains a height of more than 30 feet in these islands, is a dark green, very shiny, and resembles the leaf of the eastern chestnut oak. There are only a few bearing trees in Honolulu. The nuts from these are roasted in the same manner as salted almonds and are used on the table for the same purpose. They are crisp and tender and in my opinion far excel salted almonds." (*Judd.*)

41809. MIMUSOPS ELENGI L. Sapotaceæ.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received January 31, 1916.

"The fruit of this species is edible and commonly eaten by young boys, but is sweet and insipid. Being a forest tree the seed should be sown in nurseries and young plants planted in a definite place under cover of some shady shrub while young. They must not be planted directly in open ground." (*Regnard.*)

41810. RANDIA ACULEATA L. Rubiaceæ. Inkberry.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 31, 1916.

"A beautiful, very small-leaved shrub; a very fine hedge plant for cold highlands." (Wercklé.)

"A shrub or small tree, widely distributed in the West Indies. It yields a blue dye, and the wood is used for minor purposes when toughness is required." (Cook and Collins, *Economic Plants of Porto Rico, Contributions from the National Herbarium, vol. 8, p. 228.*)

41811. LINUM USITATISSIMUM L. Linaceæ. Flax.

From Lawton, Queensland, Australia. Presented by Mr. Reginald W. Peters, director, Experiment Grounds, at the request of Mr. Leslie Gordon Corrie, Brisbane, Australia. Received February 2, 1916.

"This seed is the result of several years' hybridization and selection in England for length of unbranched fiber and absence of tillers at base." (Peters.)

41812 to 41815.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received February 2, 1916.

41812. CORYLUS FEROX Wall. Betulaceæ. Hazel.

"This is a small tree, native of Nepal and Sikkim, found growing at altitudes ranging from 8,000 to 10,000 feet. The fruit, which has an edible kernel, is covered with a prickly cup. The wood is pinkish white in color, moderately hard and even grained." (Watt, *Dictionary of the Economic Products of India, vol. 2, p. 575.*)

See S. P. I. No. 39106 for previous introduction.

41813. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ. Laurel cherry.

A laurel cherry from the eastern Himalayas and Assam, at elevations of 4,000 to 7,000 feet, with thin dark bark and reddish brown wood.

See S. P. I. No. 39121 for previous introduction.

41814. MICHELIA CATHCARTII Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood is a dark olive brown and moderately hard. The wood of this species is used for planking and would do well for tea boxes." (Watt, *Dictionary of the Economic Products of India, vol. 5, p. 241.*)

41815. STYRAX HOOKERI C. B. Clarke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (Watt, *Dictionary of the Economic Products of India, vol. 6, pt. 3, p. 385.*)

See S. P. I. No. 39137 for previous introduction.

41816. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

From Baixa Verde, Rio Grande do Norte, Brazil. Presented by Mr. E. C. Green, superintendent, Serviço do Algodão, Ministerio da Agricultura, Rio de Janeiro.

"Legume, growing over a cactus tree 25 feet high and aiding in its destruction; on very dry sandy soil." (Green.)

41817 to 41870. *PRUNUS SERRULATA* Lindl. Amygdalaceæ.

Flowering cherry.

"A collection of scions of 54 named varieties of Japanese flowering cherries, presented by the municipality of Tokyo to the American Government. These scions were cut from authentic trees growing in the famous Arakawa flowering-cherry collection maintained by the Tokyo municipality, which collection, in the opinion of such a noted authority on the subject as Mr. S. Funatsu, contains some of the loveliest forms of these remarkable flowering trees.

"This collection duplicates one which was secured by Mr. E. H. Wilson, of the Arnold Arboretum, in January, 1915 (see S. P. I. Nos. 39743 to 39798 and 39820 to 39826), many of which we were not successful in propagating.

"The arrangements to secure these scions were made by Mr. Frank N. Meyer, agricultural explorer of this office, during his stay in Japan in September, 1915; and Mr. H. Suzuki, manager of the Yokohama Nursery Company, very kindly superintended the collection and shipment of them to this country. Thanks are due to Mr. Post Wheeler, Chargé d'Affaires of the American Embassy in Tokyo, for conducting the arrangements with the Tokyo authorities.

"Mr. Wilson collected flowering botanical specimens from the Arakawa collection, and these are now in the herbarium of the Arnold Arboretum and will be of assistance in checking up the varietal nomenclature, which is much complicated. Several recent works have appeared dealing with the systematic classification of these Japanese flowering or mountain cherries, most important of which are: Sargent, *Plantae Wilsonianae* (*Prunus* by E. Koehne), volume 1, Part II, April 30, 1912; G. Koidzumi, *Conspectus Rosacearum Japonicarum*, Journal of the College of Science, Tokyo, 1913; M. Miyoshi, *Japanische Bergkirschen, ihre Wildformen und Kulturassen*, Journal of the College of Science, Tokyo, March 20, 1916; E. H. Wilson, *The Cherries of Japan*, Arnold Arboretum, Publication No. 7, March 30, 1916.

"It is evident that radical changes in the botany of the Japanese cherries are coming. Probably some of the varieties included in this collection are classed by Miyoshi as belonging to his species *Prunus mutabilis*, but as yet the nomenclature of the varieties is so confused as to make it inadvisable here to attempt to classify them from their names alone.

"The hardness of these flowering cherries in many parts of the United States, the fact that they flower at the most bewitching time of the year—April and May—and are peculiarly attractive for small gardens and yards, and that most of them are introduced for the first time into this country make the presentation of this valuable collection by the mayor of Tokyo and his associates a matter of very unusual interest to Americans." (*Fairchild*.)

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| 41817. " <i>Fukurokuju</i> ." | 41828. " <i>Minakani</i> ." |
| 41818. " <i>Kirin</i> ." | 41829. " <i>Kokonoye</i> ." |
| 41819. " <i>Giozanoma-nioi</i> ." | 41830. " <i>Murasakizakura</i> ." |
| 41820. " <i>Sumizome</i> ." | 41831. " <i>Senrikō</i> ." |
| 41821. " <i>Meigetsu</i> ." | 41832. " <i>Ranzan</i> ." |
| 41822. " <i>Kwanzan</i> ." | 41833. " <i>Hatazakura</i> ." |
| 41823. " <i>Shujaku</i> ." | 41834. " <i>Chōshu-hizakura</i> ." |
| 41824. " <i>Taki-nioi</i> ." | 41835. " <i>Koshio-yama</i> ." |
| 41825. " <i>Shōgetsu</i> ." | 41836. " <i>Narazakura</i> ." |
| 41826. " <i>Washi-no-o</i> [<i>Washino</i> - | 41837. " <i>Shirotae</i> ." |
| 41827. " <i>Kan-zakura</i> ." [<i>wo</i>]." | 41838. " <i>Ichiyō</i> ." |

41817 to 41870—Continued.

41839. "Ōjōchin."	41855. "Ōshima-zakura."
41840. "Yae-akebono."	41856. "Hitoye-Fudanzakura."
41841. "Gyoikō."	41857. "Jo-gioi-kō."
41842. "Kongōsan."	41858. "Beni-tora-no-o."
41843. "Ariyake."	41859. "Koke-shimidsu."
41844. "Ohsibyama."	41860. "Asagi-zakura."
41845. "Bendono or Benden."	41861. "Botanzakura."
41846. "Yedozakura."	41862. "Surugadai-nioi."
41847. "Hōrinji."	41863. "Somei-yoshino."
41848. "Shirofugen."	41864. "Fugenzo."
41849. "Goshozakura."	41865. "Mikurumageshi [kaishi]."
41850. "Amanogawa."	41866. "Jō-nioi."
41851. "Gijozakura."	41867. "Taizan-fukun."
41852. "Amayadori."	41868. "Shirayuki."
41853. "Hakkasan [Hakukazan]."	41869. "Higurashi."
41854. "Ruiran."	41870. "Unju-zakura."

41871. TRACHYCARPUS TAKIL Beccari. Phœnicaceæ. Palm.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received February 1, 1916.

"A palm from Mount Takil, Himalayas, closely related to *Trachycarpus martiana*." (Hartless.)

41872. RICINUS COMMUNIS L. Euphorbiaceæ. Castor bean.

From Tegucigalpa, Honduras. Presented by Mr. Edward W. Perry. Received February 4, 1916.

Seed small, gray, mottled with chocolate brown.

41873. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Chiengrai, Siam. Presented by Dr. W. T. Lyon, Overbrook Hospital and Dispensary. Received February 8, 1916.

"Seeds of a small fruit. It is very delicious but rather full of seeds. It has a close cousin in the oxheart, which is not grown here." (Lyon.)

41874 to 41877.

From Shanghai, China. Presented by Mrs. A. Anderson, through Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 31, 1916.

41874. ACONITUM sp. Ranunculaceæ. Aconite.

A hardy ornamental perennial herb of value in masses or borders for its showy flowers and attractive foliage.

41875. PORANA RACEMOSA Roxb. Convolvulaceæ. Snow creeper.

A large twining annual herb, forming dense masses of white flowers, which, from its resemblance to snow in the jungle, is called "snow creeper" in India, where it is native. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2765.*)

41874 to 41877—Continued.

41876. *PAEDERIA FOETIDA* L. Rubiaceæ.

A glabrous pink-flowered vine, the leaves of which when crushed give off a strong odor of hydrogen bisulphid. It has become a troublesome weed among the bamboos at the Brooksville (Fla.) Field Station.

41877. *VITIS DAVIDII* Foex. Vitaceæ.

Grape.

"A luxuriant, deciduous climber, the young shoots not downy, but covered with spiny, gland-tipped, somewhat hooked bristles, which give them a very rough appearance. Leaves heart shaped, slender pointed, toothed; 4 to 10 inches long, shining dark green and smooth above; bluish or greyish green beneath. Fruit said to be about two-thirds inch in diameter, black, and of a pleasant flavor. Native of central China; introduced by Wilson for Messrs. Veitch in 1900, but if, as I believe, the vine called *Spinovitis davidii* is the same, it has been cultivated in France and in England since about 1885." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 667, under V. armata.*)

41878 and 41879.

From Chungking, China. Presented by Mr. E. Widler. Received February 5, 1916.

41878. *BOEHMERIA NIVEA* (L.) Gaud. Urticaceæ.

Ramie.

"*Ch'u ma*. This plant has a stem 5 to 6 feet high and 1 inch in circumference; the long-stalked leaves are ovate in shape with serrate margin; the under surface is covered with a downy substance and has a silvery appearance. The plant matures in about four months and bears in August. China grass is obtained from the stems of *Boehmeria nivea* and ramie fiber, or rhea, from the stems of a variety of this plant. Both plants, which belong to the stinging-nettle family, have somewhat the habit of the gigantic stinging nettle, but *B. nivea* flourishes in temperate countries and is characterized by the white undersurface of its leaves, while, on the other hand, *B. nivea* var. *tenacissima* requires a more or less tropical climate for its best development and has the under surface of its leaves green. The term *ramie*, however, is applied in commerce to the product of both plants. The local market value for a sample of fiber is 300 cash per cattie. It is used principally for rope, cloth, and famous grass cloth." (*Widler.*)

"I think that according to the best usage at the present time the plant *Boehmeria nivea* may be called *ramie*. The bark, with the fiber stripped from the ramie plant and dried, without much cleaning, is designated *ramie ribbon*; the cleaned fiber, as it is commonly prepared in China by scraping the bark, is called *China grass*; and the fiber prepared from this grass by degumming and combing is called *ramie flasse*. The long fiber combed out is known as *ramie tops*, and the short tangled fiber combed out in preparing the tops is *ramie noils*." (*L. H. Dewey.*)

41879. *CROTON TIGLIUM* L. Euphorbiaceæ.

Croton-oil plant.

"*Pa tou*. The first Chinese character composing this name refers to a country which was included within the boundaries of the present eastern Szechwan. It is a few days' journey from Chungking, on a small river. The second character was used because of the resemblance to the soy bean. This plant grows to a height of about 30 feet, 3 feet in circumference. It bears red and white flowers. It takes from five to eight years to grow, and it does best in a temperate climate. In spring

41878 and 41879—Continued.

it bears fruits, which grow to the size of large sparrow's eggs. The seeds are drab outside and whitish inside. They sell in the market for 100 to 150 cash per cattie. This is one of the five principal poisons mentioned by Shen Nung, so the plant is probably indigenous to China. The Arabic name is *ba to*, which was probably derived from the Chinese name. One of the Persian names means *Ricinus* from China, so that it is quite possible that the original habitat of this plant was here. The *pa tou* is oblong, obscurely triangular, about three-quarters of an inch in length, 3-celled, and of a yellowish brown color. Each cell contains an oval, flattened, or imperfectly quadrangular seed, resembling a coffee bean. The dark-brown testa incloses the yellowish albumen, within which is the large dicotyledonous embryo, often much shrunken. The testa is very acrid. The fresh fruits, the oil, the testa, and the root of the tree are all used in medicine. The drug is recommended for a very large number of difficulties, but, generally speaking, the Chinese doctors are afraid to employ it on account of the exaggerated notions of its poisonous properties, which were handed down from very ancient times." (*Widler.*)

41880. BROSIMUM ALICASTRUM Swartz. Moraceæ. Bread-nut tree.

From Merida, Yucatan, Mexico. Presented by Dr. L. Lavedan, New Orleans, La., through Mr. O. F. Cook, of the Bureau of Plant Industry. Received February 11, 1916.

"The leaves are used extensively for forage purposes in Yucatan, as already reported by Mr. G. N. Collins of this office a few years ago. Dr. Lavedan also considers that the seeds, which are produced in great abundance, might be utilized as a source of industrial starch or perhaps distilled into alcohol. I have assured him that we would be interested to test the possibilities of growing this tree, at least in southern Florida." (*Cook.*)

41881. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Cairns, Queensland, Australia. Cuttings presented by Mr. G. Williams, Department of Agriculture and Stock. Received January 31, 1916. Introduced for breeding experiments.

41882. PHASEOLUS CARACALLA L. Fabaceæ. Bertoni bean.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 2, 1916.

S. P. I. No. 37010, received as *Phaseolus bertonii*, a name given by Dr. Franceschi to a Paraguayan bean, is apparently identical with this species.

41883 to 41900.

From Kirki, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper.

41883. ALYSICARPUS LONGIFOLIUS (Rottl.) Wight and Arn. Fabaceæ.

"An annual, erect legume growing 3 to 5 feet high; leaves lanceolate; stems slender, rather woody; native to India. In tests in Florida, Mississippi, and elsewhere this plant succeeds well but requires a long summer season to mature. Owing to its sparse leafiness and tough stems, as well as lack of great vigor, it is not promising."

See S. P. I. No. 32432 for previous introduction.

41883 to 41900—Continued.

41884. *ALYSICARPUS RUGOSUS* (Willd.) DC. Fabaceæ.

"An annual erect legume, native to southern Asia and Africa and introduced into the West Indies. The species is variable, but several introductions tested in Florida and Mississippi do not give warrant that the plant is worthy of cultivation. The stems are rather tough, spreading or erect, 3 to 4 feet high in some varieties."

For previous introductions, see S. P. I. Nos. 32312, 33444, and 34933.

41885 to 41900. Poaceæ.

Grass.

41885. *ANDROPOGON ANNULATUS* Forsk.

Palwan.

"An abundant, native perennial grass in India, much used for fodder, both the yield and quality being good. It belongs to a group of species which are closely interrelated, but all furnish fairly good forage. The species are well adapted to Gulf coast conditions and are at present the subject of careful investigation, as the best of them will probably be worthy of cultivation. *Andropogon annulatus* is a widespread species over Africa and southern Asia. The vernacular name commonly used in the Punjab is *palwan*. Closely related species are *Andropogon pertusus* (the sour-grass of Barbados), *A. caricosus*, and *A. bifoveolatus*."

For previous introductions, see S. P. I. Nos. 32441, 33595, 33596, 34934, and 39716.

41886. *ANDROPOGON CARICOSUS* L.

"A species much like the preceding and of similar value. Introduced in Antigua, where it is valued as a hay grass."

For previous introduction, see S. P. I. No. 26581.

41887. *ANDROPOGON EMERSUS* FOURN.

An erect perennial grass, found in dry, rocky places in Mexico and the southwestern United States, with feathery fan-shaped panicles of numerous slender racemes 8 cm. (3 inches) long. The outer glumes of the sessile spikelets are marked with pinholelike pits above the middle. (Adapted from A. S. Hitchcock, in *Contributions from the U. S. National Herbarium*, vol. 17, pp. 202 and 207, under *A. perforatus*.)

41888. *ANDROPOGON LAWSONI* Hook. f.

"A perennial species with creeping rootstocks, native to Mysore, India."

41889. *ANDROPOGON ODORATUS* Lisboa.

"A species with odorous herbage and stems 3 to 4 feet high, thick as a goose quill. Native to the Dekkan, India."

41890. *ANDROPOGON PUMILUS* Roxb.

"A slender species with stem 6 to 18 inches high, native in the drier parts of India."

41891. *ANDROPOGON PURPUREO-SERICEUS* Hochst.

"An annual species with stems 3 to 4 feet high. Native to Abyssinia and India."

41892. *APLUDE ARISTATA* Torner.

"A leafy perennial grass, the tall, stiff stems branched above. Readily eaten by cattle when young, according to Duthie, but becoming rather woody."

41883 to 41900—Continued.

41893. *ARUNDINELLA AGROSTOIDES* Trin.

"An annual grass with stems 6 to 18 inches high, the leaves broad and flat. Native to India and the Philippines."

41894. *CENCHRUS BIFLOBUS* Roxb.

"A perennial grass, native to southern Asia and Africa. It is abundant in northern India, where it is considered one of the most nutritious grasses and excellent both for grazing and for hay. In Florida and along the Gulf coast it succeeds well and tends to spread naturally, but the growth is sufficient only for grazing, as on sandy soil the grass grows only 6 to 12 inches high."

For previous introductions, see S. P. I. Nos. 33601 to 33603.

41895. *CHIONACHNE BARBATA* (Roxb.) R. Br.

"A tall, coarse, branching grass, native to the hot and damp parts of India. When mature the grass is very coarse, but when young it is said to be used as fodder."

41896. *CHLORIS GAYANA* Kunth.**Rhodes grass.**

"A perennial grass, native to South Africa, first cultivated by Cecil Rhodes in South Africa about 1895. The grass is fine stemmed, very leafy, and grows to an average height of about 3 feet. The flowering head consists of 10 to 15 long, spreading spikes in a cluster, and seed is produced in abundance. The grass also spreads by means of running branches 2 to 6 feet long, which root and produce a plant at every node. Notwithstanding this method of reproduction, Rhodes grass has at no place in the United States become troublesome as a weed. Rhodes grass is completely destroyed when the temperature in winter falls to about 18° F., and as a perennial grass is therefore adapted only to southern Texas, Florida, and a narrow strip along the Gulf coast. Farther north it must be treated as an annual. At Washington, D. C., it will produce but a single crop of hay a season. Farther south two cuttings may be obtained under favorable conditions. On fertile land in central and southern Florida, however, as many as six or seven cuttings are secured in a single season. A good stand of Rhodes grass will yield from a ton and a quarter to a ton and a half of hay to a cutting. This hay is of very fine quality and is eagerly eaten by horses and cows. In Florida it is already being grown on a commercial scale."

41897. *CHLORIS PARAGUAIENSIS* Steud.

"A perennial grass native to India, Burma, and Ceylon, but now widespread in the Tropics. According to Duthie, it is considered in northern India 'a good fodder grass up to the time of flowering, after which time cattle will not touch it.' In Australia it is considered one of the best grasses for pasturage and hay."

41898. *CHLORIS VIRGATA* Swartz.

"An annual grass forming stools 2 to 3 feet high. Originally described from the West Indies, but apparently the same species occurs in the Tropics of the Old World. It has been tested at many places in the United States, but nowhere has it given sufficient promise to warrant cultivation. Other introductions under this name, presumably the same species, are S. P. I. Nos. 13895, 13901, 15335, 15337, 15354, 15355, and 21312, all from South Africa, where it is regarded as a valuable grass. No. 21700, from Peking, is apparently a different grass."

41883 to 41900—Continued.**41899. CHRYSOPOGON MONTANUS Trin.**

"This perennial grass is a handsome species growing to a height of 3 to 5 feet. In India it has an excellent reputation for fodder, and, according to Duthie, the seeds are collected and used for food by the natives. This grass has succeeded well in Florida and at Biloxi, Miss., and in this region possesses some promise as a pasture grass."

For previous introductions, see S. P. I. Nos. 33445 and 34935.

41900. COIX LACRYMA-JOBI L.**Job's-tears.**

"A coarse, annual grass with unusually numerous stems and leaves one-half to 1½ inches broad. The varieties are numerous, and few of them will mature except in the South. The fruit is peculiar, the female spikelet being inclosed in a capsule composed of a thickened sheath. In most varieties this is hard and porcelainlike, varying in form from cylindrical to globose. These capsules are used as beads for rosaries. In the variety *ma-yuen* the capsules are soft, and in Burma, especially, are used for human food. The largest varieties grow 4 to 8 feet high and furnish abundant forage of fair quality. None has yet found a place in cultivation in the United States except to a slight extent as an ornamental. This grass requires a long warm season to mature."

41901. HEDYSARUM BOREALE Nutt. Fabaceæ.

From Saskatoon, Saskatchewan, Canada. Presented by Prof. T. N. Willing, University of Saskatchewan. Received March 16, 1916.

"A perennial leguminous herb with compound leaves and showy racemes of many deflexed magenta to white flowers, native from Newfoundland and northern New England to Alaska; suggested as possibly valuable for breeding with *sulla* (*H. coronarium*), the southern species grown so extensively in Algeria, Tunis, and Spain for fodder." (*Fairchild.*)

41902 to 41916.

From Kirkee, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper except where otherwise indicated.

41902. DINEBRA ARABICA Jacq. Poaceæ.**Grass.**

"An annual grass with stems branching from the base, erect or ascending, 1 to 3 feet long. A handsome grass, but not abundant in India and therefore unimportant. Native to southern Asia and northern Africa."

41903. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ.**Teff.***(Poa abyssinica Jacq.)*

"*Teff*, cultivated as a food grain in Abyssinia, has in recent years proved very valuable for hay production in South Africa. In view of these results it is at present being tested again in various parts of the United States. Numerous previous trials have indicated that teff can not compete with heavier yielding annuals, such as millet and Sudan grass, as a hay crop, but in some parts of the United States it may yet prove to be valuable."

For previous introduction, see S. P. I. No. 40535.

41902 to 41916—Continued.

41904. ERAGROSTIS ELEGANS Nees. Poaceæ. Grass.

"An annual grass with stems 1 to 3 feet high bearing long, flat leaves. 'It is not considered a first-class fodder grass, but cattle eat it readily when other better kinds have failed.' (Duthie.) Indigenous in India, Burma, Ceylon, Mesopotamia, and Africa."

41905. EUCHLAENA MEXICANA Schrad. Poaceæ. Teosinte.

"A coarse annual grass native to Mexico, where it was cultivated in prehistoric times. It resembles corn rather closely, and some botanists consider that corn has been derived from teosinte in the course of long cultivation. The two plants may be hybridized without difficulty.

"Teosinte grows from 8 to 12 feet high and commonly produces many stems from the same root. No variety of it has ever matured north of central Mississippi, but it is commonly grown as far north as New Jersey and Minnesota. The first frosts of autumn promptly turn the leaves brown. For the best results teosinte requires fertile soil and a long season of moist, warm weather.

"Formerly teosinte was grown extensively in the Southern States. On soil of moderate fertility it does not yield as well as the sorghums, and in Florida and along the Gulf coast it can not compete with Japanese sugar cane for forage except on very rich soils.

"Teosinte is best planted in hills 4 to 5 feet apart each way, which requires about 3 pounds of seed per acre; or it may be planted in rows 4 to 5 feet apart, using about 5 pounds of seed per acre. Its cultivation should be essentially the same as for corn.

"The crop may be used for silage, for dry fodder, or for green food. For the latter two purposes it may be cut several times during the season as it promptly tillers from the stubble. For silage, it is better to allow it to become nearly mature.

"Under the most favorable conditions teosinte gives extraordinary yields. Thus, the Louisiana Agricultural Experiment Station secured nearly 50 tons of green fodder per acre; the South Carolina Agricultural Experiment Station reports 43,923 pounds, green weight, per acre from six cuttings and the Georgia Experiment Station 38,000 pounds per acre.

"In spite of these large yields under favorable conditions, the culture of teosinte has diminished, so that it is now little grown. Under ordinary conditions, at least, corn, sorghum, and Japanese sugar cane are preferred."

41906. HOLCUS HALEPENSIS L. Poaceæ. Johnson grass.
(*Sorghum halepense* Pers.)

"Probably var. *miliiformis*, which has smaller, usually unarmed spikelets, the only form common in India."

41907. HOLCUS SORGHUM SUDANENSIS (Piper) Hitchc. Poaceæ. Sudan grass.

41908. INDIGOFERA GLANDULOSA Wendl. Fabaceæ. Befri.

"Befri succeeds well as a summer annual from Washington, D. C., southward, but the plant grows only 6 to 8 inches high. For forage, at least, it holds no promise under American conditions."

For previous introductions, see S. P. I. Nos. 22732, 33446, 34936, and especially 23535.

41902 to 41916—Continued.

41909. INDIGOFERA TRIFOLIATA Torner. Fabaceæ. Indigo.

A perennial having copiously branched trailing or suberect stems 1 to 2 feet long, soon glabrescent. Found in the Himalayas, ascending to 4,000 feet in Kumaon, to Ceylon and Tenasserim. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 96, under *I. trifoliata* Linn.)

41910. ISCHAEMUM ARISTATUM L. Poaceæ. Grass.

"A perennial grass growing 1 to 4 feet high. Indigenous in China, the Malay Peninsula, India, and Ceylon."

41911. ISCHAEMUM PILOSUM (Klein) Hack. Poaceæ. Grass.

"A perennial grass with creeping rootstocks, native to India, used for fodder, being cut mainly for buffaloes. A previous introduction, S. P. I. No. 32438, proved to be unviable seed."

41912. ISCHAEMUM SULCATUM Hack. Poaceæ. Grass.

"A grass 12 to 18 inches high, with numerous branched stems. Native to central India."

41913. ISEILEMA ANTHEPHOROIDES Hack. Poaceæ. Grass.

"Native to southern Dekkan and closely related to *Iseilema laxum*. Presumably its fodder value is also equal."

41914. ISEILEMA WIGHTII (Nees) Anderss. Poaceæ. Grass.

"A grass native to India, occurring in low and swampy land. Stems 1 to 3 feet high. Duthie considers its fodder value probably equal to that of *Iseilema laxum*, which is highly valued both as natural pasturage and when cut for hay. Hooker says it is perennial, but *I. laxum* is annual."

41915. PENNISETUM CILIARE (L.) Link. Poaceæ. Grass.

(*Pennisetum cenchroides* Rich.)

"One of the most valuable pasture and hay grasses of India. Native to India and Africa and introduced into the American Tropics."

41916. SESBAN ACULEATUM (Schreb.) Poir. Fabaceæ.

"A tall, very rapid growing species, reaching a height in one season of 12 to 20 feet in Florida and Mississippi, the stems woody and 2 to 4 inches in diameter. While this species is employed as a green-manure crop in the Tropics, its woody stems and great growth make it undesirable for agricultural use in America."

For a previous introduction, see S. P. I. No. 21368.

41917. GOSSYPIUM HIRSUTUM L. Malvaceæ. Cotton.

From Mustapha, Algiers, Algeria. Presented by Dr. L. Trabut. Numbered February, 1916.

"A variety of cotton cultivated at Lemnos, grown without irrigation in ordinary soil." (Trabut.)

41918 to 41921.

From Kirki, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper.

41918 to 41921—Continued.

41918. *THELEPOGON ELEGANS* Roth. Poaceæ. Grass.

"A coarse perennial grass with stems 1 to 3 feet high, usually woody at the base. When growing in rice fields it is difficult to distinguish until in flower. Cattle and horses eat the herbage when it is young, and in some parts of the Central Provinces the seeds are used as human food. Native to India and Africa."

41919. *THEMEDA QUADRIVALVIS* (L.) Kuntze. Poaceæ. Grass.

"A coarse, rather tough annual grass growing in tufts 1 to 3 feet high. It is closely related to the kangaroo grass of Australia and Tasmania. Probably the same as S. P. I. Nos. 13434 and 21637."

41920. *TRACHYS MUCRONATA* Pers. Poaceæ. Grass.

"A perennial grass of sandy land near the seashore, native to southern India and Ceylon. The weak sprawling stems root at the nodes."

41921. *TRICHOLAENA ROSEA* Nees. Poaceæ. Natal grass.
(*Panicum teneriffae* R. Br.)

"When a single plant of Natal grass is allowed abundant room it will form a large tuft, sometimes 3 to 4 feet in diameter. The lower branches soon become decumbent, while the central stems are slender, 3 to 4 feet high, and well covered with leaves, which are so nearly erect that few are lost in mowing the hay. The seeds are produced in large clusters of about the size and shape of a panicle of oats. In most cases the seed clusters are bright red or rosy crimson in color, and for that reason the grass has sometimes been called redtop. It is, however, very different from the common northern grass known as redtop. The name *Natal grass*, which indicates the country of which it is a native, is more appropriate and distinctive, and is the one now in most common use. The plants are killed by a single plowing, and by keeping the land cultivated in other crops through the whole of a single season all the seeds in the ground will have germinated and the young plants will be killed by the cultivation, so Natal grass can not become a troublesome weed."

41922. *RUBUS* sp. Rosaceæ. Bramble.

From San Francisco, Cal. Presented by Mr. John McLaren, Superintendent of Parks and Squares. Received January 21, 1916.

Plants of a *Rubus* apparently not in our collections.

41923. *OPHIPOGON JAPONICUS* (L.) Ker. Liliaceæ.

From Baton Rouge, La. Roots presented by Mr. W. R. Dodson, director, Agricultural Experiment Station. Received February 14, 1916.

A low-growing herbaceous plant, with numerous erect, narrow linear root leaves from one-half to 1 foot long and from one-twelfth to one-eighth inch wide, and racemes of small flowers, varying from white through lilac to violet purple. It is much used in Italy and southern France for green turf and for border edges. It needs no clipping and will stand under the shade of trees, making a dark-green lawn covering, standing well in drought. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2355, 1916.*)

41924. ARUNDINARIA PUMILA Mitford. Poaceæ. **Bamboo.**

From San Francisco, Cal. Roots presented by Mr. John McLaren, Superintendent of Parks and Squares. Received February 15, 1916.

"A very pretty and ornamental dwarf bamboo. At first one might be tempted to confound this species with *Arundinaria humilis*, but closer observation leads to the conviction that it is quite a distinct plant. It is less tall, the leaves are darker green, shorter, and not so broad, and do not taper so gradually to a point as those of *Arundinaria humilis*. The tessellation is closer, the teeth of the serrated edges are, if anything, less conspicuous, and the nodes are less well defined and far less downy; but, on the other hand, they have a waxy bloom not to be found in *A. humilis*. The stem is much more slender and more entirely purple except quite at the base.

"The culms are about 15 inches high or rather more, round, and very slender. The leaves are about 5 inches long by a half to three-quarters of an inch in breadth, bright green in color. Altogether a brilliant little plant, quite hardy, and a very effective ornament for some rocky nook, where, as it does not seem much inclined to run at the roots, it may better be kept within bounds than some of its family." (*Mitford, The Bamboo Garden, p. 98.*)

41925. CARAGANA ARBORESCENS Lam. Fabaceæ. **Siberian pea tree.**

From Indian Head, Saskatchewan, Canada. Presented by Mr. Norman M. Ross, Forestry Branch. Received February 11, 1916.

41926 and 41927.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn, through Mr. Daniel F. Mooney, American minister, Asuncion. Received February 12, 1916.

• **41926. CITRUS MEDICA** L. Rutaceæ. **Citron.**
Brazilian citron.

41927. CUCURBITA MAXIMA Duchesne. Cucurbitaceæ. **Squash.**
A type that may prove of value in the Southwest.

41928. PHASEOLUS SEMIERECTUS L. Fabaceæ.

From Chuluota, Fla. Presented by Mr. Lawrence Swanson. Received February 12, 1916.

"*Jauuario*. My introduction from Cuba, where I found it growing along the banks of the River Jaugua and which has proved of more value as a cover crop than many old stand-bys. It has interested everyone who has seen it growing. It is a perennial and with me has grown again after the tips are frosted. The seeds are very scarce. From observation I think the best results will be had after the first year from seed; in its second and third year it seems to master the ground and spreads rapidly." (*Swanson.*)

41929. INDIGOFERA ARGENTEA L. Fabaceæ. **Indigo.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, horticultural division, Gizeh Branch, Ministry of Agriculture. Received February 14, 1916.

"This species is the only one cultivated in Egypt for dye production." (*Brown.*)

"It is a perennial plant, but in cultivation is either biennial or (generally) annual. It is of a woody nature, the dye being extracted from the leaves." (*Foaden and Fletcher.*)

For a full description and directions for cultivation, see Foaden and Fletcher, Text-Book of Egyptian Agriculture, pp. 512 to 519.

41930. JUGLANS DOMINGENSIS Dode. Juglandaceæ.

Dominican walnut.

From Puerto Plata, Dominican Republic. Presented by Mr. Frank Anderson Henry, American consul. Received February 17, 1916.

"These walnuts were obtained with the kind assistance of Don Virgilio Batista, of Jarabacoa, near which village the trees are found. The walnut does not appear to be very common in this part of the Dominican Republic and is probably found only at an altitude of more than 1,000 feet above sea level. Jarabacoa has an elevation of about 1,800 feet." (*Henry.*)

41931. to 41945.

From Brazil. Collected by Mr. H. M. Curran. Received February 15, 1916. Descriptive notes by Mr. Curran.

41931. LANTANA CAMARA NIVEA (Vent.) Bailey. Verbenaceæ.

"No. 10. Seed from plants 3 to 4 feet high, growing wild on hills, all flowers pure white; others in region pure red. All shades more delicate than common red and yellow cultivated, form and odor less marked. Collected at Rio de Janeiro, November 21, 1915."

41932. THUNBERGIA sp. Acanthaceæ.

"No. 8. Yellow flowers with dark centers; showy. Green foliage. Wild by roadsides. Ripe seeds collected at Rio de Janeiro, November 21, 1915."

41933. CARINIANA LEGALIS (Mart.) Kuntze. Lecythidaceæ. *Jequitiba.* (*Couratari legalis* Mart.)

"No. 45. *Jequitiba.* One of the commoner and largest of Bahian timber trees. Ornamental. Wood hard, light brown, and well known in markets."

For an illustration of the *jequitiba*, see Plate II.

41934. GEONOMA ERYTHROSPADICE Barb.-Rodr. Phœnicaceæ. Palm.

"No. 31. *Orecana brava.* A small ornamental palm, 4 to 10 feet high. The stems, from the size of lead pencils to three-fourths of an inch in diameter, are used as canes and whipstocks. Leaves durable in weather and used as thatch."

41935. IPOMOEA sp. Convolvulaceæ.

"No. 68. A common ornamental in Bahia gardens. A strong, vigorous climber with palmately dissected leaves and large yellow, very bright and very showy flowers."

41936. PTEROCARPUS VIOLACEUS Vog. Fabaceæ.

"No. 23. *Pau de sangue* (bloodwood), a large, very ornamental tree with yellow flowers. Wood, white, soft; used like our basswood."

41937. CYCLOBIUM BLANCHETIANUM Tulasne. Fabaceæ.

"No. 20. *Pau de sangue.* An ornamental timber tree."

41938. PELTOGYNE PAUCIFLORA Benth. Cæsalpiniaceæ.

"No. 3. *Pau roxo.* Purple heart, a well-known timber tree, with dark-purple wood, hard and heavy, used for making cart wheels. A large ornamental tree."

41931 to 41945—Continued.

41939. *PTEROCARPUS VIOLACEUS* Vog. Fabaceæ.

"No. 28. *Pau de sangue*. Probably the same as No. 23 [S. P. I. No. 41936]."

41940. *PIPTADENIA* sp. Mimosaceæ.

"No. 19. A large timber tree, with medium-hard wood. Ornamental. Native name *Angico branco*."

41941. *ALPINIA* sp. Zinziberaceæ.

(*Renealmia* sp.)

"No. 30. *Papatinga*. An ornamental plant 2 to 4 feet high. The fruits yield a black color used as an ink or dye."

41942. *HELICONIA* sp. Musaceæ.

"No. 46. A very ornamental flowering plant which grows in dense masses in moist soils by streams; 2 to 4 feet high; flowers red or yellowish."

41943. *PHYLLANTHUS ACIDUS* (L.) Skeels. Euphorbiaceæ.

(*Phyllanthus distichus* Muell. Arg.)

"No. 47. An ornamental tree 20 to 40 feet high. The fruits are white and used to make preserves as we preserve cherries, etc. Common in cultivation. Fruits freely; two crops a year."

41944. *VOUAPA* sp. Cæsalpiniaceæ.

(*Macrotobium* sp.)

"No. 54. An ornamental timber tree growing on river banks."

41945. *VIROLA* sp. Myristicaceæ.

"No. 41. *Ucuúba*. A common ornamental and timber tree of large size, with brown, medium-hard wood, well known on the Brazilian market. The seed is said to yield an oil used in medicine and for soap making."

41946. *LONICERA ORIENTALIS LONGIFOLIA* Dipp. Caprifoliaceæ.

(*Lonicera Kesselringi* Regel.)

Honeysuckle.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received February 24, 1916.

"Our experience with *Lonicera* seeds is that, like *Berberis* seeds and various others, they often lie in the soil for a year or more before they germinate. What we do is to plunge the pots outside, exposed to the frost, after six to nine months in a propagating house." (*Prain*.)

"It has oblong or oval-lanceolate leaves $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, rarely more than three-fourths inch wide. Flowers pink, smaller than in *orientalis*, the corolla tube only slightly swollen; stalk one-third inch long. Introduced from Kamchatka in 1888." (*Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 51.*)

See S. P. I. No. 40184 for previous introduction.

41947. *HESPERETHUSA CRENULATA* (Roxb.) Roemer. Rutaceæ.

(*Limonia acidissima* L.)

From Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Gardens. Received February 8, 1916.

See S. P. I. Nos. 26496 and 29170 for previous introductions and description as *Limonia acidissima* L.

41948. LICANIA sp. Rosaceæ.

From Merida, Yucatan, Mexico. Presented by Dr. M. Calvinò, Department of Agriculture and Commerce. Received February 21, 1916.

"*Uspib.*" Tree with large, entire, leathery leaves and clusters of small inconspicuous flowers. The fruit is said to be edible.

41949 to 41951.

From Havana, Cuba. Presented by Mr. William Brockway. Received February 11, 1916. Quoted notes by Mr. Brockway.

41949. OPERCULINA TUBEROSA (L.) Meissn. Convolvulacæ.

"No. 1. Climbing vine. The sap from this plant, especially when green, is very milky and sticky and may have rubber possibilities. Should be propagated in a warm climate."

41950. BRADBURYA PLUMIERI (Turp.) Kuntze. Fabacæ.

"No. 2. Magnificent when in flower. Flower as large as a silver dollar, snow white splashed with scarlet; a fine flower and worthy of cultivation; flowers in November and December. Vines 30 feet long."

41951. PHASEOLUS ADENANTHUS G. Meyer. Fabacæ.

"No. 3. Flowers white splashed with purple, turning yellow when matured. Vine 30 feet long, fine climber; flowers in January."

41952 to 41954.

From China. Collected by Mr. D. F. Higgins, Peking. Received February 21, 1916. Descriptive notes by Mr. Higgins.

41952 and 41953. CRATAEGUS PINNATIFIDA Bunge. Malacæ. Hawthorn.

41952. "*Sia-la-hung* [*Shan li hung*]. Collected near Peking, China, October 12, 1915. Seeds of the large Chinese thorn-apple, which is grafted on the seedlings of the smaller variety."

41953. "*Sia-la-hung* [*Shan li hung*]. Collected near Peking, China, October 12, 1915. Seeds of the Chinese thorn-apple. These seeds are the seeds of the wild indigenous variety. It is also cultivated for its fruit and for the stock on which the large variety is grafted. These seeds are fertile."

41954. PINUS BUNGEANA Zucc. Pinacæ. White-barked pine.

"Seeds of the white-barked pine of North China. These seeds are from trees about 12 miles west of Peking. Collected October 12, 1915."

41955 to 41959.

From Lamac, Bataan, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture, Manila. Received February 17, 1916.

41955. CITRUS AURANTIUM L. Rutacæ. Sour orange.

See S. P. I. No. 41713 for previous introduction and description.

41956. CITRUS EXCELSA Wester. Rutacæ. Limon-real.

See S. P. I. No. 41714 for previous introduction and description.

41957. CITRUS LIMETTA AROMATICA Wester. Rutacæ.

See S. P. I. No. 41715 for previous introduction and description.

41958. CITRUS MITIS Blanco. Rutacæ. Calamondin.

"A small, somewhat spiny tree, 4 to 6 meters tall; leaves elliptic-oblong, entire, crenulate, 4 to 9 cm. long; petioles scarcely winged, 10 to 15 mm. long; flowers small, usually solitary, white; fruit globose,

41955 to 41959—Continued.

orange-yellow, 2 to 4 cm. in diameter; skin smooth, thin, brittle, separable from the flesh; flesh orange colored, juicy, acid; aroma distinct; juice sacs rather large, short, and contained in six to eight locules; seeds comparatively large, smooth, plump, sometimes beaked. Philippines, probably extending to the Sunda Isles. With the *cabuyao* the *calamondin* shares the distinction of being indigenous to the Philippines. It is still rare in foreign countries. In Hawaii it is known as the *Chinese orange*. The *calamondin* makes an exceedingly attractive ornamental tree, and the fruit makes a delicious marmalade and a good cooling drink. As far as observed the species occurs in few forms, and the trees are almost invariably exceedingly prolific and almost everbearing." (*P. J. Wester, Citriculture in the Philippines, Philippine Bureau of Agriculture, Bulletin No. 27, p. 15.*)

41959. CITRUS WEBBERII MONTANA Wester. Rutaceæ. Cabugao.

A citrus fruit closely allied to the mandarin (*Citrus nobilis deliciosa*) and the alsem (*Citrus webberii*).

See S. P. I. No. 41388 for previous introduction and description.

41960. BUNCHOSIA sp. Malpighiaceæ.

From El Coyolar, Costa Rica. Plants presented by Mr. Carlos Wercklé. Numbered January 30, 1916.

"The pulp is exactly like the *Yemon* variety of the *kaki* persimmon in consistency and taste, but vermilion carmine in color." (*Wercklé.*)

41961 and 41962.

From Kew, England. Plants presented by Sir David Prain, director, Royal Botanic Gardens. Received February 25, 1916.

41961. × AESCULUS PLANTIERENSIS Andre. Æsculaceæ.

"A hybrid raised in the nursery of Messrs. Simon-Louis Frères, at Plantieres, near Metz, its parents no doubt *A. hippocastanum* and *A. carnea*. The seeds came from the former, so that it is (if the generally accepted parentage of *A. carnea* be correct) three-fourths common horse-chestnut and one part red buckeye (*A. pavia*). It shows the character of both its parents in the leaf, the leaflets being stalkless, as in *A. hippocastanum*, yet showing the strongly ridged and uneven surface of *A. carnea*. In shape and size the panicle is like that of *A. hippocastanum*, but the whole flower is suffused with a charming shade of soft pink, which it inherited from the other parent. In habit and general appearance it is intermediate. It has flowered at Kew for several years past, and I consider it a very beautiful and desirable acquisition. It has developed no fruit at Kew, and I understand from Mr. Jouin, of Plantieres, that it does not bear seed in the nursery. For public places this is an advantage." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 173.*)

41962. × ESCALLONIA LANGLEYENSIS Veitch. Escalloniaceæ.

"An elegant evergreen or, in hard winters, semievergreen shrub becoming eventually 8 feet or more high and producing long, slender, arching shoots in one season. Flowers of a charmingly bright rosy carmine, one-half inch across, produced during June and July (a few later) in short racemes of about half a dozen blossoms terminating short

41961 and 41962—Continued.

leafy twigs. This very attractive shrub was raised by Messrs. Veitch's nursery at Langley about 1899, by crossing *E. philippiana* with *E. punctata*. Although not quite so hardy as the first of these, it is hardy enough to stand all but the severest of frosts, and even then will break up again from the ground. It is distinct from other Escallonias in its slender arching branches, which bear the racemes on the upper side. The color of the flowers, too, is different from that of any other Escallonia except *E. edinensis*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 528.*)

41963. BARLERIA CRISTATA L. Acanthaceæ.

From Manila, Philippine Islands. Cuttings presented by Mr. H. T. Edwards, director, Bureau of Agriculture, at the request of Mr. P. J. Wester, Lamao. Received February 25, 1916.

An excellent Philippine hedge plant with fairly dense spikes of attractive blue or white flowers.

See S. P. I. No. 41458 for previous introduction and description.

41964 to 41990.

From Maidstone, England. Purchased from George Bunyard & Co. Received February 24, 1916. Plants of the following; quoted notes from Bunyard's catalogue, except where otherwise indicated.

41964 to 41976. RUBUS spp. Rosaceæ. Raspberry.

41964. "*Alexandria*. Autumn fruiting; fruit large, conical, deep red, rich flavour; vigorous and fertile. Raised by Mr. Allan, of Gunton Park Gardens."

41965. "*Hailsham*. Autumn fruiting; fruit enormous, round, dark red; growth vigorous; leaves very large; a distinct variety of much excellence. Raised by Mr. Dann, of Hailsham."

"This variety is reported as a hybrid. It is reported by the Coates Nursery, of Morganville, Cal., as an improvement on the loganberry, being sweeter." (*G. M. Darrow.*)

41966. "*Merveille Rouge (Belle Fontenay)*. Autumn fruiting; fruit medium, round, dark purple; growth rather dwarf. A good variety which, though old, is still one of the best and fruits into October."

41967. "*November Abundance*. Autumn fruiting; fruit very large, deep red, borne in clusters; canes very strong; fruits up to November. Introduced by Messrs. Veitch."

41968. "*October Yellow*. Autumn fruiting; fruits large, round, deep yellow, sweet and well flavoured; growth moderate. An old sort, of value as an autumnal variety."

41969. "*Surprise d'Automne*. Autumn fruiting; fruit large, yellow, freely produced, and of sweet flavour. A very remarkable continental variety which is certainly the most prolific and latest of yellow autumnal kinds."

41970. "*Yellow Four Seasons*. Autumn fruiting. Resembles and probably identical with *October Yellow*. Free bearer; very sweet."

41971. "*Baumforth Seedling*. Fruit round, large, dark crimson; very vigorous grower. A seedling from *Northumberland Fillbasket*."

41964 to 41990—Continued.

41972. "*Devon*. Fruit large, round, keeping a bright red when ripe; remarkably vigorous and very fertile. On trial here, but highly commended by the raiser, Mr. Pyne, of Topsham, who introduced it in 1904."

41973. "*Norwich Wonder*. Fruit large, round, ripening earlier than other sorts; very fertile and vigorous."

41974. "*Profusion*. Berries immense, dark red, round, of delicious flavour; vigorous and prolific. A variety raised near Maidstone and introduced by us. Can be highly recommended."

41975. "*Golden Drop*. Fruit deep golden, round, pleasantly flavoured; canes strong. A continental variety of which the original name has been lost; we name it as above provisionally."

41976. "*Guinea*. Fruits conical, deep yellow, very rich and sweet; canes of moderate growth. This variety is a *Yellow Superlative*, and the variety sent out under that name is practically identical."

41977 to 41987. FRAGARIA spp. Rosaceæ. Strawberry.

41977. "*Merveille de France*. Autumn fruiting; fruit enormous; growth free but compact; very rich flavour in June."

41978. "*St. Antoine de Padoue*. Autumn fruiting; berries globular, ripening well, of bright red colour; habit more vigorous than others; the summer fruits are also abundant."

41979. "*St. Fiacre*. This is a grand autumnal bearer. The berries are as large as *Royal Sovereign*, freely produced, bright colour, and rich flavour. The finest yet produced."

41980. "*Countess*. Fruits handsome, wedge shaped, dark crimson; moderate cropper, but in point of flavour quite first rate. F. C. C. R. H. S."

41981. "*Filbert Pine*. Robust grower; dull orange red, brisk in flavour; succeeds in light soils; enormous cropper."

41982. "*Fillbasket*. Bright red, good flavour; enormous bearer; very good for main crops; flowers late and is thus useful in positions liable to frosts; makes few runners."

41983. "*Givon's Late Prolific*. Dark dull crimson, firm, roundish oval, often three sided, of rich brisk flavour. The very finest of all the late sorts; a heavy successional bearer; fruits extra large and handsome, with good constitution; flowering late, with abundant foliage. A Herts customer reports a splendid crop—seven fruits to the pound."

41984. "*Hibberd's George V*. Our trial plants, although placed in a bad position, gave us wonderful berries on July 8, 1913, after the ordinary crops were passed—quite 14 days later than *Sir Joseph Paxton*. The fruits were large, some cockscomb shaped, very bright shining scarlet in colour; flesh carmine, very firm, and the flavour was equal to the best. We confidently recommend this new variety to all growers and have raised a large stock in order to offer cheaply."

41985. "*Laaton's Latest*. A very fine variety; shining deep crimson, fine flavour; moderate growth; enormous in size, yet firm, approaching 2 ounces."

41964 to 41990—Continued.

41986. "*Reward*. Fruit very large, wedge shaped, of rich vinous flavour, deep red, firm flesh; one of the best main-crop varieties."
41987. "*Waterloo*. Very large, withstanding the heat well; remarkable for its black mulberrylike appearance; for latest picking."
- 41988 to 41990. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**
41988. "*New Red Dutch*. Berries medium, but all of an even size; not diminished toward end of bunch; bright red, rather late; vigorous grower, resembling *Raby Castle* in foliage but more spreading habit. One of the best all-round kinds. Origin unknown; largely grown in Kent for market."
41989. "*Scotch*. Berries large, bright red; bunches medium, very fertile; growth vigorous, upright; foliage much cut and cupped. This sort may be always distinguished when in bloom, as the flower spikes are held horizontally. A valuable early-market sort. Origin unknown."
41990. "*Utrecht*. Berries medium, dark red; bunches medium; growth vigorous, upright; leaves resembling *Scotch* but distinct. A useful midseason variety; origin probably indicated by its name."

41991 to 42016. TRITICUM spp. Poacæ.

Wheat.

From Cawnpore, United Provinces, India. Presented by Mr. H. Martin Leake, economic botanist to the Government, at the request of Mr. A. Howard, Pusa. Received January 28, 1916.

41991 to 42006. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

41991. "No. 137. Bearded, red, felted, white grain."
41992. "No. 2778. Bearded, red, felted, red grain."
41993. "No. 169. Bearded, white, felted, white grain."
41994. "No. 195. Bearded, white, felted, red grain."
41995. "No. 627. Bearded, red, glabrous, white grain."
41996. "No. 1056. Bearded, red, glabrous, red grain."
41997. "No. 1289. Bearded, white, glabrous, white grain."
41998. "No. 3769. Bearded, white, glabrous, red grain."
41999. "No. 2755. Bald, red, felted, white grain."
42000. "No. 2771. Bald, red, felted, red grain."
42001. "No. 2799. Bald, white, felted, white grain."
42002. "No. 2822. Bald, white, felted, red grain."
42003. "No. 3794. Bald, red, glabrous, white grain."
42004. "No. 3123. Bald, red, glabrous, red grain."
42005. "No. 3513. Bald, white, glabrous, white grain."
42006. "No. 3561. Bald, white, glabrous, red grain."

42007 to 42012. TRITICUM DURUM Desf.

42007. "No. 9. Bearded, white, felted, white grain."
42008. "No. 18. Bearded, red, felted, white grain."
42009. "No. 34. *Kathias*. Bearded, white, glabrous, white grain."

41991 to 42016—Continued.

42010. "No. 47. *Kathias*. Bearded, white, glabrous, red grain."

42011. "No. 85. *Kathias*. Bearded, red, glabrous, white grain."

42012. "No. 124. *Kathias*. Bearded, red, glabrous, red grain."

42013 and 42014. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

42013. "No. 125. Var. *compactum*. Bearded, white, glabrous, white grain."

42014. "No. 132. Var. *compactum*. Bald, white, glabrous, white grain."

42015. TRITICUM DURUM Desf.

"No. 2."

42016. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

Var. *compactum*.

42017. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. Hawthorn.

From China. Presented by Rev. Horace W. Houlding, Tamingfu, Chihli, North China. Received February 3, 1916.

"*Shan li hung* or mountain red pear. My wife says that in her estimation it stands next to the apple for home use in cooking. It is good for jelly and marmalade and when dipped whole into melted rock sugar it makes the finest confection and one of the most healthful that I know of. There is a use for this fruit in America." (Houlding.)

42018 and 42019.

From India. Presented by Maj. A. T. Gage, director, Royal Botanic Garden, Sibpur, Calcutta, who secured it from the Director of Agriculture, Srinagar, Kashmir. Received February 24, 1916.

42018. MEDICAGO FALCATA L. Fabaceæ.

Lucern.

"Ordinary Ladakh lucern."

42019. MELILOTUS OFFICINALIS (L.) Lam. Fabaceæ. Yellow sweet clover.

"*Rugsug* (?) in Ladakh."

42020. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen.

From Cristobal, Canal Zone. Tubers presented by Mr. O. W. Barrett. Received March 2, 1916.

"*Twin* dasheen; local variety. About 40 per cent of the plants are twins. In good soil this variety reaches 6 to 8 feet to leaf blade. Small offsets, but fine large 'madre' up to 4 pounds each. From Bracho plantation." (Barrett.)

42021. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Yokohama, Japan. Tubers purchased from the Yokohama Nursery Company. Received March 2, 1916.

Sato-imo.

A taro of the dasheen type, obtained for botanical study, this form having flowered in Japan, where it was photographed by Mr. Frank N. Meyer, although no flowers have ever been obtained from it in the United States.

42022. JUGLANS REGIA L. Juglandaceæ. Walnut.

From New York State. Cuttings secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 3, 1916.

"Abrams walnut. The parent tree of this variety stands on property on Latta Road, Charlotte, N. Y., owned by Mrs. B. S. Abrams. It is a double tree, with trunks measuring at breast height 63 and 69 inches in circumference, respectively. The two trees are estimated to be about 60 feet tall and have a spread of about 55 feet. The tree is said to be a heavy annual bearer. Mrs. Abrams states that the crop of 1914 was about 8 bushels. The nuts are of medium size, quite spherical in form, with flattened ends, bright golden color, thin shelled, and until well dried well sealed. The kernels from the crop of 1915 are a little disappointing in that they shrink considerably; also they are somewhat objectionable in that they leave an astringent taste in the mouth. The flavor of these kernels is pleasing, though mild." (Reed.)

42023. JUGLANS REGIA L. Juglandaceæ. Walnut.

From Canada. Scions secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 3, 1916.

"Ontario walnut. This tree stands on a lot at 251 Queenstown Street, St. Catharines, Ontario, Canada. It is owned by Miss Alice Berger, of that address. It is estimated to be 75 or more years of age and has the reputation of being a heavy annual bearer. Its crop of 1914 is stated by Miss Berger to have been about 200 pounds of nuts. The nuts are of medium size, thin shelled, and the kernels of good quality. In the opinion of Robert T. Morris, of New York City, the flavor of these nuts is superior to that of any others of the sorts now being propagated in the Eastern States. The new growth on this tree was very short and irregular, making it difficult to obtain good wood for propagating." (Reed.)

42024. HUMULUS LUPULUS L. Moraceæ. Hop.

From Wye, Kent, England. Roots presented by Mr. E. S. Salmon, South-eastern Agricultural College. Received March 3, 1916.

"Foundling. Among the hops growing in the experimental hop garden at Wye College one plant attracted attention in 1906 and 1907 by its vigorous growth and prolific cropping qualities. It was decided to test this hop further; cuts were taken from the hill, and, in 1908, 38 hills were planted in a row in the main hop garden at Wye College. From 1908 to 1914 these hills have been under observation, and the following facts appear to be of sufficient commercial importance to merit the attention of hop growers. This hop has proved remarkably resistant to the attacks of the disease popularly known as nettlehead, skinkily, or (in Sussex) silly hill. This disease, which has been attributed to the attacks of an eelworm (*Heterodera schachtii*), is sometimes the cause of serious loss to the hop grower. No certain remedy against nettlehead is at present known, and it follows, therefore, that the constitutional resistance of a variety of hop to the disease is a matter of importance. The growth is very vigorous; the vine is green, with blotches (often inconspicuous) of dark green or red, and is very fruitful. It is a late hop, ripening about 10 days later than the *Canterbury Whitebine*. In the medium hop soil of the college hop garden the crop in an average season is about 15 hundredweight to the acre; in 1914 the hills yielded at the rate of 22 hundredweight to the acre. In richer soil at Chilham, Kent, 3 older hills and 22 hills in their second year bore in 1914 at the rate of 18 hundredweight to the acre. The hops are small to medium in size and hang very thickly on the laterals. In some respects

the *Foundling* hop resembles the *Colgate* variety, though it is clearly quite distinct. The *Foundling* seems worthy of trial by the commercial hop grower on account of the following characteristics: (a) Good cropping qualities, (b) high resin production, (c) marked resistance to if not total immunity from the nettlehead disease, (d) lateness of season (coming after the *Fuggles*)." (*Journal of the Board of Agriculture, p. 136, May, 1915.*)

42025. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.

(*Prosopis juliflora* DC.)

Algaroba.

From St. Joseph, Trinidad, British West Indies. Presented by Mr. Francis Miller, St. Joseph Nurseries. Received February 7, 1916.

A tree 30 to 40 feet high (sometimes reduced to a shrub), with bipinnate leaves of 15 to 20 pairs of leaflets, each composed of one to two pairs of pinnæ, and axillary flowers in cylindrical heads resembling those of *Acacia* spp. A native of Mexico and the West Indies.

42026. SOLANUM sp. Solanaceæ.

Wild potato.

From Tucuman, Argentina. Tubers presented by Mr. E. F. Schultz, horticulturist, Agricultural Experiment Station, through Mr. John S. Calvert, American vice consul, Buenos Aires. Received February 23, 1916.

"The Department of Agriculture is carrying on certain breeding experiments with potatoës, and these resistant wild strains may prove useful for this purpose. The tubers were gathered on very heavy clay soil from a piece of land which is completely water-soaked during at least three months in the year and extremely dry for about seven or eight months in succession. The tubers possess, therefore, certain resistant properties which it may be found useful to impart to the cultivated varieties in the United States." (*Schultz.*)

42027 and 42028.

From Bombay, India. Presented by Mr. W. Burns, economic botanist. Received February 18, 1916.

42027. INDIGOFERA GLANDULOSA Wendl. Fabaceæ.

Befri.

An annual herbaceous legume with elongated slender branches, odd-pinnate leaflets, and dense, sessile heads of small flowers one-fourth to three-eighths of an inch long. A native of Australia and the plains of the western peninsula of India.

42028. INDIGOFERA TRIFOLIATA Torner. Fabaceæ.

Indigo.

A perennial, subshrubby plant with trailing or suberect copiously branched stems, 1 to 2 feet long, leaves composed of three leaflets, and racemes of small red flowers. A native of China, India, the Philippines, Java, and North Australia.

See S. P. I. No. 41909 for previous introduction.

42029. CACARA EROSA (L.) Kuntze. Fabaceæ.

Yam bean.

(*Pachyrhizus angulatus* Rich.)

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received February 29, 1916.

"Seeds of the ordinary wild form that is abundant in dry thickets in most parts of the Philippines." (*Merrill.*)

See S. P. I. No. 41712 for previous introduction.

42030 and 42031.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunicutt, director, Escola Agricola de Lavras. Received February 29, 1916.

42030. *EUGENIA KLOTZSCHIANA* Berg. Myrtaceæ. **Pera do campo.**

A promising fruit, similar to a small russet pear in appearance, and possessing a pleasantly acid, aromatic pulp.

See S. P. I. Nos. 37392 and 37492 for previous introductions and description.

42031. *MYRCIARIA* sp. Myrtaceæ. **Jaboticaba.**

A large tree bearing fruits somewhat similar to grapes of the rotundifolia type. One of the most popular Brazilian fruits.

42032 to 42035.

From Quito, Ecuador. Presented by Mr. Ludovic Söderström, through Mr. Charles S. Hartman, American minister, Quito. Received February 29, 1916. Quoted notes by Mr. Söderström.

42032. *PASSIFLORA MIXTA* L. f. Passifloraceæ. **Granadilla.**

"Seeds of the Passiflora, which was formerly much cultivated in the gardens at Quito but is now rarely seen. This plant is very prolific, and in my garden I have sometimes counted over 100 flowers and fruits at one time on the same plant. In the garden there are two plants from 16 to 20 years old. The natives eat the fruit raw and also use it to flavor ice cream, etc. The altitude of Quito is 9,500 feet. Collected during the months of August to December."

42033. *PASSIFLORA* sp. Passifloraceæ. **Granadilla.**

"Seeds of a Passiflora much cultivated by the Indians in the Valley of Zambiza, northeast of Quito. The fruit is smaller than the preceding variety [S. P. I. No. 42032], is sweeter, and contains more seeds. The flower is much attacked by bats and mice, so that at Quito the plant seldom has fruits. It also requires a warmer climate, 17° to 18° C. The Zambiza Valley is about 1,000 to 1,500 feet lower than Quito and much warmer. Collected during the months of September and October."

42034. *SOLANUM QUITOENSE* Lam. Solanaceæ.

"*Naranjilla*; so called by the natives. The plant is about 6 to 8 feet high with hairy leaves and produces a fruit like a small orange; it is rather acid to taste. Each plant bears hundreds of flowers and fruits. The plant lasts five or six years, when a new plantation is made. The best plantations are in the clearings at about 5,000 to 6,000 feet altitude. The mean temperature is 17° to 19° C. The fruit seems to be the principal article of food during certain seasons for the settlers in the woods. I have never found that this plant flourishes in the dry valleys in the interior, but always in the clearings in the woods."

42035. *PASSIFLORA LIGULARIS* Juss. Passifloraceæ. **Sweet granadilla.**

"*Granadilla* or passion-flower plant. This plant is cultivated in all the warm valleys in the interior of Ecuador. I have even found this plant growing wild in the woods at about 6,000 feet altitude. In the woods the squirrels always eat the fruit, so very few seeds can be collected there."

42036. PAULOWNIA FORTUNEI (Seem.) Hemsl. Scrophulariaceæ.

From Taihoku, Formosa. Presented by Mr. M. Takata, Department of Productive Industries. Received March 2, 1916.

"In raising the Paulownia tree in Japan its root is generally used for the purpose, because its seed has not been known to germinate. We should like, therefore, to have you give special attention to the matter of sowing and directing the growth of the young plants." (*Takata.*)

A magnificent tree 30 to 50 feet high, much resembling the well-known *Paulownia imperialis* (*P. tomentosa*), but having slightly shorter panicles of larger lilac or purple tinted flowers dotted with purple on the inside of the corolla. A native of central Formosa. (Adapted from *T. Ito, Icones Plantarum Japonicarum, vol. 1, no. 3, p. 5, pl. 9, 1912.*)

Received as *Paulownia mikado*, which is considered by Rehder to be identical with *P. fortunei*.

42037. LINUM USITATISSIMUM L. Linaceæ. Flax.

From Saskatoon, Saskatchewan, Canada. Presented by Mr. F. Maclure Sclanders, commissioner, Board of Trade. Received March 2, 1916.

"*Riga* (Russian) flax. Received from the Department of Agriculture, Dublin, Ireland. I am asked to test this for seed production, the object being to ascertain if we can here grow to advantage seed for the Irish flax-fiber growers, which seed now comes from Russia and costs more than we could probably supply it for. Apparently some clear distinction is drawn between the flax which we now produce for seed and that which is adapted for the production of fiber." (*Sclanders.*)

42038. SAPINDUS SAPONARIA L. Sapindaceæ. Soapberry.

From Monterey, Mexico. Presented by the Compañía Jabonera. Received March 2, 1916.

"*Jaboncillo*. Fresh fruits. The outer part when boiled in water gives a superior soap for washing, especially for woolen goods, and is much used. The seed is hard and contains fat; it is not used. We consider this fruit of interest as well for the pulp, which yields soap, as for the seed, which may be of some use." (*Compañía Jabonera.*)

42039 and 42040.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn. Received March 3, 1916.

42039. PSIDIUM GUAJAVA L. Myrtaceæ. Guava.

"Seeds of a large fruit; when ripe it is a light green outside and a beautiful pink inside." (*Gwynn.*)

42040. RANDIA sp. Rubiaceæ.

"*Azuca revine* (?)" A spiny erect shrub with showy flowers and fruit.

42041 to 42045. JUGLANS REGIA L. Juglandaceæ. Walnut.

From New York State. Cuttings secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 4, 1916. Quoted notes by Mr. Reed.

"The Thomson orchard is owned by Mr. Adelbert Thomson, of Honeoye Falls, Livingston County, N. Y. It consists of 225 trees grown from seed raised in Rochester and planted in 1886 by Mr. Thomson where the trees now stand. After the nuts were planted Mr. Thomson lost interest and allowed the trees to be neglected for some 25 years, during which time they made very slow

growth. In 1913 the orchard yielded from 50 to 75 bushels of nuts, which sold readily at 25 cents a pound. Encouraged by this, Mr. Thomson then broke up the sod and has since been endeavoring to get the orchard well under cultivation. The crop of 1915 amounted to approximately 150 bushels, the nuts readily selling in the Rochester markets at from 20 to 30 cents."

42041. "*Avon*. Thomson orchard, Honeoye Falls, N. Y. Tree B-16. An upright, pyramidal tree of vigorous growth, evidently late in maturing its foliage, standing second in the second row beginning at the corner next to the highway and row of spruce trees. It has a trunk circumference of 41 inches at breast height and a spread of about 25 feet. Its crop of 1915 was fairly heavy, being a bushel and a half or more. The nuts were gathered about October 25. The nuts are rather above medium size, somewhat of the *Mayette* type, though rather more wedge shaped. The most distinctive external feature is perhaps the prominence of the suture at the apical end. The nuts are imperfectly sealed and slightly astringent, but of very good flavor."

42042. "*Livingston*. Thomson orchard, Honeoye Falls, N. Y. Tree C-17. A vigorous, spreading, and symmetrical tree standing first in the third row from the corner, next to the highway and the spruce hedge. Grown from seed obtained from a tree in Rochester and planted in 1886 by Mr. Thomson where the tree now stands. The tree bore a good crop in 1915. The nuts are of good size and form, well sealed, thin shelled, the kernels plump and of good flavor, though somewhat astringent. Height from 28 to 30 feet and circumference at breast height $54\frac{1}{2}$ inches. Maturity, October 10 to 20, 1915."

42043. "*Thomson*. Thomson orchard, Honeoye Falls, N. Y. Tree D-14. A vigorous, symmetrical, low-headed, and late-growing tree in the Thomson orchard, grown from the same lot of seed as B-16 [S. P. I. No. 42041] and C-17 [S. P. I. No. 42042], etc. In 1915 it bore a heavy crop of large nuts which became the favorite of Mr. Thomson's daughter. The nuts are of good size and form, easy to crack, fairly plump meated, of good flavor, but slightly astringent. In 1915 the crop matured from October 10 to 22."

42044. "*Leland*. Thomson orchard, Honeoye Falls, N. Y. Tree L-15. A double but rather small and not overvigorous tree, bearing the largest nuts of any tree in the orchard. The nuts are a little thick shelled, but rounded out in form; the kernels are plump, sweet, but fairly astringent. Height estimated to be 20 feet and circumference of each trunk at breast height $20\frac{1}{2}$ and $21\frac{1}{2}$ inches, respectively. The nuts matured from October 15 to 22, 1915."

42045. "*Holden*. The parent tree of this variety stands on the lawn of Mr. Jacob Cosmon, of Hilton, N. Y., about 2 miles from the village and a slightly greater distance from the shore of Lake Ontario. It has been known by Mr. Cosmon for about 35 years, and he estimated it to be between 50 and 60 years of age. Owing to the fact of its being crowded on three sides by other trees it has never borne heavily, but by Mr. E. B. Holden, a son-in-law of Mr. Cosmon, who is the introducer and in whose honor it has been named, it is reported to bear frequently a bushel or more of nuts. Nuts from this tree have been exhibited at various fairs and fruit shows for some 10 years and repeatedly have been given very high rating. The nuts are above medium size, bright colored, thin shelled, and have plump kernels rich in oil and of sweet flavor. They are, however, somewhat objectionable because of an astringency of pellicle."

42046. ZIZYPHUS JUJUBA Mill. Rhamnaceæ. Jujube.
(Ziziphus sativa Gaertn.)

From Shorter, Ala. Presented by Mr. Charles G. Howard. Received March 4, 1916.

"Cuttings obtained from Mr. J. W. Burton, Shorter, Ala."

42047. CYMBOPETALUM PENDULIFLORUM (Dun.) Baill. Annonaceæ. Sacred ear-flower.

From Guatemala. Presented by Mr. Stuart K. Lupton, American consul, city of Guatemala. Received March 7, 1916.

"*Sacred ear-flower*, or *orejuela*, as it is locally known. These petals and seeds were obtained through the kindness of Mr. R. S. Anderson, an American resident in Coban, Guatemala. In his letter he says, 'I am sorry to say we have not been able to find the seed. The owners of the trees or tree say the birds eat the seed, so they are hard to get.'" (*Lupton*.)

42048. CYMBOGON COLORATUS (Hook.) Stapf. Poaceæ. Lemon grass.

From Suva, Fiji Islands. Presented by Mr. C. H. Knowles, Superintendent of Agriculture. Received February 21, 1916.

"This species is not now in commercial use. It seems proved that it will produce oil not inferior to that of *Cymbopogon citratus*, the lemon oil of commerce. Lemon oil is used in America in the preparation of ionone, or artificial violet, for perfuming soap and also in the preparation of furniture polish; in India it is used in domestic medicine and as a kitchen herb in sauces and curries." (*Chase*.)

42049 to 42051.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 29, 1916.

42049. PHASEOLUS VULGARIS L. Fabaceæ.

"Forma *tawana*. The *taguana*, or giant bean of the Guaranis, which is only a form of the common bean, is perhaps the typical form from which the bean arose. But if it is botanically only a form, from the agricultural point of view it is more than a variety. This bean has been cultivated by the Guaranis certainly since a remote antiquity. The most notable peculiarity of this variety is its enormous growth. It has a long shoot, which grows to 15 or 20 meters, so that in a wood it climbs to the tops of high trees. Cultivated without branching, it develops less but yet produces abundantly, the production keeping step with the development, so that a well-developed plant will produce up to 10 kilos of clean seed." (*Bertoni, Agronomia, vol. 5, pp. 326-327. 1913.*)

42050 and 42051. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean.
(Pachyrhizus angulatus Rich.)

See S. P. I. No. 41712 for previous introduction and description.

42052 to 42054. DIOSCOREA spp. Dioscoreaceæ.

From Cristobal, Canal Zone. Tubers presented by Mr. O. W. Barrett. Received March 2, 1916.

42052 to 42054—Continued.

42052. DIOSCOREA sp.

Manawá yam.

"A very peculiar yam which appears to be distinct from the white yampee, the *Mapucs* yampee of Porto Rico, or any of the wild sorts I have ever seen. We are calling it the *Manawá* yam, from the plantation where I am trying it near Colon. About nine months ago I obtained two small roots from a Panaman, who admitted they were not commonly cultivated even in Panama. They may be native to the Darien region. From one hill (planted in April, I believe), we harvested some 6 or 8 pounds in November, and the vines are still (December 24) producing. It is a heavy yielder and two or three months earlier than the *Dioscorea alata* or *D. sativa* types. It is slightly sweet and has a flavor all its own, and practically no rag. The size and shape impress me strongly. The skin is of a distinct type, potatolike. This, with the attractive shape, individual size, and mealiness, will, I believe, make the *Manawá* very popular." (*Barrett.*)

"When baked the skin is bitter and can not be eaten." (*R. A. Young.*)

See S. P. I. No. 39705 for previous introduction.

For illustrations of yams, see Plates III and IV.

42053. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ.

White yampee.

"From Bracho plantation, near Colon. Second crop. Probably *Dioscorea trifida*." (*Barrett.*)

"The quality is excellent, the flesh being white and mealy." (*R. A. Young.*)

For an illustration of the tubers of the white yampee, see Plate V.

42054. DIOSCOREA sp. Dioscoreaceæ.

Yampee.

"From Bracho plantation, near Colon. Second crop." (*Barrett.*)

"The quality is fair; the flesh is very slightly pink and is rather firm." (*R. A. Young.*)

The tubers of this introduction were received mixed with those of the *white yampee*, S. P. I. No. 42053, but on account of the marked difference in appearance and quality they were separated and given different numbers.

For an illustration of this form of yampee, see Plate VI.

42055 and 42056.

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received March 3, 1916.

42055. CARICA PAPAYA L. Papayaceæ.

Papaya.

A rapid-growing fruit tree, reaching a height of 25 feet in 10 months and bearing numerous melon-shaped fruits on the trunk. Good varieties are deliciously sweet, with a characteristic flavor. They are relished as a breakfast fruit and are easily digested, as they contain a powerful papain ferment.

42056. PHASEOLUS CALCARATUS Roxb. Fabaceæ.

Rice bean.

"The plant is strictly an annual and half twining in habit. Planted in rows the different varieties grow 12 to 30 inches high and produce vining branches 3 to 6 feet long. The leaves closely resemble those of the common bean, but not infrequently are three lobed. The flowers are bright yellow, produced in racemes of 10 to 20. The pods are smooth,



THE DAGO HAYA, THE BEST TROPICAL YAM, FROM THE ISLAND OF GUAM, GROWING AT MIAMI, FLA. (*DIOSCOREA ALATA* L., S. P. I. No. 39705.)

The true yams constitute an important group of starchy tuberous-rooted food plants and should not be confused with certain varieties of sweet potatoes that are called yams in our Southern States. They should be grown and used largely in those warm regions of the world where they will thrive and into which people demanding white potatoes have to import them from cooler regions. In the island of Trinidad the production of the yam, cassava, taro, and other starchy root crops has been so increased during the war that the necessary demands on the wheat supply of the world and on transportation for carrying flour and potatoes to that island have been materially reduced. (Photographed by Edward Simmonds, October 20, 1916; P20115FS.)



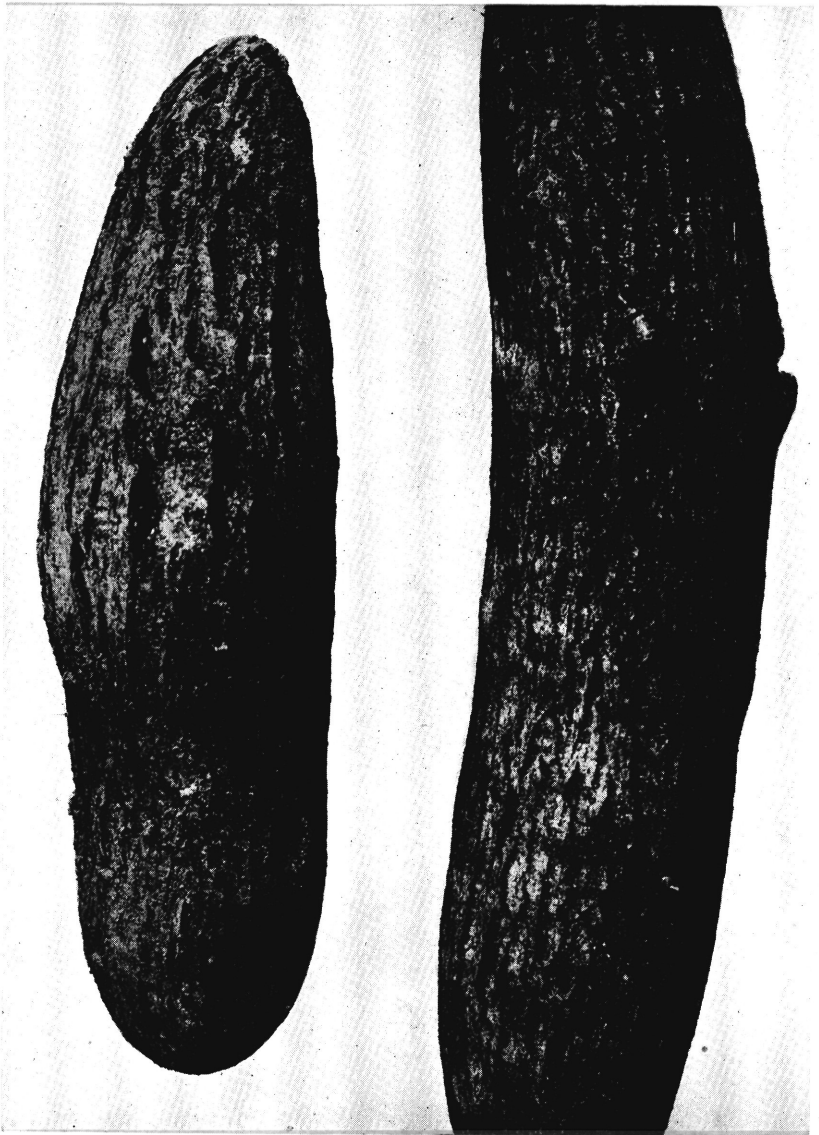
THE MANAWA YAM, FROM THE REPUBLIC OF PANAMA. (DIOSCOREA SP., S. P. I. No. 42052.)

The mealy whiteness of the flesh when cooked, the smoothness of the skin, and the shape and size of this yam make it an extremely desirable variety for table use. The first introduction did not succeed at the place where tested, but the unusually attractive appearance and excellent qualities of this variety make it worthy of the extensive trials in Florida which are now contemplated. (Photographed, natural size, by E. L. Crandall, January 17, 1916; P19425FS.)



TUBERS OF THE WHITE YAMPEE, A VARIETY OF YAM GROWN IN THE CANAL ZONE. (*DIOSCOREA TRIFIDA* L. F., S. P. I. NO. 42053.)

This yampee is of fine quality and will furnish the South with another food equal to the best potatoes if it can be grown there successfully. When baked or when peeled and boiled it resembles a mealy potato and approximates it in food value, though slightly lower in protein. (Photographed, natural size, by E. L. Crandall, March 2, 1916; P19482FS.)



ANOTHER FORM OF YAMPEE, FROM THE CANAL ZONE. (DIOSCOREA SP., S. P. I. No. 42054.)

The superior keeping quality in the Tropics of the true yam as compared with the cassava or the sweet potato is a very important factor. These tubers were reported to be of the same variety as those shown in Plate V, though, as will be seen, they are very different in appearance. They illustrate the fact that this important group of food plants deserves more serious consideration from horticulturists than it has hitherto received. (Photographed, natural size, by E. L. Crandall, March 2, 1916; P19481FS.)

42055 and 42056—Continued.

slender, falcate, straw colored, brownish or blackish, 3 to 4 inches long, and burst open readily at maturity. Though very productive of seed, the vining habit of the plant, as well as the shattering, makes it difficult to harvest." (*C. V. Piper, Bulletin of the U. S. Department of Agriculture, No. 119, p. 13.*) For further information this bulletin should be consulted.

See S. P. I. Nos. 33098 and 38441 for previous introductions.

42057. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. Plum.

From Simla, Punjab, India. Presented by Mr. E. Long, superintendent, Viceregal Gardens. Received March 7, 1916.

"Commonly known as *Alloobokhara*." (*Long.*)

Seeds sent in reply to the following request: "We are inclosing a photograph of a specimen of *Prunus* in the Kew Herbarium, England, which came originally from Simla, India. This was labeled *Prunus bokhariensis*, but we do not know for certain if this is authentic. It seems to have more than one common name and is known as *Alucha* and *Aru bokhara*. It was found at Simla apparently in what is there known as the Annandale Garden and is therefore known as the *Annandale plum*. It is also growing in the Service Club Compound at Simla and in the Kakheri Compound. This plum somewhat resembles *Prunus triflora* (*P. salicina*), but we believe it to be a distinct species, and it appears to be of much value in breeding work."

42058 to 42065.

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received February 28, 1916. Descriptive notes by Miss Wambold.

42058. CHAETOCHELOA ITALICA (L.) Scribn. Poaceæ. Millet.
(*Setaria italica* Beauv.)

"*Chō*, ground and made into *dok*, solid dumpling, coarser dumpling, or cooked as *pop*, that is, as rice is cooked."

42059. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

"*Kong*. Cooked, pressed, hung all winter to rafters, then soaked in a brown liquid called *chang*, used as a salty sauce on food. It is parched and then eaten. A few partly cooked grains are often scattered in the rice, as we use raisins in a rice pudding."

42060. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"*Soo soo*. Ground and made into flour for *dok*, a solid bread like a fallen dumpling; also cooked as *pop*, boiled rice."

42061. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.

"*Po rée*, cooked as rice is cooked; parched and made into coffee; ground into flour and made into *yot*, looking like molasses candy; sprouted and ground, mixed with rice, to make *comju*, a sort of rice soup."

42062. PERILLA FRUTESCENS (L.) Britton. Menthaceæ. Perilla.
(*Perilla ocymoides* L.)

"*Tui gai*. Oil is extracted from the seeds and used on the paper which covers the mud floors. It is used also on skin shoes."

42063. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. Adzuki bean.

"*Pat*. Used for flour and made into *dawk* (*dok*), a substance like a solid dumpling; also as porridge."

42058 to 42065—Continued.

42064. PHASEOLUS AUREUS Roxb. Fabaceæ. Mung bean

"*Nok too*. Ground and made into *mook*, a blancmange; also cooked as a vegetable."

42065. TRITICUM AESTIVUM L. Poaceæ. Wheat
(*Triticum vulgare* Vill.)

"*Meal* is the Korean name. Made into flour used for *dok*, a substance like fallen dumpling; also for *cooksoo*, i. e., vermicelli."

42066. BAMBOS GUADUA Humb. and Bonpl. Poaceæ. Guadua
(*Guadua angustifolia* Kunth.)

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni
Received February 2, 1916.

"In connection with *guaduas* I must notice the *guadua* itself, the most indispensable plant of all New Granada after the plantain, the cane, and maize. It might be called the lumber tree, for it supplies all our fencing (except wall of brick, rammed earth, and rarely of stone), also the woodwork of most houses, and whatever is made of boards at the North. It is an enormous grass like the bamboo of the eastern Tropics, growing, however, to a less height only 30 to 40 feet. The slender foliage is of inconceivable beauty, comparing with that of other trees as ostrich feathers do with goose quills. The stem is about 6 inches in diameter, with joints about 20 inches apart. The thickness of the wood is nearly an inch. When poles or slats are wanted, the stem is split into four, six, or eight parts. For boards for the top of a coarse table bench, or bedstead, it is opened and flattened out, splitting almost at every inch of width, but not coming entirely apart. For a dish, candle case, grease pot, or extemporaneous vessel for carrying drink to a company of hunters or laborers, it is cut off just below the partition. Such a receptacle is called a 'tarro'. Tarros of double capacity are made for bringing the domestic supply of water for a family by taking a piece two joints long, with a septum at each end and one in the middle. A hole is made in the upper and middle septa, and if they be used for carrying molasses a bung can be put in or an orange used for stopper. Bottles of a single joint are used for holding castor oil, etc. In short the uses of the *guadua* are innumerable. The *guadua* starts from the ground with the full diameter, or nearly so, but the joints are at first very short. Some trees send out branches, and they are long, straggling, and terribly thorny. Others grow with a diameter of only 2 inches and make good poles for bringing down oranges, every one of which has to be torn from the tree, or it decays without falling. The cavities of the *guadua* often contain water. It is erroneously believed that the quantity increases and diminishes with the phases of the moon. I must state one other thing about the *guadua* which is unusual in the vegetable kingdom here, but very common at the North. It is apt to take entire possession of the ground on which it grows. Now a square mile covered with the same species, say a pine, an oak, or the beech, an acre covered with the same species of grass, or whortleberry, or other plant is no uncommon thing at the North, but in the Tropics it is quite different. Plants are not gregarious here, still less exclusive. I have seen the guava grow in natural orchards where most of the trees in a considerable space were *Psidium*, but even this is rare, and in general you can not expect, where you have found a plant you want, to find others of the same species near it. If you wish to find a second lime tree, for instance, it is of no more use to look in the neighborhood where I found the first than in any other. But a 'guadual' is

a considerable space, almost always near a stream, where scarce the smallest intruding plant is permitted. The *guadua* might be cultivated to great profit, but I never knew of but one attempt at it. The flower and seed are so rare that few botanists have ever seen it." (*Holton, New Granada, pp. 109, 110.*)

42067. CERCIDIPHYLLUM JAPONICUM Sieb. and Zucc. Trochodendraceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 7, 1916.

"A deciduous tree of the largest size, often 100 feet high in its native state, with pendulous branches and a spirally twisted furrowed trunk. The trunk is sometimes solitary and 3 to 4 feet through, but more often the tree is made up of a group of several smaller stems. Leaves broadly ovate or heart shaped, 2 to 4 inches long. The male and female flowers are borne on separate trees, but neither possesses any beauty. This tree for a long time was thought to be confined to Japan, where it is the largest of deciduous trees, reaching its finest development in the island of Yezo; but Wilson found it in China in 1910. One tree, still living, but with its top fallen away, he found to be 55 feet in girth of trunk. The timber is light, straight grained, and yellowish, and is highly valued. The finest trees I have seen in Europe are in the Imperial Garden at Sans Souci, near Berlin, where there was, in 1908, a singularly elegant tree 30 feet high, with slender, spreading, arching branches. It succeeds equally well in the Royal Garden at Hanover. Still finer trees, but of denser habit, are in the Arnold Arboretum, Massachusetts, and in Mr. Thayer's grounds at Lancaster in the same State. It evidently needs a continental climate. At Kew, where it was introduced in 1881, it still remains a mere shrub. The generic name refers to the resemblance of the leaves to those of the Judas tree (*Cercis*)." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 332.*)

42068. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From New Orleans, La. Presented by the J. Steckler Seed Company. Received February 26, 1916.

Round, green.

42069. LUFFA ACUTANGULA (L.) Roxb. Cucurbitaceæ. Loofah gourd.

Secured by Mr. Frank N. Meyer, of the Bureau of Plant Industry, from Mr. Moy Auk, Kenilworth Avenue, Washington, D. C., March 9, 1916.

"A very good vegetable, much liked by the Chinese."

"This is a much smaller and apparently earlier variety than we have in the South." (*D. N. Shoemaker.*)

42070 and 42071. CAPSICUM ANNUM L. Solanaceæ.

Red pepper.

From State College, N. Mex. Presented by Mr. Fabian Garcia, New Mexico College of Agriculture and Mechanic Arts. Received March 7, 1916.

42070. "No. 9. This strain is proving to be more early and prolific and has a more shapely pod than the other strains." (*Garcia.*)

42071. "No. 11. This strain is almost as good as No. 9 [S. P. I. No. 42070], but it is not quite as prolific." (*Garcia.*)

42072. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.**Strawberry.**

From Chile. Presented by Mr. Thomas W. Voetter, American consul, Antofagasta, who received these seeds from the American consular agent at Arica. Received March 8, 1916.

"These seeds were collected by Mr. H. A. P. Schumacher, of Tacna, at Pistala in the Department of Tarata, Province of Tacna, Chile, located 70° 6' W. and 17° 28' S., at 2,843 meters (about 9,470 feet) elevation above sea level. The plants are grown by Indians (a mixture of Peruvians and Bolivians), and the fruit is of medium size and of light red-brown color, ripening in November." (*Voetter.*)

42073. MYRIANTHUS ARBOREUS Beauv. Moraceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received February 18, 1916.

Var. *chilnango*.

42074. CAPSICUM ANNUM L. Solanaceæ.**Red pepper.**

From Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received March 7, 1916.

"Spanish sweet pepper known to Spanish agriculture and industry as *Pimento dulce morrón*. This seed was obtained especially for this consulate general from the region in this consular district where these peppers are most largely grown. It is said to be of the highest quality." (*Hurst.*)

42075. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

From Buitenzorg, Java. Presented by the Department of Agriculture. Received March 8, 1916.

42076 to 42080. LATHYRUS spp. Fabaceæ.

From Utrecht, Netherlands. Presented by the director, Botanic Garden. Received February 2, 1916.

42076. LATHYRUS LATIFOLIUS L.**Everlasting pea.**

"This is the common perennial pea and one of the hardiest and most easily cultivated species, thriving almost anywhere, even among flags and bowlders. A rampant grower, it is a good trellis plant, and is adapted as a cover to wild, rough places, as a rock garden, where it scrambles over bushes and stones. It succeeds in shade and grows rapidly, but, like all species of *Lathyrus*, it is impatient of removal, owing to the size and length of its roots. It is not fragrant. Its varieties are not clearly defined." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1825.*)

See S. P. I. Nos. 17772 and 28480 for previous introductions.

42077. LATHYRUS ODORATUS L.**Sweet pea.**

See S. P. I. Nos. 13306 to 13312 and 17774 for previous introductions.

42078. LATHYRUS SYLVESTRIS L.**Flat pea.**

"Inferior ornamentally to other perennials; sometimes mentioned as a forage plant and for plowing under in a green state as a fertilizer. Grows well on poor, unimproved sandy soil and is unaffected by frosts and droughts. For garden cultivation it may be sown in a seed bed and

42076 to 42080—Continued.

transplanted when of suitable size. Its seeds in the wild state are said to be to some degree unhealthful, but in the cultivated form this quality has been bred out." (*Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 1825.*)

See S. P. I. Nos. 32415 and 40672 for previous introductions.

42079. LATHYRUS SYLVESTRIS L.**Flat pea.**

"Var. *wagneri*." This so-called variety, claimed to have been produced by a German named Wagner, seems not to be different from the ordinary *Lathyrus sylvestris*.

See previous introduction [S. P. I. No. 42078] for description.

42080. LATHYRUS VERNUS (L.) Bernh.**Spring vetchling.**

"A compact, tufted plant, growing quickly in the sun or a little shade; best in deep, sandy loam, in a sheltered position; hardy." (*Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 1827.*)

See S. P. I. Nos. 22555 and 40322 for previous introductions.

42081. MALUS BACCATA (L.) Moench. Malaceae.*(Pyrus baccata L.)***Siberian crab apple.**

From Castlecomer, Ireland. Cuttings presented by Mr. I. Proctor, Ballyhemon House. Received March 20, 1916.

"A fine variety of Siberian crab which produces fruit from 1½ to 2 inches long and from one-half to three-fourths of an inch in diameter." (*A. L. T. Proctor, in letter of February 7, 1916.*)

42082. PUYA CHILENSIS Molina. Bromeliaceae.**Puya.**

From Lima, Peru. Presented by Dr. A. Weberbauer. Received March 13, 1916.

"Seeds of one of the most interesting plants of the Peruvian Cordilleras, namely, of the giant bromeliad. I collected the seed at Capaya, Department of Apurimac, Province of Aymaraes, at an elevation of 4,000 to 4,100 meters above sea level in a region where frosts and snowfalls are abundant. The plant should, therefore, perhaps not be cultivated in a greenhouse, but requires only protection against sharp frosts and must naturally receive much light. In the vicinity of Capaya the plant is called *titanca*. Heretofore I have known this plant only from the Cordilleras between 9° and 10° south and have described and figured it in my book, *Die Pflanzenwelt der Peruanischen Anden.*" (*Weberbauer.*)

"This is one of the most striking of our bromeliaceous plants, cultivated in a cool stove of the Royal Gardens, Kew. The stem, or caudex, has now attained a height of 4 feet, independent of the leaves, which are from 3 to 4 feet in length, spreading in all directions, the lower ones being reflexed. These leaves would render the plant admirably suited to the formation of fences, in the nature of the spinous margins; for the upper half of the leaf has all the spines directed forward towards the apex, presenting a great obstacle to intrusion of man or beast in that direction, whilst those lower down the leaf (longer and stronger, too) have their curvature downwards, so that if man or animal is so bold as to make his way partially through, the decurved spines would prevent his retracing his steps with impunity. The compound spike of flowers upon the columnlike, perfectly straight peduncle is remarkable for

its size, the large dull yellow (but inclining to green) flowers and the copious bracteas turning brown or black in age. This plant is called *Cardon* and *Puya* in Chile, where the soft substance of the stem is used for corks and bungs; the flowers yield a remedy for hernia, and the Indians use the spines of the leaves for fishhooks." (*Curtis's Botanical Magazine*, vol. 9, pl. 4715.)

42083. PERILLA FRUTESCENS (L.) Britton. Menthaceæ. Perilla.
- (*Perilla ocymoides* L.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Company.
Received March 13, 1916.

See S. P. I. No. 42062 for previous introduction and description.

42084. ARALIA CORDATA Thunb. Araliaceæ. Udo.

From Yokohama, Japan. Roots purchased from L. Boehmer & Co. Received March 13, 1916.

"Japanese *Nakate White*, from Kanagawa Ken." (*Boehmer & Co.*)

42085. GARCINIA EPUNCTATA Stapf. Clusiaceæ.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received March 15, 1916.

"A wild fruit which grows on very large trees, 20 to 30 feet high." (*Stewart.*)

42086. NEPHELIUM LAPPACEUM L. Sapindaceæ. Rambutan.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received March 15, 1916.

"*Ramboetan atjeh matjan*. A tree up to 25 meters high. A fruiting tree which is an ornament of the Javanese village groves because of the pretty, often more or less dense, leaf crown, decorated on the outside with the numerous, long-stemmed scarlet fruits the size of a hen's egg. Arillus white, very juicy, more or less sour." (*Koorders and Valetton, Boomsoorten van Java.*)

"One of the most delicious and showy fruits of the Dutch East Indies, closely related to the litchi." (*Fairchild.*)

See S. P. I. Nos. 13571, 17515, and 34494 for previous introductions with descriptions.

42087 to 42136.

From Melbourne, Victoria, Australia. Presented by Mr. A. E. V. Richardson, agricultural superintendent, Department of Agriculture. Received March 8, 1916. Notes by Mr. Richardson.

42087. AVENA ORIENTALIS Schreb. Poaceæ. Oats.

Black Tartarian.

42088 and 42089. AVENA SATIVA L. Poaceæ. Oats.

42088. "*Ruakura* oats raised in New Zealand by Primrose McConnell and having the reputation of being rust resistant."

42089. "*Clydesdale.*"

42090 and 42091. AVENA STERILIS L. Poaceæ. Oats.

42090. "*Algerian.*"

42091. "*Calcutta.*"

42087 to 42136—Continued.

42092 to 42101. HORDEUM spp. Poaceæ. Barley.

42092 to 42095. HORDEUM DISTICHON PALMELLA Harlan.

42092. Subvariety *erectum*. "Goldthorpe. Feed barley."42093 to 42095. Subvariety *nutans*.

42093. "Pryor. Two-rowed malting barley."

42094. "Kinver. Two-rowed malting barley."

42095. "Archer. Two-rowed malting barley."

42096. HORDEUM VULGARE PALLIDUM Seringe.

Subvariety *coerulescens*. "Roseworthy Oregon. Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia."

42097. HORDEUM DISTICHON PALMELLA Harlan.

Subvariety *nutans*. "Golden grain. Two-rowed malting barley."

42098. HORDEUM VULGARE L.

"Square head. Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia."

42099 and 42100. HORDEUM VULGARE PALLIDUM Seringe.

42099. Subvariety *coerulescens*. "Short head. Six-rowed field barley produced by Prof. Perkins, of Roseworthy College, South Australia."42100. Subvariety *coerulescens*. "Cape. Two-rowed malting barley."

42101. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven.

"Skinless. Feed barley."

42102 to 42136. TRITICUM spp. Poaceæ. Wheat.

"Nos. 42102, 42105 to 42109, 42111 to 42114, 42131, and 42134 are new crossbred varieties which are largely grown in the various States of the Commonwealth. Of very high milling value, and produce flour possessing a very high water-absorption value and give well-piled loaves. The rest are, for the most part, selections isolated by various plant breeders and agriculturists from acclimatized foreign varieties, and from old types of wheat that have been growing in the States for some forty years."

42102 to 42114. TRITICUM AESTIVUM L.

(Triticum vulgare Vill.)

42102. *Federation*.42103. *Federation* (hard selection).42104. *Federation* (white selection).42105. *Currawa*.42110. *Crossbred 28*.42106. *Commonwealth*.42111. *Florence*.42107. *Major*.42112. *Cedar*.42108. *Nardoo*.42113. *Bob's*.42109. *Canberra*.42114. *Comeback*.

42115. TRITICUM DURUM Desf.

Huguenot.

42087 to 42136—Continued.

42116 to 42136. TRITICUM AESTIVUM L.

(Triticum vulgare Vill.)

42116. <i>Penny.</i>	42127. <i>Purple Straw.</i>
42117. <i>Warden.</i>	42128. <i>College Purple Straw.</i>
42118. <i>Marshall's No. 3.</i>	42129. <i>Gluyas</i> (bearded).
42119. <i>Dart's Imperial.</i>	42130. <i>Gamma.</i>
42120. <i>Yandilla King.</i>	42131. <i>Bayah.</i>
42121. <i>College Eclipse.</i>	42132. <i>Viking.</i>
42122. <i>Correll's No. 3.</i>	42133. <i>White Tuscan.</i>
42123. <i>Avoca.</i>	42134. <i>Zealand Blue.</i>
42124. <i>Wallace.</i>	42135. <i>Bunyip.</i>
42125. <i>Triumph.</i>	42136. <i>Firbank.</i>
42126. <i>Thew.</i>	

42137. ARRACACIA XANTHORRHIZA Bancroft. Apiaceæ. **Arracacha.**

From Kingston, Jamaica. Tubers presented by Mr. W. Harris, Hope Gardens. Received March 23, 1916.

"This common vegetable is a native of the Andes in South America, where it is cultivated between 5,000 and 7,000 feet altitude. It is a low parsniplike plant, producing large edible starchy carrot-shaped roots, the flavour of which has been compared to a combination of parsnip and potato. The plant will thrive in any good soil and is adapted only to the higher elevations, say from 4,500 to 6,000 feet. It is commonly cultivated as a vegetable at Bogota in Colombia up to 8,000 feet elevation." (*H. F. MacMillan, Handbook of Tropical Gardening, 2d ed., p. 234, 1914.*)

42138 to 42165. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received March 8, 1916. Quoted notes by Mr. T. Kiyono, Semmes, Ala.

- 42138. "No. 28. *Marugaki*. Astringent. Hiroshima Province."
- 42139. "No. 29. *Giombo*. Astringent. Hiroshima Province."
- 42140. "No. 30. *Shimofuri*. Astringent. Hiroshima Province."
- 42141. "No. 31. *Koharu*. Sweet. Kumamoto Province."
- 42142. "No. 34. *Yotsu-myotan*. Sweet. Hiyogo Province."
- 42143. "No. 35. *Koharu*. Sweet. Oita Province."
- 42144. "No. 39. *Takura* (or *Sakushu-mishirazu*). Astringent. Oita Province."
- 42145. "No. 40. *Kumono*. Astringent. Okidzu Province."
- 42146. "No. 41. *Kiara*. Sweet. Okidzu Province."
- 42147. "No. 42. *Fuji*. Astringent. Okidzu Province."
- 42148. "No. 43. *Mishirazu*. Astringent. Okidzu Province."
- 42149. "No. 44. *Ama-yemon*. Sweet. Okidzu Province."
- 42150. "No. 45. *Koshu-hiyakume*. Astringent. Okidzu Province."
- 42151. "No. 46. *Yotsumizo*. Astringent. Okidzu Province."
- 42152. "No. 47. *Dojo-hachiya*. Astringent. Okidzu Province."
- 42153. "No. 48. *Tokuda-gosho*. Sweet. Okidzu Province."
- 42154. "No. 49. *Shiroto-damashi*. Astringent. Okidzu Province."

42138 to 42165—Continued.

42155. "No. 50. *Jiro*. Sweet. Okidzu Province."
 42156. "No. 51. *Inayama*. Astringent. Okidzu Province."
 42157. "No. 52. *Shiyogatsu*. Sweet. Okidzu Province."
 42158. "No. 53. *Shimofuri*. Sweet. Okidzu Province."
 42159. "No. 54. *Sanenashi*. Astringent. Okidzu Province."
 42160. "No. 55. *Ama-hiyakume*. Sweet. Okidzu Province."
 42161. "No. 56. *Ye-gosho*. Sweet. Okidzu Province."
 42162. "No. 57. *Yashima*. Sweet. Okidzu Province."
 42163. "No. 58. *Onihira*. Astringent. Okidzu Province."
 42164. "No. 59. *Shiunshio*. Sweet. Okidzu Province."
 42165. "No. 60. *Fuyu*. Sweet. Okidzu Province."

42166 and 42167.

From Yokohama, Japan. Procured from the Yokohama Nursery Company, through Mr. L. H. Dewey, of the Bureau of Plant Industry. Received March 18, 1916.

42166. *CANNABIS SATIVA* L. Moraceæ.

Hemp.

"*Tochigi* hemp. The seed supply for sowing is very limited because farmers do not cultivate beyond their own local requirements, so unless contracted for early in the season no considerable quantity is obtainable. The best and most durable fishing nets are made of the *Tochigi* hemp, which are said to last for three years, while nets made of hemp produced elsewhere do not keep good half as long. The net manufacturer of Fujisawa, who supplies the nets all over Japan, uses the *Tochigi* hemp exclusively, and his make is esteemed as the very best in Japan. As to the length of fiber, it may depend upon the cultural method. For hemp production the seeds are sown broadcast and grown closely together, to make the stalks grow slender and higher. The stalks are gathered while they are quite green. For seedlings ample space is provided in order that they may spread out branches freely, and they are left in the field till the seed matures." (*S. Iida.*)

"*Tochigi* (pronounced to-ching'ee) hemp is regarded as the best fiber-producing hemp in Japan. It is cultivated most extensively in the Province of *Tochigi*, about 100 miles north of Yokohama. The slender tall stalks produce a fiber somewhat finer than the average Kentucky hemp. Although this is one of the most promising strains of foreign hems it is not likely to give very satisfactory results in this country until after it has been acclimated by cultivation and selection for two or three generations." (*L. H. Dewey.*)

42167. *ZEA MAYS* L. Poaceæ.

Corn.

Introduced for breeding experiments.

42168 to 42172. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
 (*Sechium edule* Swartz.)

From Basse-Terre, Guadeloupe, French West Indies. Presented by Mr. Joseph O. Florandin, American vice consul. Received March 20, 1916.

Introduced for the office experiments.

42168. White.

42171. Long light green.

42169. Large dark green.

42172. Small dark green.

42170. Large light green.

42173 to 42176. INDIGOFERA spp. Fabaceæ. Indigo.

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received March 15, 1916.

42173. INDIGOFERA HIRSUTA L.

An annual species of indigo, native of Guinea, less esteemed for dye production than *Indigofera anil* L. and *I. tinctoria* L.

See S. P. I. Nos. 23726 and 37068 for previous introductions.

42174. INDIGOFERA LONGERACEMOSA Boivin.

In Madagascar and Zanzibar this species, which is very distinct from both *Indigofera tinctoria* and *I. sumatrana*, is valued by the people beyond all the other species they grow, and they grow the following: (a) Chiefly *I. anil*, (b) less often *I. tinctoria*, (c) occasionally *I. sumatrana*, and (d), in the highlands of Madagascar, *I. arrecta*. (Adapted from Watt, *The Commercial Products of India*, p. 662.)

42175. INDIGOFERA SUFFRUTICOSA Mill.

A South American species cultivated in Burma, Indo-China, southern China, and Java.

See S. P. I. Nos. 24440 and 37391 for previous introductions.

42176. INDIGOFERA SUMATRANA Gaertn.

This is the form of *Indigofera tinctoria* that was introduced from the East into the West Indies and is the *I. tinctoria* of Lunan. If, therefore, it be deemed necessary to give this plant a separate name and remove it from being one of the cultivated states of *I. tinctoria* L., then it will have to be called *I. sumatrana* Gaertn. In addition to India (where it is largely in use in the north from Bihar and Tirhut westward by north to the Punjab) it also occurs in tropical Africa and Formosa. It may be distinguished from the southern form of *I. tinctoria* by its leaflets, which are larger and ovate-oblong or oblong instead of obovate or suborbicular. The pods in *I. sumatrana* are also shorter, thicker, and blunter at the apex, and are usually more numerous and straighter than in the Madras form. (Adapted from Watt, *The Commercial Products of India*, pp. 662-663.)

42177 and 42178.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received March 17, 1916.

42177. PITTOSPORUM FAIRCHILDII Cheeseman. Pittosporaceæ.

"This variety bears a striking resemblance to *Pittosporum crassifolium* [S. P. I. No. 41290], but is the more dense of the two, consequently better; it ripens its seed several months later; makes a splendid hedge and is good also as a shrub tree; height about 20 feet. This variety was discovered by the late Capt. Fairchild, on an island off the New Zealand coast. The seeds take a long time to germinate, and forcing them is of no use. Plants are tender when young and must be kept from frost; they are hardy when established." (Wright.)

42178. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"Weeping variety which will repeat from seed; best results obtained by budding them on standards, or they may be worked on low stocks; tie the bud up to a tall stake and top off at a given height. It is a very fine dessert peach." (Wright.)

42179. PLATANUS ORIENTALIS L. Platanaceæ. Oriental plane tree.

From Lahore, India. Presented by the superintendent, Government Agricultural Gardens. Received March 17, 1916.

"A deciduous tree of the largest size, in this country occasionally 80 to 100 feet high and 14 to 20 feet in girth of trunk. Native of southeastern Europe and Asia Minor; cultivated in England in the middle of the sixteenth century. The true oriental plane is comparatively rare in gardens, having been ousted by the more rapidly growing London plane, which is not so picturesque nor so pleasing as an isolated lawn tree. It is easily distinguished from *acerifolia* by its shorter, more rugged trunk and its deeper, often doubly lobed leaves. Few trees are longer lived than this. On the banks of the Bosphorus there is a group of trees under which the knights of Godfrey de Bouillon on their way to the crusades are said to have been sheltered in 1096. Under a tree still living on the island of Cos in the Aegean Sea, its trunk 18 yards in circumference, tradition says that Hippocrates sat more than 400 years B. C. There is no direct evidence to support these stories, but they point to the perhaps unequalled longevity of the plane among European trees. In his account of fine British specimens Mr. Elwes gives first place to one in the palace gardens at Ely, planted by Bishop Gunning between 1674 and 1678. It is over 100 feet high and more than 20 feet in girth. A fine specimen at Kew, near the sundial and on the site of the famous seventeenth-century gardens of Sir Henry Capel of Kew House, has a trunk 15 feet in girth." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 203.*)

42180. BARYXYLUM DUBIUM (Spreng.) Pierre. Cæsalpiniaceæ.

(*Peltophorum vogelianum* Walp.)

From Davie, Fla. Presented by Mr. Robert Werner, horticulturist, Davie Board of Trade. Received March 20, 1916.

Seeds of a large tree 50 to 60 feet high, broad and spreading, giving fine shade. A handsome ornamental tree. Flowers bright yellow with golden yellow anthers. Called *cana fistula* in Brazil, but this name properly belongs to another plant.

See S. P. I. No. 37901 for description.

42181 and 42182.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received March 18, 1916.

42181. INDIGOFERA TINCTORIA L. Fabaceæ.

Indigo.

"A blue dye is obtained from species of *Indigofera*, chiefly *Indigofera anil* (of the West Indies) and *I. tinctoria* (of India and Africa). Both are shrubby plants of the leguminous family and occur in a wild state in Ceylon up to about 2,000 feet. India and Java are almost the only indigo-producing countries. Owing partly to the unhealthiness of the operations in connection with its production, but chiefly to the introduction of synthetic indigo, the cultivation of the plant has in recent years been largely abandoned. Of late, however, the industry appears to have somewhat recovered, the natural indigo being preferred by many manufacturers to the artificial production. The best conditions for the profitable cultivation of the plant are a rich loamy soil with a free subsoil and a moist hot atmosphere; a temperature below 60° F. is unfavorable to the crop. The land being plowed and harrowed, the seed is sown in lines about 2 feet apart. The seed being small, 10 to 15 pounds

42181 and 42182—Continued.

is required to sow an acre. It germinates in three or four days, and about three months later the flowers appear, when the plants are ready for harvesting. The plants are usually cut down to within a few inches of the ground, tied up in bundles, and carried fresh to the factory. The stumps left in the ground will afterwards 'ratoon,' and two to four cuttings may be obtained from the same roots within the year. To produce the dye the whole plant is subjected to a process of fermentation and churning. The freshly cut bundles are placed in huge vats provided with a tap at the bottom; the top is weighted down with planks and water laid on so as to cover the whole. Fermentation sets in and is allowed to go on for 12 to 16 hours, being stopped when the leaves become a pale color. The liquid is run off by the tap into a second cistern and is kept constantly agitated by either wading coolies, who beat with paddles, or by a mechanical contrivance, for two or three hours, after which the indigo settles in the bottom in the form of bluish mud. This, after draining off the water, is put into bags which are hung to dry, being afterwards cut into squares and stamped and further dried for export. About 8 pounds of leaves will yield one-half ounce of indigo. Good cultivation yields an annual return of from 300 to 500 pounds of indigo per acre." (*MacMillan, Handbook of Tropical Gardening and Planting, pp. 450 and 451.*)

42182. ISATIS TINCTORIA L. Brassicacæ.**Woad.**

"*Isatis tinctoria*, the dyer's woad, is said to have been originally a native of southeastern Europe, from whence it has spread by means of cultivation and become naturalised in most parts of Europe as far north as Sweden, and also in some parts of Asia. It is a biennial, growing from 18 inches to 3 or 4 feet high, with a smooth straight stem, branches toward the top, the root leaves stalked, inversely egg shaped or oblong, and coarsely toothed, the upper ones narrow lance shaped, with prominent auricles at the base. The pods are rather more than half an inch long, broad, and very blunt at the top, but tapering to the base. Before the use of indigo became common among European dyers, the blue coloring matter called woad, obtained from this plant, was an article of great importance, and the plant was extensively cultivated; but the introduction of indigo has almost entirely superseded it, and it is now only grown to a limited extent and used chiefly by woolen dyers for mixing with indigo, in order to excite fermentation. It is generally prepared by grinding the leaves into paste, which is then carefully fermented in heaps and afterwards made into balls or bricks for sale. The use of woad as a dye dates from very early times. Dioscorides, Pliny, and others mention its use for dyeing wool; and Cæsar relates that the ancient Britons used it for staining their bodies, the word Britain being derived from the Celtic *brith* or *brit*, 'painted,' in reference to this custom." (*Lindley, Treasury of Botany, vol. 1, p. 628.*)

42183 to 42199.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received March 20, 1916.

42183. ADENOCARPUS FOLIOLOSUS (Dryand.) DC. Fabacæ.

"The stalks in this species are thickly covered with small leaves, which give the whole plant an outré appearance; hence the name '*foliolosus*,'

42183 to 42199—Continued.

so happily hit off; many other peculiarities attend this charming shrub, of which its long deciduous bractæ are not the least remarkable. It is a native of the Canary Islands, where it was found by Mr. Masson and introduced in 1779; if suffered to grow it will acquire a great height, become indeed too large for a small greenhouse, and more fit for a conservatory, for which it would appear to be a most desirable plant; it produces flowers abundantly during May and June, which are not only ornamental but deliciously fragrant. Strong-established plants usually produce perfect seeds, by which this shrub is increased; cuttings rarely succeed." (*Curtis's Botanical Magazine*, vol. 11-12, pl. 426, as *Cytisus foliolosus*.)

42184. *BERBERIS* sp. Berberidaceæ.

Barberry.

Received as *Berberis vilmoriniana*, for which a place of publication has not yet been found.

42185. *BERBERIS HOOKERI VIRIDIS* C. Schneid. Berberidaceæ. Barberry.

"An evergreen shrub, 3 to 5 feet high, producing a dense thicket of erect, angled stems which branch near the top. Leaves in tufts, 1 to 3 inches long, one-half to 1 inch wide; leathery, dark green above, glaucous white beneath. Flowers two-thirds inch across, pale yellow. Berries narrow, black purple, often remaining on the plant until the following spring. Native of the Himalayas. This shrub has been so much confused with *Berberis wallichiana* that it is difficult to disentangle the histories of the two. The true *B. wallichiana* is probably not in cultivation; it differs from *B. hookeri* in the larger leaves (3 to 4½ inches long) and especially in their veining; the veins branch out from the midrib, parallel with each other, but never reach the margin, becoming merged in a vein which runs parallel with it. In *B. hookeri* the veins fork near the margin, but do not merge into one another. *B. hookeri* flowers in April and May and as a rule is quite hardy. The only time I have known it to suffer much was during the trying winter of 1908-09, when it lost most of its leaves, and the upper portion of the stem was killed. Leaves uniformly bright green beneath. Although a marked characteristic of some plants, the white under surface of typical *B. hookeri* is not a wholly reliable distinctive character. I have seen young plants partly bright green and partly blue white beneath. The best way to increase this species and its varieties is by the seeds it so plentifully bears; they may be sown in shallow boxes or in pots and the young plants pricked out the following year into nursery rows. The type and the variety *viridis* are useful shrubs for planting in places where an evergreen is wanted that will keep fairly dwarf without pruning." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 243.)

42186. *CARAGANA ARBORESCENS* REDOWSKI Bean. Fabaceæ. Pea tree.

"A remarkable shrub, with long, serpentine branches, which will sometimes grow for several years without dividing. It thus acquires a thin and open but not ungraceful habit and is altogether a striking plant. Whether the *Caragana redowski* mentioned by De Candolle in his Memoir of Leguminosæ, published in 1825, is the same as this is uncertain. It appears never to have been properly described. The plant is at Kew, but its history is not known." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 288.)

42183 to 42199—Continued.

42187. *CARAGANA MICROPHYLLA* Lam. Fabaceæ.

Altavana.

"Native of north-central Asia from Siberia to China; introduced in 1789. It flowers in May and June and is readily distinguished from all other species by the number and small size of its leaflets, the smallest scarcely one-eighth inch long. It is a shrub of graceful habit, much wider than high (16 feet in diameter at Kew), the branches being long, slender, but little divided, and ultimately more or less pendent. Grafted on standards of *Caragana arborescens* it makes a small tree, but sucker growths from the stock are often troublesome. It is suitable as a specimen for a lawn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 291.*)

42188. *CORNUS BRETSCHEIDERI* Henry. Cornaceæ.

"A species with the young wood of a blood-red color; leaves opposite, lanceolate-ovate, dark green above, glaucous beneath; fruits blackish blue. China." (*Kew Bulletin, 1900, p. 41.*)

42189. *HYDRANGEA BRETSCHEIDERI* Dipp. Hydrangeaceæ.

"A deciduous shrub, 8 to 10 feet high, forming a sturdy bush, old bark peeling; young branches smooth. Corymbs flattened, 4 to 6 inches across, with a considerable number of large sterile flowers at the margins; these are three-fourths to 1½ inches across, the three or four sepals rounded or obovate, white, afterwards rosy. The small, perfect flowers are dull white. Native of China; introduced from the mountains about Peking in 1882, by Dr. Bretschneider. Planted in a sunny position in good soil, this makes a really handsome shrub, flowering in June and July, perfectly hardy and always vigorous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 624.*)

42190. *HYDRANGEA XANTHONEURA WILSONII* Rehder. Hydrangeaceæ.

"A deciduous shrub, 8 feet or perhaps more high, of loose, thin habit, sending out long slender branches. Leaves in threes, ovate or oval, with a short, slender point, dark green and smooth above, pale beneath. Inflorescence a flattish, corymbose panicle, 5 or 6 inches across, margined with creamy white, sterile flowers 1½ inches across. Perfect flowers one-fourth inch across, dull white. Native of central China; introduced for Messrs. Veitch by Wilson about 1904. It is a shrub of elegant and distinct habit and with considerable beauty in flower. It has, perhaps, some affinity with *Hydrangea bretschneideri*, but is, as yet, imperfectly known in gardens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 631.*)

"The variety differs from the species (which has bright reddish brown bractlets with the bark without lenticels and soon separating into thin flakes) in having the new bractlets of each year grayish yellow while those of the previous year are grayish or light brown and marked with pale lenticels and the young leaves slightly appressed pubescent beneath." (*Sargent, Plantae Wilsonianae, part 1, p. 27.*)

42191. *HEDYSARUM ESCULENTUM* Ledeb. Fabaceæ.

"An erect Siberian Hedysarum with yellowish white flowers. According to Gmelin, the root is eaten by the natives of Jakutsk.

42192. *HEDYSARUM FLAVESCENS* Regel and Schmalh. Fabaceæ.

A suberect branching Hedysarum with yellow flowers, closely related to *Hedysarum neglectum* and *H. dasycarpum*. From the mountains of Kokan at Lake Iskander-Kul, at 7,000 feet altitude.

42183 to 42199—Continued.

42193. HEDYSARUM SEMENOWII Regel and Herd. Fabaceæ.

An erect Hedysarum from the steppes of the Balkasch region of Turkestan.

42194. LARIX DAHURICA PRINCIPIS RUPPRECHTII (Mayr) Rehd. and Wils. Pinaceæ. Larch.

"A tree in some parts of its native habitat as large as the common larch; bark scaling, but not fissured; young shoots pale brown, not downy. Leaves 1 to 1½ inches long, not so tapered at the tip as in the common larch. Cones beautiful bright pink when young in April, ultimately three-fourths to 1½ inches long, egg shaped, tapered toward the top; scales rounded, with the margins distinctly beveled, and differing from those of *Larix europæica* in not being downy, at least as a rule. Native of Saghalien, eastern Manchuria, and Siberia. The date of its introduction is unknown, but it was cultivated as long ago as 1739, at which time and for long afterwards it was thought to be a native of Newfoundland, where, however, no proof of its being a native exists. It thrives much better in Britain than *L. sibirica*, and in several places is from 60 to 80 feet high. At Kew, in poor soil, it is 50 feet high, with a trunk 3 feet 8 inches in girth. As a tree for park or garden it has nothing to recommend it before the common larch except its interest and the brighter hue of its young cones." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 6.*)

42195. SPIRÆA VEITCHI Hemsl. Rosaceæ.

"A strong-growing shrub, probably 10 or 12 feet high eventually, producing gracefully arching shoots. Flowers in dense corymbs, 1½ to 2½ inches across. Native of central China; discovered by Wilson in western Hupeh in 1900, and introduced by him for Messrs. Veitch. It is a fine species (Mr. Wilson has told me he considered it the best of Chinese Spiræas), somewhat similar in general aspect and in producing its flowers on short leafy twigs from the growths of the previous summer to the well-known *Spiræa canescens (flagelliformis)*. It is readily distinguished from that species, however, by its smooth, entire leaves and smooth fruit. Its entire leaves also distinguish it from two other allies, *S. henryi* and *S. wilsoni*. I saw the plants first introduced in their young state in the Coombe Wood Nursery, when they were making shoots as much as 8 feet long in a season; when these the following June were wreathed from end to end with clusters of pure white blossom they made a picture of remarkable beauty." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 545.*)

42196. × PHYSALIS BUNYARDI Hort. Solanaceæ.

"An interesting hybrid, growing to a height of 3 feet and having large fruits." (*Bunyard's catalogue.*)

"The plant called *Physalis bunyardi* Hort. is a very free-fruited form, not so robust as *P. franchetii*, with glowing calyces; probably a form of that species or by some suggested as a hybrid with *P. alkekengi*." (*Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2608.*)

42197. VIBURNUM HUPEHENSE Rehder. Caprifoliaceæ.

"A deciduous shrub, the young shoots stellately hairy the first year, purplish brown the second. Leaves roundish ovate, coarsely toothed, dark green and covered with loose stellate down above, paler and more

42183 to 42199—Continued.

downy beneath; 2 to 3 inches long. Corymbs about 2 inches wide, the main and secondary flower stalks covered densely with stellate down; branches of the corymb usually five. Fruit egg shaped, red, one-third to two-fifths inch long. Native of Hupeh, China; discovered by Henry; introduced by Wilson in 1908. I do not know that it has yet flowered in cultivation, but it will no doubt soon do so. The above description is adapted from the original one of Mr. Rehder, who observes that it is most nearly related to *Viburnum dilatatum* (from which it differs in its orbicular-ovate leaves and stipuled leaf stalks) and to *V. betulifolium*, from which it is distinct in being downy on both leaf surfaces." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 650.)

42198. *VIBURNUM LOBOPHYLLUM* Graebn. Caprifoliaceæ.

"A deciduous shrub, with young shoots smooth or soon becoming so, dark reddish brown when mature. Leaves ovate to roundish or broadly obovate, coarsely toothed except toward the base. Corymbs 2 to 4 inches wide, with seven main branches which, like the secondary ones, are minutely downy and glandular. Flowers white, one-fourth inch across, stamens longer than the corolla, anthers yellow. Fruit bright red, roundish, one-third inch long. Native of western China; introduced by Wilson in 1901 and again in 1907 and 1910. It belongs to the confusing group of red-fruited Asiatic *Viburnums* containing *wrightii*, *betulifolium*, *dilatatum*, etc." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 652.)

42199. *VIBURNUM RHYTIDOPHYLLUM* Hemsl. Caprifoliaceæ.

"An evergreen shrub perhaps eventually 10 feet high and as much through. Leaves ovate-oblong, upper surface glossy, not downy, but deeply and conspicuously wrinkled; lower one grey with a thick felt or starry down. Flowers produced on large terminal umbellike trusses 4 to 8 inches across, which form into bud in the autumn and remain exposed all through the winter and until the blossoms expand the following May or June. They are dull yellowish white, about one-fourth inch in diameter. Fruit oval, one-third inch long, at first red, then shining black. Native of central and western China, introduced by Wilson for Messrs. Veitch in 1900. This remarkable shrub is one of the most distinct and striking not only of *Viburnums* but of all the newer Chinese shrubs. It appears to be quite hardy and flowers well in spite of the curious habit of forming its inflorescences and partially developing them in autumn. Its beauty is in its bold, wrinkled, shining leaves and red fruits. The flowers are dull and not particularly attractive. It was given a first-class certificate by the Royal Horticultural Society in September, 1907. During that month of the year its fruits are red." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 655.)

42200. *AMYGDALUS PERSICA NECTARINA* Ait. Amygdalaceæ.**Nectarine.**

From Harput, Turkey. Presented by Mr. Leslie A. Davis, American consul. Received March 24, 1916.

"Seed of the smooth-skinned peach, of the nectarine order, which is the better of the two varieties found here. This is an early variety, and I am informed that the best results are obtained by grafting." (Davis.)

42201. PLATANUS ORIENTALIS L. Platanaceæ. Oriental plane tree.

Presented by Mr. G. S. Miller, of the National Museum, through Mr. Frederick V. Coville, of the Bureau of Plant Industry. Received March 23, 1916.

"Seeds received from Dr. W. L. Abbott, of Philadelphia. Dr. Abbott states that they are from Kashmir, that the tree is a valuable shade tree of very rapid growth, handsome form, and enormous size, and that the seeds should be planted immediately. The Kashmir name is *chenar*. Dr. Abbott also states that the tree is not a native of Kashmir, but was brought from Persia." (Coville.)

See S. P. I. No. 42179 for previous introduction.

42202 to 42204.

Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received January 19, 1916. Notes by Dr. Griffiths.

42202. CHILOPSIS LINEARIS (Cav.) Sweet. Bignoniaceæ.
(*Chilopsis saligna* D. Don.)

"From the Santa Rita Mountains, Ariz. (No. 1099 DG., October 12, 1915.) This is a small willowlike tree inhabiting desert washes from Texas to California. It is very showy when in blossom, the flowers being purplish tinged and resembling those of a miniature catalpa. In nature its habit is quite open and lax, but it stands pruning and can easily be shaped as desired. The seed can probably be planted in the open in a situation where there is good drainage and where moisture conditions can be controlled when the hot, dry season arrives."

42203. DASYLIRION WHEELERI S. Wats. Liliaceæ. Sotol.

"The sotol is on the whole a rather stiff, formal plant of the yucca family. It has a short, thick trunk and long, narrow, flat, spiny-edged, gracefully drooping leaves, very different in this respect from the stiff, rigid century plants, which are not distant relatives. It does not sucker like the century plants, neither does the plant die when it has thrown up a flower stalk, thus leaving an ugly break in the planting. Its flower stalks are immense. They often reach a height of 8 or 10 feet, the myriads of small flowers occupying a solid spindle-shaped space 4 feet in length. The plant itself, with its glabrous graceful leaves, is handsome, but it is strikingly attractive from early blossoming until late winter after the mass of seed has fallen. The sotols are most attractive as specimen plants. In Mexico the leaves are stripped of their curved teeth by being pulled through a slit cut in a piece of tin and then woven into durable floor coverings, the ones we have seen lasting in good condition for two years under ordinary wear. The usual practice is for the weaver to enter the house with an armful of the leaves suitably stained and beginning in one corner of the room weave a mat to fit the floor, composing the design as he proceeds. The price is usually about 40 cents (Mexican money) per meter. From the stems of the plant, particularly in the State of Chihuahua, is manufactured one of the most violent of intoxicating distillates. In times of excessive drought the plants are cut down and the stems chopped up as feed for live stock. I believe that the seed of this planted where drainage is good and where moisture conditions can be controlled can be brought through in the open."

42202 to 42204—Continued.

42204. ERYTHRINA FLABELLIFORMIS Kearney. Fabaceæ.

"A low, spiny shrub, 2 to 4 feet high, inhabiting the upper foothills of the isolated mountain ranges of the Southwest. Its beans range from cream through yellowish or coffee color to bright scarlet. It is deciduous in its native heath and will fill about the same rôle in planting as the smaller coral beans now grown. It will probably prove more hardy than the introduced species."

42205 to 42209. TRITICUM spp. Poaceæ.**Wheat.**

From Sydney, New South Wales. Presented by Mr. George Valder, under-secretary and director, Department of Agriculture. Received March 15, 1916. Notes by Mr. Valder.

"From the Cowra Experiment Farm."

42205. TRITICUM TURGIDUM L.

"Galland's Hybrid."

42206. TRITICUM DURUM × POLONICUM.

"Nevertire."

42207. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

"Blout's Lambrigg."

42208. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

"Nyngan."

42209. TRITICUM POLONICUM L.

"Polish."

42210. SOLANUM TUBEROSUM L. Solanaceæ.**Potato.**

From Summer Hill, Mallow, Ireland. Tubers presented by Mr. J. F. Williamson. Received March 18, 1916.

"*Leinster Wonder*. It is a very vigorous grower, showing great immunity from disease, and is of excellent table quality. Haulm very dark green, of great strength, with strikingly large white flowers." (*Williamson's Catalogue of Seed Potatoes*.)

42211 to 42222. LIGUSTRUM OVALIFOLIUM × OBTUSIFOLIUM REGELIANUM. Oleaceæ.**Privet.**

From New Haven, Conn. Cuttings presented by the Elm City Nursery Company. Received March 29, 1916.

"Origin of the hybrid privet—seed parent *Ligustrum ovalifolium*, pollen parent *Ligustrum obtusifolium* [*regelianum*] (northern type). Seed obtained from *Ligustrum ovalifolium* in the fall of 1910 from a single plant in a group of several *obtusifolium*. The seed plant attracted our attention as it hung heavy with fruit, which is not common in this vicinity. The inference was that cross-fertilization had taken place with *obtusifolium*. The seedlings, some hundreds of which were planted in the field the following season, showed every indication that the crossing did take place. No two are very similar, varying greatly from upright to almost prostrate in habit, some very luxuriant and others quite dwarf, some now producing terminal clusters of fruit, while others fruit on the lateral branches only. Many have glossy leaves which are quite as persistent as *ovalifolium*; the foliage of others matures early. From the

original planting we have now reduced the number which have unquestioned merit to 50, and these are growing at Edgewood. They vary at present in height from 2 to 12 feet. We anticipate that some of them will prove to be valuable hedge plants, partaking enough of the characteristics of *ovalifolium* to give these plants desirable hedge qualities and at the same time prove more hardy owing to the infusion of *obtusifolium* blood. They have not yet been subjected to temperature exposures which have killed *ovalifolium* entirely to the ground, conditions which do occur occasionally in this vicinity, so their relative hardiness has not been absolutely determined as yet." (*Elm City Nursery Co.*)

42223 to 42267. RIBES spp. Grossulariaceæ.

From Lethbridge, Alberta, Canada. Cuttings presented by Mr. W. H. Fairfield, superintendent, Experimental Station for Southern Alberta, Received March 29, 1916.

Requested by this office for the studies of the Office of Horticultural and Pomological Investigations.

42223 to 42239. RIBES NIGRUM L. Black currant.

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| 42223. <i>Topsy.</i> | 42232. <i>Climax.</i> |
| 42224. <i>Eclipse.</i> | 42233. <i>Beauty.</i> |
| 42225. <i>Success.</i> | 42234. <i>Winona.</i> |
| 42226. <i>Merveille de la Gironde.</i> | 42235. <i>Monarch.</i> |
| 42227. <i>Ethel.</i> | 42236. <i>Eagle.</i> |
| 42228. <i>Saunders.</i> | 42237. <i>Norton.</i> |
| 42229. <i>Ontario.</i> | 42238. <i>Kerry.</i> |
| 42230. <i>Bang-Up.</i> | 42239. <i>Lee's Prolific.</i> |
| 42231. <i>Magnus.</i> | |

42240 to 42267. RIBES VULGARE Lam. Garden currant.

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| 42240. <i>Red Dutch.</i> | 42254. <i>Large Red.</i> |
| 42241. <i>Victoria.</i> | 42255. <i>Frauenderfer.</i> |
| 42242. <i>New Red Dutch.</i> | 42256. <i>Champagne.</i> |
| 42243. <i>Fay's Prolific.</i> | 42257. <i>Moore's Seedling.</i> |
| 42244. <i>Red Grape.</i> | 42258. <i>Pomona.</i> |
| 42245. <i>Raby Castle.</i> | 42259. <i>Climax.</i> |
| 42246. <i>Greenfield.</i> | 42260. <i>Large White.</i> |
| 42247. <i>La Conde.</i> | 42261. <i>Kaiser.</i> |
| 42248. <i>Rankin's Red.</i> | 42262. <i>Verrieris White.</i> |
| 42249. <i>Wilder.</i> | 42263. <i>White Brandenburg.</i> |
| 42250. <i>Cumberland.</i> | 42264. <i>White Cherry.</i> |
| 42251. <i>Prince Albert.</i> | 42265. <i>White Grape.</i> |
| 42252. <i>Long-Bunched Holland.</i> | 42266. <i>White Pearl.</i> |
| 42253. <i>Red English.</i> | 42267. <i>Wentworth Leviathan.</i> |

42268. FERONIA LIMONIA (L.) Swingle. Rutaceæ. Wood-apple.
(*Feronia elephantum* Correa.)

From Poona, India. Presented by the superintendent, Empress Botanical Gardens. Received March 31, 1916.

A spiny, deciduous tree, native of India, Ceylon, and Indo-China, with pinnate, three to seven foliate leaves and nearly globose fruits, 2½ to 3 inches in diameter, having a hard, woody rind, filled with pinkish edible pulp in which numerous woolly seeds are immersed. The pulp, which is acid, is used for

making jelly, somewhat similar to black currant jelly, and also, with spice, oil, and salt, it is used by the natives of India to make chutney. The flowers and leaves have an odor of anise and are used as a stomachic. The commonly cultivated varieties of citrus can be grafted on this plant. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 3, p. 1219.*)

42269. PASSIFLORA LIGULARIS Juss. Passifloraceæ.

Sweet granadilla.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received March 30, 1916.

"A passion flower with climbing, large-branched stem of great length, woody below, somewhat corky, and large leaves bright green above, pale and glaucous beneath. The white flowers are marked with reddish purple, becoming almost blue at the edges. This fine passion flower recommends itself, not only by the beauty and delicacy of its blossom, but by the size and rich green of the foliage. It is a native of Peru." (*Curtis's Botanical Magazine, vol. 57, pl. 2967, 1830.*)

42270. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

From Tamatave, Madagascar. Presented by Mr. James G. Carter, American consul. Received March 29, 1916.

"Commonly known in Madagascar as *pois du cap* (cape beans). The annual quantity of cape beans exported from the west coast of Madagascar each year amounts to about 7,000 tons. These go principally to England, and from there are exported in considerable quantities to the New York market. There does not seem to be very much beriberi in Madagascar. It is understood, however, that four or five years ago, when Saigon rice was imported into the colony, this disease was somewhat prevalent. There would not appear to be any special means adopted, peculiar to Madagascar, for the treatment of this disease, and the use of this bean as a preventive and cure for beriberi has not been known here." (*Carter.*)

42271 to 42273.

From Kingston, Jamaica. Presented by Mr. H. M. Curran. Received March 31, 1916.

42271. CAESALPINIA CORIARIA (Jacq.) Willd. Cæsalpiniaceæ.

"*Divi-divi*. Small spreading trees 20 to 30 feet high, with fine foliage. The trees are covered with fruits. The tree has much the habit of *Prosopis* and is similar in appearance. This is the great tannin tree of northern South America." (*Curran.*)

42272. TOLUIFERA BALSAMUM L. Fabaceæ.

Toulu.

"A large ornamental tree, used for street planting. It grows to a height of 50 to 75 feet and is of rapid growth, in habit resembling the elm." (*Curran.*)

42273. BLIGHIA SAPIDA Koen. Sapindaceæ.

Akee.

The akee, a beautiful African tree introduced into the West Indies. Valued in Jamaica as a richly flavored and wholesome food. The bright-yellow fleshy arillus is the part eaten, but it should not be eaten if in the least decayed. The fruit is prepared in various ways, stewed in milk and afterwards browned in a frying pan with butter. It is also commonly eaten boiled and mixed with salt fish, onions, and tomatoes as a breakfast food. (Adapted from *Cook and Collins, Economic Plants of Porto Rico, p. 92.*)

See S. P. I. Nos. 1969 and 24592 for previous introductions.

42274. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Mustapha, Algiers. Presented by Dr. L. Trabut, director, Service Botanique, Algeria. Received March 31, 1916.

"A Moroccan pear from the Mamora. Very resistant to dryness in the sandy noncalcareous soils. This vigorous tree will probably form a good stock." (Trabut.)

42275 and 42276.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received March 16, 1916.

42275. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"Grown in Japan."

42276. ZEA MAYS L. Poaceæ. **Corn.**

"A corn with a very short cob grown on the slopes of Mount Fuji."

42277. NYSSA OGECHE Marsh. Cornaceæ. **Ogeechee lime.**

From Burroughs Station, Ga. Presented by Mr. S. B. Dayton. Received March 20, 1916.

A tree sometimes 65 feet high, with a maximum trunk diameter of 2 feet, with simple, entire leaves, and bearing red, very acid drupes two-thirds of an inch long.

42278. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Tahiti, Society Islands. Presented by Mr. Edouard Ahnne, president, Chamber of Agriculture, through Mr. Thomas B. L. Layton, American consul. Received March 11, 1916.

"*To-ura*, indigenous. False grass of Guinea. Herbaceous plant, smooth, perennial. Stems upright, full, greenish yellow, 1½ to 2 mm.; a little woody, internode from 0^m 20 to 0^m 25, few leaves at the base. Leaves green, sheath smooth, bearded at the apex, striated with age by red marks, length 50 to 60 cm., breadth 2 cm., midrib prominent, margin lightly scarious. Panicle from 35 to 40 cm.; reddish spikelets grouped by two or three in whorls. Roots fibrous. This grass grows in Tahiti in a wild state, all along the creeks, on the roadsides, and on the uncultivated lands. The horses and cattle seek for it willingly when it is young; later the stem becomes woody and hard." (Ahnne.)

"With regard to the plant known here as *to-ura*, I am inclined to believe that it is none other than the common guinea grass known in the United States. That grass is grown in certain sections of these islands as forage for cattle and horses, but it is also found in the wild state over large areas. It was not originally indigenous, but it has thrived since its introduction. The name *to-ura* is pronounced in the native Tahitian as though it were spelled *tow rah*, the tow as in the word tower." (Layton.)

42279. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Invercargill, New Zealand. Presented by Dalgety & Co. (Ltd.). Received March 15, 1916.

For use in selection and breeding experiments.

42280. INODES TEXANA O. F. Cook. Phœnicaceæ. Palm.

Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Growing at the Plant Introduction Field Station, Chico, Cal.

"This native palm of the Rio Grande delta, while planted locally to some extent, is a species which has been neglected. It will fill the same rôle in planting as the fan palm and appears to be a little more hardy to frost conditions. It will form a pleasing variation from that species so extensively grown in the warmer regions of this country and serve to extend somewhat the region of possible palm culture. It is a species with a very local distribution in nature, being known only from this one delta region. It is producing well in the natural state at present. The seeds germinate readily soon after they fall from the trees in the late autumn. They are, however, extensively gathered and made into ornaments by the native population. This no doubt interferes decidedly with its reproduction." (*Griffiths.*)

42281. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Koorawatha, Narracan, Victoria, Australia. Presented by Messrs. Cullis, Hill, and Doake, through F. H. Brunning & Co., Melbourne. Received March 16, 1916.

"A strain known as *Hunter River* lucern."

42282 and 42283.

From Kieff, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received March 18, 1916.

42282. CARAGANA PYGMAEA (L.) DC. Fabaceæ. Dwarf pea tree.

"A deciduous shrub, 3 to 4 feet high, similar in habit to *C. aurantiaca*, having long, slender, pendulous, or even prostrate branches. Flowers yellow, 1 inch long, produced in May and June at the joints of the previous season's shoots. In a wild state this species extends over the region between the Caucasus and Siberia and Thibet; introduced in 1751. It is a very pretty plant when in flower, the blossoms being pendulous on their short stalks from the lower side of the branchlets. It is often grafted on standards of *Caragana arborescens*, but can quite well be struck from cuttings made of half-woody young twigs in July and placed in gentle heat. By growing it on its own roots the ugly and often diseased union seen on grafted plants is avoided. It is nearly allied to *C. aurantiaca*, under which the differences are pointed out. Its slender, flexible shoots are used for tying in Siberia and are said to be equal to osiers for that purpose." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 291.*)

42283. HALIMODENDRON HALODENDRON (Pall.) Voss. Fabaceæ. Salt tree. (*Halimodendron argenteum* Fisch.)

"This is a wide-spreading shrub with slender branches and small bluish green foliage, covered in early summer with numerous pale violet or rosy purple flowers. The small pale foliage and the slender-stalked drooping flowers combined with the spreading habit give to the plant a gracefulness and airiness of its own and make it a very desirable ornamental shrub. It is perfectly hardy north, resists drought and heat well, and thrives in sandy as also in saline and alkaline soils. Propagation is by seeds and by layers which root slowly; it also may be grafted on Laburnum or Caragana." (*Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1429.*)

42284. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. Pearl millet.
(*Pennisetum typhoideum* Rich.)

From Dakar, Senegal, Africa. Presented by Mr. W. J. Yerby, American consul, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received March 23, 1916.

"This head of pearl millet from Mr. W. J. Yerby measures 26 inches in length, while the average length of pearl millet heads is not more than 8 to 10 inches. Although of exceptional size the head is well filled, and the strain should be a good seed producer if it will mature in our Southern States." (H. N. Vinall.)

42285. CELTIS TALA Gillies. Ulmaceæ. Nettle tree.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916.

"*Tala*. A large spiny tree, which is suitable for shaping, and especially for street planting. From the cool and temperate regions of Argentina." (Carrasco.)

42286 to 42291.

From Siena, Italy. Presented by the director, Botanic Garden, University of Siena. Received March 24, 1916.

42286. CASUARINA GLAUCA Sieber. Casuarinaceæ. Beefwood.

"The *Australian oak*, or *swamp oak*, is a tree of moderate size, growing to the height of 60 to 70 feet, usually straight and of rapid growth. The timber is red, beautifully marked, hard and tough, and is used for cabinet work and staves. In periods of drought the foliage is used for feeding stock. When the trees are cut down, the young growth shoots up quickly from the stump. It grows in the coastal districts here, in marshy country, and frequently in land submerged with tidal water. The timber makes the very best fuel, and the tree is the second best that I know of for planting in wet or moist locations. It also makes a good and handsome shade tree." (B. Harrison, in *The Everglades Magazine*, April, 1913.)

42287. CORNUS CAPITATA Wall. Cornaceæ. Bentham's cornel.

A small tree or shrub, often low and bushy in cultivation, but reported to have the appearance of a small apple tree in Nepal, where it is a native. It bears dense heads of yellowish flowers and attractive deep red-orange fruits about the size of a nectarine. (Adapted from *Curtis's Botanical Magazine*, vol. 78, pl. 4641, 1852.)

42288. GLEDITSIA CASPICA Desf. Cæsalpiniaceæ. Honey locust.

A tree 30 to 50 feet high, of beautiful foliage, with strong spines sometimes 8 inches long, pod 6 to 7 inches long and about 1 inch broad. Hohenacker [Enum. Talysch, Bull. Soc. Nat. Mosc., 1838: 351] states that the tree is abundant toward the village of Astarā in Talysch Province, Russia, and is known by the Tartar name *lelegachatsch*; also that boys eat the sweet pulp of the pods, and that the pods are collected for fattening cattle. Its habitat is Asia, along the southern shore of the Caspian.

42289. PASSIFLORA FILAMENTO Cay. Passifloraceæ. Granadilla.

A handsome bluish passion flower resembling *Passiflora coerulea*, but differing in the brighter colors of the corona and in the corolla exceeding considerably the calyx. The flowers open in the night and close about noon the next day. Native of South America. (Adapted from *Curtis's Botanical Magazine*, vol. 46, pl. 2023, 1819.)

42286 to 42291—Continued.

42290. PASSIFLORA HERBERTIANA Ker. Passifloraceæ. **Granadilla.**

A white-flowered, tall climber with 3-lobed, cordate leaves, from New Holland. (Adapted from the original description in *Edwards's Botanical Register, vol. 9, p. 737, 1823.*)

42291. PASSIFLORA SUBEROSA L. Passifloraceæ. **Granadilla.**

An extremely variable species with attractive fruits. These are spotted when green and are deep violet colored when ripe. Native of the West Indies. (Adapted from *Curtis's Botanical Magazine, vol. 45, pl. 1983, 1818.*)

42292. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916.

"*Palo borracho.* An ornamental flowering tree, with very thick trunk, the pods of which produce vegetable wool. From the Argentine Tropics." (*Carrasco.*)

42293 to 42299.

From Siena, Italy. Presented by the director, Botanic Garden, University of Siena. Received March 24, 1916.

42293. PITTOSPORUM BICOLOR Hook. Pittosporaceæ.

Usually a bushy shrub or small tree, though occasionally attaining a height of 40 feet; the thick, narrow leaves, 1 to 2 inches long, entire, hairy beneath and usually crowded, the purple and yellow flowers often forming terminal clusters. (Adapted from *Hooker, Flora of British India, vol. 1, p. 113, 1863.*)

42294. PITTOSPORUM ERIOCARPUM Royle. Pittosporaceæ.

A small tree with somewhat whorled spreading branches, nearly or quite obovate leaves (3 to 8 by 1½ to 2 inches), and yellow flowers one-third of an inch long in compound, many-flowered corymbs. (Adapted from *Hooker, Flora of British India, vol. 1, p. 199, 1872.*)

42295. PSIDIUM ACRE Ten. Myrtaceæ.

Guava.

This species is imperfectly known, in America at least. Trees introduced into California under this name are said to greatly resemble the yellow strawberry guava (*Psidium cattleianum lucidum*), but to have more elongated and usually larger fruit.

42296. PSIDIUM MONTANUM Swartz. Myrtaceæ. **Mountain guava.**

A lofty tree, sometimes 100 feet in height, with very smooth ash-colored bark. Flowers large, white, with the odor of bitter almonds; berry sour, the size of a cherry. The wood is hard, white, and highly esteemed, affording a timber of the hardest description, with the grain beautifully variegated, but not much used in building, perhaps on account of its hardness and cross grain and because when used as posts it rots quickly in the ground. It occurs at elevations of 3,000 to 6,000 feet. (Adapted from *William Fawcett, Economic Plants.*)

42297. PTEROCARYA FRAXINIFOLIA (Lam.) Spach. Juglandaceæ.

(*Pterocarya caucasica* Meyer.)

A handsome, ornamental, deciduous tree of rapid growth, up to 60 feet high, with spreading branches, graceful dark-green foliage, and bearing drooping racemes of light-green fruits. (Adapted from *Bailey, Cyclopedia of American Horticulture, vol. 3, p. 1464, 1904.*)

42293 to 42299—Continued.

42298. SAMBUCUS EBULUS L. Caprifoliaceæ. **Danewort.**

"A large herbaceous plant with pinnate leaves and compact clusters of purplish flowers; native of Europe. Every part of this plant is cathartic and emetic. The plant is sufficiently active to be poisonous in larger quantities." (*Sowerby, English Botany, vol. 4, p. 202.*)

For an interesting discussion of this plant, see Lindley, *Treasury of Botany.*

42299. SOLLYA HETEROPHYLLA Lindl. Pittosporaceæ.

An attractive twining shrub, 3 to 4 feet high, with oblong entire leaves and terminal or axillary pendulous clusters of beautiful bright-blue bell-shaped flowers. (Adapted from *Curtis's Botanical Magazine, vol. 10, pl. 3523, 1836.*)

42300 to 42309.

From Tamingfu, Chihli, North China. Cuttings presented by Mr. J. G. Cole, at the request of Rev. Horace W. Houlding, South Chihli mission, through the American consul, Shanghai. Received March 31, 1916. Quoted notes by Mr. Cole.

42300 and 42301. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

42300. "No. 9. *Lin t'ao.*" **42301.** "No. 10. *Lin t'ao.*"

42302 and 42303. HIBISCUS SYRIACUS L. Malvaceæ. **Rose of Sharon.**

42302. "White *Mu chin* (Chinese). A flowering shrub."

42303. "Purple *Mu chin* (Chinese). A flowering shrub."

42304. PYRUS sp. Malaceæ. **Pear.**
"Wild pear."

42305 to 42309. ZIZIPHUS JUJUBA Mill. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

42305. "*Pu tao tsao.*" **42308.** "*Pu tao tsao.*"

42306. "*Tan tsao.*" **42309.** "*Ma yü tsao.*"

42307. "*Pu tao tsao.*"

42310 to 42320.

From Kieff, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received March 17, 1916.

42310. ACER GINNALA Maxim. Aceraceæ. **Maple.**

A small tree or large shrub of bushy habit with 3-lobed slightly heart-shaped leaves and very fragrant white flowers in short panicles, appearing in May. This maple is nearly allied to *Acer tataricum*, but differs markedly in the shape of the leaf. The foliage turns a beautiful red before falling, the species being one of the best for autumnal coloring. Native of China, Manchuria, and Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 142, 1914.*)

42311. ABIES SIBIRICA Ledeb. Pinaceæ. **Fir.**

A very hardy fir from northern and eastern Russia to Kamchatka and Mongolia, 60 to 100 feet in height, with a trunk 2 to 4 feet in diameter; dark yellowish green leaves, densely crowded. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 173, 1914.*)

42310 to 42320—Continued.

42312. *CARAGANA SPINOSA* (L.) DC. Fabaceæ. Pea tree.

A deciduous shrub, 4 to 6 feet in height, with long, undivided, spiny branches and short-stalked bright-yellow flowers nearly an inch long. A curious shrub of the same type as *Caragana jubata* and *C. gerardiana*, but not so formidably armed or so downy. Native of Siberia. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 291, 1914.)

42313. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. Hawthorn.

A small tree, 15 feet or more high, with or without short thorns; leaves wedge shaped or straightly cut at the base, 2 to 4 inches long; pure white flowers three-fourths of an inch across, in downy-stalked clusters, appearing at the end of May or early in June. Fruit red and about five-eighths of an inch in diameter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 433, 1914.)

42314. *JUGLANS MANDSHURICA* Maxim. Juglandaceæ. Manchurian walnut.

A Manchurian walnut, 50 to 70 feet high, with leaves 1½ to 2 feet or occasionally 3 feet long, composed of 11 to 19 leaflets. The fruit is clustered on the stalk and is roundish ovoid, with deeply pitted nuts 1½ inches long. It is very closely allied to *Juglans sieboldiana*; it is remarkably striking in the size of the leaves as a young tree. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 666, 1914.)

42315. *LONICERA CHRYSANTHA* Turcz. Caprifoliaceæ. Honeysuckle.

A shrubby honeysuckle from Japan, up to 12 feet high, with upright stems, somewhat rhombic leaves 2 to 5 inches long and yellowish white, changing to yellow, flowers three-fourths of an inch long. It is particularly handsome in autumn with its bright coral-red fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1910, 1916.)

42316. *LONICERA HISPIDA* Pall. Caprifoliaceæ. Honeysuckle.

A honeysuckle, native of Turkestan, 3 to 5 feet high, with bristly young shoots and yellow or yellowish white flowers about an inch long borne above two roundish, membranaceous bristle-edged bracts, up to an inch long. Interesting because of the large bracts subtending the flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 45, 1914.)

42317. *LONICERA RUPRECHTIANA* Regel. Caprifoliaceæ. Honeysuckle.

A shrubby Manchurian honeysuckle up to 12 feet high, with nearly lanceolate leaves, somewhat grayish beneath, about 4 inches long, and pure white flowers in pairs on long peduncles. The red, or sometimes yellow, fruits are attractive. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1909, 1916.)

42318. *RIBES DIKUSCHA* Fisch. Grossulariaceæ. Black currant.

This species is closely related to the common black currant, *Ribes nigrum* and is considered by Schneider to be possibly identical with the northern black currant (*R. hudsonianum* Richards).

42319. *SYRINGA EMODI* Wall. Oleaceæ. Lilac.

A large robust Himalayan lilac 10 to 15 feet high, closely allied to *Syringa villosa*, but with the leaves whiter underneath. The panicles are

42310 to 42320—Continued.

usually columnar, 3 to 6 inches long, not so richly colored as those of the above-mentioned species. It is useful in flowering rather late. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 566, 1914.)

42320. VITIS AMURENSIS Rupr. Vitaceæ.

Amur grape.

A strong-growing deciduous vine, somewhat similar to the common grape, with leaves 4 to 10 inches wide, somewhat longer, three lobed, often deeply so, and the under surface somewhat downy. It is worth growing for its vigorous habit and the usually fine purple and crimson hues of its foliage. Native of Amurland, Chosen (Korea), and northern China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 666, 1914.)

42321 to 42332.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 23, 1916.

42321. ACACIA BONARIENSIS Gillies. Mimosaceæ.

"*Napinday*. A handsome, very spiny tree, suitable for parks, from the temperate and cool sections of Argentina." (*Carrasco*.)

"Usually a small spiny tree which grows at length in circles. The yellow wood is hard, but has not been used. Horizontal cuts across the young shoots give a square section." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 37, 1910.)

42322. ACACIA MONILIFORMIS Griseb. Mimosaceæ.

"*Tusca*. A spiny tree, with fragrant flowers, of medium height. From the temperate and cool regions of Argentina." (*Carrasco*.)

"A species of *Espinillo* with yellow flowers separated on the stalk. Small branched, scarcely compact; grows in the valleys of the highlands; used for firewood. Wood reddish. Very abundant." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 35, 1910.)

42323. ALEGRIA DIVARICATA (Mart.) Stuntz. Tiliaceæ.

(*Luehea divaricata* Mart.)

"*Soto caballo*. A leafy flower-bearing tree, with good quality wood; from the cool and subtropical regions of Argentina." (*Carrasco*.)

"Very abundant tree, large and tall, with light, white wood, used especially for the manufacture of shoes. When in flower it is very beautiful. It is not utilized in Alto Parana, but in Alto Uruguay it is used for rods, frames and doors, and windows and planking. It is exported to the cities along the rivers of Uruguay." (*Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 100, 910.)

42324. ASPIDOSPERMA PEROBA Sald. Gama. Apocynaceæ.

"*Peroba*. An erect tree with flexible wood; from the subtropical regions in Argentina." (*Carrasco*.)

A Brazilian tree with alternate entire leaves and clusters of small flowers. The wood of this genus is valuable.

42321 to 42332—Continued.

42325. *BARYXYLUM DUBIUM* (Spreng.) Pierre. *Cæsalpiniaceæ*.
(*Peltophorum vogelianum* Walp.)

"*Ibirá-pitá*. A leafy tree, with erect trunk 1 meter in diameter; wood hard, indestructible, red; from the subtropical regions of Argentina." (*Carrasco*.)

A handsome ornamental tree with mimosalike foliage and striking yellow flowers arranged in huge panicles. It is closely related to the royal poinciana and vies with it in beauty of flower and foliage.

42326. *COMBRETUM FRUTICOSUM* (Loefl.) Stuntz. *Combretaceæ*.
(*Combretum loeflingii* Eichl.)

"*Plumerillo*. A magnificent climbing plant of rapid growth, the flowers resembling the Grevilleas; from the temperate regions of Argentina." (*Carrasco*.)

An ornamental climbing shrub with orange and green flowers; native to Brazil.

42327. *GLEDITSIA AMORPHOIDES* (Griseb.) Taub. *Cæsalpiniaceæ*.
(*Garugandra amorphoides* Griseb.) **Honey locust.**

"*Espina corona*. A leafy tree with hard wood; from the temperate and cooler regions of Argentina." (*Carrasco*.)

"A spiny tree, flowering in December; sometimes attains a height of 50 feet, trunk diameter often 2½ feet. Hieronymus states that the bark is used in place of soap for removing spots from woolen and cotton goods; hence the name *quillay*. The leaves, young twigs, and roots have astringent properties; the wood is used in making vessels for holding liquids, in turning, for house furniture, and for wooden soles and pegs." (*Taubert, Berichte Deutsche Bot. Gesellsch., vol. 10, p. 637.*)

42328. *PITHECOCTENIUM CYNANCHOIDES* DC. *Bignoniaceæ*.

"*Tripa de Braya*. A vigorous climbing plant; from the temperate and hot regions of Argentina." (*Carrasco*.)

42329. *PROSOPIS* sp. *Mimosaceæ*. **Algaroba.**

"*Algaroba morada*. A hardy, strong tree. The wood is especially useful for sleepers, tannin extraction, etc. From the cool and temperate as well as the subtropical regions of Argentina." (*Carrasco*.)

Received as *Prosopis dulcis*, which is generally considered to be a synonym of *P. chilensis* (Mol.) Stuntz (*P. juliflora* DC.), but the material received does not agree with other material of that species.

42330. *STIGMAPHYLLON JATROPHÆFOLIUM* JUSS. *Malpighiaceæ*.

"*Papa del rio*. A magnificent climbing plant with numerous flowers like *Oncidium*; from the temperate regions of Argentina." (*Carrasco*.)

A tropical American woody vine with yellow flowers in axillary, peduncled clusters.

42331. *TIPUANA TIPU* (Benth.) Lillo. *Fabaceæ*.
(*Tipuana speciosa* Benth.)

"*Tipu*. A large tree 50 meters in height, leafy, very ornamental, with good timber; from the subtropical, temperate, and cool regions of Argentina." (*Carrasco*.)

"Handsome tree, tall, large, straight trunked. Wood rose color to creamy white, soft and stringy, hard to saw and used very little in Jujuy, but in Tucuman it is used for bookshelves; also exported to

42321 to 42332—Continued.

Buenos Aires. It gives a fine red rosin. Very abundant." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 37, 1910.*)

42332. *VITEX MONTEVIDENSIS* Cham. Verbenaceæ.

"*Tarumá*. A leafy little ornamental tree, floriferous, with hard wood; from the subtropical regions of Argentina." (*Carrasco.*)

"This common species is found on the banks of the small streams; the wood, of reddish color, striped, and hard, is very good and valuable. The bark of the tree is fragile and grooved like that of the *Mata ojos* (*Pouteria sp.*) As it is well preserved in wet situations it is utilized for kilns, posts, etc., and being easy to split it is used for shingles on roofs. The fruit gives a kind of oil and the wood likewise, even after it is dried; when buried it oozes oil and seems to turn green again." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 104, 1910.*)

42333 to 42354. NICOTIANA spp. Solanaceæ. Tobacco.

From Cava, Italy. Presented by Mr. C. Emilio Anastasia, Ra Direzione Compartmentale delle Coltivazioni Tabacchi. Received March 25, 1916.

42333. *NICOTIANA ACUMINATA* (R. Grah.) Hook.

Herbaceous annual, viscid-pubescent; stem slender, branching; leaves ovate-lanceolate, undulate, sometimes subcordate, narrowed into a short petiole, apex long-acuminate; flowers loose-racemose; calyx glandular-pubescent, corolla white, about 3 inches long; tube green veined, slightly curved. Perennial in its native habitat, Chile. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 4, p. 2142.*)

42334. *NICOTIANA ALATA* Link and Otto.

Herbaceous perennial with slender erect stems 2 to 3½ feet tall and branching; flowers open at night and fragrant; tube yellowish green, limb nearly 2 inches across, pale violet beneath, white within. Native of Brazil, Uruguay, and Paraguay. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 4, p. 2141.*)

42335. *NICOTIANA CHINENSIS* Fisch.

An annual species growing to a height of 6 feet and having pink flowers in August. Originally found in China. (Adapted from *Johnson's Gardener's Dictionary, p. 658.*)

This species is referred by Comes, *Monographia Nicotiana*, p. 9, 1899, to the *angustifolia* form of *N. tabacum fruticosa* Hook. f.

42336. *NICOTIANA GLAUCA* R. Grah.

An erect, treelike species, up to 20 feet tall, glaucous-blue all over, with branching stems and long-petioled leaves. Flowers yellow, in loose, terminal, bracted panicles. Found in Argentina, Paraguay, and Bolivia. Easily grown from seed and frequently cultivated for its stately habit and glaucous-blue foliage which sometimes develops purple tints. It has escaped from cultivation and runs wild in Texas and California. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 4, p. 2143.*)

42337. *NICOTIANA LANGSDORFII* Schrank.

A pilose to downy herbaceous annual, with branching stems 2 to 3 feet tall; flowers greenish yellow in drooping panicles. Native of

42333 to 42354—Continued.

Brazil and Chile. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42338. *NICOTIANA LONGIFLORA* Cav.

An erect annual or perennial, 2 to 3 feet tall, having slender, bristly, scabrous stems and somewhat clasping, spatulate to lanceolate leaves, prominently undulate. Night-opening fragrant flowers 4 inches long, extra-axillar, in terminal loose racemes, pale violet to yellowish violet outside, white within, with yellowish violet anthers. Becomes an annual in northern gardens. Found from Texas to Chile and Argentina. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2141.*)

42339. *NICOTIANA PANICULATA* L.

An herbaceous, viscid-pubescent annual having a simple stem 2 to 3 feet tall, angular above, branching; yellowish green flowers in large terminal panicles. Not much cultivated. Native of Peru. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42340. *NICOTIANA PLUMBAGINIFOLIA* Viv.

An annual species growing to a height of 2 feet and having white flowers in May. Native of America. (Adapted from *Johnson's Gardener's Dictionary, p. 658.*)

42341. *NICOTIANA QUADRIVALVIS* Pursh.

An herbaceous, viscid-pubescent annual having erect or branching stems with leaves 4 to 6 inches long. Flowers few on short slender pedicels, purple without and white within. Formerly cultivated by the Indians and still grown by them sparingly. Known only from Indian cultivation in Oregon and Wyoming. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42342. *NICOTIANA RUSTICA* L.

An herbaceous plant, annual, biennial, or triennial, somewhat viscous pubescent, having stems about 3 feet tall, branching below. Yellowish or greenish day-opening flowers in terminal racemes. Found in Mexico and Texas. Said to be the first species of tobacco introduced into Europe. Its use was made known by Jean Nicot, for whom the genus was named. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42343. *NICOTIANA RUSTICA* L.

Received as *Nicotiana campanulata*. For a description, see S. P. I. No. 42342.

42344. *NICOTIANA SILVESTRIS* Speg. and Comes.

An herbaceous perennial, glandular-pilose throughout, having tall stems, leafy below, branching above; broad, oblong-spatulate leaves. White, fragrant flowers drooping in short racemose panicles. A night bloomer, but flowers remain open on cloudy days. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, 2141.*)

42345. *NICOTIANA SUAVEOLENS* Lehm.

An herbaceous annual or biennial, usually viscid, having stems 1 to 2 feet tall, densely villous at the base and glabrous above. Night opening, fragrant, greenish purple flowers in terminal racemes. Found in Australia. Said to grow in moderate shade. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42333 to 42354—Continued.

42346. *NICOTIANA TABACUM* L.

The ordinary tobacco of commerce.

42347. *NICOTIANA ANGUSTIFOLIA CRISPA* (Cav.) Comes.

Often referred to *Nicotiana tabacum*, but Comes in his *Monographie du Genre Nicotiana*, p. 51, considers *N. angustifolia* to be a good species.

42348. × *NICOTIANA CALYCIFLORA* Caille.

"The *calyciflora* (Cambridge) will hardly present flowers with petaloid calyx. It presents instead (and by reversion) flowers with purple corolla. This shows that it has been obtained from *Nicotiana purpurea* or *atropurpurea*. In fact, at Fojano della Chiana (Arezzo) the true *calyciflora* has been obtained by mutation of *N. atropurpurea*. Under cultivation it has in 1915 perfectly preserved the character, and I believe it will do so with you." (*Anastasia*.)

42349. *NICOTIANA TRIGONOPHYLLA* Dunal.

"*Nicotiana trigonophylla* is no more or less than *N. rustica*, while it ought to be something entirely different." (*Anastasia*.)

This species has stems 15 inches tall, with leaves that are triangular, sessile, somewhat clasping, about 2 inches long and five-eighths of an inch broad. The corolla is yellowish green, about one-half inch long; viscous pubescent throughout. Found from Utah to Mexico and California. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2144.)

42350. *NICOTIANA UNdulata* Ruiz and Pavon.

Said to be a variety of *Nicotiana suaveolens* Lehm., with large undulated leaves and flowers larger than that species. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2142.)

42351. *NICOTIANA VISCOSA* Lehm.

"*Nicotiana viscosa* ought to be near *N. langsdorffii* (a *langsdorffii* with large flowers, with the characters of *alata*); instead it is a *rustica* (like *texana*)." (*Anastasia*.)

An annual species 3 feet tall, having pink flowers in July. Originally from Argentina. (Adapted from *Johnson's Gardener's Dictionary*, p. 658.)

42352. *NICOTIANA TABACUM MACROPHYLLA* Dunal.

Received as *Nicotiana latissima* Mill.

42353. *NICOTIANA TABACUM MACROPHYLLA* Dunal.

Received as *Nicotiana macrophylla* Lehm.

"A large-leaved variety with large red flowers, of which there are several horticultural forms." (*Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2144.)

42354. × *NICOTIANA SANDERAE* Hort.

"A viscid-pubescent herbaceous annual, with stems 2 to 3 feet tall, of bushy habit; corolla salverform, the lobes carmine-rose. Originated in 1903 by Sander & Sons, St. Albans, England, as a cross between *Nicotiana alata* and *N. forgetiana*." (*Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2142.)

42355 to 42376.

From Madagascar. Presented by Mr. Eugene Jaëglé, director, Agricultural Station of Ivoloïna, near Tamatave, through Mr. James G. Carter, American consul. Received March 31, 1916.

42355. *ADENANTHERA PAVONINA* L. Mimosaceæ. Coral-bean tree.

"A handsome deciduous tree with spreading branches and bipinnate leaves, bearing pods of glossy, scarlet, biconvex seed. Flowers in racemes, numerous, small, white and yellow mixed, fragrant.

"The tree is a native of the East Indies, where the jewelers use the seeds for weights, each weighing almost exactly 4 grains. The heartwood of the larger tree is of a deep red color. It is hard and durable and in India is sometimes used as a substitute for red sandalwood. It yields a dye which the Brahmins of India use for marking their foreheads. It has long been growing in Guam and is pretty well distributed over the island. Its vernacular name [kolales] is an imitation of the 'corales' (coral beans) and is likewise applied to the smaller seeded *Abnus abrus*." (W. E. Safford, *Useful Plants of Guam*, p. 174.)

See S. P. I. Nos. 38650 and 39542 for previous introductions.

42356. *ALBIZZIA CHINENSIS* (Osbeck) Merr. Mimosaceæ.
(*Albizzia stipulata* Boiv.)

A large, deciduous, fast-growing tree of tropical Asia, whose wood is used for cart wheels, wooden bells, cabinet work, and furniture, as well as for fuel; the branches are used for fodder, and the trunk yields a gum which is suitable for sizing paper.

For previous introduction, see S. P. I. No. 39104.

42357. *CAJUPUTI LEUCADENDRA* (Stickm.) Rusby. Myrtaceæ. Cajuput.
(*Melaleuca leucadendron* L.)

The cajuput tree of India and Australia. Reaches a height of 80 feet. Can be grown on the edges of salt-water swamps, where no Eucalyptus will survive. Like the Eucalyptus the tree is believed to be valuable for subduing malarial vapors. The lamellar bark is valuable for preserving fruit wrapped in it. The wood is hard, close grained, and almost imperishable underground. The leaves yield as much as 2 per cent of the well-known cajuput oil, closely allied to that of Eucalyptus. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 303.)

42358. *BICHEA ACUMINATA* (Beauv.) W. F. Wight. Sterculiaceæ.
(*Cola acuminata* Schott and Endl.) Kola nut.

This is one of the largest and most beautiful trees of the river regions of Senegambia. It grows to a height of 10 to 20 meters, having a large trunk and strong branches, the wood being good for naval construction, carpentry, etc. The leaves are oval-acuminate and alternate, the flowers very numerous, apetalous and polygamous, in paniculate cymes. At 10 years of age the tree comes into full bearing and may yield 45 kilograms of seed twice annually, in November and June. The seeds, often reduced to a large, more or less fleshy embryo, are a clear yellow or rosy red in color. Deprived of their covering, they vary in weight from 5 to 25 grams. Kola is highly prized by all the African tribes, who use it in the fresh state for chewing and in the dry state as a food. Its taste, at first sweetish, is astringent, then bitter. It has the property of making brackish and hot water agreeable and fresh. Like maté and coca, it contains caffein and quiets hunger and allows one to endure the most prolonged labor without fatigue. In

42355 to 42376—Continued.

addition, swallowed after having been chewed or taken as a powder, the kola nut is a valued antidiysenteric and is passed among the negroes as a powerful aphrodisiac; native names *Gourou*, *Ngourou*, and *Café du Soudan*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, pp. 343, 805.)

42359. *BICHEA ACUMINATA* (Beauv.) W. F. Wight. Sterculiaceæ. Kola nut.
(*Cola acuminata* Schott and Endl.)

See S. P. I. No. 42358 for description.

42360. *CANANGIUM ODORATUM* (Lam.) Baill. Annonaceæ. Ilang-ilang.
(*Cananga odorata* Hook. f. and Thoms.)

"This is a handsome tree, symmetrical and stately, reaching a height of 50 feet or more. It has a smooth, hard, grayish bark, resembling that of the beech. It flowers in April and May or perhaps even earlier. The long, straplike, yellowish petals give out a rich, spicy fragrance, somewhat resembling that of cinnamon and very pronounced just after a rain." (*J. E. Conner.*)

See also S. P. I. No. 38652 for previous introduction.

42361. *CARICA PAPAYA* L. Papayaceæ. Papaya.

See S. P. I. No. 42055 for description.

42362. *CASSIA SIAMEA* Lam. Cæsalpiniaceæ.

A valuable medium-sized tree, having pinnately compound leaves and oblong medium-sized leaflets. It is decidedly ornamental on account of its erect terminal panicles of yellow flowers and elongated flat pods. It is commonly cultivated in the Philippines and has done remarkably well in Cuba. The wood is considered of value for house pillars and in the making of furniture. Native name, *Ong-canh-eh Kmer*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 287, and from the *Catalogue of the Manila City Nursery.*)

42363. *CASTILLA ELASTICA* Cerv. Moraceæ. Rubber tree.

A lofty, deciduous, native American forest tree of the breadfruit family, growing to a height of 20 meters and over, the young twigs being densely covered with yellowish or grayish hair. Mature leaves rather large, dark green above, paler and velvety beneath. Rubber is obtained in the usual way by tapping the tree and evaporating the moisture from the latex. (See *Contributions from the U. S. National Herbarium*, vol. 13, part 7, 1910, p. 277.)

42364. *CITRUS HYSTRIX* DC. Rutaceæ. Papeda.

A large, thorny tree, 6 to 12 meters high, having broadly winged leaves 16 to 24 cm. long. Fruits variable, from oblate to pyriform, turbinate or oblong, smooth to more or less corrugate, greenish lemon yellow; rind medium thick, flesh greenish, juicy, sharply acid, aromatic, contained in 12 to 15 locules; seeds, usually many, flat, reticulate. Found in the Malay Archipelago, including the Philippines, to India. (Adapted from *Wester, Citriculture in the Philippines, Bulletin 27, 1913.*)

42365. *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.

42355 to 42376—Continued.

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, under Dictyosperma.*)

42366. EUGENIA PARKERI Baker. Myrtaceæ.

A Madagascar tree, the wood of which is used for cabinetmaking and the leaves of which have been used with considerable success as an anti-dysenteric. Native names *Marotampona, Rotra, Vavarotra, and Voamarintampona.* (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 149.*)

42367. FUNTUMIA ELASTICA (Preuss) Stapf. Apocynaceæ.

Lagos rubber tree.

A tall forest tree growing to a height of 100 feet, usually near a stream, and found along the west coast of Africa from the Gold Coast in Ashanti through Lagos and lower Nigeria to the valleys of the Mungo River. The trunk is cylindrical with pale spotted bark; leaves oblong or lance-oblong, undulate; flowers white or yellowish, in short-peduncled, many-flowered, dense cymes. Yields the Lagos caoutchouc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1305.*)

42368. HYPHAENE CORIACEA Gaertn. Phœnicaceæ.

Palm.

A palm which reaches a height of 2 or 3 meters on the northeast coast of Madagascar, increasing by tufts of four or five leaves and sometimes branching on the main trunk. The leaves show the morphological peculiarity of being a transitional form between the palmate and pinnate leaves of the Cocos tribe. The leaves with the petiole are from 1.7 to 1.8 meters long. From the petioles of various palms are drawn fibers known in commerce under the name of piassavas. Perhaps this palm may be included among these piassavas. The filaments which have their origin at the base of the petiole measure 0.8 to 1 mm. in diameter. Besides, in the leaf, the intersegmentary filaments, measuring from 50 to 70 cm. in length, may be employed as thread. However, their resistance and elasticity are less than the coir of the coconut. Native names are *Banty, Lokoko, Satranamira, and Satranatrichy.* (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 190, 1910.*)

42369. INTSIA BIJUGA (Colebr.) Kuntze. Cæsalpiniaceæ.

(*Afzelia bijuga* A. Gray.)

A leguminous tree described as being from the Fiji Islands, but apparently widely distributed in Oceanica. The leaves are abruptly pinnate, the leaflets mostly in two pairs and ovate. Flowers in small terminal panicles. Pods oblong and flat, 5 to 8 inches long by 2 inches broad, containing compressed-orbicular seeds, 1 inch or more in diameter. Doubtless the source of the *ift* used in Guam as a cabinet wood and for general construction purposes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, described under Afzelia, vol. 1, p. 229.*)

42370. LITSEA LAURIFOLIA (Jacq.) Cordem. Lauraceæ.

(*Litsea sebifera* Pers.)

A timber tree of the laurel family, 15 to 30 feet high, found in Cochin China. The wood is greenish yellow, fine grained and soft, with long straight fiber and very easy to work. It is not easily attacked by insects and lasts well exposed to the air. Found to be good for light carpentry, joinery, and flooring. The leaves and twigs of this tree are

42355 to 42376—Continued.

filled with a glutinous substance which makes water mucilaginous. This is used for inflammation, redness of the skin, and as a remedy for hysteria. The pericarp of the fruit contains a fatty material, a true wax, which is used for making candles that give off a disagreeable odor on burning. Native names, *Cay-loi-nhot* and *Bois d'oiseau*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 533, under *Tetranthera laurifolia*.)

42371. LONCHOCARPUS FORMOSIANUS DC. Fabaceæ.

A much-branched tree from Senegal, 5 to 6 meters tall, covered during the rainy season with magnificent bunches of lilac-colored flowers recalling *Syringa vulgaris* by their color and perfume. The natives make a decoction from the bark and administer it for stomach complaints in children, the tannin it contains probably being the active agent. Native names *Koll* and *Ossani*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 801.)

42372. RAVENALA MADAGASCARIENSIS Sonner. Musaceæ. Traveler's-tree.

The so-called traveler's-tree is a magnificent palmlike tree of the Musaceæ, confined to Madagascar. It grows to a height of 20 to 30 feet, having a palmlike trunk and bananalike leaves of gigantic size, arranged in two rows on opposite sides of the arboreous stem, giving one the impression of an immense fan. The leaves when cut yield an abundance of refreshing juice, with which travelers allay their thirst. The flowers are comparatively small, aggregated in the axils of the leaves. The arillus surrounding the beanlike seeds is of a most beautiful ultramarine color and yields an essential oil. A dye is extracted from the capsules. (Adapted from *Lindley, Treasury of Botany*, vol. 2, p. 1192.)

42373. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

A tall, erect, bignoniaceous tree found in western tropical Africa and introduced into Java, Ceylon, and other tropical countries as an ornamental shade tree. It is quite commonly planted about Kandy, Ceylon, where its racemes of scarlet or crimson flowers at the tips of the branches make a strikingly handsome and conspicuous appearance at a distance. The unexpanded flowers retain a quantity of water, and this has led to the name *fountain tree*, by which it is sometimes known. (Adapted from *MacMillan, Tropical Gardening and Planting*, p. 264.)

42374. TECTONA GRANDIS L. f. Verbenaceæ.**Teak.**

A large deciduous forest and timber tree, indigenous in both peninsulas of India. The young branches are quadrangular, having opposite leaves and terminal panicles of white flowers, followed by round fruits about the size of cherries, covered with spongy wool and inclosed in a kind of bladder formed of the enlarged calyx. The valuable wood is that chiefly exported from India, more particularly Burma, and is the most important building timber of the country. (See *Watt, Commercial Products of India*, p. 1068, and *Lindley, Treasury of Botany*, vol. 2, p. 1128.)

42375. TRACHYLOBIMUM VERRUCOSUM (Gaertn.) Oliver. Cæsalpiniaceæ.

This spineless leguminous tree, found on the islands of Madagascar and Reunion, grows to a height of about 20 feet and has dense clusters of white flowers. It produces a true copal resin, or animé, which is

42355 to 42376—Continued.

used for the manufacture of varnish. The resinous wood is very hard and heavy and lasts very well. The sapwood is the color of oak and the heartwood is suitable for cabinetmaking. Native name *Copalier*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 531*, under *Hymenaea verrucosa*.)

42376. TYPHONODORUM LINDLEYANUM Schott. Araceæ.

This species of aroid is found in Zanzibar, Mauritius, and Madagascar, and, like all of the genus, it grows near the banks of muddy streams or in marshes. The plant measures from 1.5 to 2.5 meters high. All parts give off an irritating juice which causes itching. The Malagasy make an edible starch by drying the grated base of the plant over a slow fire. In spite of the action of the fire, however, this starch causes an itching in the mouth and even in the esophagus. This starch is also considered an excellent remedy against the bites of venomous animals. Certain animals, such as wild boars, are very fond of the entire stalk. From the leaf sheath, the Sakalavas extract a thread which they manufacture into heavy fishlines, and according to Perrier de la Bathie a variety which has reddish and blackish sheaths gives better fibers than the variety which has white sheaths. It is a very easy matter to gently draw out the threads after abruptly breaking the sheath, provided they are pulled out parallel to the axis. Thus obtained, the threads are at first a deep yellow, becoming much lighter with washing. Native names *Viha* and *Vihana*. (Adapted from *Heckel, Les Plantes Utiles de Madagascar, pp. 254-255*, under *T. madagascariensis*.)

42377 to 42380.

From Chefoo, China. Presented by Mr. A. Sugden, customhouse, through Mr. John F. Jewell, American consul, Chefoo. Received March 29, 1916.

42377 and 42378. ARACHIS HYPOGAEA L. Fabacæ. Peanut.

42377 Small variety. **42378.** Large variety.

42379. AMYGDALUS PERSICA L. Amygdalacæ. Peach.
(*Prunus persica* Stokes.)

"Mixed peach stones of various sorts and seasons." (*Sugden*.)

42380. PRUNUS ARMENIACA L. Amygdalacæ. Apricot.

Introduced for breeding experiments.

42381 to 42383.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916. Notes by Señor Carrasco.

42381. BAUHINIA CANDICANS Benth. Cæsalpiniacæ.

"*Caoba*. Ornamental tree, with excellent wood, from the temperate region of Argentina."

42382. CAESALPINIA MELANOCARPA Griseb. Cæsalpiniacæ.

"*Guayacan*. A handsome leafy tree, with hard reddish wood, from the temperate region of Argentina."

42383. CASSIA LAEVIGATA Willd. Cæsalpiniacæ.

"*San Falso*. A vigorous ornamental tree from the temperate and hot regions of Argentina."

INDEX OF COMMON AND SCIENTIFIC NAMES.

- Abelmoschus esculentus*, 41724.
Abies sibirica, 42311.
Acacia bonariensis, 42321.
moniliformis, 42322.
Acer ginnala, 42310.
Aconite, *Aconitum* sp., 41874.
Aconitum sp., 41874.
Adenantha pavonina, 42355.
Adenocarpus foliolosus, 42183.
× *Aesculus plantierensis*, 41961.
Azelia bijuga. See *Intsia bijuga*.
Akee, *Blighia sapida*, 42273.
Albizia chinensis, 42356.
stipulata. See *Albizia chinensis*.
Alegria divaricata, 42323.
Alfalfa, *Medicago falcata*, 42018.
sativa, 42279, 42281.
(Australia), 42281.
(New Zealand), 42279.
See also Lucern.
Algaroba, *Prosopis chilensis*, 42025.
morada, *Prosopis* sp., 42329.
Alloobokhara, *Prunus bokhariensis*, 42057.
Alloteropsis semialata, 41751.
Almond, Tangutian, *Amygdalus tanguitica*, 41708, 41709.
Alpinia sp., 41941.
Altagana, *Caragana microphylla*, 42187.
Alucha, *Prunus bokhariensis*, 42057.
Alysicarpus longifolius, 41883.
rugosus, 41884.
Amygdalus persica, 41731–41736, 41738, 41740–41743, 41881, 42178, 42300, 42301, 42379.
persica nectarina, 41739, 42200.
persica platycarpa, 41727, 41737.
tangutica, 41708, 41709.
Andropogon annulatus, 41885.
australis. See *Holcus plumosus*.
caricosus, 41886.
emersus, 41887.
ischaemum, 41762.
lawsoni, 41888.
odoratus, 41889.
pumilus, 41890.
purpureo-sericeus, 41891.
serratus. See *Holcus fulvus*.
Angico branco, *Piptadenia* sp., 41940.
Annona cherimola, 41805–41807.
squamosa, 41873.
Anthistiria avenacea. See *Themeda gigantea avenacea*.
vulgaris. See *Themeda forskalii*.
Aptuda aristata, 41892.
Apricot, *Prunus armeniaca*, 42380.
Arachis hypogaea, 42377, 42378.
Aralia cordata, 42084.
Arbutus arizonica, 41726.
Arctomecon humile, 41763.
Aristida calycina, 41758.
Arracacia xanthorrhiza, 42137.
Arracacha, *Arracacia xanthorrhiza*, 42137.
Aru bokhara, *Prunus bokhariensis*, 42057.
Arundinaria pumila, 41924.
Arundinella agrostoides, 41893.
nepalensis, 41747.
Aspidosperma peroba, 42324.
Avena orientalis, 42087.
sativa, 42088, 42089.
sterilis, 42090, 42091.
Avocado, *Persea americana*, 41688, 41725.
Balsam pear, *Momordica charantia*, 41721.
Bamboo, *Arundinaria pumila*, 41924.
Bambos guadua, 42066.
Barberry. See *Berberis* spp.
Barleria cristata, 41963.
Barley, *Hordeum* spp.:
Archer, 42095.
Cape, 42100.
golden grain, 42097.
Goldthorpe, 42092.
Kinver, 42094.
Po ree, 42061.
Pryor, 42093.
Roseworthy Oregon, 42096.
short head, 42099.
skinless, 42101.
square head, 42098.
Baryxylum dubium, 42180, 42325.
Ba to, *Croton tiglium*, 41879.
Bauhinia candicans, 42381.

- Bean, adzuki, *Phaseolus angularis*, 42063.
 Bertoni, *Phaseolus caracalla*, 41882.
 broad, *Vicia faba*, 41770.
 cape, *Phaseolus lunatus*, 42270.
 Lima, *Phaseolus lunatus*, 42075, 42270.
 mung, *Phaseolus aureus*, 42064.
 rice, *Phaseolus calcaratus*, 42056.
 sora, *Vicia faba*, 41770.
 soy, *Soja max*, 42059.
 See also Taguana.
- Beard-tongue, *Pentstemon* spp., 41772, 41773.
- Beefwood, *Casuarina glauca*, 42286.
- Beet, *Beta vulgaris*, 42275.
- Befri, *Indigofera glandulosa*, 41908, 42027.
- Berberis* sp., 42184.
 fremontii, 41764.
 hookeri viridis, 42185.
 repens, 41765.
 vilmoriniana, 42184.
- Beta vulgaris*, 42275.
- Bichea acuminata*, 42358, 42359.
- Black sapote, *Diospyros ebenaster*, 41723.
- Blighia sapida*, 42273.
- Boehmeria nivea*, 41878.
- Bois d'oiseau, *Litsea laurifolia*, 42370.
- Bradburya plumieri*, 41950.
- Bramble, *Rubus* sp., 41922.
- Bread-nut tree, *Brosimum alicastrum*, 41880.
- Brosimum alicastrum*, 41880.
- Bunchosia* sp., 41960.
- Butia capitata pulposa*, 41686.
- Cabugao, *Citrus webberii montana*, 41959.
- Cacara erosa*, 41712, 42029, 42050, 42051.
- Cactus, *Echinocactus lecontei*, 41767.
- Caesalpinia coriaria*, 42271.
 melanocarpa, 42382.
- Café du Soudan, *Bichea acuminata*, 42358.
- Cajuput, *Cajuputi leucadendra*, 42357.
- Cajuputi leucadendra*, 42357.
- Calamondin, *Citrus mitis*, 41958.
- Cananga odorata*. See *Canangium odoratum*.
- Canangium odoratum*, 42360.
- Canavali obtusifolium*, 41816.
- Candle tree, *Parmentiera cereifera*, 41722.
- Cannabis sativa*, 41728, 42166.
- Caoba, *Bauhinia candicans*, 42381.
- Capsicum annum*, 42070, 42071, 42074.
- Caragana arborescens*, 41925.
 arborescens redowski, 42186.
 microphylla, 42187.
 pygmaea, 42282.
 spinosa, 42312.
- Cardon, *Puya chilensis*, 42082.
- Carica papaya*, 42055, 42361.
- Cariniana legalis*, 41933.
- Cassia laevigata*, 42383.
 siamea, 42362.
- Castilla elastica*, 42363.
- Castor bean, *Ricinus communis*, 41872.
- Casuarina glauca*, 42286.
- Celtis tala*, 42285.
- Cenchrus biflorus*, 41894.
- Cercidiphyllum japonicum*, 42067.
- Chaetochloa italica*, 42058.
 macrostachya, 41744.
- Chamaedorea tepejilote*, 41705.
- Chayota edulis*, 41689, 41794-41799, 41800, 41801, 42068, 42168-42172.
- Chayote. See *Chayota edulis*.
- Chenar, *Platanus orientalis*, 42201.
- Cherimoya, *Annona cherimola*, 41805-41807.
- Cherry, flowering, *Prunus serrulata*, 41817-41870.
- Amanogawa, 41850.
- Amayadori, 41852.
- Ariyake, 41843.
- Asagi-zakura, 41860.
- Benden, 41845.
- Bendono, 41845.
- Beni-tora-no-o, 41858.
- Botanzakura, 41861.
- Chōshu-hizakura, 41834.
- Fugenzo, 41864.
- Fukurokuju, 41817.
- Gi-jozakura, 41851.
- Gyoikō, 41841.
- Giozanoma-nioi, 41819.
- Goshozakura, 41849.
- Hakkasan [Hakukazan], 41853.
- Hatazakura, 41833.
- Higurashi, 41869.
- Hitoye-Fudanzakura, 41856.
- Hōrinji, 41847.
- Ichiyō, 41838.

Cherry—Continued.

- Jo-gioi-kō, 41857.
 Jō-nioi, 41866.
 Kan-zakura, 41827.
 Kirin, 41818.
 Koke-shimidsu, 41859.
 Kokonoye, 41829.
 Kongōsan, 41842.
 Koshio-yama, 41835.
 Kwanzan, 41822.
 Meigetsu, 41821.
 Mikurumagaeshi [kaisi], 41865.
 Minakani, 41828.
 Murasakizakura, 41830.
 Narazakura, 41836.
 Ohsibayama, 41844.
 Ōshima-zakura, 41855.
 Ōjōchin, 41839.
 Ranzan, 41832.
 Ruiran, 41854.
 Senrikō, 41831.
 Shirofugen, 41848.
 Shōgetsu, 41825.
 Shujaku, 41823.
 Shirayuki, 41868.
 Shirotae, 41837.
 Somei-yoshino, 41863.
 Sumizome, 41820.
 Surugadai-nioi, 41862.
 Taizan-fukun, 41867.
 Taki-nioi, 41824.
 Unju-zakura, 41870.
 Washi-no-o [Washino-wo], 41826.
 Yae-akebono, 41840.
 Yedozakura, 41846.
- Chilopsis linearis*, 42202.
saligna. See *Chilopsis linearis*.
- China grass, *Boehmeria nivea*, 41878.
Chionachne barbata, 41895.
Chloris gayana, 41896.
paraguaiensis, 41759, 41897.
ventricosa, 41760.
tenuis, 41761.
virgata, 41898.
- Chorisia insignis*, 42292.
Chrysopogon montanus, 41899.
 Ch'u ma, *Boehmeria nivea*, 41878.
 Chū tzū, *Citrus nobilis* 'deliciosa',
 41719.
- Citron, *Citrus medica*, 41716, 41926.
Citrus aurantium, 41713, 41955.
excelsa, 41714, 41956.
grandis, 41711.
hystrix, 42364.

Citrus—Continued.

- limetta aromatica*, 41715, 41957.
medica, 41716, 41926.
odorata, 41717.
mitis, 41958.
nobilis deliciosa, 41719.
sinensis, 41718.
webberii montana, 41959.
- Cocos australis*, *botryophora*, *coronata*,
datil, *flexuosa*, *plumosa*, *romanzof-*
fiana. See *Butia capitata pulposa*,
 41686.
- Coix lacryma-jobi*, 41900.
Cola acuminata. See *Bichea acumi-*
nata.
- Colocasia esculenta*, 42020, 42021.
Combretum fruticosum, 42326.
loeflingii. See *Combretum fruti-*
cosum.
- Copalier, *Trachylobium verrucosum*,
 42375.
- Coral-bean tree, *Adenanthera pavoni-*
na, 42355.
- Corn, *Zea mays*, 42167, 42276.
- Cornel, Bentham's, *Cornus capitata*,
 42287.
- Cornus bretschneideri*, 42188.
capitata, 42287.
- Corylus ferox*, 41812.
- Cotton, *Gossypium hirsutum*, 41917.
- Couratari *legalis*. See *Cariniana*
legalis.
- Crab apple, Siberian, *Malus baccata*,
 42081.
- Crane's-bill, *Geranium fremontii*, 4176^s.
Crataegus pinnatifida, 41952, 41953,
 42017, 42313.
- Croton-oil plant, *Croton tiglium*, 41879.
Croton tiglium, 41879.
- Cucurbita maxima*, 41927.
- Cupressus glabra*, 41690.
- Currant, *Ribes* spp. :
 black, *Ribes nigrum*, 42223–42239.
 Bang-Up, 42230.
 Beauty, 42233.
 Climax, 42232.
 Eagle, 42236.
 Eclipse, 42224.
 Ethel, 42227.
 Kerry, 42238.
 Lee's Prolific, 42239.
 Magnus, 42231.
 Merville de la Gironde, 42226.
 Monarch, 42235.

Currant—Continued.

black—Continued.

Norton, 42237.

Ontario, 42229.

Saunders, 42228.

Success, 42225.

Topsy, 42223.

Winona, 42234.

See also *Ribes dikuscha*, 42318.
garden, *Ribes vulgare*, 41988—41990,
42240—42267.

Champagne, 42256.

Climax, 42259.

Cumberland, 42250.

Fay's Prolific, 42243.

Frauenderfer, 42255.

Greenfield, 42246.

Kaiser, 42261.

La Conde, 42247.

Large Red, 42254.

Large White, 42260.

Long-Bunched Holland, 42252.

Moore's Seedling, 42257.

New Red Dutch, 41988, 42242.

Pomona, 42258.

Prince Albert, 42251.

Raby Castle, 42245.

Rankin's Red, 42248.

Red Dutch, 42240.

Red English, 42253.

Red Grape, 42244.

Scotch, 41989.

Utrecht, 41990.

Verrieris White, 42262.

Victoria, 42241.

Wentworth Leviathan, 42267.

White Brandenburg, 42263.

White Cherry, 42264.

White Grape, 42265.

White Pearl, 42266.

Wilder, 42249.

Cyclolobium blanchetianum, 41937.

Cymbopetalum penduliflorum, 42047.

Cymbopogon coloratus, 42048.

Cypress, smooth, *Cupressus glabra*,
41690.

Dalea johnsoni. See *Parosela johnsoni*.

Danewort, *Sambucus ebulus*, 42298.

Danthonia pallida, 41752.

Dasheen, *Colocasia esculenta*, 42020.

Dasytirion wheeleri, 42203.

Delphinium scaposum, 41766.

Dictyosperma alba. See *Linoma alba*.

Dinebra arabica, 41902.

Dioscorea spp., 42052, 42054.

trifida, 42053.

Diospyros ebenaster, 41723.

kaki, 41691—41702, 41779—41793,
42138—42165.

Divi-divi, *Caesalpinia coriaria*, 42271.

Ear-flower, sacred, *Cymbopetalum
penduliflorum*, 42047.

Echinocactus leontei, 41767.

Eragrostis abyssinica, 41903.

elegans, 41904.

Erianthus fulvus. See *Erianthus ru-
spilus*.

ruspilus, 41685.

Erythrina flabelliformis, 42204.

× *Escallonia langleyensis*, 41962.

Espina corona, *Gleditsia amorphoides*,
42327.

Espinillo, *Acacia moniliformis*, 42322.

Euchlaena mexicana, 41905.

Eugenia klotzschiana, 42030.

parkeri, 42366.

Feronia elephantum. See *Feronia
limonia*.

limonia, 42268.

Ficus lacor, 41720.

Fir, *Abies sibirica*, 42311.

Flax, *Linum usitatissimum*, 41811,
42037.

Riga (Russian), 42037.

Fountain tree, *Spathodea campanu-
lata*, 42373.

Fragaria spp., 41977—41987.

chiloensis, 42072.

Funtumia elastica, 42367.

Garcinia epunctata, 42085.

mestoni, 41802.

Garugandra amorphoides. See *Gledit-
sia amorphoides*.

Geonoma erythrospadice, 41934.

Geranium fremontii, 41768.

Gleditsia amorphoides, 42327.

caspica, 42288.

Gossypium hirsutum, 41917.

Gourd, loofah, *Luffa acutangula*, 42069.

Granadilla. See *Passiflora* spp.

Grape, *Vitis* spp., 41707, 41877.

Amur, *Vitis amurensis*, 42320.

- Grass. See *Alloteropsis*, *Andropogon*, *Apluda*, *Aristida*, *Arundinella*, *Cenchrus*, *Chaetochloa*, *Chionachne*, *Chloris*, *Chrysopogon*, *Coix*, *Cymbopogon*, *Danthonia*, *Dinebra*, *Eragrostis*, *Euchlaena*, *Holcus*, *Homalocenchrus*, *Ischaemum*, *Iseilema*, *Manisuris*, *Panicum*, *Pennisetum*, *Pollinia*, *Thelepogon*, *Themeda*, *Trachys*, *Tricholaena*.
- blue star, *Chloris ventricosa*, 41760.
- brown-top, *Pollinia fulva*, 41754.
- cockatoo, *Alloteropsis semialata*, 41751.
- Johnson, *Holcus halepensis*, 41906.
- kangaroo. *Themeda forskalii*, 41757.
- Themeda gigantea avenacea*, 41748.
- lemon, *Cymbopogon coloratus*, 42048.
- Natal, *Tricholaena rosea*, 41921.
- Rhodes, *Chloris gayana*, 41896.
- rice, *Homalocenchrus hexandrus*, 41750.
- silver, *Danthonia pallida*, 41752.
- Sudan, *Holcus sorghum sudanensis*, 41907.
- sugar, *Pollinia fulva*, 41754.
- white-topped, *Danthonia pallida*, 41752.
- See also Job's-tears, Palwan, Teff, and Teosinte.
- Guadua, *Bambos guadua*, 42066.
- Guadua angustifolia*. See *Bambos guadua*.
- Guava, *Psidium* spp., 41706, 42039, 42295.
- mountain. *Psidium montanum*, 42296.
- Guayacan, *Caesalpinia melanocarpa*, 42382.
- Halimodendron argenteum*. See *Halimodendron halodendron*.
- halodendron*, 42283.
- Hawthorn, *Crataegus pinnatifida*, 41952, 41953, 42017, 42313.
- Hazel, *Corylus ferox*, 41812.
- Hedysarum boreale*, 41901.
- esculentum*, 42191.
- flavescens*, 42192.
- Hedysarum pabulare*, 41769.
- Heliconia* sp., 41942.
- Hemp, *Cannabis sativa*, 41728, 42166.
- Tochigi, 42166.
- Hesperethusa crenulata*, 41947.
- Hibiscus esculentus*. See *Abelmoschus esculentus*.
- syriacus*, 42302, 42303.
- Holcus fulvus*, 41755.
- halepensis*, 41906.
- plumosus*, 41756.
- sorghum*, 42060, 42278.
- sudanensis*, 41907.
- Homalocenchrus hexandrus*, 41750.
- Honey locust, *Gleditsia* spp:
- Argentine, *Gleditsia amorphoides*, 42327.
- Caspian, *Gleditsia caspica*, 42288.
- Honeysuckle. See *Lonicera* spp.
- Hop, Foundling, *Humulus lupulus*, 42024.
- Hordeum distichon palmella*, 42092-42095, 42097.
- vulgare*, 42098.
- coeleste*, 42061.
- pallidum*, 42096, 42099, 42100.
- trifurcatum*, 42101.
- Huang ko shu, *Ficus lacor*, 41720.
- Humulus lupulus*, 42024.
- Huckleberry, *Vaccinium ovatum*, 41730.
- Hydrangea bretschnneideri*, 42189.
- xanthoneura wilsonii*, 42190.
- Hymenaea verrucosa*. See *Trachylobium verrucosum*.
- Hyphaene coriacea*, 42368.
- Ibirá-pitá, *Baryxylum dubium*, 42325.
- Ilang-ilang, *Canangium odoratum*, 42360.
- Indigo. See *Indigofera* spp.
- Indigofera argentea*, 41929.
- glandulosa*, 41908, 42027.
- hirsuta*, 42173.
- longeracemosa*, 42174.
- suffruticosa*, 42175.
- sumatrana*, 42176.
- tinctoria*, 42181.
- trifoliata*, 41909, 42028.
- Inkberry, *Randia aculeata*, 41810.
- Inodes texana*, 42280.
- Intsia bijuga*, 42369.
- Ipomoea* sp., 41935.
- Isatis tinctoria*, 42182.

- Ischaemum aristatum*, 41910.
australe villosum, 41749.
pilosum, 41911.
sulcatum, 41912.
- Iscilema anthephoroides*, 41913.
wightii, 41914.
- Jaboncillo, *Sapindus saponaria*, 42038.
 Jaboticaba, *Myrciaria* sp., 42031.
 Jauguario, *Phaseolus semierectus*, 41928.
- Jequitiba, *Cariniana legalis*, 41933.
 Job's-tears, *Coix lacryma-jobi*, 41900.
Juglans domingensis, 41930.
mandshurica, 42314.
regia, 41776-41778, 42022, 42023, 42041-42045.
- Jujube, *Ziziphus jujuba*. See Tsao.
- Kaki, *Diospyros kaki*:
 Ama-hiyakume, 42160.
 Ama-yemon, 42149.
 Anzai, 41691.
 Benigaki, 41699.
 Chijo, 41779.
 Chiomatsu, 41696.
 Dojo-hachiya, 42152.
 Fijuwara-gosho, 41695.
 Fuji, 42147.
 Fuyu, 42165.
 Gombo, 42139.
 Gobangaki, 41789.
 Hana-gosho, 41787.
 Handai, 41792.
 Hiragaki, 41702.
 Hira-sanenashi, 41700.
 Hon-gosho, 41693.
 Ibo-gaki, 41698.
 Inayama, 42156.
 Jiro, 42155.
 Jisha, 41791.
 Kiara, 42146.
 Koharu, 42141, 42143.
 Koshu-hiyakume, 42150.
 Kubo, 41692.
 Kumono, 42145.
 Manzu-gaki, 41783.
 Marugaki, 42138.
 Mishirazu, 42148.
 Mompei, 41786.
 Moriya, 41780.
 Niyorodo, 41781.
 Onihira, 42163.
 Oranda-gosho, 41782.
- Kaki—Continued.
 Osoraku, 41697.
 Rendaiji-hiragaki, 41793.
 Sakata, 41790.
 Sakushu-mishirazu, 41701, 42144.
 Sanenashi, 42159.
 Shimofuri, 42140, 42158.
 Shioto-damashi, 42154.
 Shiunshio, 42164.
 Shiyogatsu, 42157.
 Shyozaemon, 41784.
 Takura, 42144.
 Tokuda-gosho, 42153.
 Toyo-oka, 41694.
 Yashima, 42162.
 Ye-gosho, 42161.
 Yoroi-odoshi, 41788.
 Yotsu-myotan, 42142.
 Yotsumimi, 41785.
 Yotsumizo, 42151.
- Kola nut, *Bichea acuminata*, 42358, 42359.
 K'u kua, *Momordica charantia*, 41721.
- Lantana camara nivea*, 41931.
 Larch, *Larix dahurica principis rupprechtii*, 42194.
Larix dahurica principis rupprechtii, 42194.
 Larkspur, *Delphinium scaposum*, 41766.
Lathyrus latifolius, 42076.
odoratus, 42077.
sylvestris, 42078, 42079.
vernus, 42080.
- Laurel cherry, *Laurocerasus acuminata*, 41813.
Laurocerasus acuminata, 41813.
Leersia hexandra. See *Homalocenchrus hexandrus*.
 Lelegachatsch, *Gleditsia caspica*, 42288.
 Lemon, royal, *Citrus excelsa*, 41714.
Licania sp., 41948.
Ligustrum ovalifolium × *obtusifolium regelianum*, 42211-42222.
 Lilac, *Syringa emodi*, 42319.
Lilium giganteum, 41687.
 Lily, *Lilium giganteum*, 41687.
 Limon-real, *Citrus excelsa*, 41714, 41956.
Limonia acidissima. See *Hesperethusa crenulata*.
Linoma alba, 42365.
Linum usitatissimum, 41811, 42037.

- Litsea laurifolia*, 42370.
sebifera. See *Litsea laurifolia*.
Lonchocarpus formosianus, 42371.
Lonicera chrysantha, 42315.
hispida, 42316.
kesselringi. See *Lonicera orientalis longifolia*.
orientalis longifolia, 41946.
ruprechtiana, 42317.
Lo-thi, *Alloteropsis semialata*, 41751.
Lucern, Hunter River, *Medicago sativa*, 42281.
Ladakh, *Medicago falcata*, 42018.
See also Alfalfa.
Luehea *divaricata*. See *Alegria divaricata*.
Luffa *acutangula*, 42069.
- Macadamia ternifolia*, 41808.
Macrobium sp. See *Vouapa* sp.
Madroña, *Arbutus arizonica*, 41726.
Malus baccata, 42081.
Manisuris compressa, 41745.
Maple, *Acer ginnata*, 42310.
Meal, *Triticum aestivum*, 42065.
Medicago falcata, 42018.
sativa, 42279, 42281.
Medlar, *Mespilus germanica*, 41803.
Melaleuca leucadendron. See *Cajuputi leucadendra*.
Melilotus officinalis, 42019.
Mespilus germanica, 41803.
Meston's garcinia, *Garcinia mestoni*, 41802.
Michelia cathcartii, 41814.
Millet, *Chaetochloa italica*, 42058.
pearl, *Pennisetum glaucum*, 42284.
Mimusops elengi, 41809.
Momordica charantia, 41721.
Mu chin, *Hibiscus syriacus*, 42302, 42303.
Myrciaria sp., 42031.
Myrianthus arboreus, 42073.
- Napinday, *Acacia bonariensis*, 42321.
Naranjilla, *Solanum quittoense*, 42034.
Nectarine, *Amygdalus persica nectarina*, 41739, 42200.
Nephetium lappaceum, 42086.
Nettle tree, *Celtis tala*, 42285.
Nicotiana acuminata, 42333.
alata, 42334.
angustifolia crispa, 42347.
- Nicotiana calyciflora*, 42348.
campanulata. See *Nicotiana rustica*, 42343.
chinensis, 42335.
glauca, 42336.
langsдорffii, 42337.
latissima. See *Nicotiana tabacum macrophylla*, 42352.
longiflora, 42338.
macrophylla. See *Nicotiana tabacum macrophylla*, 42353.
paniculata, 42339.
plumbaginifolia, 42340.
quadrivalvis, 42341.
rustica, 42342, 42343.
sanderæ, 42354.
silvestris, 42344.
suaveolens, 42345.
tabacum, 42346.
macrophylla, 42352, 42353.
trigonophylla, 42349.
undulata, 42350.
viscosa, 42351.
Nyssa ogeche, 42277.
- Oats, *Avena* spp. :
Algerian, 42090.
Black Tartarian, 42087.
Calcutta, 42091.
Clydesdale, 42089.
Ruakura, 42088.
- Ogeechee lime, *Nyssa ogeche*, 42277.
Okra, *Abelmoschus esculentus*, 41724.
Operculina tuberosa, 41949.
Ophitopogon japonicus, 41923.
Orange, Calamondin, *Citrus mitis*, 41958.
Chinese, *Citrus mitis*, 41958.
mandarin, *Citrus nobilis deliciosa*, 41719.
sour, *Citrus aurantium*, 41713, 41955.
See also *Citrus sinensis*, 41718.
- Oreana brava, *Geonoma erythrospace*, 41934.
Orejuela, *Cymbopetalum penduliflorum*, 42047.
- Pachyrhizus angulatus*. See *Cacara erosa*.
Pæderia foetida, 41876.
Paeonia moutan. See *Paeonia suffruticosa*.
suffruticosa, 41710.

- Palm, *Butia capitata pulposa*, 41686.
Chamaedorea tepejilote, 41705.
Geonoma erythrospadice, 41934.
Hyphaene coriacea, 42368.
Inodes texana, 42280.
Linoma alba, 42365.
Trachycarpus takil, 41871.
- Palo borracho, *Chorisia insignis*, 42292.
- Palwan, *Andropogon annulatus*, 41885.
- Panicum distachyon*, 41746.
foliosum, 41753.
semialatum. See *Alloteropsis semialata*.
teneriffae. See *Tricholaena rosea*.
- Papa del rio, *Stigmaphyllon jatropaefolium*, 42330.
- Papatinga, *Alpinia* sp., 41941.
- Papaya, *Carica papaya*, 42055, 42361.
- Papeda, *Citrus hystrix*, 42364.
- Parmeniera cereifera*, 41722.
- Parosela johnsoni*, 41771.
- Passiflora* sp., 42033.
filamentosa, 42289.
herbertiana, 42290.
ligularis, 42035, 42269.
mixta, 42032.
suberosa, 42291.
- Pa tou, *Croton tiglium*, 41879.
- Pau de sangue, *Pterocarpus violaceus*, 41936, 41939.
Cyclolobium blanchetianum, 41937.
- Pau roxo, *Peltogyne pauciflora*, 41938.
- Paulownia fortunei*, 42036.
- Pea, everlasting, *Lathyrus latifolius*, 42076.
flat, *Lathyrus sylvestris*, 42078, 42079.
sweet, *Lathyrus odoratus*, 42077.
- Pea tree, *Caragana* spp., 42186, 42312.
dwarf, *Caragana pygmaea*, 42282.
Siberian, *Caragana arborescens*, 41925.
- Peach, *Amygdalus persica*:
Agra, Large, 41740.
(Australia), 41727, 41881.
(China), 42300, 42301, 42379.
Country, 41733.
Flat China, *Amygdalus persica platycarpa*, 41727, 41737.
Hardoi, 41738.
(India), 41731-41738, 41740-41743.
Kashmiri, small red, 41742.
small white, 41741.
white, 41732.
- Peach—Continued.
Large Red, 41735, 41736.
Lin t'ao, 42300, 42301.
Mai-Cha, 41743.
(New Zealand), 42178.
Peen-to, *Amygdalus persica platycarpa*, 41727, 41737.
(Quetta), 41731.
Sheharunpur, 41733, 41735, 41736.
silver, 41734.
weeping, 42178.
- Peanut, *Arachis hypogaea*, 42377, 42378.
- Pear, Moroccan, *Pyrus mamorensis*, 42274.
wild (China), *Pyrus* sp., 42304.
willow-leaved (Caucasus), *Pyrus salicifolia*, 41729.
- Peltogyne pauciflora*, 41938.
Peltophorum vogelianum. See *Baryxylum dubium*.
- Pennisetum cenchroides*. See *Pennisetum ciliare*.
ciliare, 41915.
glaucum, 42284.
typhoideum. See *Pennisetum glaucum*.
- Pentstemon palmeri*, 41772.
utahensis, 41773.
- Peony, tree, *Paeonia suffruticosa*, 41710.
- Pepper, red, *Capsicum annum*, 42070, 42071, 42074.
- Pera do campo, *Eugenia klotzschiana*, 42030.
- Perilla frutescens*, 42062, 42083.
ocymoides. See *Perilla frutescens*.
- Peroba, *Aspidosperma peroba*, 42324.
- Persea americana*, 41688, 41725.
gratissima. See *Persea americana*.
- Persimmon, Chinese. See Kaki.
Japanese. See Kaki.
- Phaseolus adenanthus*, 41951.
angularis, 42063.
aureus, 42064.
bertonii. See *Phaseolus caracalla*.
calcaratus, 42056.
caracalla, 41882.
lunatus, 42075, 42270.
semierectus, 41928.
vulgaris, 42049.
- Phyllanthus acidus*, 41943.
distichus. See *Phyllanthus acidus*.
× *Physalis bunyardi*, 42196.

- Pimento dulce morrón, *Capsicum annuum*, 42074.
- Pine, white-barked, *Pinus bungeana*, 41954.
- Pinus bungeana*, 41954.
- Piptadenia* sp., 41940.
- Pithecoctenium cynanchoides*, 42328.
- Pittosporum bicolor*, 42293.
eriocarpum, 42294.
fairchildi, 42177.
- Plane tree, oriental, *Platanus orientalis*, 42179, 42201.
- Platanus orientalis*, 42179, 42201.
- Plum, Annandale, *Prunus bokhariensis*, 42057.
- Plume-grass, *Erianthus ruftipilus*, 41685.
- Plumerillo, *Combretum fruticosum*, 42326.
- Poa abyssinica*. See *Eragrostis abyssinica*.
- Pois du cap, *Phaseolus lunatus*, 42270.
- Pollinia cumingii*. See *Pollinia fulva*.
fulva, 41754.
- Poppy, *Arctomecon humile*, 41763.
- Porana racemosa*, 41875.
- Potato, Leinster Wonder, *Solanum tuberosum*, 42210.
wild, *Solanum* sp., 42026.
- Privet, hybrid, 42211-42222.
- Prosopis* sp., 42329.
chilensis, 42025.
juliflora. See *Prosopis chilensis*.
- Prunus acuminata*. See *Laurocerasus acuminata*.
armentaca, 42380.
bokhariensis, 42057.
hortulana, 41704.
persica. See *Amygdalus persica*.
persica platycarpa. See *Amygdalus persica platycarpa*.
serrulata, 41817-41870.
tangutica. See *Amygdalus tangutica*.
- Psidium acre*, 42295.
guajava, 41706, 42039.
montanum, 42296.
- Pterocarpus violaceus*, 41936, 41939.
- Pterocarya caucasica*. See *Pterocarya fraxinifolia*.
fraxinifolia, 42297.
- Pummelo, *Citrus grandis*, 41711.
- Puya chilensis*, 42082.
- Pyrus* sp., 42304.
baccata. See *Malus baccata*.
germanica. See *Mespilus germanica*.
mamorensis, 42274.
salicifolia, 41729.
sorbus. See *Sorbus domestica*.
- Queensland nut, *Macadamia ternifolia*, 41808.
- Quillay, *Gleditsia amorphoides*, 42327.
- Rambutan, *Nephelium lappaceum*, 42086.
- Ramie, *Boehmeria nivea*, 41878.
- Randia* sp. 42040.
aculeata, 41810.
- Raspberry, *Rubus* spp., 41964-41976.
Alexandria, 41964.
Baumforth Seedling, 41971.
Devon, 41972.
Golden Drop, 41975.
Guinea, 41976.
Hailsham, 41965.
Merveille Rouge (Belle Fontenay), 41966.
Northumberland Fillbasket. See Baumforth Seedling.
Norwich Wonder, 41973.
November Abundance, 41967.
October Yellow, 41968.
Profusion, 41974.
Surprise d'Automne, 41969.
Yellow Four Seasons, 41970.
Yellow Superlative, 41976.
- Ravenala madagascariensis*, 42372.
- Renealmia* sp. See *Alpinia* sp.
- Ribes dikuscha*, 42318.
nigrum, 42223-42239.
vulgare, 41988-41990, 42240-42267.
- Ricinus communis*, 41872.
- Rose of Sharon, *Hibiscus syriacus*, 42302, 42303.
- Rottboellia compressa*. See *Manisuris compressa*.
- Rubber tree, *Castilla elastica*, 42363.
Lagos, *Funtumia elastica*, 42367.
- Rubus* spp., 41922, 41964-41976.
- Salazaria mexicana*, 41774.
- Salt tree, *Halimodendron halodendron*, 42283.
- Sambucus ebulus*, 42298.
- San Falso, *Cassia laevigata*, 42333.
- Sapindus saponaria*, 42038.

- Sato-imo, *Colocasia esculenta*, 42021.
Sechium edule. See *Chayota edulis*.
 Service tree, *Sorbus domestica*, 41703, 41804.
Sesban aculeatum, 41916.
Setaria macrostachya. See *Chaetochloa macrostachya*.
italica. See *Chaetochloa italica*.
 Shan li hung, *Crataegus pinnatifida*, 41952, 41953, 42017.
 Sia-la-hung, *Crataegus pinnatifida*, 41952, 41953.
 Sincamas, *Cacara erosa*, 41712.
 Snow creeper, *Porana racemosa*, 41875.
 Soapberry, *Sapindus saponaria*, 42038.
Soja max, 42059.
Solanum sp., 42026.
quitoense, 42034.
tuberosum, 42210.
Sollya heterophylla, 42299.
 Sora mame, *Vicia faba*, 41770.
Sorbus domestica, 41703, 41804.
 Sorghum. See *Holcus sorghum*.
Sorghum halepense. See *Holcus halepensis*.
vulgare. See *Holcus sorghum*.
 Soto caballo, *Alegria divaricata*, 42323.
 Sotol, *Dasyliirion wheeleri*, 42203.
Spathodea campanulata, 42373.
Spiraea veitchi, 42195.
 Squash, *Cucurbita maxima*, 41927.
Stigmaphyllon jatrophaeifolium, 42330.
 Strawberry, *Fragaria* spp.:
 (Chile), 42072.
 Countess, 41980.
 Filbert Pine, 41981.
 Fillbasket, 41982.
 Givon's Late Prolific, 41983.
 Hibberd's George V, 41984.
 Laxton's Latest, 41985.
 Merveille de France, 41977.
 Reward, 41986.
 St. Antoine de Padoue, 41978.
 St. Fiacre, 41979.
 Waterloo, 41987.
Styrax hookeri, 41815.
 Sugar-apple, *Annona squamosa*, 41873.
 Sweet clover, yellow, *Melilotus officinalis*, 42019.
Syringa emodi, 42319.
 Taguana, *Phaseolus vulgaris*, 42049.
 Tala, *Celtis tala*, 42285.
 Taro, *Colocasia esculenta*, 42021.
 Tarumá, *Vitex montevidensis*, 42332.
 Teak, *Tectona grandis*, 42374.
Tectona grandis, 42374.
 Teff, *Eragrostis abyssinica*, 41903.
 Teosinte, *Euchlaena mexicana*, 41905.
Tetranthera laurifolia. See *Lonchocarpus formosianus*.
Thelepogon elegans, 41918.
Themeda forskalii, 41757.
gigantea avenacea, 41748.
quadrivalvis, 41919.
 Thorn-apple, Chinese, *Crataegus pinnatifida*, 41952, 41953, 42017, 42313.
Thunbergia sp., 41932.
 Tihi-tihi, *Citrus medica odorata*, 41717.
 Tipu, *Tipuana tipu*, 42331.
Tipuana speciosa. See *Tipuana tipu*, 42331.
 Titanca, *Puya chilensis*, 42082.
 Tobaceo. See *Nicotiana* spp.
Tolujifera balsamum, 42272.
 Toulou, *Tolujifera balsamum*, 42272.
 To-ura, *Holcus sorghum*, 42278.
Trachycarpus takil, 41871.
Trachylobium verrucosum, 42375.
Trachys mucronata, 41920.
 Traveler's-tree, *Ravenala madagascariensis*, 42372.
 Tree peony, *Paeonia suffruticosa*, 41710.
Tricholaena rosea, 41921.
 Tripa de Braya, *Pithecoctenium cynanchoides*, 42328.
Triticum aestivum, 41991-42006, 42013, 42014, 42016, 42065, 42102-42114, 42116-42136, 42207, 42208.
durum, 42007-42012, 42015, 42115.
 × *polonicum*, 42206.
polonicum, 42209.
turgidum, 42205.
vulgare. See *Triticum aestivum*.
 Tsao, *Ziziphus jujuba*:
 Ma yü, 42309.
 Pu tao, 42305, 42307, 42308.
 Tan, 42306.
 Tusca, *Acacia moniliformis*, 42322.
Typhonodorum lindleyanum, 42376.
madagascariensis. See *Typhonodorum lindleyanum*.
 Ucutúba, *Viola* sp., 41945.
 Udo, *Aralia cordata*, 42084.
 Nakate White, 42084.
 Uspib, *Licania* sp., 41948.

- Vaccinium ovatum*, 41730.
- Vetchling, spring, *Lathyrus vernus*, 42080.
- Viburnum hupchense*, 42197.
lobophyllum, 42198.
rhytidophyllum, 42199.
- Vicia faba*, 41770.
- Virola* sp., 41945.
- Vitex montevidensis*, 42332.
- Vitis amurensis*, 42320.
armata. See *Vitis davidii*.
caribaea. See *Vitis tiliacifolia*.
davidii, 41877.
tiliacifolia, 41707.
- Vouapa* sp., 41944.
- Walnut, *Juglans* spp.:
Dominican, *Juglans domingensis*, 41930.
English. See Persian.
Manchurian, *Juglans mandshurica*, 42314.
Persian, *Juglans regia*:
Abrams, 42022.
Avon, 42041.
Holden, 42045.
(India), 41776-41778.
Leland, 42044.
Livingston, 42042.
Ontario, 42023.
Thomson, 42043.
- Wheat, *Triticum* spp.:
(Australia), 42102-42136, 42205-42209.
Avoca, 42123.
Bayah, 42131.
Blout's Lambrigg, 42207.
Bob's, 42113.
Bunyip, 42135.
Canberra, 42109.
Cedar, 42112.
(Chosen), 42065.
College Eclipse, 42121.
College Purple Straw, 42128.
Comeback, 42114.
- Wheat—Continued.
Commonwealth, 42106.
Correll's No. 3, 42122.
Crossbred 28, 42110.
Currawa, 42105.
Dart's Imperial, 42119.
Federation, 42102-42104.
Firbank, 42136.
Florence, 42111.
Galland's Hybrid, 42205.
Gamma, 42130.
Gluyas, 42129.
Huguenot, 42115.
(India), 41991-42018.
Kathias, 42009-42012.
(Korea), 42065.
Major, 42107.
Marshall's No. 3, 42118.
Nardoo, 42108.
Nevertire, 42206.
Nyngan, 42208.
Penny, 42116.
Polish, 42209.
Purple Straw, 42127, 42128.
Thew, 42126.
Triumph, 42125.
Viking, 42132.
Wallace, 42124.
Warden, 42117.
White Tuscan, 42133.
Yandilla King, 42120.
Zealand Blue, 42134.
- Woad, *Isatis tinctoria*, 42182.
- Wood-apple, *Feronia limonia*, 42268.
- Yam, Manawá, *Dioscorea* sp., 42052.
- Yam bean, *Cacara erosa*, 41712, 42029, 42050, 42051.
- Yampee, *Dioscorea* sp., 42054.
white, *Dioscorea trifida*, 42053.
- Yucca angustissima*, 41775.
- Zea mays*, 42167, 42276.
- Ziziphus jujuba*, 42046, 42305-42309.
sativa. See *Ziziphus jujuba*.