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Issued July 12, 1920.

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 APRIL 1,
TO JUNE 30, 1916.

(No. 47; Nos. 42384 to 43012.)



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GOVERNMENT PRINTING OFFICE.
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BUREAU OF PLANT INDUSTRY.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1916 (NO. 47; NOS. 42384 TO 43012).

INTRODUCTORY STATEMENT.

This inventory covers the spring months of the year preceding our entry into the Great War. During those months 40 countries sent freely through their official representatives, or allowed to pass freely, the plant material collected within their borders which this inventory describes. In the light of recent events this fact takes on a new significance. It shows the spirit of free exchange of material of the greatest value which existed before the war, material from which food crops of great importance could be developed. Upon no single species of plant had any nation placed an embargo. It was possible at any time through official requests to secure every courtesy desired and, often without cost, all plant material asked for. The policy, followed by this office for 10 years, of offering to secure free of cost small quantities of plant material of American species may have been in part responsible for the hearty assistance rendered by these representatives of 40 foreign countries. Even the Ameer of Afghanistan, who guarded jealously every avenue of communication with the outside world, sent a shipment of plants as a gift to this Government previous to the war.

This inventory describes collections made by only one representative of the office, Mr. H. M. Curran, who as a collaborator collected, in connection with other work upon which he was engaged in Colombia, seeds of some rare and interesting oil palms and of tropical forest and other economic trees of that country.

Of the material sent in by correspondents, the cerealists will be interested in a collection of South African endemic varieties of wheat (Nos. 42391 to 42426) which Mr. I. B. Pole Evans reports have been cultivated for many years on irrigated lands; and in the Papago sweet corn of Arizona (No. 42642), which may prove valuable for silage in Kansas and Nebraska.

Four good tropical bonavist beans (Nos. 42577 to 42580) from British Guiana, one of which lasts for two years, may interest Florida truck growers; and a relative of the udo from the Himalayas, *Aralia cachemirica* (No. 42607), which is hardy at the Arnold Arboretum,

near Boston, deserves to be tested in comparison with the Japanese vegetable.

A most noteworthy addition is the Grimaldi collection of hybrid grapes, selections of many hundreds of hybrids made by Dr. Clemente Grimaldi between the Italian varieties of the European grape and various American species of *Vitis* (Nos. 42477 to 42519). These were presented by Mr. F. Paulsen, director of the Regio Vivaio di Viti Americane, direct from Palermo. They are presumed to contain some stock varieties and direct producers of exceptional value because of their resistance to drought and to an excessive content of lime in the soil.

The cherimoya has shown itself so well adapted to cultivation in California and Florida and its rapid recovery from frost injury has been so noticeable that five named grafted varieties from Chile (Nos. 42897 to 42901), gifts of Sr. Adolfo Eastman, of San Francisco de Limache, have already attracted considerable attention in those regions where this delicious fruit can be grown.

The roselle jelly plant is a success in Florida and Texas, but too often the crop is cut short by frost. Wester's strain, Temprano, which matures 20 days before the others, may make the growing of this remarkable jelly-producing plant a success farther north (Nos. 42471 to 42475).

The Macadamia is bearing in southern Florida and California, and several people are studying its possibilities. *Macadamia minor* (No. 42468), a smaller species sent in by Mr. J. F. Bailey, should be tested in the same localities.

We are accustomed to connect high protein content with leguminous crops, but in the Capoeira branco, *Solanum bullatum* (No. 42815), which Mr. Benjamin H. Hunnicutt, of Lavras, Brazil, reports is relished by cattle and horses, we have one of the Solanaceæ, the leaves of which, according to analysis, contain 20 to 28 per cent of protein, and the branches 14.06 per cent of protein, dry weight. This is higher in protein than many alfalfas, and it deserves the consideration of forage-crop specialists.

Dr. J. H. Maiden, of Sydney, Australia, proposes the Japanese grass, *Osterdamia matrella* (No. 42389), for culture on swamps and dry flats near the sea and believes it worthy of trial in sand-hill districts or on saline lands near the coast.

It is recognized that bamboo thickets form good grazing grounds for cattle. The switch cane of our Southern States no doubt furnishes a very considerable amount of fodder for southern cattle. In the Andean Cordilleras another bamboo, the canea, *Chusquea quila* (No. 42388), is highly considered as a forage plant and exists in great quantities there, according to Dr. Vereertbrugghen, who has succeeded in obtaining a quantity of seed for trial.

Mr. J. Burt Davy, who has sent in many valuable things from South Africa, submits for trial the seeds of what he believes is a new annual hay grass for wettish lands in the maize belt of the South, especially for alluvial deposits where water is apt to stand during rains. Animals, he reports, are extremely fond of this *Panicum laevifolium* (No. 42608).

The so-called algaroba of Hawaii, introduced by padres into the islands, has been such a valuable forage tree that the Philippine aroma, *Prosopis vitaliana* (No. 42807), which resembles and has until recently been confused with it, merits attention. It is quite distinct, however, having no sweet arillus in the pod; and since it spreads along the sandy coast region and up on the hillsides and is relished by stock it deserves to be naturalized throughout the Tropics.

The importance of vegetable oils has been emphasized by the war, and it is evident that Americans have paid too little attention to the South American wild palms, from the kernels of which excellent oils are obtainable. The Corozo palm, *Elaeis melanococca* (No. 43001), according to Curran, yields an excellent cooking oil and is found in immense numbers on the flooded areas of Colombia, while the cultivation of the Cohune palm, *Attalea cohune* (No. 42707), according to Consul Dyer, of Honduras, is capable of being developed into an important industry there.

Dr. L. Trabut, our collaborator, who has made so many valuable suggestions that we listen to him with unusual interest, proposes *Saccharum biflorum* (No. 42551), a grass of great size much used in Algeria as a screen and in Sicily and on the banks of the Nile as a sand binder, for trial in our Southwestern States.

Besides the strictly economic plants, this inventory includes several striking new ornamentals. S. P. I. Nos. 42435 to 42443 show a collection of tree and shrub seeds from Dr. Fischer de Waldheim and include a rare Turkestan maple, the oriental beech, a Turkestan mountain cherry, a mountain almond, and the most decorative of all the tamarisks. S. P. I. No. 42597, *Cornus capitata*, from the Himalayas, has bracts that are sulphur yellow instead of white in color, like our dogwoods, and bears fruits 2 inches long and fleshy like a strawberry. What might be done in the hybridization of our eastern and western species with this Himalayan dogwood!

Actinidia arguta is such an indispensable porch vine and its foliage is so universally free from disease that the larger leaved *A. callosa henryi* (No. 42683) from central China deserves to be tried in comparison.

M. Vilmorin's new hybrid clematis (No. 42688), a result of crossings between Wilson's *Clematis montana rubens*, one of the loveliest of all climbers but tender, and *C. chrysecoma*, is said to be more vigorous and branching than the former, and it may be hardier.

S. P. I. No. 42691 is the new Chinese *Deutzia longifolia veitchii*, one of the most interesting new flowering shrubs introduced from China, with large beautiful rose-colored flowers, making it especially suitable for parks.

Rose growers will take a particular interest in the remarkable collection of rose species (Nos. 42974 to 42982) from the Arnold Arboretum, which has gathered them from China and Chosen (Korea). This collection represents material of the greatest value for hybridizers and can hardly fail to lead to the origination of many new and lovely hardy roses for America.

Perhaps the most remarkable plant listed, from the botanist's point of view, is the Javanese shrub *Pavetta zimmermanniana* (No. 42767). Its leaves are inhabited by bacterial colonies which induce knots analogous to those formed by *Bacillus radicicola* in the roots of leguminous plants. These knots are apparently essential to the healthy growth of the plant, and the bacterium is universally present in the young seed. This represents a new class of plants whose rôle in our agriculture remains to be further studied.

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

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., February 11, 1919.

INVENTORY.

42384 and 42385. *NEPHELIUM* spp. Sapindaceæ.

From Buitenzorg, Java. Presented by the director of the Botanic Gardens. Received April 6, 1916.

42384. *NEPHELIUM LAPPACEUM* L.

Rambutan.

"The rambutan tree grows to a height of about 40 feet, and when in fruit is a handsome sight, the terminal clusters of bright crimson fruits being produced on every branch. The compound leaves are made up of oblong-ovate leaflets about 4 inches long by 2 inches wide. In habit of growth the tree appears to be normally rather round-topped and spreading, but as it is frequently planted among other trees, it is forced to grow tall and slender, branching only at a considerable height above the ground. A cluster of rambutans, when highly colored, is exceptionally attractive. The best forms attain, when fully ripe, a rich crimson color. The individual fruits are slightly smaller than a hen's egg, but more elongated in form. They are covered with soft spines about half an inch in length and are borne in clusters of about 10 to 12 fruits. The skin is not thick or tough, and to eat the fruit the basal end is torn off, exposing the aril, which, with a slight pressure on the apical end of the fruit, slides into one's mouth. The aril is white, nearly transparent, about one-fourth of an inch thick, and has a mildly subacid, somewhat vinous flavor." (*Wilson Popenoe.*)

See S. P. I. No. 34494 for previous introduction.

42385. *NEPHELIUM MUTABILE* Blume.

Pulassan.

"*Pulassan.* A Malayan tree, similar to the rambutan in appearance, but differing in the fruit and in the leaves, which are gray beneath. The fruit is larger than the rambutan, of a deep purple-brown, with short, blunt processes, and, according to Ridley, the flavor is decidedly superior to that of the latter fruit." (*Macmillan, Handbook of Tropical Gardening, 2d ed., p. 176.*)

42386. *CASTILLA NICOYENSIS* O. F. Cook. Moraceæ.

Nicoya rubber.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received April 3, 1916.

A medium-sized tree, 10 to 20 meters high, with deciduous leaves 8 to 18 inches long and 4 to 8 inches broad, bearing inconspicuous flowers and orange-red fruits in a receptacle 2 to 3 inches in diameter. Reported so far only from the peninsula of Nicoya, but the probability is that it will be found all along the Pacific coast from Nicaragua to Panama. It is a good rubber producer, the milk being particularly abundant toward the end of the dry season. Owing to this fact, it is almost exterminated from the western forests of Costa Rica. (Adapted from *Pittier, Contributions from the U. S. National Herbarium vol. 13, p. 275.*)

For previous introduction, see S. P. I. No. 38188.

42387. PSIDIUM GUAJAVA L. Myrtaceæ. Guava.

From Allahabad, India. Presented by Prof. P. H. Edwards, American Presbyterian Mission. Received April 1, 1916.

"*Sufeda* or *Safeda*. White with creamy skin and smooth delicious flesh. This variety is considered the best." (*Edwards*.)

42388. CHUSQUEA QUILA Kunth. Poaceæ. Bamboo.

From Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received April 6, 1916.

"*Canea*, the bamboo from this Cordillera. It is difficult to get ripe seed, but at last I believe I have the real stuff, full grown, ripe, and well dried. According to an agricultural paper of Buenos Aires, they have never tried to get this bamboo from seed, but transplanted the roots." (*Vereertbrugghen*.)

42389. OSTERDAMIA MATRELLA (L.) Kuntze. Poaceæ. Grass.
(*Zoysia pungens* Willd.)

From Sydney, New South Wales, Australia. Presented by Dr. J. H. Maiden, director, Botanic Garden. Received April 1, 1916.

A grass of considerable value on littoral swamps and dry flats near the sea. According to Kirk, it is found sometimes forming a compact turf of dry land and affording a large supply of succulent herbage for horses, cattle, and sheep. Its value, however, in such localities, if bulkier grasses would grow there, must be comparatively little, as, from its close-growing habit, it chokes out all other species. It is evidently much relished by stock, and is worthy of introduction in sand-hill districts near the sea or on saline soil inland. (Abstract from *Maiden, Useful Native Plants of Australia, p. 112.*)

For previous introduction, see S. P. I. No. 34657.

42390 to 42427.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received April 5, 1916. Quoted notes by Mr. Evans.

"Varieties of wheat commonly grown in South Africa. The seed of these varieties was sown during the winter months as late as August and reaped during the summer months; that is to say, from November to January. They have all been grown under irrigation with the exception of those noted."

42390. HORDEUM INTERMEDIUM CORNUTUM (Schrad.) Harlan. Poaceæ. Barley.

"No. 18. *Barley-wheat*, from Fauresmith."

42391 to 42421. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

42391. "No. 14. *Kolonie Rooi Koren*, from Zastron."

42392. "No. 1. *Early Beard*, from Edenburg, Orange Free State."

42393. "No. 3. *Du Toit's Koren*, from Austens Port."

42394. "No. 4. *Australian wheat*, from Edenburg, Orange Free State."

42395. "No. 5. *Klein Rooi Koren*."

42396. "No. 6. *Defiance*, from Edenburg, Orange Free State."

42397. "No. 7. *Baard Koren*, from Melkbosch, Bethanie district."

42390 to 42427—Continued.

42398. "No. 8. *Red Egyptian* (generally known as *Stromberg Rooi Koren*), from Ligton."
42399. "No. 9. *Transvaal Wol*, from Tagelberg, Bethulie district."
42400. "No. 10. *Talawair*, from Kleinzuurfontein."
42401. "No. 11. *Celiers* or *Cilliers*, from Hammonia, Orange Free State."
42402. "No. 12. *Wit Baard Koren*, from Hammonia, Orange Free State."
42403. "No. 13. *Rustproof*, from Zastron."
42404. "No. 15. *Ou Baard* (late), from Kleinzuurfontein."
42405. "No. 16. *Gluyas* (early)."
42406. "No. 17. *Rooi Kaal Koren*, from Treurfontein, Fauresmith."
42407. "No. 19. *Sibies Koren*, from Fauresmith."
42408. "No. 20. *Klein Koren*, from Bethulie district."
42409. "No. 21. *Wolhuter* wheat."
42410. "No. 60. *Ekstein*, from Holland Posthumus."
42411. "No. 61. Spring wheat, from Holland Posthumus."
42412. "No. 62. *Bob's* wheat, from H. Stubbs, Corunna."
42413. "No. 63. *White Australian* wheat or *Hoffman's*, from H. Stubbs, Corunna."
42414. "No. 67. *Delaware* wheat, from H. J. Joubert, Middelfontein, Bethulie district."
42415. "No. 69. *Primrose*, from Burghersdorp."
42416. "No. 70. Early spring, from Burghersdorp."
42417. "No. 71. *Bosjesveld*, from Burghersdorp."
42418. "No. 77. *Wol Koren* (grown without water), from J. J. Badenhorst, Verliespan, P. O. Dewetsdorp, Orange Free State."
42419. "No. 79. *Geluks Koren* (grown without water), from M. L. Badenhorst, Klipfontein, P. O. Dewetsdorp, Orange Free State."
42420. "No. 80. *Baard Koren* (grown without water), from J. J. Badenhorst, Verliespan, P. O. Dewetsdorp, Orange Free State."
42421. "No. 81. *Rooi Els* wheat, from A. E. Shore, Kalkfontein, P. O. Dewetsdorp, Orange Free State."
- 42422 to 42425. *TRITICUM DURUM* Desf. Poaceæ. **Durum wheat.**
42422. "No. 72. *Media* wheat, from Burghersdorp."
42423. "No. 2. *Blue Beard*, from Klipfontein, P. O. Austens Port."
42424. "No. 74. *Golden Ball*, from W. H. Webster, Vaalbank, P. O. Dewetsdorp, Orange Free State."
42425. "No. 65. *Bengal* wheat or *Zwartbaard*, from P. v. Aardt, Brockpoort."
42426. *TRITICUM TURGIDUM* L. Poaceæ. **Poulard wheat.**
"No. 66. *Ijzervark*, from H. J. Joubert, Middelfontein, Bethulie district."
42427. *SECALE CEREALE* L. Poaceæ. **Rye.**
"No. 22."

42428. BERBERIS FREMONTII Torr. Berberidaceæ. Barberry.

From Tucson, Ariz. Presented by Mr. J. J. Thornber, Agricultural Experiment Station. Received April 5, 1916.

Small, unarmed shrub, 5 to 10 feet high, with two or three pairs of somewhat spiny leaflets, the lowest pair close to base of petiole; yellow flowers, and dark-blue ovate berries. Occurring somewhat rarely in canyons from southwestern Colorado to Mexico.

For previous introduction, see S. P. I. No. 41764.

42429. CASSIA ANGUSTIFOLIA Vahl. Cæsalpiniaceæ. Senna.

From Khartum, Sudan, Africa. Presented by Mr. R. Hewison, Department of Agriculture and Forests. Received April 4, 1916.

"Obtained by Mr. Wood, Assistant Director of Forests." (*Hewison.*)

A small shrub, native to Arabia and east Africa and largely cultivated in parts of southern India. It furnishes *Tinnivelly* senna, the best known variety of this medicinal product. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 536.*)

For previous introduction, see S. P. I. No. 41282.

42430 to 42434.

From Brazil. Collected by Mr. H. M. Curran.

42430. BASELLA RUBRA L. Basellaceæ. Red basella.

"No. 115. *Berthala*. Cultivated vine, leaf and stem edible, fruits yield purple dye. Barra do Rio Contas, Bahia, Brazil, November, 1915." (*Curran.*)

An annual or biennial herb, cultivated in the Tropics as a potherb. It is remarkably variable, and several forms have been described under different specific names. It has bisexual white, red, or violet flowers. The form usually considered as *Basella rubra* is said to yield a rich purple dye, but it is difficult to fix. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 455.*)

42431. ERYTHROXYLON sp. Erythroxylaceæ.

"No. 40."

42432. HELICTERES OVATA Lam. Sterculiaceæ. Rosca.

"No. 345."

A small tree or shrub with simple ovate leaves and flowers in small axillary clusters. The wood is utilized for posts and fuel, and the bark furnishes material for the manufacture of paper; the roots are used medicinally. (Adapted from *Correa, Flora do Brazil, p. 64.*)

For previous introduction, see S. P. I. No. 36706.

42433. MIMOSA sp. Mimosaceæ.

"No. 79."

42434. SCHIZOLOBIUM PARAHYBUM (Vell.) Blake. Cæsalpinaceæ. Bacarubú.

(*S. excelsum* Vog.)

"No. 13."

42430 to 42434—Continued.

A very large, quick-growing tree, with fine feathery leaves. Native to Brazil. The flowers, of a bright yellow color, are borne in large, erect racemes in February or March when the tree is bare of leaves. The flowers are at once followed by beautiful, young, feathery foliage. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 300.)

42435 to 42443.

From Petrograd, Russia. Presented by Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received April 6, 1916.

42435. ACER GINNALA SEMENOVII (Regel and Herd.) Pax. Aceraceæ.

Maple.

“Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914.”

A graceful shrub of bushy habit, with glossy, dark-green, deeply 3 to 5 cut leaves and long peduncled panicles of rather fragrant yellowish flowers. The foliage turns a beautiful red in late summer. It is reported hardier than any of the Japanese maples. Native to Russia. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 1, p. 200.)

For previous introduction, see S. P. I. No. 34784.

42436. ACER TRAUTVETTERI Medw. Aceraceæ.

Maple.

“Collected by J. W. Palibin in the Caucasus in 1914.”

A tree up to 50 feet in height and 6 feet in girth of trunk, with smooth branches and deeply five-lobed leaves, 4 to 8 inches wide, and about three-fourths as long, dark, lustrous green, smooth above, somewhat paler beneath. It is a handsome foliage tree, native of the Caucasus and Persia, and is distinguished in spring by its brilliant crimson bud scales. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 160.)

For previous introduction, see S. P. I. No. 32975.

42437. CARPINUS ORIENTALIS Mill. Betulaceæ. **Oriental hornbeam.**

“Collected by J. W. Palibin in the Caucasus in 1914.”

A small tree or large shrub with small ovate leaves up to 2 inches long and 1 inch wide, dark glossy green above. Native to southeastern Europe and Asia Minor. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 296.)

42438. FAGUS ORIENTALIS Lipsky. Fagaceæ.

Beech.

“Collected by J. W. Palibin in the Caucasus in 1914.”

A large perennial tree with elliptic or oblong nearly entire leaves. Native from Asia Minor to northern Persia. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 3, p. 1203.)

For previous introduction, see S. P. I. No. 27662.

42439. PRUNUS PROSTRATA Labill. Amygdalaceæ. **Mountain cherry.**

“Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914.”

A deciduous shrub 2 to 3 feet high, of low, spreading habit, measuring much more in width than it does in height. Flowers one-half to three-fourths of an inch across, produced singly or in pairs. Petals of a lively rose color. Fruit red, one-third of an inch long. Native of the mountains of the Levant, where it usually makes a close, stunted bush, very unlike the rather free-growing plant seen in this country. It needs a

42435 to 42443—Continued.

sunny position, and is admirably suited on some roomy shelf in the rock garden fully exposed to the sun. In such a position, following a hot summer, it flowers profusely enough to almost hide its branches. It is perfectly hardy at Kew. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 248.*)

For previous introduction, see S. P. I. No. 40815.

42440. PRUNUS SPINOSISSIMA (Bunge) Franch. Amygdalaceæ. Wild almond.

“Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914.”

A wild, shrubby almond found between stony débris in the hot and dry mountain regions of Russian Turkestan. May be experimented with for the following purposes: As a drought-resistant stock for almonds and peaches, as a possible drought-resistant nut tree, as an ornamental tree or hedge plant in desert regions, and as hybridization material. (Adapted from *F. N. Meyer. See Inventory 31, p. 13.*)

For previous introduction, see S. P. I. No. 33312.

42441. TAMARIX FLORIDA ALBIFLORA Bunge. Tamaricaceæ. Tamarisk.

A leafless shrub with pale reddish purple bark, graceful green twigs, and white flowers. (See *Bunge, Tentamen Generis Tamaricum, p. 38.*)

42442. TAMARIX KARELINI HIRTA Litv. Tamaricaceæ. Tamarisk.

A glaucous Tamarix, with purplish brown bark, stiff branchlets, and intense purple flowers. (See *Bunge, Tentamen Generis Tamaricum, p. 68.*)

For previous introduction, see S. P. I. No. 39627.

42443. TAMARIX PENTANDRA Pall. Tamaricaceæ. Tamarisk.

Received as *Tamarix pallasii* Desv., var. *macrostachys* Bunge.

“This shrub or small tree is one of the most decorative tamarisks in cultivation, flowering in great profusion in July and August. In the wild state it ranges from the Balkan Peninsula through southern Russia to Turkestan and from Asia Minor to Persia, adorning the banks of rivers, particularly in their lower reaches and estuaries. Like other species of this genus, it thrives well in saline soils, but is by no means dependent on a more than ordinary amount of salts in the ground. The flowers are usually rose colored, but sometimes white or nearly so.” (*Curtis's Botanical Magazine, pl. 8138.*)

For previous introduction, see S. P. I. No. 39692.

42444 to 42448. MESEMBRYANTHEMUM spp. Aizoaceæ.

Fig marigold.

From San Francisco, Calif. Presented by Mr. John McLaren, Golden Gate Park. Received April 12, 1916. Plants of the following:

42444. MESEMBRYANTHEMUM AEQUILATERALE Haw.

A succulent plant with stems several feet in length and thick fleshy leaves, spreading out over the ground in large mats and growing luxuriantly on dry barren rocky places and sandy plains. Flowers are fragrant and showy, of a bright rose-purple color, and about 2 inches across. This species is native to Australia, Tasmania, Chile, and California. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 2041.*)

42444 to 42448—Continued.

42445. MESEMBRYANTHEMUM BICOLOR L.

Shrub 2 to 3 feet high, having straight, upright, stiff twigs with grayish brown bark. Leaves on the long shoots scattered, only clustered on the short shoots, about as long as the internodes. Flowers in twos, or only one, about $3\frac{1}{2}$ cm. broad, yellow within and crimson on the outside. A native of Cape Colony on the sandy plains near Cape Town. (Adapted from *Alwyn Berger's Mesembrianthemum*, p. 152.)

42446. MESEMBRYANTHEMUM FLORIBUNDUM Haw.

Ice plant.

A succulent plant, tortuous in growth, with branches not over 6 inches long, and more or less decumbent; leaves less than 1 inch long, very narrow, terete, curved, obtuse, a little thicker toward the apex; stems and leaves bearing glittering papillæ; stems bristly; flowers small, rose colored, the petals being twice as long as the calyx. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2043.)

42447. MESEMBRYANTHEMUM FUGIONIFORME L.

Stems upright, 15 to 30 cm. long and 1 to 2 cm. in diameter, simple, rarely branched, with rough brownish green bark. Leaves in thick tufted rosettes, standing upright and incurved, the older bent back, 15 to 20 cm. long, linear, sword shaped, long pointed. Flowering stems rising laterally from the leafy rosettes, soon dying, distinctly leaved, one to three flowers. Flowers up to 7 cm. broad, open in the afternoon, malodorous. Native to Cape Colony. (Adapted from *Alwyn Berger's Mesembrianthemum*, p. 217.)

42448. MESEMBRYANTHEMUM SPECTABILE Haw.

A succulent plant with prostrate stems but ascending branches; leaves 2 to 3 inches long, crowded, glaucous, incurved and spreading, triquetrous with equal sides, attenuate and mucronate; flowers purplish, petals 1 inch long, the inner ones somewhat shorter. Grows on dry, barren, rocky places and dry sandy plains. Native to Cape Colony regions. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2042.)

42449. SPIRAEA WILSONI Duthie. Rosaceæ.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received April 5, 1916.

"*Spiraea wilsoni* is closely allied to, perhaps only a variety of, *S. henryi*. It is distinguished, among other points, by its smooth ovary and smooth or slightly silky flower stalks. Leaves of flowering shoots entire, downy above, duller green." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 535.)

For previous introduction, see S. P. I. No. 37611.

42450. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

From Glenwood, Hawaii. Tubers presented by Mr. J. B. Thompson, superintendent, Glenwood substation. Received April 11, 1916.

"*Kuoho*. An upland taro. This variety was grown quite commonly around Hilo at the time of my visit to Hawaii in 1913 and was considered to be one of the best. The corms and tubers are very acrid in the raw state and require longer cooking to destroy the acidity than is necessary to cook them to a soft, mealy condition. The quality is good when the taro is thoroughly cooked." (*R. A. Young*.)

42451. ZEA MAYS L. Poaceæ.**Corn.**

From Salmon Arm, Canada. Presented by Mr. Thomas A. Sharpe. Received April 10, 1916.

"Seed of a very fair flint corn which has ripened here for two years, from seed received from the Agricultural College at St. Anne, Province of Quebec." (Sharpe.)

42452 and 42453.

From Zacuapam, Huatusco, Mexico. Presented by Dr. C. A. Purpus. Received April 12, 1916.

42452. CACARA EROSA (L.) Kuntze. Fabaceæ.
(*Pachyrhizus angulatus* Rich.)

Yam-bean.

"The young root 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." (W. E. Safford.)

For previous introduction, see S. P. I. No. 22971.

42453. GOSSYPIUM sp. Malvaceæ.

Cotton.

"Raised from seed from Oaxaca, dry country without irrigation." (Purpus.)

42454. CICER ARIETINUM L. Fabaceæ.**Chick-pea.**

From Malaga, Spain. Presented by Mr. Thomas R. Geary, American vice consul. Received April 5, 1916.

"Seeds of the most productive variety in this district." (Geary.)

"*Hamus, gram, garbanzo.* An annual plant growing from 12 to 18 inches in height, cultivated extensively in India, southern Europe, and Mexico. The seeds, two to three, which resemble somewhat the pea, are borne in short pods. They are used as an article of food, parched or toasted, and also ground into a meal that in many respects resembles corn meal. This plant is especially well adapted for cultivation in our semiarid States." (Peter Bisset.)

"In Jerusalem chick-peas are eaten prepared in the following way: The dry chick-pea is put in an earthen jar with water; the cover is then cemented on with dough or cement, and the whole jar placed in the furnace of a Turkish bath and covered with ashes. It is usually kept in the furnace from 4 o'clock in the afternoon until the next morning. This method of cooking the chick-pea is better than boiling. When the peas are done they are manipulated with the fingers until all the outside skin comes off; they are then put in a bowl

16a



THE ARRACACHA, A FAVORITE VEGETABLE OF THE VENEZUELANAS, WHICH APPEARS TO BE ADAPTED TO THE WARMER PARTS OF THE UNITED STATES. (ARRACACIA XANTHORRIZA BANCR., S. P. I. NO. 42455.)

The whole root is tender and edible. It is generally boiled and mashed like the potato or used in soups like parsnips, to which it is closely allied, but is more delicate in flavor than either. The clump shown is two seasons old, but clumps of a similar size are produced in a single season. The plant has flowered in Florida this season for the first time. (Photographed by David Fairchild at the Plant Introduction Field Station, Brooksville, Fla., Nov. 25, 1918; P24598FS.)



BERMUDA ARROWROOT, A STARCH PRODUCER OF IMPORTANCE. (MARANTA ARUNDINACEA L., S. P. I. NO. 42463.)

A single clump of arrowroot. The rootstocks are said to contain from 15 to 25 per cent of a starch that is considered to be very easily digested and is generally recommended for invalids who find difficulty in digesting other starches. The yield is estimated at from 1,600 to 2,000 pounds of starch to the acre. A considerable arrowroot industry exists in Bermuda and St. Vincent. The exports from the latter island amounted to over \$100,000 in 1916. The possibilities of its culture in parts of Florida are being investigated. They are largely questions of yield and labor. (Photographed by David Fairchild at the Plant Introduction Field Station, Brooksville, Fla., Nov. 20, 1918; P24644FS.)

and mashed until they become quite creamy, adding, if necessary, a small quantity of the water in which they are cooked. This creamy substance is then usually flavored with a little garlic and salt; and melted butter, into which pine seeds are thrown and browned, is added. This is eaten as a breakfast food with fresh bread, the bread being dipped in the 'cream.' The 'cream' is also eaten with green and red peppers and radishes. The native name for this 'cream' is *hummus-indamas*. In Jaffa horse beans are prepared in the same way. Olive oil, which is cheaper than butter, is used to some extent instead of butter in Egypt and also in Jaffa." (*Whiting.*)

42455. ARRACACIA XANTHORRHIZA Bancroft. *Apiaceæ.*

Arracacha.

From La Guaira, Venezuela. Roots presented by Mr. Homer Brett, American consul. Received April 12, 1916.

An umbelliferous plant, native of the South American Andes, growing only at heights of 4,000 feet and upward. The plant is a biennial and develops a large yellowish root the size of the common beet, or perhaps larger. The growing plants resemble celery, and the Spanish name *apio*, meaning celery, is often applied to it for this reason. The large fleshy root is developed in the first year and, being edible, is used before the tall flower stem appears. This root is eaten boiled, like parsnips, or sliced raw and fried, like potatoes, being very palatable either way. A good alcohol may be made from the juice of the root. For propagation, cuttings are made with a couple of inches of the fleshy root attached, the fleshy end being placed about 2 inches deep in the top of the hill. The plant requires rain or irrigation at least every month, and as it grows the earth is hilled up, care being exercised not to heap the earth against the trunk of the plant. (Adapted from *Handbook of Venezuela, Bureau of American Republics, 1904.*)

For an illustration of the arracacha plant, see Plate I.

42456 to 42458. CICER ARIETINUM L. *Fabaceæ.* **Chick-pea.**

From Jerez de la Frontera, Spain. Presented by Mr. Paul H. Foster, American consul. Received April 5, 1916. Descriptive notes by Mr. Foster.

42456. "*Garbanzo de Castilla.* This is the largest and finest sort produced in Spain, but the yield is not so heavy as of the other varieties."

42457. "*Garbanzo del Pais.* Smaller in size and not so tender as that of Castilla [S. P. I. No. 42456], but locally it produces fair quantities under semiarid conditions."

42458. "*Garbanzo Negro*, or black chick-pea. Produces well under semiarid conditions. Used locally for stock feed, as a rule; but the poorer classes of peasants in the country use it for food when other sorts are scarce and high priced. Said to be very nourishing and fattening when used for stock feeding. This sample was kindly furnished me by Mr. Walter J. Buck, H. B. M. vice consul."

42459 to 42462. CICER ARIETINUM L. *Fabaceæ.* **Chick-pea.**

From Madrid, Spain. Presented by Mr. Robertson Honey, American consul. Received April 5, 1916.

See S. P. I. No. 42454 for previous introduction and description.

42459. Variety A.

42461. Variety C.

42460. Variety B.

42462. (Mixed when received.)

42463. MARANTA ARUNDINACEA L. Marantaceæ. Arrowroot.

From Kingston, Jamaica. Tubers presented by Mr. W. Harris, superintendent, Hope Gardens. Received April 15, 1916.

"The true arrowroot is a native of tropical America. The arrowroot is a perennial herb with large lanceolate leaves and white rootstocks or rhizomes 1 to 2 feet in length and 1 to 2 inches in diameter. The plant is propagated by divisions of the rhizomes in rows 3 feet apart and 1 foot apart in the row. The tubers may be harvested about 8 to 12 months from the time of planting. A good yield of arrowroot is 5 tons of tubers per acre. The tubers contain 25 per cent starch. The yield of prepared arrowroot per acre is about 1,500 pounds. Arrowroot starch may be obtained by grating, washing, and straining the tubers by the method used with cassava. Like cassava, also, the plant seems to exhaust the soil quickly, thus making necessary a system of rotation. The best quality of arrowroot comes from Bermuda, but the largest supply is received from St. Vincent, Barbados, and Ceylon. Arrowroot starch is considered to be very easily digested and is generally recommended for invalids who have found difficulty in digesting the starch from potatoes and other plants." (*Wilcox, Tropical Agriculture, p. 151.*)

For an illustration of the Bermuda arrowroot plant, see Plate II.

42464 to 42469.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, Botanic Gardens. Received April 4, 1916.

42464. CAREYA AUSTRALIS (Benth.) F. Muell. Lecythidaceæ.

A large tree with alternate undotted leaves, large red flowers, and globular, fleshy, edible fruit with a hard rind. The bark is made into twine, and the wood, which is of a light-gray color, red in the center, close in grain, and tough, is easily worked. (Adapted from *Bailey, Queensland Flora, p. 667.*)

42465. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ.
(*Atalantia glauca* Benth.) Australian desert kumquat.

An edible-fruited shrub or small tree, occurring in Queensland, and New South Wales in subtropical regions subject to severe cold and extreme drought. Small, emarginated leaves, subglobose, flattened, or slightly pyriform fruits; small seeds. An 'ade is made from the juice, and the fruits are good for making jam or pickles. It is the hardiest evergreen citrus fruit known and the only one showing pronounced drought-resistant adaptations. (For fuller description, see *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1127.*)

42466. ERYTHRINA VESPERTILIO Benth. Fabaceæ. Coral tree.

A soft-wooded tree found in Queensland and in North, South, and Western Australia, growing to a height of 30 to 40 feet, with a diameter of 1 to 2 feet. The wood is used by the aborigines for making their "hielamans," or shields, being exceedingly light and spongy. Might possibly be used for making floats for fishing nets. Called *hielaman* tree or batwing coral. (Adapted from *Maiden, Useful Plants of Australia, p. 426.*)

42467. EUCALYPTUS MINIATA A. Cunn. Myrtaceæ.

A moderate-sized or large tree, the bark fibrous and persistent, but readily separable in flakes, the young shoots sometimes glaucous or mealy white. Leaves ovate-lanceolate or lanceolate, acuminate, mostly

42464 to 42469—Continued.

4 to 6 inches long. Peduncles axillary or lateral, very thick and broad, more or less flattened, one-half to 1 inch long, with about five to seven rather large closely sessile flowers. Stamens richly colored, nearly half an inch long, inflected in the bud; anthers oblong with distinct parallel cells. Ovary short, flat topped. Fruit ovoid or urceolate, very thick and hard, more or less prominently ribbed, 1 to nearly 2 inches long, the rim rather thick, the capsule deeply sunk. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 228.*)

42468. *MACADAMIA MINOR* F. M. Bailey. Proteaceæ.

A large shrub or small tree with slender branches; three-parted leaves, often crowded at the end of the branches; and nuts about seven-eighths of an inch long and three-fourths of an inch in diameter. A native of Queensland. (Adapted from *F. M. Bailey, Queensland Agricultural Journal, vol. 25, p. 11, 1910.*)

42469. *SYNCARPIA HILLII* F. M. Bailey. Myrtaceæ. Turpentine tree.

A myrtaceous tree from Frazer's Island, North Queensland, having wood of a dark-pink color, close grained, and tough, being useful for building purposes. (Adapted from *Bailey, Proceedings of the Royal Society of Queensland, vol. 1, p. 86, and Maiden, Useful Native Plants of Australia, p. 602.*)

42470 to 42475.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received April 8, 1916.

42470. *UVARIA RUFA* (Dunal) Blume. Annonaceæ.

"*Banauac; Susong calabao.* Fruits of this species are oblong, reniform, 3 sometimes 4 centimeters in length, in bunches of 18 to 20, averaging 115 grams in weight; surface bright red, velvety, ferruginous pubescent; skin thin, brittle; flesh scant, whitish, juicy, aromatic, subacid, without a trace of sugar; quality rather poor; seeds many. Season, September." (*Wester, Philippine Agricultural Review, p. 321, July, 1913.*)

For previous introduction, see S. P. I. No. 34522.

42471 to 42475. *HIBISCUS SABDARIFFA* L. Malvaceæ. Roselle.

42471. "*Rico.* The young plants of the Rico retain their unifoliate leaf characters longer than the *Victor* [S. P. I. No. 42473], and later are mostly tripartite instead of five parted. The stems and calyces are dark red and the leaves dark green with reddish veins. The calyx is of about the same length as the *Victor*, but of greater equatorial diameter; the fleshy spines subtending the calyx lobes are stout and stand at nearly a straight angle from the axis of the fruit; the apex of the calyx lobes is frequently incurved. The *Rico* has been named and described from plants grown from seed obtained by the writer in 1911 from Mr. J. E. Higgins, horticulturist of the Hawaii Agricultural Experiment Station, and has probably descended from a variety grown in 1902 at the Agricultural Experiment Station, Mayaguez, Porto Rico, by Mr. O. W. Barrett." (*Wester, Philippine Agricultural Review, p. 126, March, 1912.*)

42470 to 42475—Continued.

42472. "*Archer*. Plant robust, frequently exceeding 1.6 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those in the red types; eye yellowish; pollen pale yellow, stigma green; full-grown calyx greenish white, sparsely covered with short, stiff bristles; average length of calyx, 45 millimeters; width, 26 millimeters; including epicalyx, 32 millimeters. The *Archer* is very prolific, and the fruit is somewhat less acid than those of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety that is said to resemble champagne in taste and appearance. Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested in the Lamao experiment station the same year. It has been named in honor of Mr. Archer, with whom the writer has had the privilege of being in correspondence for many years and who has greatly assisted the Bureau of Agriculture in the introduction of many useful and decorative tropical American plants. The green type of roselle, to which the *Archer* belongs, was described as *Hibiscus digitatus* by Cavanilles in 1790, but it is now considered to be a form of *H. sabdariffa* L." (*Wester, Philippine Agricultural Review, p. 268, June, 1914.*)

42473. "*Victor*. This variety is distinguished by having the unifoliolate leaves of the young plant change early into leaves deeply five lobed, these leaf characters remaining until the flowering period, when the leaves become three parted or again unifoliolate. The stems and calyces are reddish. The calyces average about 45 to 50 millimeters in length and 28 millimeters in equatorial diameter, tapering toward the apex; the calyx lobes are frequently convolute, and the fleshy spines subtending the calyx lobes are longer and more slender than in the *Rico* [S. P. I. No. 42471] and are curved upward. The *Victor* is more upright in habit than the *Rico* and somewhat earlier in fruiting, due probably to its having been cultivated in Florida for several years." (*Wester, Philippine Agricultural Review, p. 126, March, 1912.*)

For illustrations of the roselle plant and fruits, see Plates III and IV.

42474. "*Temprano*. Plant of medium vigor and upright growth, branching profusely, rarely exceeding 1.25 meters in height; stems light red; leaves palmately five lobate, with conspicuously narrow lobes; flowers normal; pollen golden brown; calyx of the same general form as that of the *Victor* [S. P. I. No. 42473], but smaller; average length, 45 mm., width, 25 mm., with epicalyx, 39 mm. The variety is prolific and the fruiting season is 20 days earlier than *Victor* and *Rico*. When the *Victor* fruited for the first time at Lamao in 1911, one plant was conspicuous for its earliness, and the seed was saved from this plant and sown the following year. The early trait of the parent tree was transmitted to the progeny, and the earliest plant was again isolated and the seed sown in 1913. In harvesting the fruit and seed of the third generation, the early habit and other characteristics that distinguish this new strain



A ROSELLE PLANT IN FLOWER AND FRUIT. (HIBISCUS SABDARIFFA L., S. P. I. No. 42473.)

Although the roselle is an all-round producer, the leaves being used for boiled greens in Hawaii and in curries in India, the seed being commonly used as poultry feed, and the bark having been used extensively in India for its fiber, its chief value at present seems to be in the use of the fleshy calyxes for making a delicious jelly or sauce. Its large yellow flowers and deep crimson stems and flower buds make it a striking shrubby perennial worthy a place in southern gardens. (See Plate IV.) (Photographed by R. A. Young at the Plant Introduction Field Station, Brooksville, Fla., Nov. 18, 1918; P24405FS.)



A BASKETFUL OF PREMIER JELLY PRODUCERS, FRUITS OF THE ROSELLE PLANT. (HIBISCUS SABDARIFFA L., S. P. I. No. 42473.)

Only a part of the fruit is used, the thick fleshy calyx, the juice of which has a beautiful wine-red color and makes an excellent jelly or jam with a flavor somewhat resembling that of the cranberry, but which is perhaps more delicate. (Photographed by E. C. Crandall in the photographic laboratory Dec. 9, 1916; P20139F'S.)

42470 to 42475—Continued.

from its parent, the *Victor*, seem to be sufficiently well fixed to merit its recognition as a separate variety, and it has been named *Temprano* on account of its early habit. The *Temprano* is more subject to leaf-blight than any of the varieties mentioned in this paper, and therefore, on account of its deficiency in vigor, it is not recommended for planting on a large scale. In fact, the *Temprano* is of more value in a subtropical than a tropical country, where early frosts at the approach of the cold season destroy the ordinary varieties before their fruiting season is over." (*Wester, Philippine Agricultural Review, p. 267, June, 1914.*)

42475. "*Hybrid.*"

42476. RUBUS sp. Rosaceæ.

From Mobile, Ala. Plants presented by Mr. G. R. McKenzie, landscape gardener. Received April 17, 1916.

"*Family Delight.* Pink berry bush. This berry was found in the woods near Citronelle, Ala. I think it is a cross between the raspberry and blackberry. It makes a good hedge; a hedge 50 feet long planted in the fall of 1910 is 9 feet high and gives us from 2 to 5 quarts of berries a day for about six weeks. My family like the berries much better than they do strawberries. It makes the finest kind of jelly and jam, and as a fresh fruit it is hard to beat." (*McKenzie.*)

42477 to 42519. VITIS spp. Vitaceæ.**Grape.**

From Palermo, Italy. Cuttings received through Mr. F. Paulsen, director, Regio Vivaio di Viti Americane, at the request of the Superior Minister of Agriculture, April 14, 1916. Quoted notes from Dr. Grimaldi, in *La Viticoltura Moderna*.

In 1904, Dr. Clemente Grimaldi wrote concerning his work on the hybridization of grapes: "Notwithstanding the labors given for almost 15 years to hybridization, I have believed that I should maintain the utmost reserve in publishing the hybrids, and until now I have made known only six, all stocks, which are the following: Nos. 50, 88, 125, 791, 110, and 323." Later in the same article he wrote: "Among the hybrids obtained by me the following at present give me the hope that they will be of service as direct producers," and he lists Nos. 88, 97, 317, 953, 1075, and 1132.

These hybrids were requested at the suggestion of Dr. Gustav Eisen, and they represent some of the best results obtained from the hybridization of American species of *Vitis* with *Vitis vinifera* strains of Italian origin for the purpose of securing varieties resistant to *Peronospora* and other diseases. Of the Ruggeri and Paulsen hybrids descriptions have not been accessible, but have probably appeared in later volumes of *La Viticoltura Moderna*.

42477. "Paulsen hybrid No. 2 A (*Riparia* × *Rupestris*)."

42478. "Ruggeri hybrid No. 19."

42479. "Grimaldi hybrid No. 88."

"*Calabrian* × *Rupestris Ganzin* (published in 1889). Extremely vigorous, fertile, with the appearance of *Rupestris*; shoots very large, short and branched. Adaptability to lime similar to Grimaldi hybrid No. 50 (*Calabrian* × *Azemar*), as shown by its behavior in the lime plat (oasi

42477 to 42519—Continued.

calcare) of the experiment station; very drought resistant. Produces abundant and good red grapes." (*La Viticoltura Moderna*, vol. 10, p. 274, 1904.)

"Fruiting abundantly when adult; medium bunches with medium seed, not very compact. Grapes sweet, maturing early." (*La Viticoltura Moderna*, vol. 10, p. 276, 1904.)

"Grimaldi hybrid No. 88 selected."

"*Calabrian* × *Rupestris Ganzin*. Red grapes. Most vigorous and very fruitful; bunches crowded, winged, 18 cm. in length, blooming twice, seeds round, diameter 14 mm.; pulp white, sweet, skin lightly colored red, early maturing." (*La Viticoltura Moderna*, vol. 14, p. 145, 1907.)

This number consists of two varieties, Nos. 88 and 88 selected, which were mixed by mistake.

42480. "Grimaldi hybrid No. 97."

"*Calabrian* × *Rupestris Ganzin*. Red grapes. Very vigorous and productive when full grown; bunches medium, not very compact, seeds small. Grapes sweet, maturing late." (*La Viticoltura Moderna*, vol. 10, p. 276, 1904.)

42481. "Grimaldi hybrid No. 110."

"*Calabrian* × *Rupestris Ganzin* (published in 1902). Very vigorous and a very rapid grower. Bunches not very numerous, small, somewhat winged, with few seeds." (For full description and plate, see *La Viticoltura Moderna*, vol. 11, pp. 167-170, 1904.)

42482. "Ruggeri hybrid No. 193. *Berlandieri* × *Riparia*."

42483. "No. 125."

42484. "Ruggeri hybrid No. 140."

"*Berlandieri* × *Rupestris du Lot*. Affinity complete, vegetation vigorous, production normal." (*La Viticoltura Moderna*, vol. 15, p. 108, 1909.)

42485. "Ruggeri hybrid No. 188. *Berlandieri* × *Riparia*."

42486. "Ruggeri hybrid No. 199. *Berlandieri* × *Riparia*. Affinity complete, vegetation vigorous, productivity most abundant. Takes the graft in a marvelous manner."

42487. "Ruggeri hybrid No. 225. *Berlandieri* × *Riparia*."

42488. "Ruggeri hybrid No. 267. *Berlandieri* × *Riparia*."

42489. "Ruggeri hybrid No. 300. *Berlandieri* × *Riparia*."

42490. "Grimaldi hybrid No. 317. *Frappato* × *Rupestris Ganzin*. White grapes; very vigorous, moderate bearer, bunches medium, somewhat few seeded, seeds medium, grapes very sweet, maturing late." (*La Viticoltura Moderna*, vol. 10, p. 276, 1904.)

42491. "Grimaldi hybrid No. 323. *Frappato* × *Rupestris Ganzin* (published in 1902). I decided to publish these two hybrids (Nos. 110 and 323) because of their excellent quality, their affinity with our variety, and their very great vigor. Their resistance to drought is extremely high. The resistance to chlorosis in both is scarcely inferior to that of the first three hybrids (Nos. 50, 88, and 125)." (*La Viticoltura Moderna*, vol. 10, p. 275, 1904.)

42477 to 42519—Continued.

42492. "Grimaldi hybrid No. 480."
42493. "Grimaldi hybrid No. 533."
42494. "Grimaldi hybrid No. 722. *Berlandieri* × *Tremano*. Seed of 1904. It is characterized by its vigor and by the precocity of its development, and has all the other merits of Nos. 446 and 528." (*La Viticoltura Moderna*, vol. 14, p. 144, 1907.)
42495. "Paulsen hybrid No. 737."
42496. "Paulsen hybrid No. 764."
42497. "Paulsen hybrid No. 779."
42498. "Paulsen hybrid No. 882."
42499. "Grimaldi hybrid No. 791. *Calabrian* × *Riparia Rupestris* 3309 (published in 1901). The marvelous vigor, superior to that of all the other hybrids, decided me to publish it. It resists drought and has the best of all the other requisites, affinity with our variety, propagation by cuttings, precocity of development, etc. Endures up to 55 per cent of lime in dry soils." (*La Viticoltura Moderna*, vol. 10, p. 275, 1904. For fuller description and plate, see the same periodical, vol. 12, pp. 169-171, January, 1906.)
42500. "Paulsen hybrid No. 810."
42501. "Paulsen hybrid No. 877."
42502. "Grimaldi hybrid No. 934. *Calabrian* × *Aramon Rupestris Ganzin*. Of medium vigor, abundantly fruitful. Seeds with skin dark reddish; without foxiness (foxé), medium maturity." (*La Viticoltura Moderna*, vol. 12, p. 334, 1906.)
42503. "Grimaldi hybrid No. 935. *Calabrian* × *Aramon Rupestris Ganzin*. Most vigorous, fruiting very abundantly. Seeds with skin dark reddish; without foxiness (foxé), early maturity." (*La Viticoltura Moderna*, vol. 12, p. 334, 1906.)
42504. "Grimaldi hybrid No. 940. *Calabrian* × *Aramon Rupestris Ganzin*. White grapes; of medium vigor and very fruitful, bunches very large, somewhat few seeded, the seeds large, oval; grapes very sweet, maturity a little late." (*La Viticoltura Moderna*, vol. 10, p. 277, 1904.)
42505. "Grimaldi hybrid No. 953. *Calabrian* × *Aramon Rupestris Ganzin*. White grapes; very vigorous and most fruitful, bunches large and seeds large; grapes very sweet, maturing medium." (For full description and illustration, see *La Viticoltura Moderna*, vol. 17, pp. 137-154, 1910.)
42506. "Paulsen hybrid No. 1045."
42507. "Paulsen hybrid No. 1043."
42508. "Grimaldi hybrid No. 1075. *Frappato* × *Aramon Rupestris Ganzin*. Red grapes; of medium vigor and fruitfulness, bunches medium, with large compact seeds; grapes sweet, maturing early." (*La Viticoltura Moderna*, vol. 10, p. 277, 1904.)
42509. "Paulsen hybrid No. 1103."
42510. "Grimaldi hybrid No. 1132. *Uva di Troja* × *Rupestris Ganzin*. Red grapes. Very vigorous and fruitful, bunches medium, moderately compact, with rather large seeds; grapes sweet and almost free from foxiness; maturity medium." (*La Viticoltura Moderna*, vol. 10, p. 277, 1904.)

42477 to 42519—Continued.

42511. "Paulsen hybrid No. 1176."
 42512. "Paulsen hybrid No. 1901."
 42513. "Paulsen hybrid No. 1511."
 42514. "Paulsen hybrid No. 1321."
 42515. "Paulsen hybrid No. 1742."
 42516. "Paulsen hybrid No. 1776."
 42517. "Paulsen hybrid No. 1548."
 42518. "Paulsen hybrid No. 1902."
 42519. "Paulsen hybrid" (number not legible).

42520 to 42523.

From Azua, Santo Domingo. Received through Dr. J. N. Rose, U. S. National Museum, April 13, 1916. Quoted notes by Dr. Rose.

42520. *COCCOTHRINAX ARGENTEA* (Lodd.) Sarg. Phœnicaceæ. **Palm.**
 (*Thrinax argentea* Lodd.)

"A common species of Santo Domingo. It has purple fruit."

For previous introduction, see S. P. I. No. 40524.

42521. *GUILANDINA BONDUC* L. Cæsalpiniaceæ.
 (*Cæsalpinia bonducella* Fleming.)

"A low shrub."

For previous introduction, see S. P. I. No. 38891.

42522. *INODES NEGLECTA* (Beccari) O. F. Cook. Phœnicaceæ.
 (*Sabal neglecta* Beccari.)

"A tree about 20 feet high, with large, fanlike leaves and large more or less drooping flower clusters. It doubtless would prove a valuable palm for introduction into the warmer parts of this country."

"This palm was first described by Beccari in Webbia, vol. 2, p. 40, 1907, as *Sabal neglecta*. It is closely related to the hat palm of Porto Rico, *Inodes causiaram*, and is therefore placed in that genus." (O. F. Cook.)

42523. *PICRODENDRON MEDIUM* Small. Simaroubaceæ.

"This plant is common about Azua, Santo Domingo. It is a tree with round, orange-colored fruit."

42524. *DIOSCOREA DAEMONA* Roxb. Dioscoreaceæ. **Yam.**

From Singapore, Straits Settlements. Tubers presented by Mr. I. Henry Burkill, Botanical Gardens. Received April 14, 1916.

"A large climber of the tropical forests of India and Burma. Stems twining to the left, sometimes prickly; leaves digitately three to five nerved; capsule longer than broad and seeds winged at the base only. This wild yam is extensively used as a famine food, chiefly in Burma and the Central Provinces and Central India. It appears never to have been cultivated. Some writers, however, say the roots are highly poisonous and cause intoxication, but are rendered edible by boiling and steeping in running water, this treatment being repeated two or three times. Ridley speaks of the tubers being used in the manufacture of dart poison." (Watt, *The Commercial Products of India*, p. 494.)

42525 to 42527. CHRYSOPHYLLUM CAINITO L. Sapotaceæ.**Caimito.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received April 15, 1916.

Star-apple. A fairly large, handsome West Indian tree, with striking dark-green leaves, which are copper colored underneath. Fruits are 2½ to 3 inches in diameter, purplish black, round and smooth. A cross section of the fruit presents a stellate form, the cells with their white, edible contents radiating from a central axis; hence the name *star-apple*. The tree is valuable for ornamental and shade purposes; is propagated by seed and thrives best in deep, rich, well-drained soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 135.*)

For previous introduction, see S. P. I. No. 40347.

42525. No. 525.2.

42527. No. 890.3.

42526. No. 890.2.

42528. PHYSALIS GRANDIFLORA Hook. Solanaceæ.**Ground cherry.**

From Prince Albert, Saskatchewan, Canada. Purchased from Mrs. Andrew Knox. Received April 14, 1916.

A *Physalis* found on the sandy banks of the Saskatchewan River, Winnipeg Lakes, and the Red River of the North. It is remarkable for the great size and white color of its flowers, which are nearly an inch broad. The whole plant is exceedingly viscid. (Adapted from *Hooker, Flora Boreali Americana, vol. 2, p. 90.*)

42529. NEYRAUDIA MADAGASCARIENSIS (Kunth) Hook. f. Poaceæ.**Grass.**

From Sibpur, near Calcutta, India. Presented by Maj. A. T. Gage, superintendent, Royal Botanic Garden. Received April 17, 1916.

A grass found in Madagascar that is used, along with other grasses, in the manufacture of ordinary hats. Called *fantaka* in the Hova dialect, though *kit-sangy* is the general name used to designate this grass. (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 55.*)

For previous introduction, see S. P. I. No. 39690.

42530 and 42531. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received April 20, 1916.

See S. P. I. No. 42454 for previous introduction and description.

42530. "*Afrangi* (imported)."

42531. "*Shami* (imported) and *Egyptian*." This seed was mixed when received.

42532. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote.**

(*Sechium edule* Swartz.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 18, 1916.

"We have but a single variety of chayote." (*Trabut.*)

See S. P. I. No. 30462 for previous introduction.

42533 to 42550.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Quoted notes by Señor Carrasco except as otherwise stated.

42533. CITHAREXYLUM BARBINERVE Cham. Verbenaceæ.

"*Espino de los bañados*. Magnificent ornamental tree, with fragrant flowers, red fruits, and flexible vibrant wood, used in the manufacture of guitars; from the cool and subtropical regions of Argentina."

For previous introduction, see S. P. I. No. 33943.

42534. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ.

(*Cocos pulposa* Barb.-Rord.)

Palm.

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis*, *C. yatay*, and *C. eriospatha*. The trunk is 6 to 12 feet by 1½ to 2 feet in diameter, with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The fruit is yellow, about 1 inch long by 1¼ inches in diameter, and the pulp is of a texture and taste somewhat like the pineapple." (*C. B. Doyle*.)

42535. ENTEROLOBIUM TIMBOUYA Mart. Mimosaceæ.

Timbo.

"*Timbo*. A tree with thick bark, reaching 30 meters in height, branching horizontally, fruits of the size and shape of a human ear, whence called also *Oreja de negro*. Of rapid growth, wood good, native of the northern part of Argentina. From the temperate region."

For previous introduction, see S. P. I. No. 33955.

42536. EUGENIA PUNGENS Berg. Myrtaceæ.

Guabiyú.

"*Guabiyú*. An ornamental fruit tree from the temperate and hot regions of Argentina."

For previous introduction, see S. P. I. No. 33959.

42537. FICUS SUBTRIPLINERVA Mart. Moraceæ.

Gomero.

"*Gomero*. A large tree from the subtropics of Argentina."

For previous introduction, see S. P. I. No. 33963.

42538. LANTANA SELLOWIANA Link and Otto. Verbenaceæ.

Trailing lantana.

"*Salvia morada*. A dry, bunchy shrub, flower bearing; from the cool and temperate regions of Argentina."

42539. LEUCAENA GLAUCA (L.) Benth. Mimosaceæ.

An ornamental tree resembling Mimosa in having 10 stamens and resembling Acacia in its flat pod; much cultivated in warmer climates. The white flowers are numerous, borne in globular heads.

42540. LITHRAEA MOLLEOIDES (Vell.) Engl. Anacardiaceæ.

(*L. aroeirinha* L. Marchand.)

Aroeira branca.

"*Molle a beber*. A strong shrub with handsome foliage; the fruits are used for making a tonic drink. From the temperate and cool regions of Argentina."

For previous introduction, see S. P. I. No. 33981.

42533 to 42550—Continued.

42541. *MIMOSA SENSITIVA* L. Mimosaceæ. Sensitive plant.
 “*Sensitiva*. A vigorous flowering shrub from the Tropics of Argentina.”
 Received as *Mimosa sensitiva arborea*, implying a treelike habit.
42542. *PHYTOLACCA DIOICA* L. Phytolaccaceæ. Ombú.
 “*Ombú*. A large branching tree, the trunk of which reaches in a few years a diameter of several meters. Specimens exist in the Province of Buenos Aires which are 5 to 6 meters in diameter, with heads 15 to 20 meters in diameter. From the temperate and subtropical regions of Argentina.”
 For previous introduction, see S. P. I. No. 31482.
42543. *PIPTADENIA COMMUNIS* Benth. Mimosaceæ. Cebil.
 “*Cebil*. A tree attaining 20 meters in height, the trunk being sometimes a meter in diameter, with rough bark and hard wood. Furnishes tannin. From the temperate regions of Argentina.”
- 42544 and 42545. *PSIDIUM GUAJAVA* L. Myrtaceæ. Guava.
 42544. “*Guava*. Ornamental shrub with beautiful flowers and useful fruits; from the temperate and warmer regions of Argentina.”
 Received as *Psidium pomiferum*.
 42545. “*Arazá*. Ornamental shrub with beautiful flowers and useful fruits; from the temperate and warmer regions of Argentina.”
 Received as *Psidium pyriferum*.
42546. *PTEROGYNE NITENS* Tulasne. Cæsalpiniaceæ.
 “*Viraró*. A large tree, with strong useful wood; from the temperate regions of Argentina.”
 For previous introduction, see S. P. I. No. 41308.
42547. *TECOMA STANS* (L.) JUSS. Bignoniaceæ. Yellow tecoma.
 “*Guaranguay*. A very floriferous ornamental shrub; from the temperate regions of Argentina.”
42548. *TERMINALIA TRIFOLIATA* Spreng. Combretaceæ.
 “*Palo de lanza*. A vigorous tree, with strong flexible yellowish wood; from the temperate regions of Argentina.”
 For previous introduction, see S. P. I. No. 34029.
42549. *TIPUANA TIPU* (Benth.) Lillo. Fabaceæ. Tipu.
 (*T. 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.”
 For previous introduction, see S. P. I. No. 42331.
42550. *QUILLAJA SAPONARIA* Molina. Rosaceæ. Quillay.
 “*Quillay*. A leafy tree, of industrial value because of its saponiferous bark; from the cool and temperate regions of Argentina.”
 For previous introduction, see S. P. I. No. 34407.

42551. SACCHARUM BIFLORUM Forsk. Poaceæ. Grass.

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received April 18, 1916.

"This grass of great size succeeds very well in the sand hills of the coast. It is easily propagated by cuttings, and forms a good screen at very little cost. The results obtained during some years induce me to recommend to you this plant, which grows spontaneously upon the banks of the Nile and in Algeria at Bone. It is much used in Sicily to bind sands and to protect cultivation." (Trabut.)

42552. × CYTISUS DALLIMOREI Rolfe. Fabaceæ. Broom.

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received April 24, 1916.

"A hybrid raised at Kew in 1900 by crossing *Cytisus scoparius* var. *andreaeanus* (seed bearer) with *C. albus*. It is a tall shrub, perhaps 8 or 9 feet high, of thin, erect habit, suggesting that of *C. scoparius*. Leaves mostly trifoliate, downy. Flowers about five-eighths of an inch long, the whole of the petals suffused with beautiful shades of rosy pink, deepening on the wing petals to crimson. Calyx helmet shaped, shining brown, slightly downy. At each node the flowers are solitary or in pairs. The beautiful broom is quite distinct from any other in cultivation and is the first hybrid broom raised by artificial cross-fertilization, all its predecessors having originated as chance crosses made by insects. It is propagated by grafting on Laburnum. As it flowers regularly and in great profusion in May, it ought in time to become a popular garden shrub." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 458.)

42553 to 42565. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, director, Government Horticultural Experiment Station. Received April 20, 1916. Quoted notes by Mr. T. Kiyono, Semmes, Ala.

42553. "No. 37. *Hagakushi*. Astringent. Fukuoka Province."

42554. "No. 38. *Otani*. Astringent. Fukuoka Province."

42555. "No. 61. *Kabuto-gosho*. Sweet. Gifu Province."

42556. "No. 62. *Kiara*. Sweet. Kumamoto Province."

42557. "No. 63. *Saburoza*. Astringent. Ishikawa Province."

42558. "No. 64. *Kuramitsu*. Astringent. Ishikawa Province."

42559. "No. 65. *Oku-gosho*. Sweet. Gifu Province."

42560. "No. 66. *Kuro-gaki* (or *Birodo-gaki*). Sweet. Gifu Province."

42561. "No. 67. *Midzushima*. Sweet. Ishikawa Province."

42562. "No. 68. *Midzushima*. Sweet. Tomiyama Province."

42563. "No. 69. *Kuramitsu*. Astringent. Fukui Province."

42564. "No. 70. *Saburoza*. Astringent. Fukui Province."

42565. "No. 71. Wild seedling with profuse staminate flower habit, grown in woods near Okudzu station."

42566. RUBUS GEOIDES J. E. Smith. Rosaceæ. Frutilla.

From Punta Arenas, Chile. Presented by Mr. David J. D. Myers, American consul. Received April 18, 1916.

"This fruit is full of seed. I have been unable to learn whether there are any other wild varieties of this *frutilla*, the local name. The plant grows extensively over a large area inland from this port, where fire destroyed the forests some years ago. Neither the plant nor the fruit bears much, if any, relation to the common strawberry from the standpoint of an ordinary observer. The plant is extremely small and the berries are almost completely hidden in the moss and dead leaves. The color of the ripe fruit is amber and resembles the raspberry both in shape and taste. The educated Chileans from the north call the small cultivated strawberries *frutillas* and the large varieties *fresas*. The names seem to be reversed here, and while they call the wild variety *frutilla* also, they do not recognize it as belonging to the same family as the true strawberry." (*Myers.*)

42567. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam-bean.
(*Pachyrhizus angulatus* Rich.)

From Shonghong, via Swatow, China. Presented by Rev. F. J. Wiens, Mennonite Brethren Mission. Received April 15, 1916.

"The root is edible and has a sweet delicious taste. The seeds are planted or sown in April or May, and the flowers are all cut down except those wanted for seeds. The natives tell me the seeds are very poisonous." (*Wiens.*)

42568 to 42571. TRITICUM spp. Poaceæ. Wheat.

From Madrid, Spain. Presented by Mr. José Hurtado de Mendoza, Estación de Ensayo de Semillas, La Moncloa. Received April 21, 1916.

"The most noteworthy varieties cultivated in the Peninsula."

42568. TRITICUM AESTIVUM L.
(*T. vulgare* Vill.)

42569 to 42571. TRITICUM DURUM Desf.

42572 to 42575.

From Teneriffe, Canary Islands. Presented by Dr. George Perez. Received April 17, 1916. Descriptive notes by Dr. Perez.

42572. CYTISUS STENOPETALUS (Webb) Christ. Fabaceæ. Broom.

"*Gacia* is the name under which it is known in our island of Palma, which is the home of this valuable *Cytisus* and where it is cultivated as a forage plant. This variety has the largest leaves, and on this account is the most suitable of the many varieties of this species as a forage plant. It is a most beautiful and ornamental garden plant, and is cultivated in our island of Palma exactly the same as *tagasaste*, but they find they can plant it higher above the sea level. *Gacia* is known to prosper as high as 1,500 meters above sea level, and therefore will stand cold better. My advice, however, is to make trials only in southern California."

For previous introduction, see S. P. I. No. 29641.

42573. CYTISUS PALLIDUS Poir. Fabaceæ. Broom.

"*Gacia blanca*, also *Herdanera*, as it is known in Palma. Besides being very useful as a forage plant, this is a most beautiful and ornamental garden plant."

For previous introduction, see S. P. I. No. 34262.

42572 to 42575—Continued.

42574. *CYTISUS STENOPETALUS* (Webb) Christ. Fabaceæ. **Broom.**

For previous introduction, see S. P. I. No. 42572.

42575. *LIMONIUM FRUTICANS* (Webb) Kuntze. Plumbaginaceæ.
(*Statice fruticans* Webb.) **Sea lavender.**

"Native of the coast region of Teneriffe, where the lowest temperature in winter is much above the freezing point, so that it should not be sown in the open where there are frosts. The seed should be carefully extracted before sowing, or if you find this method too slow (it is far the best), then soak in water at about 70° F. and stir daily until the dried flower heads sink to the bottom, then sow. This process takes about 10 days and the seed begins to come up in about one month; in the extracted-seed method germination takes place after about a week."

42576. *PRUNUS TOMENTOSA ENDOTRICHA* Koehne. Amygdalaceæ.
Bush cherry.

From Ventimiglia, Italy. Presented by the superintendent, La Mortola Botanic Garden. Received April 20, 1916.

The species is described as follows: "A deciduous shrub of spreading habit, 4 to 8 feet high and twice as wide; leaves dark dull green above, paler and densely woolly beneath. Flowers three-fourths of an inch across, white, tinted with rose, produced singly or in pairs at the joints of the previous year's growth. Fruit bright red, about the size of a small cherry, ripe in July. Native of northern and western China, but introduced from Japan about 40 years ago. It usually flowers about the fourth week in March and is then an object of great beauty and charm. Shoots from 1 to 2 feet long are made in one season, and these the following spring are furnished from end to end with the delicately tinted flowers. It must be said, however, that its beauty is short lived. Some sheltered nook should be chosen for it, a consideration its early blossoms entitle it to. The fruits are not freely produced with us, although about Peking the shrub is cultivated for their sake. Propagated by layers and cuttings of half-ripened wood." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 255.*)

The variety is described by Koehne in Sargent's *Plantae Wilsonianae*, vol. 1, p. 225, as a shrub 1 to 3 meters or a tree up to 7 meters high, from western Hupeh and northern Shensi.

42577 to 42580. *DOLICHOS LABLAB* L. Fabaceæ. **Bonavist bean.**

From Georgetown, British Guiana. Presented by Mr. J. F. Waby. Received April 24, 1916. Quoted notes by Mr. Waby.

42577. "*Park's runner* or *scarlet runner*. A viny plant, flowers purplish, pods 6 to 6½ inches long, three-fourths of an inch wide. Beans of the two shades found in the same pod, though more frequently of the darker shade, which is more prolific. I have used it at least twice a week on my table for months; it is decidedly the best we have. See mention in Board of Agriculture Journal of British Guiana, vol. 8, p. 14, 1914."

42578. "Strong vine, prolific, lasting at least two years and giving abundantly if well watered. Purplish flowers, seeds brown, used shelled before the seeds get hard."

42577 to 42580—Continued.

42579. "Dwarf, bushy, 2 to 2½ feet high, white flowers, white seeds, pods small, flat, averaging three seeds each. Grown by the coolies here. This is not to be compared for usefulness with the white-seeded *Nankinicus*."

42580. "A white-flowered kind much used by the coolies."

42581 to 42595.

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

42581. *PRUNUS CORNUTA* (Wall.) Steud. Amygdalaceæ.

Himalayan bird cherry.

"A deciduous tree, 50 to 60 feet high in a wild state. Leaves deep dull green above, paler beneath; flowers white, densely set on cylindrical racemes, 3 to 6 inches long, three-fourths to 1 inch wide; each flower is one-fourth to one-third inch across. Fruit round, one-third of an inch in diameter, red, changing to dark brown-purple. Flowers in May. Native of the Himalayas, where it is widely spread up to 10,000 feet and represents in that region *Prunus padus*. So nearly are they allied that many botanists regard them as forms of one species. According to travelers in the Himalayas, *P. cornuta* grows to considerably larger size than does *P. padus*, as we know it in England. The name *cornuta* (horned) refers to the shape of the fruits as often seen in the Himalayas. An insect deposits its eggs in the young fruit, and as the larvæ develop they set up irritation and cause a curious growth, which is from 1 to 2 inches long and curled like a horn. It is analogous to the many galls that occur on our own trees, notably oaks." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 233.)

42582. × *PRUNUS EMINENS* Beck. Amygdalaceæ.

Hybrid cherry.

"A small pretty tree similar to *Prunus acida* in flower, but of more open growth; is described as a hybrid between it and *P. fruticosa*." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 227.)

42583. *PRUNUS INCANA* (Pall.) Stev. Amygdalaceæ.

Willow cherry.

"A deciduous shrub, 4 to 8 feet high, of rather open, loose habit. Leaves dark green and smooth above, covered with a close white wool beneath. Flowers one-fourth of an inch across, borne singly from the buds of the previous year's shoots; petals deep rosy red. Fruit smooth, red, one-third of an inch across. Native of southeastern Europe and Asia Minor; introduced in 1815. Its flowers appear in April along with the young leaves, and it is then very pretty. Sometimes confused with *Prunus nana*, it is easily distinguished from that and most other species by the close white felt on the under surface of the willowlike leaves. The fruit is quite different from that of *P. nana*, being cherrylike." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 238.)

42584. *PRUNUS MAXIMOWICZII* Rupr. Amygdalaceæ.

Korean cherry.

"A deciduous tree up to 20 or 30 feet high, with a slender trunk. Flowers rather dull yellowish white, about five-eighths of an inch across, produced in mid-May on stalked racemes, remarkable for the large leaf-like bracts with which they are furnished. Fruit globose, one-sixth of an inch wide, shining, at first red, then black; ripe in August. Native

42581 to 42595—Continued.

of Korea, Manchuria, and Japan. The tree is interesting and very distinct among cherries because of the conspicuous bracts on the inflorescence, which remain until the fruit is ripe; but neither in flower nor fruit is it particularly attractive as cherries go. For its autumn coloring it may prove valuable, as it turns a brilliant scarlet both in Japan and North America. It is very hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

For previous introduction, see S. P. I. No. 40997.

42585. RUBUS COREANUS Miquel. Rosaceæ. **Bramble.**

"A deciduous shrub, 8 to 10 feet high (it has been found 15 feet high in a wild state), with erect or arching, stout, biennial stems, branching toward the top, and armed with stiff, broad-based spines. Leaves composed usually of seven dark lustrous-green leaflets. Flowers borne in flattish clusters, terminating short shoots from the wood of the previous year. Fruit of various colors from red to nearly black, edible but small, and of poor flavor. Native of Korea and China; introduced from the latter country in 1907 by Wilson, who found it at altitudes up to 6,000 feet. It is one of the handsomest of all Rubi in its vigorous blue-white stems and beautiful pinnate foliage, and may prove a valuable acquisition in gardens should it be quite hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 456.*)

For previous introduction, see S. P. I. No. 26277.

42586. RUBUS BIFLORUS QUINQUEFLORUS Focke. Rosaceæ. **Bramble.**

"A deciduous shrub, with erect stems up to 10 feet high and 1 inch thick at base, covered with a thick, white, waxy coating and armed with straight, broad-based spines. Toward the top the stems branch freely, the branches also being white, and, like the leafstalks and often the midrib, spiny. Leaves 4 to 10 inches long, composed of three to five leaflets, which are dark green above, covered beneath with a close white felt. Flowers terminal and axillary, white, three-fourths of an inch across; fruits edible. Native of the Himalayas up to 10,000 feet; introduced in 1818. Among the longer cultivated, white-stemmed raspberries this is by far the most effective, although it is no doubt equaled by some of the newer Chinese species. Its flowers are of little consequence, being small and of little beauty. It should be raised from seed (which ripens here), and planted in groups of not less than half a dozen. The soil should be a good loam, the aim being to produce stout thick stems, for the stouter they are the whiter and more persistent is their waxy covering. After the previous year's stems have flowered and borne fruit, they should be cut away (usually about August), leaving only the virgin growths of the year. During autumn and winter a group of this *Rubus* makes one of the most striking plant pictures in the open air. *Var. quinqueflorus.*—A vigorous Chinese form introduced by Wilson in 1907, with the terminal inflorescence composed most frequently of five (sometimes up to eight) flowers. In the type they are usually two or three." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 454.*)

For previous introduction, see S. P. I. No. 35197.

42587. RUBUS LASIOSTYLUS DIZYGOS Focke. Rosaceæ. **Bramble.**

"An erect-growing deciduous shrub with biennial stems 4 to 6 feet high, covered with a blue-white, waxy bloom, and closely set with bristle-

42581 to 42595—Continued.

like spines. Leaves composed of three or five leaflets, and on young vigorous plants as much as 14 inches long, but usually some 6 or 8 inches long. Flowers small, with reddish purple petals, which are shorter than the calyx segments and soon fall. Fruit 1 inch across, roundish, red, and downy, with an agreeable acid taste. Native of central China; originally discovered in Hupeh by Henry, who sent seeds to Kew in 1889, from which plants were raised that flowered in 1894. This is one of the most striking of the white-stemmed brambles. It has lately been reintroduced in quantity by Wilson from Hupeh." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 462.*)

42588. RUBUS INOPERTUS Focke. Rosaceæ. **Bramble.**

A Chinese bramble, growing at altitudes of 600 to 2,200 meters, of which Focke says (*Sargent, Plantae Wilsonianae, vol. 1, p. 54*): "This Chinese plant seems to be rather constant and looks very different from the tropical *R. niveus* Thunberg. It is therefore reasonable to separate the two plants specifically, although there occur connecting links in the Himalayas."

For previous introduction, see S. P. I. No. 26276.

42589. RUBUS MESOGAEUS Focke. Rosaceæ. **Bramble.**

A slender climbing bramble with stems 4 to 5 meters long, rather small flowers, and small globose berries. Native of central China, especially western Hupeh and Szechwan. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, No. 72, p. 204.*)

42590. RUBUS OMEIENSIS Rolfe. Rosaceæ. **Bramble.**

A large straggling shrub with round stems unarmed, but furnished with small stellate hairs. Leaves of maplelike form, five or obscurely seven lobed, with a heart-shaped base; 3 to 7 inches long and as wide. Stipules one-half to three-fourths of an inch long, cut up into deep narrow segments. Panicles many flowered, terminal; flowers half an inch across with downy stalks; calyx downy, the lobes pointed, triangular; petals purple. Fruit black, well flavored, ripening late. Native of western China, and found on Mount Omi by Wilson, who introduced it for Messrs. Veitch, with whom it flowered in August, 1908. It grows up to 6,000 feet elevation and will probably be perfectly hardy. It makes a growth 10 or 12 feet long in a season. The stipules are rather remarkable. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

For previous introduction, see S. P. I. No. 40195.

42591. RUBUS PUBESCENS Weihe. Rosaceæ. **Bramble.**

A very robust bramble, native of central and western Germany, Switzerland, France, and England, with strong, thick canes which do not ascend to any height without support. Spines very strong, reddish brown, on broad compressed bases. Flowers appearing in July, conspicuous, white, sometimes pale red. Fruit well developed, conspicuous, round, with pleasant flavor.

42592. RUBUS THIBETANUS Franch. Rosaceæ. **Bramble.**

An erect deciduous shrub, 6 feet or more high; stems biennial, smooth, round, covered with a purplish bloom and set irregularly with straight,

42581 to 42595—Continued.

slender prickles. Leaves pinnate, 4 to 9 inches long, composed of 7 to 13 leaflets. Flowers one-half inch across, petals purple. Fruit roundish, five-eighths of an inch across, black with a bluish bloom. Native of western China; discovered and introduced by Wilson for Messrs. Veitch, with whom it flowered in August, 1908. Wilson found it in the Min River valley at altitudes of 4,000 to 6,000 feet, where it is rare. Of the newer Chinese Rubi it is one of the most distinct and attractive looking, for both its blue-purple stems and its very handsomely cut foliage. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 468.*)

42593. RUBUS THUNBERGII GLABELLUS Focke. Rosaceæ. **Bramble.**

A Chinese Rubus from western Hupeh differing from the typical Japanese plant in its more robust habit and its sparingly pilose leaves and twigs.

42594. RUBUS TRIANTHUS Focke. Rosaceæ. **Bramble.**

A deciduous shrub of wide-spreading habit, the biennial stems erect, much branched, spiny, blue-white, 4 to 6 feet high. Leaves simple, distinctly three lobed on the barren stems, less markedly lobed on the flowering shoots, whitish beneath, dark green above. Flowers pinkish white, insignificant, produced a few together on cymes that are terminal on short lateral twigs. Fruit dark red. Native of central China up to 4,000 feet; introduced for Messrs. Veitch by Wilson in 1900. It is distinct from most Rubi in the absence of down or hairs, but has not much garden value. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 469.*)

42595. RUBUS VICARIUS Focke. Rosaceæ. **Bramble.**

A form from western Szechwan, closely related to *Rubus idaeus*. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, No. 72, p. 204.*)

42596. STRYCHNOS SPINOSA Lam. Loganiaceæ. **Kaffir orange.**

From Inhambane, Portuguese East Africa. Presented by Rev. Pliny W. Keys, Methodist Episcopal Mission. Received April 24, 1916.

"A remarkable East African shrub or small tree with evergreen foliage and short spines, bearing large, round, green fruits with extremely hard shells. When these ripen they turn yellow and scent the room with the fragrance of cloves. The seeds have a small amount of strychnin in them. The flesh is edible, reminding one of a brandied peach." (*Fairchild.*)

For previous introduction, see S. P. I. 33341.

42597 to 42605.

From Ventimiglia, Italy. Received through the superintendent, La Mortola Botanic Garden, April 17, 1916.

42597. CORNUS CAPITATA Wall. Cornaceæ. **Bentham's cornel.**

A deciduous or partially evergreen tree, 30 to 40 or more feet high, of bushy habit, and, if allowed to develop without interference by other trees, wider than it is high. Leaves leathery, opposite, dull gray-

42597 to 42605—Continued.

green. Flowers minute, inconspicuous, crowded in a hemispherical mass half an inch across. The beauty of the inflorescence is in the four to six sulphur-yellow bracts that subtend the true flowers; these are obovate, $1\frac{1}{2}$ to 2 inches long, and three-fourths to $1\frac{1}{2}$ inches wide. The fruit is a fleshy, strawberry-shaped, agglomerated, crimson mass, 1 to $1\frac{1}{2}$ inches across, in which many seeds are imbedded. Introduced from the Himalayas in 1825 and is a native also of China. When covered with the pale yellow "flowers," they provide one of the richest ornaments, and in fruit, too, they are objects of great beauty, but often damaged by birds. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 387.*)

For previous introduction, see S. P. I. No. 42287.

42598. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

A treelike half-woody plant, 6 to 10 feet high, with large entire cordate-ovate leaves and small pinkish fragrant flowers followed by egg-shaped, reddish brown, finely striped fruits about 2 inches long. These are seedy, musky acid, and somewhat tomatolike in flavor. Grown mostly as a curiosity. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 943.*)

42599. CYPHOMANDRA FRAGRANS (Hook.) Sendt. Solanaceæ.

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Tree-tomato.

This plant is a native of Argentina. The stem is erect, treelike, 12 or more feet high, bearing at the top many long branches, spreading horizontally. The whole plant is glabrous. The leaves are in unequal pairs, the lesser one in the shorter petiole, cordate, glossy, and somewhat succulent; the larger one on a longer petiole, rather ovate than cordate, dark green, a little pale beneath. From the forking of the branches the peduncles have their origin; these are pendent, bearing a raceme of flowers. The mouths of the flowers are all directed downward. Buds at first purple, then greenish, and when fully open are green with a dark streak on the back of each segment. The corolla is thick and fleshy, deeply cut into five oblong, reflexed segments. (Adapted from *Curtis's Botanical Magazine, pl. 1839.*)

For previous introduction, see S. P. I. No. 35096.

42600. HAKEA CUCULLATA R. Br. Proteaceæ.

An erect shrub 4 to 5 feet high with pale brown, very hairy branches. The large sessile leaves are leathery, heart shaped, and are glaucous green in color. The red flowers appear in copious clusters and are composed of four strap-shaped segments. Fruits clustered, about an inch long. (Adapted from *Curtis's Botanical Magazine, pl. 4528.*)

42601. HAKEA ELLIPTICA (Smith) R. Br. Proteaceæ.

An erect shrub 6 to 15 feet high with nearly sessile oval or elliptical leaves 2 to $3\frac{1}{2}$ inches long, white flowers in globose sessile clusters and ovoid fruit. The foliage is by far the finest of all the introduced kinds, the rich bronze color of the young shoots being hardly rivaled among other shrubs. The compact, erect habit makes it generally suited for lawn and shrubbery planting. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42597 to 42605—Continued.

42602. *HAKEA LAURINA* R. Br. Proteaceæ.

A tall shrub up to 30 feet in this country and becoming treelike in Australia. Leaves elliptical or lanceolate, 5 to 6 inches long. Flowers crimson in a globular head $1\frac{1}{2}$ to 2 inches thick, from which the numerous showy golden-yellow styles project 1 inch or so in every direction. It is the only species with showy flowers grown in America. Equally satisfactory for shrubbery and for hedges. Always highly ornamental. It has been called "the glory of the gardens of the Riviera." (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42603. *HAKEA SUAVEOLENS* R. Br. Proteaceæ.

A rounded shrub from 8 to 15 feet high, leaves 2 to 4 inches long, cylindrical, with rigid spinelike tip, occasionally entire, but usually branched into rigid cylindrical lobes. Flowers white, fragrant. An easily grown, drought-resistant, self-protective plant, and therefore a favorite for depot grounds, public parks, impenetrable hedges, and the like. Makes a suitable covering for dry hillsides, although not deep rooted and sometimes inclined to become top-heavy. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42604. *HAKEA VARIA* R. Br. Proteaceæ.

A shrub resembling *Hakea suaveolens*, with some leaves with nearly cylindrical lobes, varying, however, to flat and hollylike, 1 to 2 inches long. Flowers in small clusters. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42605. *ALECTRYON TOMENTOSUM* (F. Muell.) Radlk. Sapindaceæ.
(*Nephelium tomentosum* F. Muell.)

A tree 20 to 30 feet high, from Queensland and New South Wales. Leaflets four to eight, 2 to 4 inches long; flowers small, crowded on short, slightly branched tomentose panicles sometimes reduced to simple racemes. Fruit softly tomentose-villous, depressed at the top, of two or rarely three globular, slightly compressed lobes, united at the top, four or five lines in diameter, rather hard, indehiscent. Seeds half immersed in a yellowish arillus. (Adapted from *Bentham, Flora Australiensis, vol. 1, p. 466.*)

For previous introduction, see S. P. I. No. 35102.

42606. *CITRUS LIMONIA* Osbeck. Rutaceæ. **Szechwan lemon.**

From Chungking, China. Seeds presented by Mr. E. Widler. Received April 15, 1916.

"This lemon answers almost the description of the Ichang lemon, excepting that its seeds are much smaller, and the inside seems to be all pith. These Szechwan lemons grow about 100 miles distant from Chungking. Chinese name *Hsiang yüan.*" (Widler.)

42607. *ARALIA CACHEMIRICA* Decaisne. Araliaceæ.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received April 28, 1916.

A spineless herb from the Himalayas growing to a height of 8 feet, with quinately compound leaves, the pinnæ often with five to nine leaflets which are

usually rounded at the base, oblong-ovate, doubly serrate, and 4 to 8 inches long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 344.*)

For previous introduction, see S. P. I. No. 33142.

42608. PANICUM LAEVIFOLIUM Hack. Poaceæ. Grass.

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received April 25, 1916.

"An annual hay grass common in wettish lands in our maize belt. This is a remarkably heavy cropper, and if I remember rightly one of my early investigations gave a cutting of about 5 tons of hay to the acre, but I have not my original notes, which have been lost somewhere in the Department of Agriculture. This grass seems to thrive best on alluvial deposits, but it is also found on almost any kind of soil where water is apt to stand during rains. Animals are extremely fond of it, and we consider it one of our best native grasses. As compared with *teff* (*Eragrostis abyssinica*), the principal drawback of *Panicum laevifolium* is the unevenness in maturity of its seeds, whereas *teff* matures very evenly, owing to the fact that the first-ripened seeds do not fall off easily, as is the case with *P. laevifolium*. However, in spite of this drawback I think this grass may meet the needs of some particular locality in the South where the rainfall is erratic and apt to come after long intervals of drought." (*Davy.*)

42609. INDIGOFERA GLANDULOSA Wendl. Fabaceæ. Indigo.

From Bangalore, Mysore, India. Presented by Mr. G. H. Krumbiegel, superintendent, Government Botanic Gardens, Lal-bagh. Received April 24, 1916.

An ornamental leguminous annual from tropical Asia and Australia, about a foot tall and bearing purple, pea-shaped flowers in July. (Adapted from *Johnson's Gardeners' Dictionary, p. 512.*)

For previous introduction, see S. P. I. No. 42027.

42610. ZEA MAYS L. Poaceæ. Corn.

From Canada. Presented by Prof. James Murray, MacDonald College, Quebec. Received April 24, 1916.

"*Quebec yellow*, which yielded an average of 84 bushels per acre for four years on an acre block at MacDonald College." (*Fairchild.*)

42611. CANNABIS SATIVA L. Moraceæ. Hemp.

From Yokohama, Japan. Procured from the Yokohama Nursery Company, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received May 2, 1916.

"Produced in Kogen Do (Kang Won), a northeastern province back of Seoul, facing the Japan Sea." (*S. Ida.*)

42612 to 42630.

From British India. Presented by Mr. M. Buysman, Lawang, Java. Received April 19, 1916.

42612. ARALIA CISSIFOLIA Griffith. Araliaceæ.

A shrub 10 feet high, or erect small tree; its branches with short strong deflexed prickles are sometimes clustered at the nodes. Leaflets

42612 to 42630—Continued.

lanceolate, acuminate; peduncles solitary, each carrying a many-flowered umbel. Fruit glabrous. (Adapted from *Hooker, Flora of British India, vol. 2, p. 722, 1879.*)

42613. BRASSAIOPSIS SPECIOSA Dec. and Planch. Araliaceæ.

Frequently found from Nepal and Assam to Chittagong. A small tree of almost palmlike character, scarcely branched, and leafy only at the extremity of the branches. The leaves are large, on long petioles, swollen at the base, digitate, consisting of about seven large leaflets which are oblong-lanceolate and glabrous. Racemes 4 to 5 feet long, pendent from the apex of the stem, and bearing at the end of the branches large densely-flowered umbels of a brownish or yellowish green color. One-seeded, subglobose fruits. (Adapted from *Curtis's Botanical Magazine, pl. 4804, as Hedera glomerulata*; and *Hooker, Flora of British India, vol. 2, p. 737.*)

42614. BYTTNERIA ASPERA Colebr. Sterculiaceæ.

"A climbing shrub of the central and eastern Himalayas up to 4,000 feet, the Khasia Hills, the tropical forests of Burma, and the Andamans. It forms often a very dense growth, and has large fruit with strong spikes." (*Gamble, A Manual of Indian Timbers, 2d ed., p. 105.*)

42615. CAMPANULA COLORATA Wall. Campanulaceæ. Bellflower.

The deep-colored bellflower from the high altitudes of India and Afghanistan is variable in its growth, sometimes erect, at others trailing. A desirable ornamental for rock gardens. The slender stems are much branched and grow to a length of 2 feet. The leaves are broadly oval or ovate-lanceolate, and sessile or attenuated into a short footstalk. The flowers are bell shaped, deep bright purple, the tube being rather elongated and the lobes rather large, spreading. (Adapted from *Curtis's Botanical Magazine, pl. 4555.*)

42616. DISPORUM CALCARATUM D. Don. Convallariaceæ.

"This species, remarkable for the length of the spurs at the base of the sepals, was collected by Mr. Gomez on the Jentya Hills in Sylhet, a mountainous region on the northeastern frontier of Bengal. The flowers, which appear in May, are apparently of a green color, and vary from two to five in the umbel. The leaves are altogether sessile, not being narrowed at the base as in most of the other species. The inflorescence, as in the rest of the genus, is really terminal, although from the prolongation of the branches beyond it, it has the appearance of being lateral." (*D. Don, in Transactions of the Linnean Society of London, vol. 18, p. 516, 1841.*)

42617. GAULTHERIA TRICHOPHYLLA Royle. Ericaceæ.

A low evergreen shrub of densely tufted habit, 3 to 6 inches high, spreading by means of underground shoots; stems wiry and slender, bristly. Leaves narrow, glossy dark green above, pale beneath. Flowers solitary in the leaf axils; corolla pink, one-sixth of an inch long and wide, bell shaped. Fruit blue-black. Native of the Himalayas up to 13,000 feet. It is a dainty plant suitable for the rock garden and pleasing for the bright green of its foliage and neat habit. Propagated by cuttings and division. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 582.*)

42612 to 42630—Continued.

42618. LITSEA ZEYLANICA Nees. Lauraceæ.

A middle-sized evergreen tree, glabrous, only leaf buds and pedicels pubescent. Leaves alternate, thinly coriaceous, pale beneath, 4 to 6 inches long, on a petiole half an inch long. Flowers yellowish white, funnel shaped, in dense sessile clusters. Berry subglobose, one-third of an inch in diameter. (Adapted from *Brandis, Forest Flora of India*, p. 382.)

42619. LONICERA MACRANTHA (Don) Spreng. Caprifoliaceæ.

Honeysuckle.

An ornamental evergreen climbing shrub with shining green leaves, pale beneath, and fragrant white flowers changing to yellow. It much resembles the Japanese honeysuckle (*Lonicera japonica*), but the unopened flowers are pink or reddish, and the fruit is white. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 10.)

42620. LUCULIA GRATISSIMA (Wall.) Sweet. Rubiaceæ.

"Himalayas and Ava, at elevations of 4,000 to 6,000 feet. A tall shrub or small tree. Important in the series of plants destined to maintain garden fragrance well throughout the year, the copious large blossoms being developed in the coolest season. The plant hates frost and dry heat. The flowers will likely be acceptable for perfume factories." (*Mueller, Select Extra-Tropical Plants*, p. 292.)

42621. MICROTROPIS DISCOLOR Wall. Celastraceæ.

A small evergreen or shrub from the forests of the central Himalayas up to 7,000 feet, the Khasia Hills, and the damp hill forests of Burma. The wood is white and easily worked. (Adapted from *Gamble, A Manual of Indian Timbers*, 2d ed., p. 175.)

42622. PANAX PSEUDOGINSENG Wall. Araliaceæ.

"Doubtfully separable from the true ginseng of Japan, *Panax ginseng* C. A. Mey., which differs by having broader, more obovate, less bristly leaves. The Indian examples show every form of rootstock and tuber attributed specially to *P. ginseng* and to *P. quinquefolium* L." (*Hooker, Flora of British India*, vol. 2, p. 721.)

42623. PRINSEPIA UTILIS Royle. Amygdalaceæ.

A deciduous thorny shrub from the Himalayas and the Khasia Hills. The hard, compact wood is red, close and even grained, and is used for fuel and for walking sticks. The fruit is like a sloe (*Prunus spinosa*), and an oil is expressed from the seeds which is used for food and for burning. (Adapted from *Gamble, A Manual of Indian Timbers*, 2d ed., p. 316.)

42624. RIBES GRIFFITHII Hook. f. and Thoms. Grossulariaceæ.

An erect shrub 8 feet high, from the subtropical regions of the eastern Himalayas. Leaves 2 to 3 inches long. Flexuose, pendent, very lax racemes, 3 to 6 inches long; berry one-fourth of an inch long, red. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 411.)

42625. CAUTLEYA LUTEA Royle. Zinziberaceæ.

(*Roscoea elatior* Smith.)

A common plant in the Himalayas at elevations of 5,000 to 8,000 feet from Kashmir to Bhutan and 5,000 to 6,000 feet in the Khasia Moun-

42612 to 42630—Continued.

tains. Stems grow to a height of 18 inches from the rather swollen rooting base and are leafy all the way up. Narrow leaves 5 to 10 inches long, bright green above, paler or suffused or streaked with red-brown beneath. The spike is 4 to 8 inches high, flowers rather remote; bracts green or red-purple; flowers $1\frac{1}{2}$ to 2 inches long. Calyx tubular, red-purple. Corolla golden yellow. (Adapted from *Curtis's Botanical Magazine*, pl. 6991.)

42626. RUBUS LINEATUS Reinw. Rosaceæ. Bramble.

A strong suberect herb with softly pubescent branches. Leaflets three to five, subsessile, coriaceous. Flowers in axillary short heads and terminal elongate silvery panicles. Numerous small red drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

For previous introduction, see S. P. I. No. 30178.

42627. SALVIA CAMPANULATA Wall. Menthaceæ.

An herb with ascending hirsute stem and axillary or terminal racemes of yellow flowers with purple dots. From Gossain Than, India. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 1, p. 67, 1830.)

42628. SARCOCOCCA SALIGNA (Don) Muell. Arg. Buxaceæ.
(*S. pruniformis* Lindl.)

"An evergreen shrub, 2 to 3 feet high; stems erect, smooth. Leaves 3 to 5 inches long, one-half to $1\frac{1}{2}$ inches wide; narrow-lanceolate, with a long drawn-out point; base narrowly wedge shaped; smooth, glossy, with a marginal vein on each side extending all round the leaf; stalk one-fourth to three-eighths of an inch long. Flowers greenish white, in short axillary racemes opening in winter and spring. Berries egg shaped, one-third to one-half inch long, purple. Native of the Himalayas and China, the form from the latter being probably the hardier. The Himalayan plant has long been cultivated indoors at Kew, but the Chinese one was introduced by Wilson about 1902 and has so far proved quite hardy and a vigorous grower. From *Sarcococca humilis* and *S. ruscifolia* it is distinguished by the absence of down from the stems, as well as in stature and length of leaf." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 500.)

42629. STROBILANTHES PECTINATUS (Wall.) T. Anders. Acanthaceæ.

A spreading shrub up to 10 feet high with heads of wide funnel-shaped, purple flowers $1\frac{1}{2}$ to $2\frac{1}{4}$ inches across. An important under-shrub in the Himalayan forests. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 446; and *Gamble, A Manual of Indian Timbers*, 2d ed. p. 519.)

42630. VIBURNUM CYLINDRICUM Buch.-Ham. Caprifoliaceæ.

An evergreen shrub or, in some of its native habitats, a tree 40 to 50 feet high. Flowers white, quite tubular, about one-fifth of an inch long, produced from July to September in usually 7-rayed cymes 3 to 5 inches across. The cymes are rendered pretty by the protruded bunch of lilac-colored stamens. Fruit egg shaped, one-sixth of an inch long, black. Native of the Himalayas and China. Most of the plants now in cultivation are Chinese, and these are probably hardier than the Indian ones. They have at any rate succeeded very well in the Coombe Wood Nursery.

42612 to 42630—Continued.

Two characters make this species very distinct, viz, the tubular corolla with erect, not spreading lobes, and the curious waxy covering of the leaves; the latter only shows itself when the leaf is touched or bent; ordinarily they are of a dingy dark green. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 645.*)

42631. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Hilo, Hawaii. Tubers presented by the Hilo Boarding School, at the request of Mr. J. B. Thompson, Hawaii Experiment Station, Glenwood. Received May 1, 1916.

Lihilihi molina variety.

42632. CERATONIA SILIQUA L. Cæsalpiniaceæ. Carob.

From Athens, Greece. Presented by the Royal Society of Agriculture. Received April 25, 1916.

A small shrubby tree, native of southern Europe and extensively cultivated for its sweet, sugary, flat pods. They are a valuable fattening and nutritious food for cattle and are also relished by human beings. The tree is frequently unisexual. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 174.*)

See S. P. I. No. 30914 for previous introduction.

42633. VICIA FABA L. Fabaceæ. Broad bean.

From Valparaiso, Chile. Presented by Mr. L. J. Kenna, American consul general. Received May 1, 1916.

"*Habas*, which is the only commercially successful variety of the horse bean known in this market." (*Kenna.*)

42634 to 42640.

From Christiania, Norway. Presented by Mr. Rolf Nordhagen, Botanic Garden. Received April 20, 1916.

42634. AVENA PLANICULMIS Schrad. Poaceæ. Oats.

"Possesses leaves 1 inch wide; occurs in eastern Siberia in dry, open places." (*A. S. Hitchcock.*)

42635. BERBERIS sp. Berberidaceæ. Barberry.

"I am very sorry to say that after examining both *chinensis* and *spathulata* [S. P. I. No. 42637] I have come to the conclusion that they are not rightly determined." (*Nordhagen.*) Received as *Berberis chinensis* Poir.

42636. BERBERIS INTEGERRIMA Bunge. Berberidaceæ. Barberry.

Shrub growing to 6 feet tall, last year's branches terete, purplish brown; spines usually simple, about 2 inches long. Leaves obovate or broadly obovate, usually entire, sometimes remotely setose-serrate, grayish green. Racemes dense, usually many flowered. Flowers are small, on short pedicels, about one-fifth of an inch long. Fruits black, globose-ovoid. A somewhat variable species. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 490.*)

42634 to 42640—Continued.

42637. BERBERIS sp. Berberidaceæ.

Barberry.

"I am very sorry to say that after examining both *chinensis* [S. P. I. No. 42635] and *spathulata* I have come to the conclusion that they are not rightly determined." (Nordhagen.) Received as *Berberis spathulata* Schrad.

42638. MALUS PUMILA Mill. Malaceæ.

Paradise apple.

"Paradise. A bushy apple, apparently rarely growing over 5 feet in height. A native of the Caucasus, whence it probably was introduced into western Europe, where it is now extensively used as a dwarfing stock for apples. This shrubby apple produces red fruits of fair quality, is very drought resistant, and stands high summer temperatures. May be used in hybridization work and in creating a strain of bush apples." (Meyer. See S. P. I. No. 27968, Inventory 23, p. 52.)

Seeds received as *Pyrus paradisica*. *Malus pumila* is, however, the earlier name.

42639. RUBUS CAESIUS L. Rosaceæ.

Dewberry.

"A deciduous shrub, with slender creeping stems, prickly, and covered with a whitish bloom when young. Leaves usually composed of three leaflets which are green on both sides. Flowers white, in small clusters. Fruit composed of a few large carpels, covered with a blue-white bloom when ripe. This is one of the British brambles easily distinguished from all the forms of common blackberry by the few but large 'pips' composing the fruit and by their being covered, like the young stems, with a white or bluish bloom. It is common in Britain and over Europe, extending into northern Asia. Of no value for gardens." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 455.)

For previous introduction, see S. P. I. No. 30161.

42640. VACCINIUM MYRTILLUS L. Vacciniaceæ.

Bilberry.

A deciduous shrub, usually 6 to 12 inches high, sometimes more. Leaves ovate, often somewhat heart shaped, bright green, and quite smooth. Flowers produced in May usually singly on drooping stalks from the leaf axils. Corolla nearly globular, pale pink, one-fourth of an inch long. Berries black, with a blue bloom, one-third of an inch in diameter, globular. Native of Britain, where it is one of the commonest of mountain and moorland shrubs, also of northern and central Europe. The bilberry is one of the most valuable wild fruits of Britain and is frequently offered in considerable quantities in the markets of north country towns. It is used for making tarts and jelly and is especially delicious eaten with cream and sugar. A very hardy plant, it manages to survive on the summits of our loftiest mountains. It is scarcely of sufficient interest for the garden, and does not always thrive well transplanted to low-level gardens, in the South at any rate. Its angled stems distinguish it from the other British species. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 628.)

42641. VICIA FABA L. Fabaceæ.

Broad bean.

From Yokohama, Japan. Presented by Miss Eliza R. Scidmore. Received May 5, 1916.

"Large shipments of horse beans have lately been made to Australia from Japan, and Australian varieties are being experimented with here." (*Scidmore.*)

42642. ZEA MAYS L. Poaceæ.**Corn.**

From Tucson, Ariz. Presented by Mr. George F. Freeman, acting director, University of Arizona. Received May 5, 1916.

"*Papago* sweet corn. We do not really expect that this will be promising as a sweet corn outside of the Southwest, but some results in eastern Kansas and Nebraska last year indicate that it might prove a valuable silage or forage corn in the humid sections." (*Freeman.*)

42643. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.*(P. juliflora DC.)***Algaroba.**

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Public Gardens. Received April 7, 1916.

A shrub or tree, 3 to 40 feet high, with bipinnate leaves of 15 to 20 pairs of leaflets, each composed of one or two pairs of pinnae; and axillary flowers in cylindrical heads resembling those of *Acacia* spp. Native of Mexico and the West Indies.

42644 to 42646. VICIA FABA L. Fabaceæ.**Broad bean.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received May 5, 1916. Notes by Mr. Brown.

"Varieties usually grown in Egypt."

42644. "*Egyptian tick* bean."

42646. "*Fava Pavonazza.*"

42645. "*White Cyprus* bean."

42647. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received May 8, 1916.

"In its young state this is an exceedingly ornamental evergreen shrub. The large orbicular-cordate acuminate leaves at first are purple, with the course of the veins picked out with green; afterwards they are green with purple veins. The stipules are remarkable for concealing between them the terminal bud; they are obliquely obovate-oblong, purplish. Himalaya." (*Kew Bulletin, Additional Series 4, 1900.*)

For previous introduction, see S. P. I. No. 39639.

42648. PLATANUS ORIENTALIS L. Platanaceæ.**Oriental plane tree.**

From Lahore, India. Presented by the superintendent, Agri-Horticultural Society. Received May 4, 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; in open situations it usually branches a few feet from the ground into several large spreading limbs; young shoots at first covered with pale brown hair tufts, becoming smooth later. Leaves palmate, 6 to 10 inches wide, somewhat less in length, with five large

lobes and usually a smaller one on each side at the base; the lobes, which are half to two-thirds the depth of the blade and lance shaped, each have one to three large teeth or minor lobes at the sides. When they first unfold, the leaves are covered with a thick whitish brown felt composed of stellate hairs, which later falls away, leaving the leaf smooth except near the veins beneath and glossy above; stalk $1\frac{1}{2}$ to 3 inches long. Fruit balls two to six on each stalk, 1 inch wide, bristly." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 203.*)

42649 to 42673.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received April 26, 1916. Plants of the following:

42649 to 42655. ARUNDINARIA spp. Poaceæ. Bamboo.

42649. ARUNDINARIA GRAMINEA (Bean) Makino.

A slender and very hardy bamboo, with stems up to 10 feet high and about one-fourth of an inch in diameter. The leaves are the narrowest in proportion to their length of all the hardy bamboos, being 4 to 9 inches long but not more than half an inch wide. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.*)

42650. ARUNDINARIA SIMONII (Carr.) A. and C. Rivière.

A very vigorous bamboo, which spreads rapidly by means of its underground suckers, and, with the exception of *Arundinaria fastuosa*, is the tallest of our hardy sorts. It has stems up to 18 feet high, 1 to $1\frac{1}{4}$ inches in diameter at the base, the outer ones arching outward. The leaves are narrowly oblong, broadly wedge shaped at the base, with long tapering points, 3 to 12 inches long and one-third to $1\frac{1}{4}$ inches wide, vivid green above, and glaucous on one side of the midrib beneath, rather greenish on the other. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 219.*)

"The sheaths nearest the ground are short, though long enough to overlap the internodes, but those of the upper joints, although 8 to 10 inches long, do not exceed the internodes in length. They are at first of a fine green color, shading into purple, which soon fades, however, to a dull yellow. These prominent sheaths, which are thick, stiff, and beautifully glazed on the side next the culm, will easily distinguish this arundinaria from any other common Japanese form." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 32.*)

42651. ARUNDINARIA JAPONICA Sieb. and Zucc.

A very hardy, handsome evergreen bamboo, having larger leaves than any other species of its height and character that we can grow outside. It maintains a rather tufted habit. The stems are 10 to 12 feet high, erect, one-sixth to two-thirds of an inch in diameter, with erect branches near the top. Leaves 7 to 12 inches long, three-fourths of an inch to 2 inches wide, terminated by a long, taillike point. The upper surface is a dark, glossy green; rather glaucous beneath, except a strip about one-fourth of its width near one margin, which is green. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 216.*)

42649 to 42673—Continued.

"This is said to be the hardiest species in Japan, growing as far north as the island of Hokkaido, where the temperature falls below zero Fahrenheit. Its culms are extensively used for fan making, and millions of cheap paper-covered fans are made every year from the stems of this species. River banks and the margins of ponds and canals are eminently suited to its growth, and the overflowed lands of the Colorado River in Arizona might be planted to advantage with this species." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indust. Bul. 43, p. 31.*)

42652. ARUNDINARIA FASTUOSA (Marl.) Makino.

If not the most graceful, it is the loftiest and stately of hardy species, resembling *Arundinaria simonii*, but differing in the short, crowded branches at each joint and in the more tufted habit. The stems are up to 22 feet high and 1½ inches in diameter at the base. The leaves are 4 to 8 inches long, one-half to 1 inch wide, wedge shaped at the base, long and taper pointed; dark, lustrous green above; one side of the midrib beneath glaucous, the other greenish; margins toothed. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.*)

42653. ARUNDINARIA PYGMAEA (Miquel) Kurz.

The dwarfiest of the hardy bamboos, although the stems, when drawn up in a dense mass, will grow 18 inches high. Leaves 2 to 5½ inches long, one-third to 1 inch wide, rounded at the base, rather abruptly narrowed at the apex to a slender point. This little bamboo forms a low, dense carpet over the ground and spreads with great rapidity. Among the dwarf creeping sorts with green leaves, the velvety undersurface of the leaves will best distinguish it. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 218.*)

42654. ARUNDINARIA MARMOREA (Mitf.) Makino.

A very pretty, well-marked bamboo, distinguished by the marbled stem sheaths and stems remaining unbranched the first season and by the apex of the leaf being constricted about half an inch from the tip. It spreads very rapidly by underground suckers, forming luxuriant masses, but is liable to injury by winter cold. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 217.*)

42655. ARUNDINARIA MARMOREA (Mitf.) Makino.

Var. *variegata*. A form differing from the species only in its variegated leaves.

42656. SASA ALBO-MARGINATA (Miquel) Makino and Shibata. Poaceæ.
Bamboo.

A hardy bamboo with stems 1 to 1½, sometimes 3 to 4 feet high, with a single branch at each of the upper joints, leaves narrow-oblong, 4 to 8 inches long, 1 to 2¼ inches wide, abruptly tapered at the base and narrowed quickly also at the top to a short, slender point. It forms dense, matted patches and spreads very rapidly. While it is pleasing in summer

42649 to 42673—Continued.

and early autumn, the habit of decaying at the leaf margins spoils it later. This character is not found, so far as I know, in any other hardy species. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 220.*)

42657. *BAMBOS QUADRANGULARIS* Fenzl. Poaceæ.

Bamboo.

A bamboo which grows to a height of 30 feet in a wild state, but is usually 6 to 12 feet high in Europe. Stems round when young, but distinctly four sided, with rounded corners, when half an inch or more thick. It is best distinguished in the younger stages by curious little spicate protuberances at the joints. Leaves rich green, 4 to 8 inches long, one-half to 1 inch wide. It is, unfortunately, not very hardy. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 231.*)

"The sheath is very thin and delicate and more open than in most bamboos, gaping from the base and leaving the greater part of the internode uncovered. The wood of this species is too weak to make it of any great value, and its sensitiveness to frost is too great to enable one to class it among the hardy sorts. It is, however, a decorative plant and worthy of repeated trials in the frostless regions of America. It is said that roots will form easily from the lower nodes of the square bamboo if the portion bearing these nodes is buried in the soil. This would facilitate propagation if the statement proves correct." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 34.*)

42658. *BAMBOS NANA* Roxb. Poaceæ.

Bamboo.

A dwarf bamboo with stems 1 to 2½ feet high, most of them about as thick as a lady's hatpin, zigzagged. Leaves arranged in two opposite rows; three-fourths to 2¼ inches long, one-sixth to one-third of an inch wide, rounded at the base, bright green above, slightly glaucous beneath. Its dwarf, erect stems and tiny, distichously arranged leaves easily distinguish it from all other hardy bamboos. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 231.*)

42659. *PHYLLOSTACHYS BAMBUSOIDES CASTILLONIS* Marliac. Poaceæ.

Bamboo.

This has the most beautifully colored stems of all hardy bamboos. The curious alternation of green and yellow, together with the often variegated leaves, make it very distinct. According to Dr. Stapf, of Kew, there is nothing in its floral characters to distinguish it from *Phyllostachys nigra*. In vegetative character, however, it is very near *P. bambusoides*. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 150, as P. castillonis.*)

"The contrast between the golden yellow of the stems and the green stripes on the young shoots is one of the prettiest effects imaginable. The species grows occasionally over 30 feet high in Japan." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 29.*)

42660. *PHYLLOSTACHYS PUBERULA* (Miquel) Munro. Poaceæ. Bamboo.

A very graceful and luxuriant bamboo, reaching in favorable situations 14 feet in height. It is laden, when in good health and well established, with heavy plumose masses of foliage, which make the outer stems arch outward. Leaves are uniform in size and from 2 to 3½ inches long and

42649 to 42673—Continued.

from one-third to five-eighths of an inch wide, tapering at the base to well-developed stalks one-eighth of an inch long; dark lustrous green above, glaucous beneath. In the richness of its verdure combined with a remarkable elegance of form, this bamboo is probably the loveliest of all its kind. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 150.*)

42661. PHYLLOSTACHYS PUBESCENS HOUZEAU. Poaceæ. Bamboo.

This is one of the stoutest of our hardy bamboos, the stems reaching sometimes nearly 20 feet in height and bending somewhat stiffly; 1½ inches in diameter, deep yellow when mature. Leaves 2 to 5 inches long, one-fourth to three-fourths of an inch wide, tapering or rounded at the base, slender pointed, dark green above, glaucous beneath. The stems when young grow with great rapidity, sometimes nearly 1 foot in 24 hours in England—more in hotter climates. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 151, as P. mitis.*)

“The largest hardy species in Japan, growing to a height of over 50 feet and producing, not uncommonly, culms over 6 inches in diameter. The culms are gently curved shortly after leaving the ground, while those of other sorts with which it might be confused rise straight from the base. Its sheaths are of a light-brown color, marked with dark amber-brown blotches and round dots and covered with bristles. The sheath spreads right and left from the base of the pseudophyll and is fringed throughout with hairs which are straight when they lie between the pseudophyll and the stem, but curled on the right and left sides where they are free to develop. The internodes are generally shorter than those of the other large species, and the leaf sheaths are fringed at the insertion of the leaf with a number of rather coarse hairs. The branch buds are purplish brown and strongly marked. This is the great edible bamboo of Japan and China, the method of cultivation of which has been described.” (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 27.*)

42662. PHYLLOSTACHYS PUBESCENS HETEROCYCLA (CARR.) HOUZEAU. Poaceæ. Bamboo.

The curious so-called tortoise-shell bamboo. The joints of the stems near the base do not circle them in the ordinary way, but take diagonal directions, the normal space between the joints being suppressed at each side alternately. Thus the scars join at opposite sides alternately for 1 or 2 feet up the stem, when it assumes its normal form and the scars become rings. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 151.*)

42663. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) HOUZEAU. Poaceæ. Bamboo.

One of the handsomest of the bamboos, very distinct because of its black stems, which vary from 10 to 20 feet in height and from half an inch to 1½ inches in diameter; at first green, they become with age quite black. Leaves in plumose masses, usually 2 to 3½ inches long, one-fourth to five-eighths of an inch wide (sometimes larger); of thin texture, dark green above, rather glaucous beneath. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

42649 to 42673—Continued.

"The culms when young are covered with dark brown to purple spots, which spread as it grows older until the whole culm becomes dark brown, almost black, except just below the nodes, where there is an ash-gray line. This dark color at once distinguishes the species from all other Japanese sorts. Branch buds are brown, mottled with black. There is a great variation in the intensity of this dark color of the culms, and this is said to vary with the kind of soil upon which the plants are grown and the amount of sunlight to which they are exposed. . . . Nothing could exceed the delicate beauty of the groves of this species which are to be seen near Kyoto. Their dark stems, ash-gray nodes, and light-green foliage make them unique among decorative plants. The uses of this species are limited to the manufacture of furniture, numerous household articles, and fancy fishing poles, for all of which these black bamboos are peculiarly suited." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 29.*)

For previous introduction, see S. P. I. No. 37555.

42664. *PHYLLOSTACHYS BAMBUSOIDES* Sieb. and Zucc. Poaceæ.

Bamboo.

This is one of the finest hardy bamboos, very hardy and free growing, with stems 10 to 18 feet high, and long branches. Stem sheaths are pinkish when young, conspicuously mottled with deep purple. The leaves are among the largest in the hardy *Phyllostachys* group, varying from 2½ to 6 inches long, one-half to 1½ inches wide, bright green above, glaucous beneath. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

"The arrow bamboo is that of which the stems are still employed in the manufacture of the fine Japanese arrows used generally for archery purposes. It is not very commonly seen in gardens, so far as observed, even in Japan, and the arrow makers, it is said, get their main supply of stems from wild plants. There are some of these manufacturers in the town of Shidzuoka, but the demand for arrows is so small that they are doing a poor business. This species is distinguished from others by the fact that it does not have an actively creeping rootstock. Each plant forms a separate small clump by itself. The hardness of the culms, their small cavity, and the smoothness of the nodes, as well as their small size, are characteristics that well adapt them for arrow making. This is believed to be a hardy species, and it is quite unlike the ordinary bamboos in appearance." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 30.*)

42665. *PHYLLOSTACHYS BAMBUSOIDES MARLIACEA* Houzeau. Poaceæ.

Bamboo.

A variety of *Phyllostachys bambusoides*, distinguished by the curious wrinkling of the stems, especially toward the base. It does not appear to be so vigorous as the species, but behaves more like *P. mitis* in regard to hardiness. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

42666. *PHYLLOSTACHYS KUMASACA* (Zoll.) Munro. Poaceæ. Bamboo.

A pretty bamboo, suitable for a damp spot in the rock garden, being of a neat, tufted habit. It is one of the most distinct of all hardy bamboos, especially in its sturdy, zigzag stem (1 to 2 feet high, very much

42649 to 42673—Continued.

flattened between the joints), the great proportionate width of the leaves, their length of stalk, and the uniformly short branches which occur three or four at each joint, 1 to 2½ inches long, bearing one to three narrowly ovate leaves 3 to 4 inches long and three-fourths to 1 inch wide. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 152.)

42667. PHYLLOSTACHYS AUREA A. and C. Rivière. Poaceæ. Bamboo.

A bamboo somewhat resembling *Phyllostachys mitis*, which is, however, a taller species without the crowded joints at the base of the stem and without the swollen band beneath the joint, which is so distinctive a character in *P. aurea*. The stems are pale yellowish green, 10 to 15 feet high, stiffly erect, growing in tufts and spreading slowly. Beneath each joint there is a curious swollen band about one-fourth of an inch wide. The leaves are 2 to 4½ inches long and one-third to seven-eighths of an inch wide. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 149.)

"Mr. Mitford remarks that this species should be planted in large, bold masses for good landscape effect, for if single plants are set out they send up shoots only near the mother culm and produce a switch-like effect. The shoots of this species are edible, according to the Japanese books, and are of even better flavor than those of *P. mitis*; but this variety does not appear to be grown for food." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 30.)

42668. BAMBOS VULGARIS Schrad. Poaceæ. Bamboo.

An Indian bamboo, with bright-green stems, 20 to 80 feet high and with numerous branches weighted with dense foliage. Leaves usually 6 to 10 inches long, two-thirds to 1½ inches wide. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 448.)

"A species growing in Satsuma, the southern province of Japan, but which is not hardy at Yokohama. It is propagated differently from the hardy sorts, as new shoots are borne from the base of the culm as well as from the rhizome. This species is said to be easy to propagate because of this character, but it will probably have a chance to succeed in the United States only in subtropical Florida and Texas, where it will require a good soil, rich in humus." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 34.)

42669. BAMBOS ARGENTEO-STRIATA Regel. Poaceæ. Bamboo.

May be the same golden bamboo known as *Bambos vulgaris* var. *aureo variegata*. This resembles the species, but has canes of rich golden yellow color, penciled with green. (See Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 448.)

42670. BAMBOS NANA ALPHONSE-KARRI (Mitf.) Makino. Poaceæ.

Bamboo.

A variegated form of *Bambos nana*, with young stems striped with white and pink, older stems yellow with broad green stripes. (See Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 449.)

42649 to 42673—Continued.

42671. *BAMBOS VITTATO-ARGENTEA* Hort. Poaceæ. **Bamboo.**

A variegated or blue bamboo of gardens, the talchochiku of the Japanese. Often attains the size of *Bambos argentea*, but leaves are still more blue on the under side and smaller and more delicate. They are striped and edged with white. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 449.*)

42672. *BAMBOS AUREO-STRIATA* Regel. Poaceæ. **Bamboo.**

A slender, low-growing bamboo 1 to 2 feet high, with lanceolate or somewhat ovate leaves, pointed at the apex and narrowed at the base into a short petiole. (Adapted from *Munro, Monograph of the Bambusaceæ, in Transactions of the Linnean Society of London, vol. 26, p. 116.*)

42673. *BAMBOS SENANENSIS* Franch. and Savat. Poaceæ. **Bamboo.**

A Japanese bamboo, 10 or more feet high, with rather large, broad leaves and sheaths of deep-green hue. (Adapted from *Satow, Cultivation of Bamboos in Japan, p. 65, 1899.*)

42674 and 42675. *DIOSPYROS KAKI* L. f. Diospyraceæ. **Kaki.**

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

42674. "No. 72. *Kuharu*. Sweet. Kumamoto Province."

42675. "No. 73. *Gauzan*. Sweet. Kumamoto Province."

42676. *HEDYSARUM BOREALE* Nutt. Fabaceæ.

From Saskatoon, Saskatchewan, Canada. Presented by Mr. W. E. Lake, University of Saskatchewan. Received May 1, 1916.

A perennial leguminous herb with compound leaves and showy racemes of many magenta to white flowers. Native of Newfoundland and northern New England to Alaska.

"The possibility of crossing this with *H. coronarium* is suggested, in view of the great forage value but tender character of the Mediterranean species." (*Fairchild.*)

For previous introduction, see S. P. I. No. 41555.

42677. *LATHYRUS PRATENSIS* L. Fabaceæ. **Yellow vetchling.**

From Dublin, Ireland. Presented by Sir F. W. Moore, director, Royal Botanic Garden, Glasnevin. Received May 2, 1916.

A low straggling perennial, having leaves of two bright green leaflets and four to nine flowered peduncles of yellow flowers. Adventive in fields and waste places from New Brunswick to New York and Ontario; native of Europe and Asia.

For previous introduction, see S. P. I. No. 32193.

42678. *OSTERDAMIA MATRELLA* (L.) Kuntze. Poaceæ. **Grass.**
(*Zoysia pungens* Willd.)

From Taihoku, Formosa. Plants presented by Mr. M. Takata, Department of Productive Industries. Received May 6, 1916.

Grass from the Far East, often known as *Zoysia pungens*. Seems to be succeeding in Florida as a lawn grass.

For previous introduction, see S. P. I. No. 42389.

42679 to 42681.

From Kieff, Russia. Procured through Messrs. St. Przedpelski and T. Antoniewicz. Received May 3, 1916.

42679. *AMMODENDRON CONOLLYI* Bunge. Fabaceæ.

A hardy evergreen, silky leaved shrub from Siberia.

For previous introduction, see S. P. I. No. 31330.

42680. *ELAEAGNUS ANGUSTIFOLIA* L. Elæagnaceæ.

Oleaster.

Small European shrub with silvery foliage.

For previous introduction, see S. P. I. No. 40214.

42681. *LARIX SIBIRICA* Ledeb. Pinaceæ.

Larch.

A Siberian larch, closely related to European larch. Perennial tree, to 90 feet high, with ascending branches. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 886.*)

42682. *ARTEMISIA CINA* Berg. Asteraceæ.

Wormseed.

From Petrograd, Russia. Procured through Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received May 4, 1916.

The plant is a low and straggling undershrub, with erect branches, abounding in the deserts of Turkestan, where all the drug *santonica* is collected in July and August by native tribes. It belongs to a perplexing group of species of this difficult genus, variously regarded by different botanists as distinct species or as varieties of the polymorphous species, *Artemisia maritima* L. The drug is composed of the dried unexpanded flower heads, and forms a yellowish green (at length greenish brown) somewhat glossy, mobile mass, having a strong and peculiar, somewhat camphoraceous odor and an aromatic and bitter taste; it is used as an anthelmintic especially for roundworms.

42683 to 42698.

From Paris, France. Plants purchased from Vilmorin-Andrieux Company. Received May 6, 1916. Descriptions adapted largely from Vilmorin, *Catalogue des Plantes*.

42683. *ACTINIDIA CALLOSA HENRYI* Maxim. Dilleniaceæ.

A climbing plant introduced from central China by Wilson. Leaves persistent, coriaceous, lanceolate, finely dentate, 15 cm. long. They are bronze red, passing into a metallic green and in autumn take on a beautiful reddish color. This plant is entirely distinct from its relatives and is remarkable for the size of its leaves. Found by Wilson and Henry in western Hupeh and Szechwan as a climber reaching a height of 7 meters, with fragrant white flowers and greenish ovoid or elongated fruit.

For previous introduction, see S. P. I. No. 34529.

42684. *AMPELOPSIS LEOIDES* (Maxim.) Planch. Vitaceæ.

An Asiatic species, introduced by Wilson, very distinct and remarkable because of its pinnate leaves, composed of five very long leaflets,

42683 to 42698—Continued.

pointed and shining. This plant is very vigorous and may attain several meters in height; it will cover walls and trellises well. It is a southern Japanese species allied to *Ampelopsis megalophylla*.

42685. *BUDDLEIA NIVEA YUNNANENSIS* (Dop.) Rehd. and Wils. Loganiaceæ.

Of the same group as *Buddleia variabilis*. Branches and lower sides of the leaves whitish. It is remarkable for its very beautiful, delicate mauve flowers, which have a very pleasant perfume and are arranged in a large lengthened spike. Flowers from July to October. Height, 1½ to 3 meters. Wilson says this variety is much more widely distributed than the type and is readily distinguished by its usually solitary terminal panicle and much larger flowers, attaining 5 mm. in diameter; the leaves are usually pubescent above and vary in size and are sometimes nearly entire, coarsely serrate, or sinuately toothed. From western Szechwan.

42686. *CLEMATIS ARMANDI* Franch. Ranunculaceæ. *Clematis*.

A new climbing Chinese species, exceptional in its strongly persistent, coriaceous, trifoliolate, dark shining blue-green leaves. Flowers pure white, 5 cm. across, in many-flowered axillary panicles. Flowers in April. Climbs to a height of 5 m. or more. Collected by Wilson and Henry in western Hupeh and Szechwan. Called *Wei ling hsien* by the Chinese in Hupeh.

42687. *CLEMATIS MONTANA WILSONII* Sprague. Ranunculaceæ.

Clematis.

A white-flowered climbing variety, recently introduced from Hupeh, Szechwan, and Yunnan by Wilson. Flowers very abundant, fasciculate, sometimes a little yellowish or rosy on the outside, produced in June and July with generally a second flowering in the autumn. This plant is very superior to its relatives.

42688. *CLEMATIS VEDRARIENSIS* Hort. Ranunculaceæ. *Clematis*.

Obtained at Verrieres by crossing *Clematis chrysocoma* and *C. montana rubens*. This very beautiful hybrid is more vigorous and more branching than the latter. It has preserved the beautiful rose color of the latter, but is a trifle paler. The flowers are also much larger and measure up to 7 cm. in diameter. Flowers in May and June. Height, 5 to 6 meters. The plant is of great value for decorating arbors, trellises, etc.

42689. *PYRACANTHA CRENULATA YUNNANENSIS* Vilm. Malaceæ.

A new variety from seed received from China by Mr. Maurice L. Vilmorin, differing from the type in its greater vigor, its longer spines, and its less dentate leaves. The fruits of a brighter coral red are smaller but more abundant, and hang on the shrub until January. It attains a height of 1 to 3 meters.

42690. *COTONEASTER NAN-SHAN* Hort. Malaceæ.

Introduced from China by Mr. Maurice L. Vilmorin. This new species is well characterized by its stiff branches and small foliage. Flowers white, fruits very large, bright red, ripening in October. Serves admirably for the decoration of rock slopes and rockeries. Height, 15 to 20 cm.

42683 to 42698—Continued.

42691. *DEUTZIA LONGIFOLIA VEITCHII* (Veitch) Rehder. Hydrangeaceæ.

Introduced recently from Yunnan, this new *Deutzia* is without doubt the one whose flowers are the largest and the most brilliantly colored. They are of a beautiful rose, with deep lilac coloring inside and out, arranged in numerous small clusters along the branches. They bloom in May. The plant is very vigorous, hardy, flowers very young; is easily forced. It is said to be one of the most interesting novelties introduced from China recently. Received a certificate of merit from the National Society of Horticulture of France.

42692. *LONICERA SIMILIS DELAVAYI* (Franch.) Rehder. Caprifoliaceæ.
Honeysuckle.

A very vigorous new honeysuckle from western China, with long climbing branches, and lengthened, very velvety leaves. The young branches are covered their whole length with odorous flowers, at first white, then yellow, arranged in pairs, and continuing to appear from June until frost, with an abundant flowering in autumn.

42693. *PAULOWNIA DUCLOUXII* Dode. Scrophulariaceæ.

A recently introduced tree from Yunnan, China, differing from the common *Paulownia* in its white flowers, being slightly rosy and without spots. It flowers at the end of winter before the leaves appear.

42694. *POTENTILLA FRUTICOSA VILMORINIANA* Komarow. Rosaceæ.

Introduced from China by Mr. Maurice L. Vilmorin, this new *Potentilla* forms a tufted shrub, very erect, 1 meter in height, with silky, very silvery foliage, and is covered during the whole season with pale sulphur-yellow flowers, larger than those of the species. Very suitable for massing in a shrubby border.

42695. *RODGERSIA AESCULIFOLIA* Batal. Saxifragaceæ.

A vigorous plant newly introduced from China, with large rhizomes and slender petioles supporting six large, umbellate, oval leaves, heavily veined, and of beautiful dark green, resembling those of the chestnut. Flowers white, in a long panicle, 75 cm. long, appearing in June. Flourishes in cool, half-shaded, peaty soils.

42696. *SYRINGA GIRALDII* Sprenger. Oleaceæ. Lilac.

Originally from the north of China, this lilac, which is still little known, is chiefly remarkable for its early flowering, which takes place in Paris at the beginning of April. The beautiful flowers are white, slightly marked with lilac, in loose thyrses, and as odorous as those of the common lilac. It reaches a height of 3 to 4 meters.

42697. *VIBURNUM CARLESII* Hemsl. Caprifoliaceæ.

A Korean tree recently introduced and little known, reaching a height of about 1 meter; of open habit, with opposite subsessile, rounded pubescent, deciduous leaves, and very odorous white flowers, flushed with rose in terminal umbels, appearing in May. Flourishes in cool, semishady places with little lime; forces very easily; recommended for border for mass plantings of rhododendrons and azalea.

42683 to 42698—Continued.

42698. *VIBURNUM DAVIDI* Franch. Caprifoliaceæ.

Introduced from China through the efforts of Mr. Maurice L. Vilmorin, this new viburnum is one of the most distinct and most remarkable of the genus. It is a low plant, entirely hardy, with large persistent, shining leaves resembling those of a rhododendron, the shoots of the year terminating in an umbel of white flowers, appearing in April. These flowers are succeeded by steel-blue fruits, ripening in autumn. It attains a height of 25 to 50 cm., and flourishes in shady, peaty soil. Received a certificate of merit from the National Society of Horticulture of France in 1913.

42699 to 42706. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

From Donga, Northern Nigeria. Presented by Mr. C. L. Whitman, Sudan United Mission, London.

"Belonging to the *Shallu* group."

42699. Straw-colored glumes, light red seed.

42700. Reddish brown glumes, medium red seed.

42701. Black glumes, light red seed.

42702. Straw-colored to brown glumes, yellow-pink seed.

42703. Dark red glumes, light red seed.

42704. Straw-colored to brown glumes, light-red seed.

42705. Light straw-colored glumes, white seed.

42706. Black glumes, white seed.

42707. *ATTALEA COHUNE* Mart. Phœnicaceæ. Cohune palm.

From Ceiba, Honduras. Presented by Mr. F. J. Dyer, American consul. Received May 11, 1916.

"It is known as the *Cohune* or *Monaco* palm, these names being variously applied to different stages of its growth. For a series of years it remains acaulescent and barren, its huge leaves rising nearly erect from the ground. Even after the trunk has reached a height of 10 or 15 feet or more, and has long been in bearing, it usually remains covered to the ground with the persistent bases of the sheathing petioles. Finally these are gradually dropped, and the tree shows a clean cylindrical trunk of 30 to 50 feet or more. The blade of the leaf is 15 to 20 feet long, vertical in position, and describing a most graceful curve, its numerous divisions entirely distinct (an inch or more broad and an inch or two apart) and conduplicate at the base. The leaves are used for thatching, but are much inferior to the less divided and flatter leaves of the *Manicaria*. The fruiting spadix is loaded with five to eight hundred or more nuts, which are elliptic-ovate and 2½ inches long, not including the broadly conical beak. The thick bony endocarp incloses usually a single seed, sometimes two or rarely three. (*Asa Gray, Proceedings of the American Academy of Arts and Sciences, vol. 21, pp. 464-465.*)

"The tree producing these nuts is very plentiful in this locality and the yield is quite heavy. I believe that a large business can be developed in extracting oil." (*Dyer.*)

42708 to 42715.

Received from Mr. W. S. Bogdan, in charge of the agricultural experiment station at Krasny Koot, Samara Government, southeast Russia.

"The climate in the lower Volga region, where Krasny Koot is situated, is decidedly semiarid, with long, hot summers and dry, cold winters, and settlers have suffered much from failure of crops on account of introduced seed not being suitable to the locality. Mr. Bogdan has experimented primarily with native species of forage plants and has developed some very promising varieties suitable to local conditions. In certain of our semiarid Western States his selections may prove to be successful." (*F. N. Meyer.*)

42708 to 42713. AGROPYRON CRISTATUM (L.) Beauv. Poaceæ.

Wheat-grass.

42708 to 42710. Received as *Agropyron desertorum*.

42711 to 42713. [No notes.]

42714 and 42715. MEDICAGO FALCATA L. Fabaceæ.

Alfalfa.

A species closely allied to *Medicago sativa*, common alfalfa; but possessing sickle-shaped pods.

42716. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Tsama melon.

From Johannesburg, Union of South Africa. Procured from Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received May 9, 1916.

The famous forage melon of the Kalahari Desert, which furnishes forage for cattle on the sandy plains, flourishing under temperatures of 110° F. on almost pure sand with very low rainfall. Of no value for table use, but it may be useful in melon breeding.

For previous introduction, see S. P. I. No. 41164.

42717 to 42720.

From Colombia. Presented by Mr. H. M. Curran. Received April 15, 1916.

42717. ARRABIDAEA sp. Bignoniaceæ.

"An ornamental vine, on the Magdalena River, above Calamar." (*Curran.*)

A bignoniaceous ornamental climbing shrub, native of South America, having small flowers arranged in large terminal panicles. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 93.*)

42718. MAXIMILIANEA sp. Cochlospermaceæ.

(*Cochlospermum* sp.)

A small tree or shrub having palmately lobed alternate leaves, furnished with long stalks and large yellow flowers in terminal panicles that wither before the leaves make their appearance. The capsular fruit when ripe is in form and size like a pear and opens with three or five valves. The seeds are small, very numerous, and covered with a cottony down. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 305.*)

42719. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. Algaroba. (*P. juliflora* DC.)

See S. P. I. No. 42643 for previous introduction and description.

42717 to 42720—Continued.

42720. TOLUIFERA BALSAMUM L. Fabaceæ. Toulou.
(*Myroxylon toluiferum* H. B. K.)

"A small tree from the Magdalena River, above Calamar." (Curran.)

A tropical American tree or shrub of the bean family having unequally pinnate leaves marked with pellucid dots. The flowers are white or rose colored, in axillary or terminal clusters, with a bell-shaped, 5-toothed calyx and a papilionaceous corolla. The fruit is indehiscent, with one or two seeds, and borne on a stalk, the upper part of which is winged. The seeds have a myrrhlike odor. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 772.*)

For previous introduction, see S. P. I. No. 42272.

42721. FRAGARIA VESCA L. Rosaceæ. Strawberry.

From Ambato, Ecuador. Presented by Mr. Abelardo Pachano, Escuela de Agronomia. Received May 10, 1916.

"This plant is a native of the Andes. Closely related to the *frutilla*, and is known under the name *fresa*. The fruit is much smaller [than *frutilla*] and rather acid in taste, but the plant is highly ornamental and well adapted for garden borders. I have been unable to detect whether these seeds belong to the *F. vesca* or to the *F. reniforme*, as the plants were in very bad condition when they were brought to me." (Pachano.)

42722. NORMANBYA MERRILLII Beccari. Phœnicaceæ. Palm.

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received May 12, 1916.

"*Bonga de China* or *Bonga de Jolo*. A medium-sized palm with graceful, somewhat curved, pinnate leaves, somewhat resembling the common betel-nut palm, but not so tall. The leaves are rather glaucous, and the pretty crimson fruits are borne just below the leaves in medium-sized bunches, the individual fruits being less than 1 inch long. One of our most ornamental medium-sized palms, which thrives remarkably well in Manila." (Merrill.)

42723 to 42729.

From San Martin de Loba, Bolivar, Colombia. Presented by Mr. H. M. Curran. Received April 29, 1916. Quoted notes by Mr. Curran.

42723. ANNONA sp. Annonaceæ. Guanavito.

"*Guanavito*. A low shrub with glossy ornamental leaves and the habits of *Cratægus*. Fruit orange-red, specimens obtained about 2 inches in diameter, flesh rather dry as compared with cultivated varieties. Would make a good hedge. Low lands, in dense thickets."

42724. COCCOLOBIS sp. Polygonaceæ.

"Small, round-headed ornamental tree; fruit said to be edible."

42725. BRITOA ACIDA (Mart.) Berg. Myrtaceæ. Guayabo.

"Large-fruited guava; fruit soft, yellow, few seeds, very acid and juicy."

For previous introduction, see S. P. I. No. 28061.

42726. BIXA SPHAEROCARPA Triana. Bixaceæ. Achuete.

The fruits of this species are spherical instead of cordiform, as are those of *Bixa orellana*.

42723 to 42729—Continued.

42727. HYMENAEA COURBARIL L. Cæsalpiniaceæ. Courbaril.
 "Large ornamental timber tree. Fruit edible."

42728. SAPINDUS SAPONARIA L. Sapindaceæ. Soapberry.
 "A small tree with a heavy crop of fruit, on sandy hills near the river."

For previous introduction, see S. P. I. No. 42038.

42729. STIGMAPHYLLON sp. Malpighiaceæ.
 "*Bejuco de sapo*. Ornamental climber, shiny clusters of purple-tinted fruits in great profusion. Grows over forest trees."

42730. PINUS BUNGEANA Zucc. Pinaceæ. White-barked pine.

From Peking, China. Presented by Mr. John V. A. MacMurray, secretary, American Legation, at the request of Mr. F. N. Meyer, of the Bureau of Plant Industry. Received May 6, 1916.

"A very beautiful pine with silvery-white bark; a slow grower, but extremely striking when old. The bark peels off in flakes, like the sycamore, but the foliage is not so dense as that of most other pines." (*F. N. Meyer*.)

For previous introduction, see S. P. I. No. 41954.

42731 to 42733.

From Issylkul, Akmolinsk Government, Siberia. Presented by Mr. I. M. Karzin. Received May 1, 1916.

42731. TRITICUM DURUM Desf. Poaceæ. Durum wheat.
 Velvety.

42732. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.
 Subvariety *violaceum*. "New race of naked barley, found by me in midst of varieties obtained from China, which were being tested in the experimental field at Deliankakh; and called by Mr. R. Regel, of the Bureau of Practical Botany at Petrograd, *Hordeum karzinianum*." (*Karzin*.)

42733. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.
 "Wild lucerne from the steppes of Semiroins Province." (*Karzin*.)
 Received as *M. caerulea* Lessing.

42734 to 42739.

From Petrograd, Russia. Presented by Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received May 1, 1916.

42734. AVENA BARBATA Brot. Poaceæ. Oats.
 An annual grass, with many-nerved glumes, two or three florets to the spikelet, occurring throughout the Spanish Peninsula. (Adapted from *Lázaro e Ibiza, Compendia de la Flora Española, 2d ed., vol. 1, p. 681*.)

42735. AQUILEGIA BREVI-STYLA Hook. Ranunculaceæ. Columbine.
 A perennial herb with small, twice-ternate leaves and small flowers 12 to 18 mm. long. The blade of the petals is yellowish, shorter than the blue sepals and longer than the blue spurs. An alpine plant of the central Rocky Mountains. (Adapted from *Coulter and Nelson, New Manual of Rocky Mountain Botany, p. 192, 1909*.)

42734 to 42739—Continued.

42736. *AQUILEGIA LACTIFLORA* Kar. and Kir. Ranunculaceæ. Columbine.

A hardy perennial columbine from the Altai Mountains, Siberia; usually about 1½ feet high, with the sepals nearly white or tinged with blue. Desirable species, not much planted. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 340.*)

42737. *AQUILEGIA VIRIDIFLORA* Pall. Ranunculaceæ. Columbine.

A greenish flowered columbine from eastern Siberia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 340.*)

42738. *FRAGARIA MOSCHATA* Duchesne. Rosaceæ. Hautbois strawberry.

A plant similar to the alpine strawberries, but taller, usually diœcious and more pubescent; the hull strongly deflexed from the fruit; pale red berry. It is cultivated in Europe. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 605.*)

42739. *RIBES GRAVEOLENS* Bunge. Grossulariaceæ.

This species is said by Janczewski to be merely a pubescent-leaved variety of *R. fragrans*. (For technical description, see *De Janczewski, Monographie des Groseilliers, Mémoires de la Société de Physique et Historie Naturelle de Geneve, vol. 35, p. 343, 1905.*)

42740. *CACARA EROSA* (L.) Kuntze. Fabaceæ. Yam-bean.
(*Pachyrhizus angulatus* Rich.)

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received April 26, 1916.

Received as two varieties, mixed by mistake.

42741. *INDIGOFERA TINCTORIA* L. Fabaceæ. Indigo.

From Paris, France. Purchased from Vilmorin-Andrieux Company. Received April 28, 1916.

The common indigo of commerce.

42742 to 42748.

From Chefoo, China. Presented by Mr. A. Sugden, Commissioner of Chinese Maritime Customs, through Mr. John F. Jewell, American consul, Chefoo. Received May 11, 1916. Cuttings of the following:

42742 to 42747. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

42742. No. 1. Autumn peach. **42745.** No. 4. Mountain peach.

42743. No. 2. Green peach. **42746.** No. 5. Late green mountain peach.

42744. No. 3. Green peach. **42747.** No. 6. A native Chefoo peach.

42748. *PRUNUS* sp. Amygdalaceæ. Prune.

"No. 7. Remarkable Chinese variety. Very productive in its natural state, round, rough, clear firm flesh, *Mirabelle* color, sweet, red juice; ripe in August; very good for tarts, jams, jellies, etc." (*Sugden.*)

42749 to 42758.

From Nancy, France. Presented by Prof. Edmond Gain, director, Botanic Garden. Received April 17, 1916.

42749. *RIBES LOBBII* A. Gray. Grossulariaceæ.

It should be particularly looked for in California, north of San Francisco Bay, and along the coast to British Columbia. The species may be distinguished by its dark purplish red calyx half an inch in length, not counting the ovary, nearly white petals half the length of the stamens, very glandular but unarmed ovary, and especially by the short, oval, and very blunt anthers which are dotted by a few warty glands on the back. These short and blunt anthers are shared with some species but not with others. (Adapted from A. Gray, *American Naturalist*, vol. 10, p. 274.)

42750 to 42757. *RUBUS* spp. Rosaceæ.

Bramble.

42750. *RUBUS DISCOLOR* Weihe and Nees.

A bramble from the western Himalayas at altitudes of 3,000 to 7,000 feet and westward through Afghanistan and Europe to the Atlantic. Flowers pink, about three-fourths of an inch in diameter; fruits small, globose, black.

42751. *RUBUS FASTIGIATUS* Weihe and Nees.

A robust, nearly erect plant with ternate leaves and simple panicles of large, white flowers. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire*, p. 41, 1881.)

42752. *RUBUS GODRONII* Lec. and Lam.

Red flowering *Rubus* with leaves quite tomentose on the under side. Closely allied to *Rubus diversifolius* and *R. callianthus*. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire*, p. 41, 1881.)

42753. *RUBUS HIRTUS* Waldst. and Kit.

"A prostrate, sometimes climbing shrub, with the stems covered with stalked glands and hairs, and furnished with straight, bristlelike prickles. Leaflets usually three, occasionally five, on vigorous stems, broadly oval, rounded at the base, shortly pointed, coarsely toothed, dark green and bristly above, very hairy on the veins beneath. Flowers white, produced in large panicles, the main stalk furnished with violet-colored or purple gland-tipped hairs and bristles. Fruit globular; the sepals erect. A common species in Great Britain, very characteristic of the group with glandular hairs and bristles on the inflorescence." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 452.)

42754. *RUBUS LEJEUNEI* Weihe and Nees.

A bramble with procumbent stems and large flowers with red petals and stamens. In thickets at Malmedy. (Adapted from *Bluff and Fingerhuth, Flora Germanica*, vol. 1, p. 633, 1825.)

42755. *RUBUS NITIDUS* Weihe and Nees.

Suberect species with large rose-colored flowers, closely allied to *Rubus cordifolius*, but differing in the colored petals. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire*, p. 342, 1881.)

42749 to 42758—Continued.

42756. RUBUS RUDIS Weihe and Nees.

"A shrub with subprostrate or low arching stems of dark purplish color, armed with short decurved prickles, and furnished with numerous stalked glands. Leaves large among brambles, and composed of three or five leaflets. Leaflets whitish downy beneath, becoming greenish, the terminal one oval or obovate, with a slenderly tapered point, doubly toothed. Flowers pink, borne on a loose, wide panicle, the stalks downy and thickly furnished with shortly stalked glands. Fruit small. Common in the south of England and wild in the neighborhood of Kew. Distinguished by its thickly glanded stems and inflorescence. Nearly allied to and sometimes confused with it, but more widely spread northwards, is *Rubus echinatus*." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 453.)

42757. RUBUS WAHLBERGII Arrhen.

A species said to be midway between *Rubus lindenbergii* and *R. caesius*. Native in parts of Germany. (For full technical description, see *Ascherson und Graebner, Synopsis der Mittel Europäischen Flora*, vol. 6, pt. 1, p. 646.)

42758. AVENA LUDOVICIANA Durieu. Poaceæ.

Oats.

A form apparently closely allied to *Avena sativa*.

42759 and 42760.

From Rochester, N. Y. Presented by Mr. John Dunbar. Received May 17, 1916, seedlings of the following:

42759. CORNUS PAUCINERVIS Hance. Cornaceæ.

Cornel.

Shrub 1 to 3 meters tall, white flowers, black fruit. From western Hupeh and western Szechwan. (Adapted from *Plantae Wilsonianae*, vol. 2, pt. 3, p. 577.)

42760. MALUS GLAUDESCENS Rehder. Malaceæ.

Crab apple.

"The earliest of the American crab apples to flower, *Malus glaucescens*, is a native of New York and of Ontario and is a treelike shrub or small tree distinguished from the other northern species by the pale lower surface of the leaves and the hairy covering on the outer surface of the calyx of the flower." (Arnold *Arboretum, Bulletin of Information*, new ser., vol. 1, 1915.)

42761 to 42764. CICER ARIETINUM L. Fabaceæ.

Chick-pea.

From Barcelona, Spain. Procured through Mr. Carl Bailey Hurst, American consul general. Received April 25, 1916.

42761. "Variety *Andaluz*, superior."

42762. "Variety *Corriente*, 1^a, Andaluz."

42763. "Variety *Andaluz*, extra."

42764. The packages were broken when received and the following varieties were mixed: Type Alfarnate-superior; type Alfarnate-extra; variety Corriente-Andaluz. These are evidently place names only.

42765. ENGELHARDTIA ACERIFLORA (Reinw.) Blume. Juglandaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky.
Received May 16, 1916.

A very tall tree, with compound leaves somewhat like those of the walnut, and inconspicuous flowers disposed in drooping, spicate panicles. These are succeeded by little fruits which are about the size of a pea, each seated on the base of a three-lobed, beautifully veined and colored bract. These are often more than a foot long and hang very gracefully among the foliage. (Adapted from *Lindley, Treasury of Botany, pt. 1, p. 451.*)

**42766. RUBUS ULMIFOLIUS BELLIDIFLORUS (Koch) Focke. Rosaceæ.
Bramble.**

From Amsterdam, Netherlands. Presented by the director, Botanic Garden,
University of Amsterdam. Received May 15, 1916.

A very handsome, double-flowered pink bramble, commonly used for planting in England. Each flower produces an extraordinary number of narrow petals, making a gay display in July and August. This bramble is highly recommended for half-shady woodlands.

42767. PAVETTA ZIMMERMANNIANA Valet. Rubiaceæ.

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger,
director, Botanic Gardens. Received May 12, 1916.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers.

"The remarkable researches of Zimmerman and Faber (detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914) make this species of unusual interest. Faber has proved that the leaves of this and of several other species of *Pavetta*, *Psychotria*, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum*. The bacteria of this genus almost invariably inhabit the micropyle of the young seed, and, when the seed germinates, grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply imbedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the facts that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these tropical trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of

the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of *Pavetta* or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semi-Tropics or wherever else the climate will permit of their cultivation." (*Fairchild.*)

42768 to 42789.

From Madrid, Spain. Presented by the curator, Botanic Gardens. Received May 8, 1916.

42768. *AVENA STERILIS* L. Poaceæ. Oats.

So-called animated oats, closely resembling *Avena fatua*, wild oats, but with larger spikelets. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 435.*)

42769 to 42775. *ASPARAGUS* spp. Convallariaceæ. Asparagus.

42769. *ASPARAGUS CAPENSIS* L.

A shrubby plant with large, spreading prickles; ascending, rather flexuous, woody branches; and branchlets in dense clusters, one-fourth to 1 inch long. Flowers produced only from tips of the branches, and usually solitary, about one-eighth of an inch long. (Adapted from *Baker in Flora Capensis, vol. 6, p. 263.*)

42770. *ASPARAGUS OFFICINALIS* L.

42771. *ASPARAGUS MARITIMUS* Mill.

An herbaceous perennial, native to the coasts of Europe and northern Africa. The erect, much-branched stems are round; the subulate, angled cladodes are in fascicles of six to eight; and the small flowers, one-half the length of the pedicel, produce globose fruits. (Adapted from *Boissier, Flora Orientalis, vol. 5, p. 336.*)

42772. *ASPARAGUS OFFICINALIS* L.

42773. *ASPARAGUS SCANDENS* Thunb.

A slender, climbing vine up to 6 feet high, with freely branching green stems, the branches with twigs and cladodes in one plane. This ornamental asparagus thrives more in an intermediate house, and is a good decorative plant when grown in strings for table decorations. It is also good as a pot plant. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 408.*)

42774. *ASPARAGUS STIPULARIS* Forsk.

An herbaceous perennial, native of the Mediterranean region. It has erect stems with angle-grooved branches, cladodia 2 inches long, and small flowers followed by berries the size of a pea. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 230.*)

42775. *ASPARAGUS TRICHOPHYLLUS* Bunge.

A hardy, herbaceous perennial from northern Asia, twining to a height of 6 feet with cladodes like an ordinary asparagus.

42776. *CARYOPTERIS MONGHOLICA* Bunge. Verbenaceæ.

An ornamental, woody plant grown for its lavender-blue flowers, profusely produced in fall. The flowers are in densely clustered, axillary cymes and in this species less numerous but larger than in the commonly known *C. incana* (*C. mastacanthus*). (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 679.*)

42768 to 42789—Continued.

42777. GLEDITSIA CASPICA Desf. Cæsalpiniaceæ. Honey locust.

A very spiny tree, 30 to 40 feet high, the spines slightly flattened, 6 inches or more long. The flowers are green, almost sessile, in dense, downy racemes 2 to 4 inches long. Fruit scimitar shaped, about 8 inches long and an inch wide. This species is well worth growing because of its greater sturdiness than the ordinary honey locust and because of the size and number of its spines. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 595.*)

For previous introduction, see S. P. I. No. 42288.

42778. PINUS sp. Pinaceæ. Pine.

Received as *Pinus paroliniana* Webb [= *P. pyrenaica* Lapeyr.]; the seeds do not agree with our material of this species.

42779. PYRUS CANESCENS Spach. Malaceæ. Pear.

A probable hybrid between *Pyrus nivalis* and *P. salicifolia*, between which species it is almost intermediate. This tree is very handsome in spring with its very white young leaves, which become shiny dark green above when mature. The fruit is pale green, with much shorter stalk than that of *P. nivalis*. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

42780. RIBES FLAVUM Berland. Grossulariaceæ. Currant.

Janczewski (Monographie des Grosseilliers, Mémoires de la Société de Physique et Historie Naturelle de Geneve, vol. 35, page 506, 1907) refers to this species as a variety of *Ribes aureum*, the common golden, or buffalo, currant of the central and western United States.

42781. RIBES MULTIFLORUM Kit. Grossulariaceæ. Currant.

This most striking of the red-currant group has yellowish green flowers crowded on slender, pendulous racemes, stems 5 inches long. It is a very good shrub, up to 6 feet high, with perhaps stouter unarmed branches than any other currant. The fruit is roundish, red when ripe; one-third of an inch in diameter, native of southern and eastern Europe. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

42782 to 42789. RUBUS spp. Rosaceæ. Bramble.

42782. RUBUS HOFFMEISTERIANUS Kunth and Bouche.

A Himalayan species closely related to *Rubus gracilis* and *R. foliolosus*, but differing from the former in having all the leaflets suborbicular or broadly elliptic, pilose above, and the flowers in compact racemes; and from the latter in the form of the leaflets. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 72, pt. 2, p. 190.*)

42783. RUBUS INERMIS Pourr.

This species is listed by Focke as a form under *Rubus ulmifolius*, a very large-branched plant without spines and commonly with ternate leaves. Of unknown origin. (See *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 2, p. 154, 1914.*)

42784. RUBUS LEUCOSTACHYS Schleicher.

A British shrub distinguished by its round, bright pink or white petals and densely felted stems, leaves, and peduncles; the fruit is white and insipid.

42768 to 42789—Continued.

42785. RUBUS LINDLEIANUS Lees.

A plant with tall, curving shoots, strong prickles, and cymose clusters of white or pale rose-colored flowers. (Adapted from Focke, *Species Ruborum, Bibliotheca Botanica, vol. 85, pt. 1, p. 132, 1914.*)

42786. RUBUS RHAMNIFOLIUS Weihe and Nees.

This species from southern England has thick, leathery leaflets covered beneath with a felt of grayish white down and white or pale pink cup-shaped flowers borne in slender panicles.

42787. RUBUS SANCTUS Schreber.

A very variable species between *Rubus rhamnifolius* and *R. gratus*, with strong, arched shoots; leaves composed of five leaflets; elongate racemes of white or pale rose-colored flowers. (Adapted from Focke, *Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 1, p. 136, 1914.*)

42788. RUBUS THYRSIFLORUS Weihe and Nees.

A European species, with nearly prostrate, rarely climbing stems; leaves divided into three or five broad, irregularly toothed leaflets; rather small white flowers and small fruit. (Adapted from Focke, *Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 2, p. 244.*)

42789. RUBUS VESTITUS Weihe and Nees.

A well-characterized, large-fruited species which has, however, in western Europe, a large number of forms, usually of local distribution. (For a complete technical description, see Ascherson and Graebner, *Synopsis der Mittel Europäischen Flora, vol. 6, pt. 1, p. 546.*)

42790. VITEX LUCENS Kirk. Verbenaceæ. Puriri.

From Avondale, Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received May 13, 1916.

"A fine tree, from 50 to 60 feet in height, often called the *New Zealand oak*, on account of the strength and durability of its timber. It is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with large holes, but these do not affect the timber, except in so far as it has sometimes to be cut to disadvantage. The holes are made by a soft-bodied grub, which develops into the puriri moth. The leaves of the *puriri* are handsome, being of a bright, glossy green, the leaflets 3 to 4 inches long. The flowers are in axillary panicles, four to eight together, pink or red, irregular in shape, and with exserted stamens. The roots of the *puriri* never penetrate deeply into the ground, but lie near the surface, so that the tree is easily blown over in a gale of wind. It is endemic in New Zealand and is restricted to the northern part of the North Island. It is easily cultivated and flowers more or less all the year round." (*Laing and Blackwell, Plants of New Zealand, p. 350.*)

"The New Zealand *puriri* is one of the most handsome trees in cultivation, and is worthy of more extensive planting. It transplants well, grows rapidly, and makes a compact tree of symmetrical bushy form, with bright glossy-green foliage. It is one of the New Zealand hardwoods used for railway sleepers, and is very durable. The berries when ripe resemble cherries, which tends to add to its beauty." (*Wright.*)

42791. ARTEMISIA CINA Berg. Asteraceæ. Wormseed.

From Tiflis, Caucasus, Russia. Presented by the director, Jardin Botanique. Received May 22, 1916.

See S. P. I. No. 42682 for previous introduction and description.

42792. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

From Beira, Mozambique, Portuguese East Africa. Seed presented by Mr. E. H. Heron, Director of Agriculture. Received May 13, 1916.

"A robust tree which has spread spontaneously in the forests of the Philippines, the island of Guam, and the East Indies. It is essentially tropical, while the cherimoya, with the smooth-fruited forms of which it has often been confused, is subtropical. Its fruit is inferior in flavor to both the cherimoya and the sugar-apple (*Annona squamosa*), from the first of which it may be distinguished by its long, narrow, glabrate leaves and from the second by its solid, compact fruit, as well as its larger leaves. From *A. glabra*, with which it is also confused, it may be distinguished by its elongate narrow outer petals and its small, dark-brown seeds. It is common in the West Indies and thrives in south Florida." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 294.*)

See S. P. I. Nos. 18736 and 39887 for previous introductions.

42793 to 42798.

From Leyden, Netherlands. Seeds presented by the director, Botanic Garden. Received May 15, 1916.

42793. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

42794. MALUS ASTRACANICA DUM.-COURS. Malaceæ. Apple.

This species is perhaps native of southern Russia and western Siberia. It resembles *Malus pumila* in most fruit characters and in the pubescence of the leaves, but is nearer to *Malus baccata* in the form, serration, and texture of the leaves and in the longer stemmed fruits and leaves.

42795. MALUS sp. Malaceæ. Apple.

Received as *Malus orthocarpa* Lavalley, which appears never to have been published.

42796. PYRUS AMYGDALIFORMIS Vill. Malaceæ. Pear.

A large, rounded shrub or small tree, occasionally 20 feet high. Leaves very variable in shape and size; white flowers 1 inch across appearing in April; fruit orange shaped, about an inch wide, yellowish brown, produced on a short thick stalk. Not especially valuable for the garden except for its picturesqueness when old. Native of the Mediterranean region. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles, vol. 2, p. 273.*)

42797. PYRUS NIVALIS Jacq. Malaceæ. Pear.

A small sturdy tree with woolly, white young shoots and young leaves; flowers pure white, 1½ inches across, produced in April in conspicuous clusters. Fruit 1½ inches or more wide, rounded, yellowish green. This eastern European tree is very beautiful early in the season because of its pure white leaves and numerous flowers. In France the trees are cultivated for their fruits, which are eaten when bletted. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

42793 to 42798—Continued.

42798. *PYRUS SINAI* Desf. Malaceæ. Pear.
(*P. sinaica* Dum.-Cours.)

This pear, which is related to *Pyrus amygdaliformis*, is supposed to have originated in Asia Minor or the islands of the Grecian Archipelago. Its leaves in spring are white with down, becoming smooth and shiny later. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 273.)

42799. *ALPINIA EXALTATA* (L. f.) Roem. and Schult. Zinziberaceæ.
(*Renealmia exaltata* L. f.)

Received through Mr. W. E. Safford, of the Bureau of Plant Industry, May 8, 1916.

"A plant belonging to the ginger family, widely spread in tropical America. In Porto Rico it is commonly known as *Bihao*, or *Vijao grande*. The broad thin membranaceous leaves, usually acuminate at the apex and tapering at the base, are somewhat like those of a canna. The inflorescence is a long simple raceme, with magenta-colored or reddish purple peduncle and bracts and yellow flowers. The fleshy, obovoid, or oval fruit usually borne on a recurved pedicel (when mature) is black at length and yields a dye of some importance." (*Safford*.)

- 42800 and 42801. *ARACHIS HYPOGAEA* L. Fabaceæ. Peanut.

From Tsingtau, China. Presented by Mr. Willys R. Peck, American consul. Received May 18, 1916.

42800. "The large ordinary peanut of trade, grown in Shantung Province. This variety was imported into Shantung within comparatively recent years. The writer recollects that some twenty years ago they were a rarity in the province." (*Peck*.)

42801. "A small wrinkled sort that, I am informed by an American resident from the Southern States, is found in the southern part of the United States and is known colloquially as *goober*. This variety is indigenous, but has, in its turn, become comparatively rare. None were obtainable in this consular district, these seeds having come from Tsinanfu, 250 miles away." (*Peck*.)

42802. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

From Chungking, Szechwan Province, China. Tubers presented by Mr. E. Widler. Received May 19, 1916.

"The taro is cultivated in Szechwan in summer wherever a good water supply is available. Each plant produces 7 to 15 egg-shaped tubers; they are cooked whole or sliced and fried in sauce of various kinds. The plant has been known since before the Han period." (*Widler*.)

- 42803 to 42805.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received May 23, 1916.

42803 to 42805—Continued.

42803 and 42804. CUCURBITA PEPO L. Cucurbitaceæ. Pumpkin.

"Seeds of the *Ayote de pelleja* (skin pumpkin) entirely without shell, but solid and good. It is for the temperate and cold highlands of tropical countries only; does not produce fruits in Philadelphia or Florida." (Wercklé.)

42805. MEIBOMIA sp. Fabaceæ.

42806. GOSSYPIUM sp. Malvaceæ. Caravonica cotton.

From the city of Guatemala, Guatemala. Presented by Mr. S. Billow. Received May 10, 1916.

"During the year 1912 I procured some seed grown from plants near the Pacific Ocean, at an altitude of about 300 feet. When I returned to Guatemala after my last visit to the States, I arranged to put in an experimental plat and planted some of this seed in October, 1913, but owing to many plants not showing the characteristics claimed for Caravonica cotton I exterminated them, only saving those which appeared to possess the true strain. These plants in about eight months gave the first crop, from which I obtained a very good quality of seed. The plants were in a private garden near the city, the altitude being 5,000 feet. I planted about an acre in July, 1915, and last month the plants commenced to have matured bolls, some of the plants having as many as 250 on them. During the time between planting and fruiting we had some very dry as well as cool weather, the thermometer falling to 45° F., and while it apparently retarded the growing of the plants it did not seem to have any effect otherwise." (Billow.)

42807. PROSOPIS VIDALIANA Naves. Mimosaceæ. Aroma.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received May 22, 1916.

"Considerable interest and argument has occasionally arisen with regard to the *aroma*, since many people casually acquainted with the Hawaiian *prosopis* species have insisted that our *aroma* is identical, hence have called it *algaroba*. Mr. Merrill, of the Bureau of Science, upon his return from his recent visit to the United States, secured adequate botanical material of the *Prosopis juliflora* in Honolulu for comparison with our so-called Philippine species. Mr. Merrill maintains that inasmuch as our species has much larger leaves and leaflets and the entire absence of the sweet substance in the pods characteristic of the Hawaiian form, the sinking of the *aroma* into *P. juliflora* is a serious mistake, although practiced by many reputable botanists. Our Mr. H. J. Gallagher, who has had extensive experience both in Hawaii and here in feeding animals, is of the opinion that the *aroma* is of considerable importance as a food for animals, citing his experience in Batangas Province in the southern part of Luzon. During the 11 years we have been observing the *aroma* its spreading has been quite noticeable, but it apparently tends to follow the sandy coast regions, yet does spread slowly up over the hillsides. The objection to the *aroma* is the presence of the long sharp thorns, which are much more pronounced than on the *P. juliflora* in Hawaii. Nevertheless, in Hawaii the thorns apparently vary with individuals, being longer on some trees than on others." (Edwards.)

42808. STROBILANTHES FLACCIDIFOLIUS Nees. *Acanthaceæ*.

From Canton, China. Presented by Mr. P. R. Josselyn, American vice consul in charge. Received May 23, 1916.

"The only dye plant at all extensively grown in Szechwan to-day is *Strobilanthes flaccidifolius* (*tienhua*), which produces an indigo. In certain parts of the Chengtu Plain this is grown in quantity, and the same is true of the district of Mienchou and elsewhere, but its cultivation is on the decline. It is planted on ridges which are kept flooded between. When the plants are about 3 feet tall they are cut down and the leafy shoots placed in concrete pits full of cold water. After steeping for about five days the stems are removed, leaving a green-colored water. Slaked lime is placed in the water to precipitate the indigo. The water is allowed to drain off, and the dye is found deposited at the bottom of the pit." (*E. H. Wilson, A Naturalist in Western China, vol. 2, p. 86, 1914.*)

42809. ALBIZZIA LEBBECK (L.) Benth. *Mimosaceæ*. **Lebbeck tree.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received May 23, 1916.

"The lebbek of Egypt is a large spreading deciduous tree which grows wild in the forests of India, where it is known as the *sisir* tree. Its leaves are composed like those of the honey locust. The greenish yellow flowers are in heads of three or four together, and these are followed by strap-shaped yellowish brown pods 6 to 12 inches long and three-fourths to 1½ inches wide. The trunks of the mature trees are smooth with light-colored bark. The sapwood is white and the heartwood hard, brown mottled with darker longitudinal streaks. The wood seasons and works well and is durable. In many respects the lebbek tree is an ideal one for southern roadsides. It grows rapidly, produces a dense shade, thrives in soils which contain little moisture, and is as easily transplanted and propagated by cuttings as a willow. Large trees can be dug up, severely pruned back, and set out with very little risk of their dying. The crowns and irregular branches of the tree are unsymmetrical enough to relieve that monotony incident to long rows of such trees as the Lombardy poplar so common in Italy and Chile and in Utah, or the cypress so continually met with about north Italian cities. I have not been able to satisfy myself as to the hardiness of the lebbek tree, since such forests as are reported to have occurred in Cairo have been at long intervals. The probabilities are, however, that it will withstand slight frost, and experiments to test its hardiness are worthy of being thoroughly made. It may succeed, therefore, in southern California, Arizona, and Florida, possibly also in Texas and Louisiana." (*D. G. Fairchild, The Lebbek or Sisir Tree, Botany Cir. 23, pp. 1-4.*)

42810. FRAGARIA CHILOENSIS (L.) Duchesne. *Rosaceæ*.

Strawberry.

From Chile. Presented by Mr. L. J. Kenna, American consul general, Valparaiso, who secured them from Mr. Robert Christie, Castro, Chile. Received May 26, 1916.

"Strawberry seed from Cucao, west coast of Chiloe Island, Chile, March, 1916." (*Christie.*)

42811. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Los Angeles, Calif. Presented by Mr. Charles F. O'Brien. Received June 2, 1916.

"Cuttings from the tree on my ranch at Beverly Hills. Under the stimulus of heavy pruning last year and ample irrigation, the tree this year produced more than 300 pounds of fruit. More than 100 of these fruits weighed from 1 to 2 pounds. We found that this tree comes true to seed, apparently for the reason that there is nothing in the neighborhood with which it can cross. We have some of the young trees now fruiting, and the fruit is apparently identical. This tree originally came from Peru, and I consider this fruit superior to the Mexican variety." (*O'Brien.*)

42812. BERTHOLLETIA NOBILIS Miers. Lecythidaceæ. Brazil nut.

From Brazil. Purchased from Hills Brothers Co., New York. Received May 1, 1916.

"We have lately received a letter from our representatives in Para, from which we quote: 'The tree is grown from the ordinary nut pod, which must be planted intact with the eye uninjured, from which, we understand, only one nut germinates. There are no other seeds from which the plant can be grown. The writer has never succeeded in growing a Brazil-nut tree, although he has made many attempts.' This nut is grown on the Amazon River in South America and has become an article of commerce." (*Hills.*)

42813. MAMMEA AMERICANA L. Clusiaceæ. Mamey.

From Moimpos, Bolivar, Colombia. Seeds presented by Mr. H. M. Curran. Received June 3, 1916.

"Large tree, fruit 4 to 6 inches in diameter, irregular but rounded in form. The two seeds in each fruit separate easily. Rather thin, bright yellow flesh, rather tough, with pleasant slightly acid flavor." (*Curran.*)

For previous introduction, see S. P. I. No. 37814.

42814. NEPHELIUM LAPPACEUM L. Sapindaceæ. Rambutan.

From Buitenzorg, Java. Presented by Dr. and Mrs. A. Hagedoon. Received June 3, 1916.

"Seeds of one of the finest *kapoclasans* (hairless *rambutan*). The fruits we took them from were of exceptionally good taste, flesh sweet to the stone, and stone as free as any we saw; fruits very large, dark red." (*Hagedoon.*)

See S. P. I. No. 42384 for fuller description.

42815. SOLANUM BULLATUM Vell. Solanaceæ.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt. Received April 10, 1916.

"*Capocira branco*. Relished by cattle as well as by horses. It seems to have no poisonous effect whatever on the stock eating it." (*Hunnicutt.*)

A South American plant which may possibly be valuable as a forage plant because of its large percentage of protein. Analyses of the leaves and branches show 20 to 28 per cent of protein in the leaves and 14.06 per cent of protein in the branches. (See *Journal of Heredity*, vol. 10, p. 185.)

42816. GOSSYPIUM sp. Malvaceæ. Cotton.

From the Canal Zone. Presented by Mr. S. P. Verner, Cristobal. Received June 5, 1916.

"From Arcia, Perez Place, Colon, Panama. It is interesting because it has the habit of opening in the dry season, which all cotton here does not have." (Verner.)

"The fiber is fine and of good quality, with a length of $1\frac{1}{4}$ to $1\frac{3}{8}$ inches, and would undoubtedly find a market if produced in sufficient quantity." (O. F. Cook.)

42817. CORIARIA THYMIFOLIA Humb. and Bonpl. Coriariaceæ.

From Ambato, Ecuador. Presented by Prof. Abelardo Panchano, Ambato Agricultural School, through Mr. Frederic W. Goding, American consul general, Guayaquil. Received June 7, 1916.

"This Coriaria is known under the Quichua name *piñan*, but in the northern provinces the plant is talked about as *Shanzhi* or *Zhanzhi*. Its berries are rather poisonous if eaten in some quantity, as I had reason to verify when a boy. The bark and the roots are rich in tannin, as is the case in the *Coriaria myrtifolia* of the European shores of the Mediterranean Sea. The ink obtained from the fruit has a beautiful violet color that changes to black and, within a few hours, to reddish; it has an ancient fame of being indelible, and we believe this ink would be very good if we could, by some means, fix its color. It is said that during the colonial times a Spanish ship sunk, and it was possible to save some papers after they had been under the water because they had been written with *Shanzhi* ink. It is added that there was a king's order to write with this ink all papers of importance." (Panchano.)

42818 and 42819. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

From Donna, Tex. Presented by Mr. Eltweed Pomeroy. Received June 6, 1916.

42818. "Special bright red, crop of 1915. This blossoms very early and rather high up and may ripen fruit where the regular crop would be cut off by frost. Of course, this is only a supposition which needs proving." (Pomeroy.)

42819. "Special dark red, crop of 1915. This blossoms low down and is not very early in blossoming, but it is so protected by the branches that it may escape frost where the fruit borne higher up and more on the outside might be frosted." (Pomeroy.)

42820. BEGONIA sp. Begoniaceæ.

From Rama, Nicaragua. Presented by Mr. Carlos Berger. Received June 7, 1916.

"Seeds of a plant which has some resemblance to *Hydrastis canadensis*. The Indians use the rhizome as a violent emetic in case of snake bite, poisonings, etc., and it acts so strongly that it produces the vomiting of blood in certain doses. The leaves are healing and are used in swellings and skin eruptions. It is curious that the land turtles are crazy for the leaves of this plant, and if there are any of such turtles around, you might be sure to find them near this plant." (Berger.)

42821 to 42823.

From Nanking, China. Seed received through Mr. John H. Reisner, at the request of Rev. Joseph Bailie, University of Nanking, May 23, 1916.

42821. ACER BUEGERIANUM Miquel. Aceraceæ. Maple.

"*Yah feng.* We do not know the name of this maple. The tree attains a large size. The seeds were gathered at Ningkwofu, in Anhwei Province, China." (*Reisner.*)

42822. LIQUIDAMBAR FORMOSANA Hance. Hamamelidaceæ.

"*Feng hsiang shu.*"

Tree up to 120 feet in height, having somewhat the appearance of the sweet gum, *Liquidambar styraciflua*, but smaller, usually 3-lobed leaves.

For previous introduction, see S. P. I. No. 34583.

42823. PISTACIA CHINENSIS Bunge. Anacardiaceæ. Pistache.

"*Huang lien shu.*"

A tall, deciduous, diœcious tree, strikingly ornamental, with large pinnate leaves, red when young, changing to vivid green in summer and flaming scarlet and yellow in fall. Berries inedible.

For previous introduction, see S. P. I. No. 40662.

For an illustration of an avenue lined with Chinese pistache trees, see Plate V.

42824. SYNSEPALUM DULCIFICUM (Schum.) Daniell. Sapotaceæ.

(*Sideroxylon dulcificum* A. DC.)

From Aburi, Gold Coast Colony, British West Africa. Presented by Mr. R. H. Bunting, Acting Director of Agriculture. Received May 23, 1916.

"A shrub 6 feet high, with slender, glabrous, brownish branches, with rounded, wedge-shaped leaves 4 to 6 inches long, and axillary clusters of whitish flowers. Native of Upper Guinea." (*Oliver, Flora of Tropical Africa, vol. 3, p. 502, 1877.*)

42825 and 42826.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received May 25, 1916.

42825. CHLORIS PARAGUAIENSIS Steud. Poaceæ. Grass.

Grasses of this genus are usually perennials often cultivated as ornamentals on account of the attractive inflorescence. Rhodes grass and star-grass are related species.

For previous introduction, see S. P. I. No. 41897.

42826. LYSICARPUS TERNIFOLIUS F. Muell. Myrtaceæ.

"A myrtaceous tree 40 to 50 feet high, with hard, heavy, elastic timber prettily marked, used for cabinetwork, but more particularly for piles, bridges, railway sleepers, etc. The fiber of the bark is of such superior quality that it has been sought for by rope and paper makers." (*Maiden, Useful Native Plants of Australia, pp. 565, 627, 1889.*)

42827 to 42835.

From Asmara, Eritrea, Africa. Seeds presented by the director, Direzione di Colonizzazione. Received May 23, 1916.

42827 to 42835—Continued.

42827. ADANSONIA DIGITATA L. Bombacaceæ. Baobab.

A medium-sized tree, native of central Africa; famous for the great age and enormous size of trunk which it attains. The pulp of the fruit is edible and the juice is used for making a beverage. The bark produces a strong fiber. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 214, 1914.*)

For previous introduction, see S. P. I. No. 33552.

42828. ALBIZZIA AMARA (Roxb.) Boivin. Mimosaceæ.

A medium-sized, unarmed tree, with densely pubescent branches and small, feathery, compound leaves; closely related to the acacias; native of Abyssinia and western India. (Adapted from *Hooker, Flora of British India, vol. 2, p. 301, 1878.*)

42829. CALPURNIA AUREA (Lam.) Benth. Fabaceæ.

A tall, leguminous shrub, very rarely treelike, with large, evergreen, compound leaves and showy racemes of yellow flowers, much like Laburnum; appearing in winter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 637, 1914.*)

42830. CASSIA OCCIDENTALIS L. Cæsalpiniaceæ.

A glabrous, ill-smelling weed, 60 to 90 cm. high, with short, closely crowded, axillary racemes of yellow flowers; of wide distribution in the Tropics and in the warmer temperatures. The seeds, sometimes called *Negro coffee*, are used in some parts of the world as a substitute for coffee and are said to be a febrifuge. The plant has been used as a remedy for stomach trouble, nervous trouble, asthma, and typhoid fever. The root is especially active and the leaves are used medicinally in many countries. (Adapted from *Safford, Useful Plants of Guam, p. 218, 1905.*)

For previous introduction, see S. P. I. No. 38123.

42831. CASSIA TORA L. Cæsalpiniaceæ.

An annual, glabrous undershrub, with even, pinnate leaves and small yellow flowers in pairs or in short, axillary, few-flowered racemes; of very wide distribution in the Tropics. The leaves are mucilaginous and ill smelling; they are said to be aperient. In India they are fried in castor oil and applied to ulcers. The root rubbed with lime juice is a remedy for ringworms. (Adapted from *Safford, Useful Plants of Guam, p. 219, 1905.*)

42832. HIBISCUS LUNARIFOLIUS Willd. Malvaceæ.

An undershrub with roundish or sometimes obscurely three to five lobed, long, petiolate leaves; and terminal racemose inflorescences of large yellow flowers 2 to 3 inches across. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 202, 1868.*)

42833. JUNIPERUS PROCERA Hochst. Pinaceæ. East African cedar.

A tall conifer, said to be 100 to 150 feet high, with straight trunk; and to yield durable and valuable timber. Native of the high mountains of British East Africa.

For previous introduction, see S. P. I. No. 27505.



AVENUE OF THE CHINESE PISTACHE AT CHICO, CALIF. (PISTACIA CHINENSIS BUNGE, S. P. I. NO. 42823.)

These graceful trees form an avenue leading to the Plant Introduction Field Station at Chico, Calif., and are glorious lines of color in spring with their deep wine-red new foliage, and again in fall with their gorgeous autumn-tinted leaves changing from scarlet to yellow as they mature. These trees live to be centuries old and attain a great size. Their usefulness is not confined to their ornamental value, as the timber is much sought for furniture making in China, and the trees show promise as stocks for the edible pistache nut of commerce (*P. vera*). (Photographed by P. H. Dorsett at Chico, Calif., Oct. 31, 1918; P24761FS.)

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42827 to 42835—Continued.

42834. *OLEA CHRYSOPHYLLA* Lam. Oleaceæ.

A small tree, noteworthy because of the drab or golden color of the under surface of the leaves; flowers small, in axillary panicles; drupe rather large and blackish, globose or somewhat ellipsoidal. Native of tropical Africa. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 2333, 1916.*)

42835. *OXYTENANTHERA ABYSSINICA* (Rich.) Munro. Poaceæ. Bamboo.

A large bamboo, 25 to 50 feet high and 1½ to 3 inches in diameter. Reported to have a wide range in Africa. This species has a very different appearance from the remainder of the genus, but the structure of the spiculæ in all the species is very similar. (For technical description, see Col. Munro's Monograph of the Bambusaceæ, in the Transactions of the Linnean Society, London, vol. 26, p. 127, 1870.)

42836. *ANNONA GLABRA* L. Annonaceæ. Pond-apple.

From Manila, Philippine Islands. Seed presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received May 29, 1916.

Small to medium-sized evergreen tree, sometimes attaining a height of 45 feet; bearing edible fruits the size of a Bellflower apple, with a smooth, leathery skin, green at first, later turning yellow. A swamp-loving tree of the American Tropics, considered of possible value as a stock for other edible-fruited anonas.

42837. *GREVILLEA LAURIFOLIA* Sieber. Proteaceæ.

From Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens, Sydney. Received June 5, 1916.

"From Clarence, Blue Mountains, 88 miles west of Sydney, altitude 3,468 feet; seeds collected April 18, 1916." (*Maiden.*)

A procumbent or trailing shrub with nearly oblong, entire leaves, closely silky underneath, and terminal or lateral, rather dense racemes, 1 to 2 inches long. Native of New South Wales. (Adapted from *Bentham, Flora Australiænsis, vol. 5, p. 436, 1870.*)

42838. *FRAXINUS OXYCARPA* Willd. Oleaceæ. Ash.

From Kieff, Russia. Seeds presented by Messrs. St. Przedpelski and T. Antoniewicz. Received June 1, 1916.

Similar in its leaves (shape size, and leaflets) to *Fraxinus angustifolia* Vahl, but the leaves are always downy about the midrib. Fruits more tapered at the base. The species has a more eastern natural habitat, reaching to Persia, the Caucasus, and Asia Minor.

42839. *OSTERDAMIA MATRELLA* (L.) Kuntze. Poaceæ. Grass.
(*Zoysia pungens* Willd.)

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received June 6, 1916.

A creeping grass, important for binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

For previous introduction, see S. P. I. No. 42678.

42840 to 42849. CUCUMIS MELO L. Cucurbitaceæ. Melon.

From Petrograd, Russia. Presented by Miss M. I. Kurnakova Danilova, through Mr. Felix Cole, American vice consul, at the request of Dr. C. C. Young, Belen, Tex. Received June 9, 1916. Quoted notes by Miss Danilova.

42840. "Red, soft-fleshed, aromatic, summer melon called *Ananas* (pineapple)."
 42841. "Black summer melon called *Urlik*."
 42842. "Sweet, aromatic, soft-fleshed winter melon called *Adan*."
 42843. "Light green, summer melon called *Aramad*."
 42844. "Local *Batrin*, length 27 inches, thickness 3 inches."
 42845. "Soft, juicy, summer melon called *Daniar*."
 42846. "Mixed summer melons of all kinds."
 42847. "Summer melon called *Akurtsi*."
 42848. "Sweet, juicy, winter melon."
 42849. "The Amir melon, called *Maiskaja*."

42850 to 42853.

From Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received June 12, 1916. Quoted notes by Mr. Wright.

42850. RYMANDRA EXCELSA Salisb. Proteaceæ. Honeysuckle tree.
 (*Knightia excelsa* R. Br.)

"New Zealand honeysuckle tree, the wood of which is used for veneering purposes in making furniture. Very pretty in the grain. Its flowers are pretty and at the same time odd, coming out of the side of the branches, instead of out of the terminal, as in most cases. A pretty tree and a useful timber for furniture."

42851. METROSIDEROS ROBUSTA A. Cunn. Myrtaceæ. Rata.

"Native name *Rata*. This tree grows to over 100 feet high and 6 feet or more through, a hardwood, very durable; is largely used by wheelwrights. Found all over New Zealand. When in bloom is very gorgeous. *Metrosideros robusta* is only found inland in the forests and not on the coast. It is very difficult to gather seed, owing to the height to which it grows before seeding."

42852. METROSIDEROS TOMENTOSA A. Rich. Myrtaceæ.

"Native name *Pohutukawa*. This is without doubt one of the most beautiful of flowering trees and is invaluable for bees, the honey from the flowers being of excellent flavor and as white as lard. This tree is to be found skirting the New Zealand coast, on the hillsides, along the sea beach, and even grows out of the sides of the cliffs, overlooking the sea. In many cases you can see trees just above high-water mark, where the roots are frequently washed by the tide and doing well. Like *Metrosideros robusta* it is a hardwood and is used for making knees for boat building; it grows to about 40 feet high. Strange to say, *M. tomentosa* is found in the wild state growing only near the sea, although it grows well inland providing it is protected from frost."

For previous introduction, see S. P. I. No. 34715.

42850 to 42853—Continued.**42853.** *PITTIOSPORUM TENUIFOLIUM* Gaertn. Pittosporaceæ.

"Hardy, used for hedges. Seed takes a very long time to germinate, often 12 months."

For previous introduction, see S. P. I. No. 30216.

42854. *PHYTOLACCA* sp. Phytolaccaceæ. **Ink plant.**

From Kohu Kohu, Hokianga, New Zealand. Presented by Mr. G. J. Clapham. Received June 10, 1916.

"The pheasants and other birds are very fond of the berries and so distribute the seeds over large areas." (*Clapham.*)

42855 to 42857.

From Colombia. Presented by Mr. H. M. Curran. Received June 3, 1916. Quoted notes by Mr. Curran.

42855. *BACTRIS* sp. Phœnicaceæ. **Rattan palm.**

"Outer coat of fruit edible. The bright red clusters of fruit are very ornamental; 1,000 feet elevation."

42856. *BROWNEA ARIZA* Benth. Cæsalpiniaceæ. **Ariza.**

"Low tree, 20 to 30 feet, in dense forests or along streams or rivers. Very ornamental. Clusters of red flowers borne in profusion; 100 feet elevation."

42857. *THEOBROMA PURPUREUM* Pittier. Sterculiaceæ. **Wild cacao.**

"*Cacao del Monte.* Wild cacao from Cauca River valley. Small tree in dense forest. Said to be edible."

42858. *PSIDIUM GUAJAVA* L. Myrtaceæ. **Guava.**

Grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in recording distribution.

A superior Mexican form with large, pink-fleshed fruits selected at the Miami Field Station. Mr. Simmonds states that these are plants from a tree in the south garden that carried Dr. Webber's guava (No. 1961) budded on seedlings of S. P. I. No. 28134.

42859 and 42860.

From Colombia. Presented by Mr. H. M. Curran. Received June 3, 1916. Quoted notes by Mr. Curran.

42859. *BULNESIA ARBOREA* (Jacq.) Engl. Zygophyllaceæ.

"*Guayacan tola.* Colombian lignum-vitæ. Small ornamental tree. Showy yellow flowers."

42860. *LAWSONIA INERMIS* L. Lythraceæ. **Henna.**

"Ornamental shrub; yellow, very fragrant flowers."

Received as "reseda," a name sometimes applied to this plant in the West Indies. (See *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1830.*)

For previous introduction, see S. P. I. No. 39459.

42861 to 42878.

From Santiago, Chile. Seeds presented by Señor Don Ernesto Palacios, Catholic University. Received June 1, 1916. Descriptions adapted from Castillo and Dey, *La Jeografia Botanica del Rio Valdivia*, unless otherwise indicated.

42861. *ACACIA CAVENIA* (Molina) Bertero. Mimosaceæ. Cavan.

A small Chilean tree, known as *cavan*, with exceedingly hard wood, durable in moist soil. The spiny plant makes admirable hedges. The tannin from this species is said to be especially valuable for dyeing.

For previous introduction, see S. P. I. No. 33833.

42862. *ARGEMONE MEXICANA* L. Papaveraceæ. Mexican poppy.

42863. *BERBERIS* sp. Berberidaceæ. Calafate.

42864. *BUDDLEIA GLOBOSA* Hope. Loganiaceæ. Pañil.

The *pañil* or *palguin*, a Chilean shrub, better known as *matico*, owes its name *pañil* to the soft fleshy consistency of its leaves which are much used in curing inflammation and are used with good results for washing wounds. Abundant in Valdivia, where it occurs as a shrub, covered in November with yellow flowers, in globose clusters.

42865. *CALDCLUVIA PANICULATA* (Cav.) Don. Cunoniaceæ. Tiaca.

A Chilean tree, known also as *tiaca*, and by the Araucanians as *quiaca*, which is its only name in Chiloe. The diameter of the trunk, which reaches about 15 meters, is only about 40 cm. The chestnutlike leaves in the young specimens are grouped at the end of the branches, giving the tree an ornamental appearance which is increased by its aromatic flowers. Comparable only to the *luma* (*Myrceugenia fernandeziana*) in the elasticity of its wood, which is suited for carriage building.

For previous introduction, see S. P. I. No. 33353.

42866. *CANNA* sp. Cannaceæ.

42867. *CRINODENDRON PATAGUA* Molina. Elæocarpaceæ. Patagua.
(*Tricuspidaria dependens* Ruiz. and Pav.)

This Chilean shrub is called *chequehue* by the natives, and grows best on river banks. It hardly reaches a height of 3 meters, and has beautiful foliage of lanceolate leaves, which appear in spring, and red flowers.

For previous introduction, see S. P. I. No. 33950.

42868. *DAUCUS CAROTA* L. Apiaceæ. Carrot.

42869. *DRIMYS WINTERI* Forst. Magnoliaceæ. Canelo.

A handsome evergreen shrub, rather tender; young shoots smooth, often tinged with red. Leaves lanceolate, 5 to 10 inches long, bright rather pale green, very aromatic when crushed. Flowers borne in a cluster of loose umbels, from four to seven in each umbel; they are ivory white, fragrant, and about 1½ inches across. Native of South America from Tierra del Fuego to north of the Equator. Known since 1578, in which year its bitter aromatic bark was brought home by Capt. Winter (after whom it is named) in one of Drake's ships from the Magellan Straits. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 502.*)

For previous introduction, see S. P. I. No. 35986.

42861 to 42878—Continued.

42870. ESCALLONIA REVOLUTA (Ruiz and Pav.) Pers. **Escalloniaceæ.**

Frequently called *siete camisas* (seven-bark) in Valdivia. It is rare in the central valley of Chile, but frequent in the mountains of Santiago. In Valdivia it grows in moist soils and rarely reaches 5 meters in height, sending out branches from the base of its thin trunk. Its light white wood is used only for firewood.

For previous introduction, see S. P. I. No. 34405.

42871. FAGELIA sp. **Scrophulariaceæ.**
(*Calceolaria* sp.)

42872. KAGENECKIA OBLONGA Ruiz and Pav. **Rosaceæ.** **Bolen.**

A Chilean tree which grows in arid places throughout the country. Its leaves are used for treating intermittent fever, and it is also employed at a tonic.

For previous introduction, see S. P. I. No. 34400.

42873. LAGENARIA VULGARIS Seringe. **Cucurbitaceæ.** **Gourd.**

42874. MAYTENUS BOARIA Molina. **Celastraceæ.** **Maiten.**

This Chilean tree, known as *huirpo* to the Araucanians, attains 12 meters in height, with a slender trunk. It is undoubtedly the most beautiful native tree in its foliage, which trembles and waves in the slightest breeze. Its leaves, which have a great forage value, are most eagerly sought by hungry cattle, like those of the weeping willow. Its wood is often yellow and is hard and elastic. There are varieties the wood of which is finely streaked with red and olive.

For previous introduction, see S. P. I. No. 34621.

42875. PERSEA LINGUE (Ruiz and Pav.) Nees. **Lauraceæ.** **Lingue.**

This is a very valuable industrial forest tree of large size, handsome, compact, evergreen, has glossy gray-blue-green leaves, and is an extra quick grower; here it is not a delicate plant, but grows quickly in any soil that is wet or very moist, also in water. The wood is light and tough like elm, but takes a very high finish. Its lumber is highly esteemed and is lasting if protected from the wet; it is used for furniture, bodies and poles of carts, ox yokes, etc. The wood is the color of white ash, finishes with a yellowish tinge, takes any stain. Its bark is used solely for tanning and is largely exported to Europe. Every station south is filled with overflowing with thousands of bags of broken bark awaiting transportation. The forests are being stripped, and in a very few years this tree will be very scarce. It is an extra beautiful shade tree. Its leaves are poisonous to animals, especially sheep, which are very fond of them. Medicinally it is a powerful astringent.

See S. P. I. Nos. 3393 and 24208 for previous introductions.

42876. PSORALEA GLANDULOSA L. **Fabaceæ.** **Culen.**

A medicinal plant, which grows along the river banks, and reaches a uniform height throughout Chile of 2 to 5 meters. Its leaves are used in the preparation of *aloja* (a popular beverage).

42877. QUILLAJA SAPONARIA Molina. **Rosaceæ.** **Quillay.**

"The *quillay* or *cullay* of the Chileans is a tree from 50 to 60 feet high, with smooth, shining, short-stalked, oval leaves and usually terminal white flowers, either solitary or from three to five upon a stalk. Its bark, called *quillay* or soap-bark, is rough and dark colored ex-

42861 to 42878—Continued.

ternally, but internally consists of numerous regular whitish or yellowish layers and contains a large quantity of carbonate of lime and other mineral matters. It is also rich in saponin, a vegetable soap principle found likewise in plants belonging to the cloverworts, soapworts, and a few other orders; and on this account it is commonly used as a substitute for washing clothes, 2 ounces of the bark being sufficient to wash a dress. It is also said to remove all spots or stains and to impart a remarkable luster to wool; and is used to wash the hair, for which purpose it is powdered between stones, then rubbed with the hands in water, making a foam like soap. A preparation of it has been brought into use in this country for promoting the growth of the hair." (*Lindley, Treasury of Botany, vol. 2, p. 952.*)

See S. P. I. No. 3360 for previous introduction.

42878. SCHINUS HUIGAN Molina. Anacardiaceæ. **Huigan.**
(*S. dependens* Orteg.)

This characteristic spiny shrub of the arid hills in Chile has fragrant leaves and hard resistant wood, which is much used whenever the size of development permits. The seeds are scattered by the breaking of the epidermis of the fruit. It makes an excellent hedge plant.

For previous introduction, see S. P. I. No. 33823.

42879. HIBISCADELPHUS GIFFARDIANUS Rock. Malvaceæ.

Hau Kuahiwi.

From Honolulu, Hawaii. Presented by Mr. J. F. Rock, botanist, College of Hawaii. Received June 5, 1916.

"You may know that of this species there is only one tree in existence and consequently seed is very scarce. I have a number of young trees growing in Honolulu and thus hope to perpetuate the species." (*Rock.*)

"The *Hau Kuahiwi* is a remarkable tree. At first appearance one would think it to be the common *Hau* (*Hibiscus tiliaceus*), but at closer inspection one can not but wonder at the most peculiar shape of the flowers, which are of a deep magenta, and the large yellowish tuberculate capsules. It is rather a low tree with a not-erect, but rather inclining, trunk of a foot in diameter, with a many-branching round crown. The genus *Hibiscadelphus*, meaning brother of *Hibiscus*, was described by the author and the species named in honor of Mr. W. M. Giffard, of Honolulu, in whose company the writer collected his first specimens. It differs from the genus *Hibiscus* in its very peculiar flowers and mainly in the calyx, which is not persistent with the capsules, but drops together with the bracts as soon as the capsules are formed. Unfortunately, the tree is the only one in existence. It is unique among all Hawaiian plants, and the author is sorry to relate that nothing has been done to protect it. Like many other Hawaiian trees, it will succumb to the ravages of cattle, which inhabit a great many of our native forests. This single tree is found on a small kipuka of 56 acres called Puaulu, on the land of Keauhou, near Kilauea Volcano, at an elevation of 4,200 feet, on the island of Hawaii. It is surrounded by a great many rare trees, which will share its fate sooner or later. Among them are beautiful trees of *Sapindus saponaria*, *Pelea*, *Zanthoxylum*, *Urera*, *Straussia*, *Ochrosia*, etc. The genus consists of three species, the above described one in Hawaii, one on Maui with only a single tree left, and a third on Hualalal, Hawaii." (*J. F. Rock, Indigenous Trees of the Hawaiian Islands, p. 299.*)

42880 to 42887.

From Tokyo, Japan. Presented by Dr. H. Terao, botanist, Imperial Agricultural Experiment Station. Received May 31, 1916.

42880 to 42884. *ORYZA SATIVA* L. Poaceæ. Rice.

42885 to 42887. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

42888 to 42891. HORDEUM spp. Poaceæ. Barley.

From Khartum, Sudan Government. Presented by Mr. E. R. Sawyer, Central Research Farm. Received June 13, 1916. Notes by Mr. Sawyer.

42888. *HORDEUM VULGARE COELESTE* L.

"Abyssinian barley or barley wheat. Cultivated in parts of India as a true hull-less barley."

42889. *HORDEUM VULGARE COELESTE* L.

"*Saggia*. Abyssinian barley."

42890. *HORDEUM VULGARE PALLIDUM* Seringe.

"*Sagia* or *Sagina* barley grown under water-wheel irrigation."

42891. *HORDEUM VULGARE PALLIDUM* Seringe.

"The ordinary Egyptian barley as cultivated on the larger estates."

42892 to 42894. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Pusa, India. Presented by Mr. Bernard Coventry, Agricultural Advisor to the Government of India. Received June 13, 1916.

For a full discussion of these varieties and their behavior, see "Some Varieties of Indian Gram," by Albert and Gabrielle L. C. Howard, *Memoirs of the Department of Agriculture of India*, vol. 7, No. 6, December, 1915, pp. 231-232, from which the following quoted notes have been taken:

42892. "Type 9. Very late, habit very spreading, with numerous side branches. Leaves very dark green. Flowers white. Seeds white with a yellowish tinge. This type is of interest in that in spite of its deep root system, which is a disadvantage at Pusa, it has so far given the highest monetary return per acre. In this form yield and quality are united in the same type."

42893. "Type 17. Late, habit slightly spreading. Leaves with a yellowish tinge and slight redness on the apices of the teeth of the leaflets, midrib reddish. Flowers pink; standard slightly pink; wings violet. Seeds yellowish brown."

42894. "Type 18. Intermediate in time of maturity, habit erect. Leaves light green with a yellowish tinge, slight reddening on the margins of the leaflets, and deeper reddening on the midrib. Flowers pink; standard light pink; wings violet. Seeds dark brown."

42895. CACTUS sp. Cactaceæ. Cactus.

From Santa Marta, Colombia. Plants collected by Mr. H. M. Curran. Received June 24, 1916.

42896. XIMENIA AMERICANA L. Olacaceæ. False sandalwood.

From Donga, Northern Nigeria. Presented by Rev. C. L. Whitman, Sudan United Mission. Received June 17, 1916.

42896—Continued.

"Seeds of what might be called an apricot plum. A fruit the size of a small plum growing on a plumlike tree, but having considerable of an apricot flavor."
(Whitman.)

42897 to 42901. ANNONA CHERIMOLA Mill. Annonaceæ.

Cherimoya.

From San Francisco de Limache, Chile. Plants presented by Sr. Adolfo Eastman. Received May 6, 1916. Quoted notes by Mr. Eastman.

"These are grafted varieties and are already in flower, so that at least next season they will bear."

42897. "*Concha*, meaning shell. The skin resembles tortoise shell."

42898. "*Copucha*, meaning bladder. Has a very smooth skin."

42899. "*Piña*, meaning pineapple. Has the appearance of the pineapple."

42900. "*Sandia*, meaning watermelon. Called so because of its size, like a watermelon."

42901. (No label.)

42902. AMHERSTIA NOBILIS Wall. Cæsalpiniaceæ.

From Sibpur, near Calcutta, India. Presented by the curator of the Royal Botanic Garden, at the request of Mr. Bernard Coventry, Agricultural Adviser of the Government of India, Pusa. Received June 20, 1916.

"Named in honor of Lady Amherst. A medium-sized tree, native of Burma, and considered the most beautiful of all flowering trees. Its immense candle-brumlike sprays of red and yellow flowers, drooping from every branch among the handsome foliage, present an appearance of astonishing elegance and loveliness. It is in flower during the greater part of the year, but its chief flowering season in Ceylon is from January to April, i. e., the dry season. The tree thrives in the moist low country up to 1,600 feet and requires rich and well-drained soil. It does not seem to flourish near the sea, and is rarely met with about Colombo. It produces seed very scantily anywhere, a pod or two occasionally being all that can be obtained, and even these are often infertile. Propagation by layering has therefore to be adopted. Introduced into Ceylon in 1860." (Macmillan, *Handbook of Tropical Gardening and Planting*, p. 291.)

42903 and 42904. STRYCHNOS spp. Loganiaceæ.

From Beira, Mozambique, Portuguese East Africa. Presented by Mr. E. H. Heron, Director of Agriculture. Received June 19, 1916.

42903. STRYCHNOS SPINOSA Lam.

"Vernacular name, *M'Tamba*."

A small tree up to 10 feet high found throughout tropical Africa, in Madagascar, and the Seychelles. This tree is interesting because of its hard-shelled, orangelike fruit, 2 to 3 inches in diameter, with an acid pulp which is wholesome and agreeable, with a clovelike aroma very noticeable when ripe. The seeds contain no alkaloids. This plant has produced fruit in Florida, where it seems to do well.

For previous introduction, see S. P. I. No. 42596.

42904. STRYCHNOS GERRARDI N. E. Brown.

"Vernacular name, *M'Quaqua*."

An East African species from Natal and Portuguese East Africa.

For previous introduction, see S. P. I. No. 34161.

42905 to 42966. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Pusa, India. Presented by Mr. A. Howard, Imperial Economic Botanist for India. Received May 27, 1916.

42905. Bihar No. 37.	42936. Bihar No. 99.
42906. Bihar No. 38.	42937. Bihar No. 100.
42907. Bihar No. 39.	42938. Bihar No. 101.
42908. Bihar No. 40.	42939. Bihar No. 102.
42909. Bihar No. 41.	42940. Bihar No. 103.
42910. Bihar No. 42.	42941. Bihar No. 104.
42911. Bihar No. 43.	42942. Bihar No. 105.
42912. Bihar No. 44.	42943. Bihar No. 106.
42913. Bihar No. 45.	42944. Pusa No. 106.
42914. Bihar No. 46.	42945. Bihar No. 107.
42915. Bihar No. 47.	42946. Bihar No. 108.
42916. Bihar No. 48.	42947. Bihar No. 109.
42917. Bihar No. 49.	42948. Bihar No. 110.
42918. Bihar No. 50.	42949. Bihar No. 111.
42919. Bihar No. 51.	42950. Bihar No. 112.
42920. Bihar No. 52.	42951. Bihar No. 113.
42921. Bihar No. 53.	42952. Bihar No. 114.
42922. Bihar No. 54.	42953. Bihar No. 115.
42923. Bihar No. 55.	42954. Bihar No. 116.
42924. Bihar No. 56.	42955. Bihar No. 117.
42925. Bihar No. 57.	42956. Bihar No. 118.
42926. Bihar No. 58.	42957. Bihar No. 119.
42927. Bihar No. 59.	42958. Bihar No. 120.
42928. Bihar No. 60.	42959. Bihar No. 121.
42929. Bihar No. 61.	42960. Bihar No. 123.
42930. Bihar No. 62.	42961. Bihar No. 124.
42931. Bihar No. 63.	42962. Bihar No. 125.
42932. Bihar No. 64.	42963. Bihar No. 126.
42933. Bihar No. 65.	42964. Bihar No. 127.
42934. Bihar No. 66.	42965. Bihar No. 128.
42935. Bihar No. 98.	42966. Bihar No. 130.

42967. TRIPSACUM LAXUM Nash. Poaceæ. Grass.

From the city of Guatemala, Guatemala. Plants presented by Mr. Juan J. Rodriguez, through Mr. Stuart K. Lupton, American consul, at the request of Mr. H. Pittier, of the Department of Agriculture. Received June 21, 1916.

42968. CARICA PAPAYA L. Papayaceæ. Papaya.

From Donga, Northern Nigeria. Presented by Rev. C. L. Whitman, Sudan United Mission, through Rev. C. W. Guinter, Kratzerville, Pa. Received June 22, 1916.

"In from 12 to 18 months in this climate this grows into a tree 10 to 20 feet high. The fruit ripens here from November to January, and is quite edible. I trust you may be successful in growing it, though this may be doubtful because of the danger of frost in most parts of the States." (*Whitman.*)

42969. BURSERA sp. Balsameaceæ.

From El Banco, Colombia. Presented by Mr. H. M. Curran. Received June 21, 1916.

"*Madura Platano*. Large ornamental timber tree. Juana Sanches, El Banco, May 15, 1916." (Curran.)

42970. CUCURBITA FICIFOLIA Bouche. Cucurbitaceæ. Alcallota.

From Santa Ines, Chile. Presented by Mr. Walter Fischer, of the Bureau of Commerce, who secured them from Sr. Salvador Izquierdo, Santiago, Chile. Received June 27, 1916.

"Seeds of a pumpkin called *alcallota* obtained May 5, 1916, at the nursery and cannery of Salvador Izquierdo near Nos, about 12 miles south of Santiago, Chile. The fruit of this particular variety is of a creamy-white color, smooth, somewhat oblong in form, of about 7 or 8 pounds' weight, and with quite hard durable rind; evidently a good keeper, at least in that climate, as shown by the good preservation of the fruit, then just a year old, from which the seeds were extracted. This pumpkin is much used in Mr. Izquierdo's cannery for marmalades, the fibrous inside being made into a very sweet preparation, which does not lose its stringy character and which is termed *dulce de alcallota*, and the rind is cooked into a soft creamy paste labeled *crema de alcallota*. Both preparations are very tasty, with a sweet-potato flavor especially noticeable in the cream." (Fischer.)

For previous introduction, see S. P. I. No. 36328.

42971 and 42972.

From Dehra Dun, United Provinces, India. Presented by Mr. Thomas Tracy. Received June 15, 1916. Notes by Mr. Tracy.

42971. BEAUMONTIA GRANDIFLORA (Roth) Wall. Apocynaceæ.

"A mammoth creeper that has run up to the top of the cotton tree [S. P. I. No. 42972]. The blossoms are formed in a cluster; pure white and fragrant; corolla deep and unbroken. The corolla is about 2 inches deep, with an undulating border."

For previous introduction, see S. P. I. No. 33560.

42972. BOMBAX MALABARICUM DC. Bombacaceæ. Cotton tree.

"Seeds from the cotton tree in front of our house. I think the tree is from Africa. It is very large."

For previous introduction, see S. P. I. No. 40603.

42973 to 42982.

From Jamaica Plain, Mass. Cuttings presented by Prof. C. S. Sargent, Arnold Arboretum. Received June 30, 1916.

42973. BERBERIS SARGENTIANA C. Schneid. Berberidaceæ. Barberry.

A black-berried barberry from western Hupeh, China, reaching a height of 2 meters. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum, and for this reason is one of the most desirable of the recent introductions as a garden plant. (Adapted from Sargent, *Plantae Wilsonianae*, vol. 1, p. 359, 1913.)

42974 to 42982. ROSA spp. Rosaceæ. Rose.**42974. ROSA BANKSIOPSIS Baker.**

A very common rose in western Hupeh in thickets of low-growing shrubs on mountain slopes at altitudes of 1,300 to 2,000 meters. It

42973 to 42982—Continued.

grows to a height of 3 meters, has rose-red flowers, coral-red fruits, and more or less reddish purple shoots and branches remarkably free from prickles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322, 1915.*)

42975. *ROSA BELLA* Rehd. and Wils.

This pretty rose from the mountains in northwestern Shansi seems most closely related to *Rosa moyesii* Hemsley and Wilson, which is a much more vigorous plant with stout prickles, larger usually more acute leaflets pubescent beneath, at least on the midrib, globose ovoid flower buds abruptly contracted at the apex, larger flowers, and pinnate sepals. It may also be compared with *R. sweginzowii* Koehne, which differs chiefly in its stouter, much-flattened prickles, the usually double serrate leaflets more or less pubescent beneath, in the globose-ovoid flower buds, and in the pinnate sepals. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 342, 1915.*)

42976. *ROSA CAUDATA* Baker.

"This is a rose discovered by Wilson in western China. It is one of the *Cinnamomæ* section of the genus, and is a tall vigorous shrub with stout arching stems covered not very thickly with stout spines, dark-green foliage, and flowers about 2 inches in diameter, in wide, sometimes 25-flowered clusters. The beauty of the flowers is increased by the white markings at the base of the pure pink petals. The fruit is orange-red, an inch long, gradually contracted above into a narrow neck crowned by the much-enlarged calyx lobes. This handsome rose is flowering now for the third year in the arboretum; it is perfectly hardy and an excellent addition to the roses of its class." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 42.*)

42977. *ROSA CORYMBULOSA* Rolfe.

"A distinct new species with unarmed or sparingly prickly branches and numerous small flowers in corymblike inflorescences. Flowers three-fourths to 1 inch across. Petals broadly obovate, deep rose above, white at the base. Fruits globose, glandular, about one-third of an inch long, crowned by the persistent sepals. Central China." (*Kew Bulletin of Miscellaneous Information, New Garden Plants of the Year 1915, p. 80.*)

42978. *ROSA DAVIDI* Crép.

An orange-fruited, pink-flowered rose from western Szechwan, China, reaching a height of 5 meters at altitudes of 1,600 to 3,000 meters. It is the species nearest, in China, to *Rosa macrophylla* Lindley of the western Himalayas. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322, 1915.*)

42979. *ROSA HELENÆ* Rehd. and Wils.

"From the seeds of a rose collected by Wilson in western China; a new species of the *Moschata* group has been raised. It is now flowering in the arboretum for the third year, and is a vigorous and perfectly hardy shrub, 5 or 6 feet tall, with slender, arching stems furnished sparingly with short red spines, light-green cheerful

42973 to 42982—Continued.

foliage, and terminal and axillary many-flowered clusters of pure white, delicately fragrant flowers $1\frac{1}{2}$ inches in diameter and borne on short, erect branchlets. It is a plant which will be prized by persons who realize that among the wild roses are some of the most beautiful of all flowering plants and who find a place for them in their gardens." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 39, 1915.*)

42980. ROSA JACKII Rehder.

"This beautiful rose was introduced into the arboretum from Korea several years ago by Mr. Jack, and when it flowered was named for him. At about the same time it was named in England *Rosa bakeri* and *R. kelleri*, names which can not be used for it, however, as they had previously been given to other roses. It is one of the *Multiflora* roses with long stems which lie flat on the ground, lustrous foliage, and pure white flowers 2 inches or more in diameter, in wide many-flowered clusters. The flowers are larger than those of the Japanese *R. multiflora*, and it blooms much later than that species. This rose is perfectly hardy and a first-rate garden plant. The hybridizer ought to be able to find in it a good subject from which to raise a race of hardy, late-flowering rambler roses." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 43, 1915.*)

42981. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils.

"*Rosa multiflora*, var. *cathayensis*; it is a hardy, vigorous, and handsome plant with the habit of the Japanese *R. multiflora*. The flowers are from 2 to $2\frac{1}{2}$ inches in diameter and are produced in large, many-flowered clusters, and the large, conspicuous, bright-yellow anthers add to the beauty of the clear pink petals. This rose may well become a popular garden plant. It offers possibilities which the hybridist will undoubtedly take advantage of; and it is of considerable historical interest as the wild original of garden plants cultivated probably for centuries by the Chinese and known in Europe and America for more than a hundred years." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 35, 1915.*)

42982. ROSA SWEGINZOWII Koehne.

A rose from western Szechwan, with deep rose-colored flowers, growing to a height of 5 meters, at altitudes of 2,300 to 3,600 meters. The shoots are thickly covered with short, stout, flattened prickles. (Adapted from *Plantae Wilsonianae, vol. 2, p. 324, 1915.*)

42983 to 42985. ANANAS SATIVUS Schult. f. Bromeliaceae.

Pineapple.

From Brisbane, Australia. Plants presented by Mr. J. F. Bailey, director, Botanic Gardens. Received June 28, 1916.

42983. "*Cayenne Queen*, smooth leaf."

42984. "*Ripley Queen*, rough leaf."

42985. "*McGregor*. A variety raised by Mr. E. Smallman, of Ormiston, and named in honor of our immediate past governor, Sir William McGregor." (*Bailey.*)

42986 to 43010.

From Colombia. Seeds collected by Mr. H. M. Curran. Received June 20, 1916. Quoted notes by Mr. Curran.

42986. *ACHRAS ZAPOTA* L. Sapotaceæ. Sapodilla.
(*A. sapota* L.)

"Good quality and early. White or greenish flesh. (Margarita, Mompos, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 38859.

42987. *ANACARDIUM EXCELSUM* (Bert. and Balb.) Skeels. Anacardiaceæ.
(*A. rhinocarpus* DC.)

"*Caracoli*. Large ornamental timber tree. (Margarita, Mompos, Colombia.)"

For previous introduction, see S. P. I. No. 40987.

42988. *ANNONA MARCGRAVII* Mart. Annonaceæ. Guayabana.

"*Guayabana del monte*. Wild anona. Tree in second-growth forest. Edible fruit, 6 inches in diameter. Greenish white fruit, slightly acid. (El Banco, Colombia.)"

42989. *BRITOA ACIDA* (Mart.) Berg. Myrtaceæ. Guayabo.

"*Guayabo*. Tree 20 to 30 feet. Large yellow fruit, few seeds, acid, 3 inches in diameter, white flesh. (Papayal, El Banco, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 42725.

42990. *CARICA PAPAYA* L. Papayaceæ. Papaya.

"Large-fruited papaya. (Margarita, Mompos, Colombia, May 16, 1916.)"

42991. *LICANIA PLATYPUS* (Hemsl.) Fritsch. Rosaceæ. Chupa.

"*Chupa*. Large fruits, with smooth brown or greenish coat. Soft, yellow, rather dry flesh. Fruit 4 to 6 inches long, 2 to 3 inches in diameter. Tree 40 to 60 feet. Said to bear at all seasons. (Papayal, El Banco, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 41485.

42992 to 42996. *MANGIFERA INDICA* L. Anacardiaceæ. Mango.

"From Papayal, El Banco, Colombia, May 20, 1916."

42992. "*Mango Hobo*. Very large, very yellow, good flavor."

42993. "*Mango Liso*. Large, one of the earliest, ripe March to April. Good flavor."

42994. "*Mango Chupa*. Large red."

42995. "*Mango Masa*. Yellow with dark lines."

42996. "*Mango Lechoso*. Commonest and best flavored of mangos in this region. Very large crop this year. Fruit medium sized, yellow, very much fiber."

42997. *CITRUS* sp. Rutaceæ. Orange.

"Seeds of a large orange; fair flavor, sweet. (Margarita, Mompos, Colombia, May 15, 1916.)"

42998. *ANNONA MARCGRAVII* Mart. Annonaceæ. Guayabana.

"Wild form of this plant in the second-growth forests along the Magdalena River, possibly escaped from cultivation, as most of this region has been cleared during the last 300 years, and grows up into

42986 to 43010—Continued.

the forests. Fruits are 4 or 6 inches in diameter, heart shaped, and a greenish white color; not of unpleasant flavor, but rather dry as compared with the ordinary cultivated forms."

For previous introduction, see S. P. I. No. 42988.

42999. *BACTRIS* sp. Phœnicaceæ. Palm.

"From Tierras de Loba, Bolivar, Colombia."

43000. *CHRYSOBALANUS ICACO* L. Rosaceæ. Icaco.

"A shrub from 4 to 8 feet in height, much branched. Planted more as an ornamental about the houses than for fruit. Fruits white with a pinkish bloom, rather dry and insipid; about the size of a wild plum."

For previous introduction, see S. P. I. No. 33791.

43001. *ELAEIS MELANOCOCCA* Gaertn. Phœnicaceæ. Palm.

"*Palma corozo*. Palm with practically no stems, leaves borne from within 2 to 3 feet from the ground, 8 to 10 feet long. Fruits borne in dense heads, a great part of them included among the bases of the leaves. Fruits compressed and irregular, orange-red in color when ripe. Two classes of oil are obtained, red oil from the coating of the seeds and a clear oil from the kernels. The latter is very much prized as a cooking oil. The palm is common in the lowlands among the flooded areas. This palm is often found growing under conditions similar to those of our flooded bottom lands along the Mississippi or the Gulf coast rivers."

For previous introduction, see S. P. I. No. 40303.

43002. *CEREUS* sp. Cactaceæ. Cactus.

"The plants reach a size of from 12 to 20 feet high. Fruits edible, about the size of an egg, red, and of a pleasant flavor. Common plant of the hills above the Bay Santa Marta."

43003 to 43006. *GOSYPIUM* sp. Malvaceæ. Cotton.

"Growing together on a small plantation. Strong healthy plants full of flowers and fruits at the time of collection, June, 1915."

43003. "Peruvian cotton."

43005. "Antioquia cotton."

43004. "Bogota cotton."

43006. (Colombian.)

43007. *MOMORDICA ZEYLANICA* Mill. Cucurbitaceæ. Balsam-apple.

"The Chinese gardeners about the American cities grow this plant under the name of la-kwa, for the edible pulpy arils surrounding the seeds, also for the edible fruit itself (which is prepared, usually by boiling, before it is ripe). The rind is sometimes dried and used in medicinal preparations. The odd seeds cause it to be called the 'art pumpkin' by some persons." (*Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 2060.*)

For previous introduction, see S. P. I. No. 28284.

43008. *SALIX CHILENSIS* Molina. Salicaceæ. Willow.
(*S. humboldtiana* Willd.)

"Common willow from the Magdalena River region; size about 20 feet in height, 5 to 6 inches in diameter. It has no commercial use, but it will probably be useful for basket work. It is probably *Salix humboldtiana*."

For previous introduction, see S. P. I. No. 28709.

42986 to 43010—Continued.

43009. *SAPINDUS SAPONARIA* L. Sapindaceæ. Soapberry.

“Common tree of the Magdalena River region; size 50 to 60 feet, and the diameter is 18 to 24 inches. Fruits are not commonly used in this region. An ornamental and useful timber tree.”

For previous introduction, see S. P. I. No. 42728.

43010. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame.
(*S. indicum* L.)

“*Honholi*. A low annual herb from 2 to 3 feet in height. Seeds used for making sweetmeats. Commonly cultivated in low negro clearings.”

For previous introduction, see S. P. I. No. 36896.

43011. *OSTERDAMIA MATRELLA* (L.) Kuntze. Poaceæ. Grass.
(*Zoysia pungens* Willd.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Company.
Received May 10, 1916.

A creeping grass, important in binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

See S. P. I. No. 34657 for previous introduction.

43012. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Cochabamba, Bolivia. Presented by Mr. Johnson Turnbull. Received
June 27, 1916.

“These stones are remarkably small for peach stones, some of them being only half an inch long and one-fourth of an inch thick, while the largest does not exceed three-fourths of an inch in length. The surface is rather smooth, the inequalities consisting mostly of pits instead of grooves, and they are sharp pointed at the apex. The fruit is evidently a cling, and from the amount of flesh adhering, there was evidently a fair proportion of flesh to the size of the stones. Cochabamba is about latitude 17° 20' S., and the altitude is about 8,000 feet.” (*W. F. Wight.*)

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