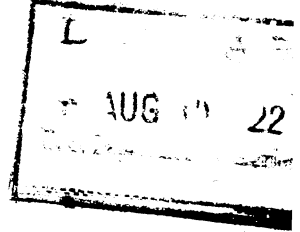


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Issued July, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.



INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO OCTOBER 31, 1919.

(No. 60; Nos. 47865 to 48426.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1922.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM JULY 1 TO OCTOBER 31, 1919 (NO. 60; NOS. 47865 TO 48426).

INTRODUCTORY STATEMENT.

There are many experimenters who appear not to understand the problem of plant introduction and who, after applying for interesting plants which they see described and finding none left for distribution, since others who applied previously had received them, become discouraged. It should be pointed out that obtaining plants from out-of-the-way parts of the world is a very different thing from the purchase of plants from a nursery. We may through a traveler, a transient correspondent, or one of our own explorers get a small quantity of seed of a rare tree, for example. We often can not get more seed of this species, even by going to very great expense, as it may be found in some out-of-the-way place and may fruit very infrequently. If it can be grown only from seed and the trees do not bear until they are 8 or 10 years old, we simply can not supply more than the number of plants grown from the original introduced seeds until, years later, either the seedlings fruit in this country or a rare opportunity occurs whereby we may obtain it again from its foreign source. The most constructively helpful experimenters are those who appreciate these conditions and who, when they can not get what they want, are glad to test other introductions which we can send them.

This sixtieth inventory has a number of noteworthy new introductions.

Mr. Maiden, of Sydney, sends in a "native cherry" tree (*Exocarpus cupressiformis*, No. 47866) which produces fruit morphologically similar to the cashew nut and the raisin tree, the pedicel below the seed instead of the parts surrounding it being enlarged.

Dr. da Costa sends from Para the pupunha palm (*Guilielma speciosa*, No. 47868) which apparently resembles the pejibaye of Costa Rica, producing a fruit which is boiled and eaten like potatoes. These species of *Guilielma* deserve especial study by tropical horticulturists.

Mr. Wragge sends a quantity of seed of the nikau palm from New Zealand (*Rhopalostylis sapida*, No. 47878), which, it is noted, stands grass fires well and therefore ought to be adapted for naturalization in southern Florida, where the species grows well. Mr. Wragge also sends in seeds of the puriri (*Vitex lucens*, No. 47881), a valuable timber tree from the North Island, where it is known as the "New Zealand oak" because of the strength and durability of its wood.

Dr. Trabut sends from Algeria seeds of a good pasture grass (*Oryzopsis miliacea*, No. 47898) growing on saline soils.

S. P. I. No. 47899 records the success made in Cuba by Irving L. Ward with one of our introductions, *Gonolobus edulis* (No. 35249), which bears soft green fruits that are of good quality when baked or when fried like eggplant.

Dr. Johnson sends seeds of the Guatemalan lignum-vitæ (*Guaiacum guatemalense*, No. 47900), which Wilson Popenoe says is a beautiful flowering tree remaining in bloom from late February or early March for several weeks. It has proved adapted to growth in southern Florida and will add a feature to the landscape.

Mr. Tacea, of Yucatan, sends seeds of the *Jatropha curcas* (No. 47916) with the report that, although commonly supposed to be a purgative, the nuts are eaten there commonly, even being made into confectionery. A recent careful analysis by Dr. Power of the seeds of this *Jatropha* from trees grown in Florida failed to reveal any substantial quantity of the purgative substance, and tests on animals produced negative results. If its seeds may be used as table nuts, this tree will be a valuable addition to the food plants of southern Florida, since it grows very luxuriantly there and bears abundantly.

Mr. Poynton has furnished the seeds of the kauri pine of New Zealand (*Dammara australis*, No. 47917), one of the greatest timber trees of the world and one of the most stately of all forest trees. Every effort should be made to grow it in America.

Through Anderson & Co., of Sydney, Australia, we have imported seeds of a thin-shelled variety of the macadamia or Queensland nut (*Macadamia ternifolia*, No. 47918). Since this species is fruiting well in southern Florida, a thin-shelled variety will add new interest to its possibilities.

Citrus webberii (No. 47919) is the name given by Wester to what he declares is the largest loose-skinned citrus fruit in the world, coming from Cotabato in the Philippine Islands.

The burakan (*Ipomoea nymphaeaefolia*, No. 47920) is, according to Wester, a most gorgeous morning-glory, producing great masses of bright-yellow flowers.

Mr. H. R. Wright, of Auckland, who has sent us some very interesting new deciduous fruit varieties, now sends in a new seedling

of the Washington Navel orange (No. 47931) called Dunning's Seedless, which is reported in Queensland to be better than its parent.

Asst. Surg. Gen. Carter has obtained from Guayaquil, Ecuador, seeds of the naranjilla (*Solanum quitoense*, No. 47951), bearing fruits the size of a mandarin orange which have a very acid flavor and are used there for ice creams and cold drinks.

Mr. J. Burt Davy sends from the Transvaal the buchu (*Barosma betulina*, No. 47953), a shrub which, according to the description, vies with the gardenia as an ornamental, having starlike purple flowers. There are two species, both of which furnish the barosma camphor of commerce.

Mr. Milo Baker, of Los Angeles, sends budwood of a species of Casimiroa (No. 47957). Since interest in this new fruit tree is growing in California and Florida, the collecting into a single orchard of all the known varieties and species is the next logical step in its development.

Dr. da Costa has presented us with the seeds of an important oil palm (*Oenocarpus bataua*, No. 47965), native to the Amazon region, which yields an oil scarcely distinguishable from olive oil, and the ucuúba (*Virola sebifera*, No. 47966), a bush that, according to Lange, bears great quantities of nuts rich in oily substances.

Dr. Bertoni sends in from Paraguay, the home of the feijoa, a new fruit tree of the myrtle family (*Britoa sellowiana*, No. 47968), about which little seems to be known in this country. He also presents a species of *Solanum* (*S. chacoense*, No. 47972) which is closely related to the potato and which he remarks is not attacked there by any insect or disease. He suggests that it may be useful to potato breeders.

The success at Del Monte, Calif., of the yang mei (*Myrica rubra*) is worth especial mention, and Mr. T. Lee, to whom is due its success there, has sent seeds (No. 48000) of this valuable Chinese fruit tree, which he collected from his own trees. There are few handsomer fruits in the world than this yang mei.

Dr. Cramer, the plant breeder of Java, has sent a collection of seeds from selected strains of the West African oil palm (*Elaeis guineensis*, Nos. 48001 to 48010) and seeds of the *Mimusops kauki* (No. 48011), which has fruits flavored like those of the sapodilla (*Achras zapota*) and prefers situations near the sea and so may be valuable for the Miami beaches.

Mr. Day, of Rio de Janeiro, furnishes seed of a variety of Job's-tears (*Coffea lacryma-jobi*, No. 48012) which produces on low moist or marshy soils large crops of good fodder and may prove adapted to use on the Everglades.

Mr. Gossweiler, of Angola, Portuguese West Africa, has sent in a very interesting new summer vegetable (*Rumex abyssinicus*, No.

48023) called the Abyssinian Rumex. Its very vigorous growth and production of great masses of leaves of most delicate texture make it a very promising new vegetable for all-summer culture.

From Dr. Proschowsky, of Nice, France, who has sent in so many interesting plants, we have received seeds of *Casuarina deplancheana* (No. 48026), which is native to New Caledonia and deserves trial in Florida. It is new to this country. He also sends a new and very rare climber (*Semele androgyna*, No. 48032) and a remarkable species of Albizzia (*A. lophantha*, No. 48034) from southwestern Australia, which produces on its roots bacterial nodules weighing as much as 2 pounds.

Through the generosity of M. Jules Goffart, of Tangier, whose collection of acacias is noted, we have received 39 species of acacias (Nos. 48035 to 48073). The beauty of the flowers and the usefulness of the trees for street and sand-dune plantings and as furnishing valuable woods, tannins, gums, and other material make this a very valuable gift.

Through Dr. Koningsberger, of the Buitenzorg Garden, there has come in a quantity of seed of a variety of the well-known Job's-tears, called djali bras (No. 48081), which can be grown anywhere in the Tropics and which, unlike the ordinary Job's-tears, has seeds with thin soft shells. These when cooked whole, like rice, or ground into meal are said to make an excellent food. A new tropical grain crop like this deserves study.

Dr. Galloway calls attention to a promising new rose (*Rosa coriifolia*, No. 48086) which has been used by Dr. Van Fleet as a stock because of its vigor, hardiness, upright smooth stems, and lack of suckers.

Metrosideros tomentosa (No. 48151) from New Zealand, according to Mr. Hallet, is covered with crimson flowers in summer. Its spreading nature and its ability to withstand salt spray and to stand as much frost as the lemon may make it an excellent windbreak for the Florida seacoasts.

A wild persimmon (No. 48162) from Puerto Bertoni, Paraguay, which may be useful for stocks or for breeding purposes, is sent in by Mr. Bertoni.

Entelea arborescens (No. 48165), which grows along the north coast of New Zealand, produces very light wood, about half the weight of cork. Mr. Wright, who sends in seeds, says it is one of the handsomest of small trees. The large drooping clusters of pure-white flowers, which are an inch in diameter, ought to attract the attention of some one who lives where it can be grown. Has its wood ever been compared with balsa wood?

Mr. Alfred Bircher, of Matania el Saff, Egypt, sends in seeds of *Eugenia aquea* (No. 48223), a myrtaceous tree which bears fruits the size of loquats with an aromatic flavor.

Mr. J. F. Rock, of Honolulu, during a hurried trip to Siam, sent back seeds of the *Hydnocarpus anthelminthica* (Nos. 48227 and 48228), which yields one of the oils used in the treatment of leprosy.

Mr. J. Burt Davy has sent from Victoria Falls, Rhodesia, a remarkable collection (Nos. 48230 to 48261) of seeds of the timber trees and of the ornamental trees and shrubs of that region; among them are the Rhodesian mahogany, Rhodesian teak, mukwa, Zambezi almond, and the gum-copal tree. It is hoped that some of these may be valuable for the reforestation work being carried on by the Hawaiian Sugar Planters' Association on the mountain areas of the Hawaiian Islands.

It is strange that a potherb like *Basella rubra* (No. 48262) should be in almost universal use in Bengal and practically unknown as such in America, though it grows and forms an attractive screen in our Southern States. Can there be different strains of it, or have we failed to learn to like it or to prepare it properly?

It is to be hoped that the common bamboo of northern Bengal (*Dendrocalamus hamiltonii*), which grows to 80 feet in height and furnishes edible shoots and valuable timber, will prove hardy enough for our Southern States. Seeds of this (No. 48266) were sent us by Col. A. T. Gage, of Darjiling, India, who at the same time sent seeds of *Dillenia pentagyna* (No. 48267), the flower buds and fruits of which are edible. Since *Dillenia indica* has fruited on Mr. George B. Cellon's place at Miami, Fla., it is possible that this other member of the genus will grow in that region.

The tree which furnishes the easily worked wood for tea chests and which grows at altitudes of 3,000 feet (*Duabanga sonneratioides*, No. 48268) would probably be a valuable addition to the forest trees of Porto Rico and Hawaii; and, since its seeds germinate readily, it may prove adaptable for forest purposes.

Maesa chisia (No. 48272), which covers large areas of the Darjiling Hills and according to Gamble affords ideal protection to planted trees, may prove of use in the reforestation work in Hawaii.

Subtropical species of *Prunus* may play a rôle in the stock problem of our Southern States, and *Prunus cerasoides* (No. 48276), a large tree often cultivated in the Himalayas, is worthy of investigation.

The yellow-fruited raspberry, which, according to Gamble, is one of the best wild fruits of India, can not fail to interest the breeders of the genus *Rubus*. Seeds of this *Rubus* (*R. ellipticus*, No. 48278) were sent us by Col. Gage.

Since the beautiful grass *Thysanolaena agrostis*, which the writer sent from Poona in 1902, has been established near Orlando, Fla., by Mr. Nehrling, its relative *T. maxima* (No. 48279) certainly should be tried there.

Through the kindness of Mr. H. J. Elwes, the well-known authority on British trees, we have received a most valuable collection of 123 species of mostly ornamental trees, shrubs, and plants (Nos. 48304 to 48426) made by the distinguished explorer of western China, Mr. G. Forrest. These include 2 species of *Buddleia*; *Lonicera henryi*, distinguished by being one of the 3 evergreen-leaved vines which are hardy in Boston; 12 species of *Meconopsis*, the so-called "blue poppy" of western China, which is so beautiful but so difficult to grow anywhere; 48 species of Chinese Primulas, some still undescribed; 3 species of *Pyrus*; 12 species of *Rubus*; and the new mountain ash, *Sorbus vilmorini*, from Yunnan.

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

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 6, 1921.

INVENTORY.¹

47865. ARACHIS HYPOGAEA L. Fabaceæ.

Peanut.

From Rio de Janeiro, Brazil. Presented by Capt. Amilcar A. B. Magalhaes, Comissão de Linhas Telegraficas Estrategicas de Matto Grosso ao Amazonas. Received July 1, 1919.

"Peanuts grown by Mr. R. G. Reidy on his property, 'Cascatinha,' 500 meters above sea level, at the station called Martins Costa, on the Central Railway of Brazil, State of Rio de Janeiro. The original seed, from the wilds of Matto Grosso, where it was grown by the Indians, was given to Mr. Reidy by the Comissão in 1918 and is understood to have been selected for its very large size. The specimens sent are reduced in size, but are still much larger than the common peanut of Matto Grosso. Mr. Reidy stated that the development of the crop was retarded by damage resulting from floods. The product shows a marked modification in coloration." (*Magalhaes.*)

47866 and 47867.

From Sydney, Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens. Received July 2, 1919.

47866. EXOCARPUS CUPRESSIFORMIS Labill. Santalaceæ.

Native cherry. A small tree about 20 feet high with very numerous green, wiry branches, sometimes collected in a dense conical head, sometimes loose and pendulous at the ends. The leaves are reduced to tiny alternate scales. The flowers are small, in terminal spikes, and soon fall off, except one in each spike; after fertilization this one is raised on an obconical pedicel which thickens to a diameter of one-fourth of an inch and is red and succulent. The fleshy edible pedicel, under the small, dry, globular fruit, has been likened to a cherry with the stone outside. The close-grained, handsome wood is used for turning and cabinet purposes. (Adapted from *Bentham, Flora Australiensis, vol 6, p. 229, and Maiden, Useful Native Plants of Australia, pp. 30 and 534.*)

47867. TIMONIUS RUMPHII DC. Rubiaceæ.

A tall shrub or small tree, with small drupes which have much the appearance of the crab or wild apple of Europe. The wood is light in color, close grained, and suitable for lining boards; it is easily worked and resembles somewhat the English sycamore. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 63 and 607.*)

¹ All introductions consist of seeds unless otherwise noted.

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

47868 and 47869.

From Para, Brazil. Presented by Dr. J. Simao da Costa. Received July 3, 1919.

47868. *GUILIELMA SPECIOSA* Mart. Phœnicaceæ. **Palm.**
(*Bactris gasipaes* H. B. K.)

"*Pupunha*. Seeds of our *Guilielma speciosa*. The trees grow in clusters and are very graceful. The fruit, borne in large bunches, is edible. The natives prefer to boil it and eat it with cane sirup, but Europeans domiciled here have learned to eat the fruit boiled like the ordinary side dishes composed of all sorts of vegetables, as potatoes, yams, etc. The seeds yield an oil of very good quality, but in such small proportions that no one has ever attempted its extraction on a commercial scale." (*Da Costa*.)

For an illustration of this tree, see Plate I.

47869. *MAURITIA ARMATA* Mart. Phœnicaceæ. **Palm.**

"*Carana*. Seeds of *Mauritia armata*, from the fleshy pericarp of which a wine is made. The inner portion is a vegetable ivory as hard as that from *Phytalephas macrocarpa*. As the fruit is very small the buttons made are also much smaller than can be made from other vegetable ivories." (*Da Costa*.)

47870 and 47871.

From Bogota, Colombia. Presented by Mr. M. T. Dawe. Received July 7, 1919.

47870. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn.)

"A rich-colored variety of sapote, which is also of excellent flavor." (*Dawe*.)

47871. *ANNONA MURICATA* L. Annonaceæ. **Soursop.**

"This is a yellow-seeded form and may be a distinct species." (*W. E. Safford*.)

47872. *PHASEOLUS VULGARIS* L. Fabaceæ. **Common bean.**

From Trujillo, Peru. Presented by Mr. A. M. Lynch. Received July 7, 1919.

Nuña. Seeds white, nearly spherical, about three-eighths of an inch in diameter.

47873. *PHASEOLUS VULGARIS* L. Fabaceæ. **Common bean.**

From North Rose, N. Y. Presented by Mr. O. S. Weed. Received July 7, 1919.

"In 1917 I made several crosses between the blightless *Red Kidney*, *Marrow*, *Pea* bean, and *Yellow Eye*. In 1918 I again planted these crosses and the results were really marvelous in the vast numbers of peculiar beans obtained. I am sending you a few of the hybrids." (*Weed*.)



A PALM WHICH RIVALS THE BANANA AS A FOOD PRODUCER. (GUILIELMA SPECIOSA MART., S. P. I. No. 47868.)

The pupunha, which grows wild in the Amazon Valley of Brazil, produces large bunches of yellow fruits the size of an apricot. When boiled, these fruits have somewhat the texture and flavor of the chestnut and are of high food value. The plant, which is perhaps not specifically distinct from the pejobaye of Costa Rica (though the latter is usually considered to be *G. utilis*, not *G. speciosa*), should be cultivated throughout the Tropics. (Photographed by P. H. Dorsett at the Botanical Garden, Rio de Janeiro, Brazil, January 1, 1914; P14589FS.)



A SEEDLESS WHITE SAPOTE. (CASIMIROA SP., S. P. I. NO. 47957.)

When undertaking the improvement of a cultivated fruit, one of the chief aims of horticulturists seems to be the development of seedless forms. The above illustration shows a seedless white sapote, grown by Mr. I. L. Collins at Orange, Calif. It is not rare for trees of this species to produce such fruits, but it is not yet certain that grafting or budding will perpetuate the characteristic; it is quite possible that seedlessness, in this species, may often be due to defective pollination. (Photographed by David Fairchild, Orange, Calif., October 10, 1919; P25706FS.)

47874 to 47876.

From Bogota, Colombia. Presented by Mr. W. O. Wolcott. Received July 9, 1919.

47874. ANNONA MURICATA L. Annonaceæ.

Soursop.

"The soursop, known in Spanish-speaking countries as guanábana, sometimes shortened to guanaba, is unexcelled for sherbets and refreshing drinks. Like other anonas, however, it does not always fruit abundantly when grown from seed, and it will be necessary to establish named varieties, propagated vegetatively, before soursop culture can become the basis of an industry.

"The fruit is oblong, sometimes 4 or 5 pounds in weight, dark green, and prickly on the surface. The flesh is white and cottony or tough in texture, so that it is not good to eat out of hand. But it has a rich, aromatic, and perfectly delicious flavor, and when mixed with milk it makes one of the best drinks of the Tropics—the champola of Havana restaurants and cafés.

"The tree is tropical in its requirements and can be grown in the United States only in the southern part of Florida, approximately the area between Palm Beach and Punta Gorda on the north to Key West on the south. It is small, rarely attaining more than 20 feet in height, and has thick glossy leaves and large greenish flowers. It may be mentioned that the pollination of the anonas has never been studied sufficiently, and it is probable that their productiveness may be increased by attention to this subject. Mr. P. J. Wester and others have shown that most species are dependent upon cross-pollination, and if the insects which normally effect this are not present something will have to be done to insure its being accomplished." (*Wilson Popenoe.*)

47875. ANNONA SQUAMOSA L. Annonaceæ.

Sugar-apple.

"The sugar-apple, usually known in Spanish-speaking countries as *anona* or *anón*. This is one of the best of the anonas for strictly tropical regions, and it can even be grown where there are light frosts. It is too tender, however, for cultivation in California. In Florida it succeeds as far north as Cape Canaveral, though it is not commonly grown north of Palm Beach. It is more productive than several of the other anonas, especially when grown in a rather dry climate.

"The sugar-apple is a small tree, sometimes not attaining more than 12 or 15 feet in height, and rarely more than 20 feet. Its fruits are the size of apples and suggest pine cones in general appearance, whence the name 'pinha' which is used in Brazil. When fully ripe the fruit is soft and the carpels separate readily, exposing the snow-white, delicately flavored pulp. Like the cherimoya, the sugar-apple is eaten out of hand; it resembles the cherimoya in flavor, but has less acidity and is not, therefore, quite so delicious.

"The plant is widely distributed throughout the Tropics. It has become naturalized in parts of India and is highly esteemed in that country as a fruit. The Anglo-Indians call it 'custard-apple,' but this name is applied to all anonas without discrimination and leads to confusion. The Hindus have named it 'sharifa,' meaning noble, and 'sitaphal,' the fruit of Sita, one of their gods.

"In short, the sugar-apple is one of the important fruits of the Tropics. It is particularly adapted to dry regions, but does not withstand more

47874 to 47876—Continued.

than a few degrees of frost and is successful only in regions which rarely experience temperatures below freezing." (*Wilson Popenoe.*)

47876. SOLANUM QUITOENSE Lam. Solanaceæ.

Naranjilla.

A hairy-leaved unarmed shrub, 4 to 8 feet in height, bearing large quantities of small, acid, peculiarly fragrant fruits which the Spaniards call "Quito oranges" because of their size, appearance, and flavor. They are used for salads and preserves and for making cooling drinks and ices; a little of the juice is used in the preparation of the tea called maté.

For previous introduction and description, see S. P. I. No. 42034.

47877. COSTUS SPECIOSUS (Koen.) J. E. Smith. Zinziberaceæ.

From Oneco, Fla. Plants purchased from Reasoner Bros. Received July 11, 1919.

One of the most elegant plants of this family; its stout, spirally twisted stem carries its glossy leaves and dense, showy, white-flowered spike above the brushwood in the Indian tropical jungles. It is common everywhere in India, and especially in Bengal, where it frequents moist, shady places. The tuberous, horizontal rootstock yields 24 per cent starch, and in Ceylon the poorer natives use it for food, but it is not cultivated. In some parts of India the tuber is cooked in sirup and made into a preserve. It is also used as a substitute for ginger. (Adapted from *Watt, Dictionary of the Economic Products of India*, p. 279; *Hooker, Flora of British India*, vol. 6, p. 249; and *Chevast, C. Congrès d'Agriculture Coloniale, Gouv. Gen. de l'Indo-Chine, Hanoi series, No. 2, 1918.*)

47878 to 47881.

From Auckland, New Zealand. Presented by Mr. Clement L. Wragge, Waiata Botanic Garden, Birkenhead. Received July 11, 1919.

47878. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ.

(*Areca sapida* Soland.)

Nikau palm.

This elegant and graceful palm, found usually in thick brush, is the only species of this family represented on the mainland of New Zealand. The tree is sometimes 30 feet in height, with a smooth, polished, ringed, green stem and pinnate leaves 14 feet in length. Each tree bears two or three spathes, 13 inches long, which inclose the flower buds. The white flowers, sessile on a thick, fleshy, white axis, are followed by ovoid drupes, half an inch in length, which are a vivid red when ripe and look like a huge bunch of coral. The fruits are extremely hard and have been used for shooting birds. Although so hard, they are much relished by the wild parrots. The leaf strips are much used by the Maoris for weaving into baskets and kits of every description. The leaves are used in the construction of the native huts; a framework is made of manuka sticks, and the roof and walls of palm leaves which form a water-tight covering. The top of the stem is fleshy and juicy and is sometimes eaten. The nikau palm will stand fire almost as well as the cabbage tree (*Cordyline australis*). After a big bush fire most of the trees are killed, except the nikaus, the cabbage trees, and the fern trees. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 84.)

47878 to 47881—Continued.

47879. COPROSMA LUCIDA Forst. Rubiaceæ.

A shrub about 15 feet in height, with leathery, glossy bright-green leaves, 2 to 5 inches long. The inconspicuous flowers are wind-pollinated. The plant is often cultivated in gardens for the beauty of its small berry-like drupes which are brilliant orange-red. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 392.*)

47880. STYPHELIA ACEROSA (Gaertn.) Laing and Blackwell. Epacridaceæ.
(*Cyathodes acerosa* R. Br.)

Mingi-mingi. A shrub or small tree with blackish branches and rigid, pungent, needle-shaped leaves about half an inch in length, with recurved margins and three to seven parallel veins on the under surface. The small flowers, appearing in October and November, have whitish funnel-shaped corollas and form small white or red drupes. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 328.*)

47881. VITEX LUCENS Kirk. Verbenaceæ. Puriri.

A fine tree, from 50 to 60 feet in height, native to New Zealand but restricted to the northern part of the North Island. It is often called the New Zealand oak, on account of the strength and durability of its wood, which is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with holes, the work of a soft-bodied grub which develops into the puriri moth. These holes do not affect the timber, except in so far as it has sometimes to be cut to disadvantage. The handsome, bright glossy-green leaves are 3 to 5 foliolate with leaflets 3 to 4 inches long. The pink or red 2-lipped flowers, produced more or less all the year round, are in clusters of four to eight in axillary panicles. The roots of the puriri never penetrate deeply into the ground but lie near the surface, so the tree is easily blown over in a gale. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 350.*)

47882 to 47894.

From La Moncloa, Madrid, Spain. Presented by Sr. José Hurtado de Mendoza, director, Estación de Ensayo de Semillas. Received July 12, 1919.

47882 to 47884. TRITICUM AESTIVUM L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

47882. *Mocho colorado.* 47884. *Toledo sin barbas.*

47883. *Rabón.*

47885 to 47893. TRITICUM DURUM Desf. Poaceæ. Durum wheat.

47885. *Blanca de Nulas.* 47890. *Raspinegro.*

47886. *Caña maciza.* 47891. *Rubio entrelargo del Montijo.*

47887. *Carita de ratón.* 47892. *Rubio candeal.*

47888. *Enano de Jaen.* 47893. *Semental.*

47889. *Granadino.*

47894. TRITICUM TURGIDUM L. Poaceæ. Poulard wheat.
Baza.

47895 to 47897.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira. Received July 15, 1919.

47895. *HELIANTHUS ANNUUS* L. Asteraceæ. **Sunflower.**

"Seeds of a Russian variety grown in this country." (*Silveira.*)

47896 and 47897. *RICINUS COMMUNIS* L. Euphorbiaceæ. **Castor-bean.**

47896. The ordinary variety with small gray seeds.

47897. Var. *sanguineus*, with large reddish seeds.

47898. *ORYZOPSIS MILIACEA* (L.) Benth. and Hook. Poaceæ.**Grass.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received July 16, 1919.

"I am sending seeds of *Oryzopsis miliacea*, an indigenous grass which is quite resistant in saline situations and forms a good pasturage in such places." (*Trabut.*)

47899. *GONOLOBUS EDULIS* Hemsl. Asclepiadaceæ.

From La Gloria, Cuba. Presented by Mr. Irving L. Ward. Received July 17, 1919.

"Seeds which I grew from S. P. I. No. 35249 sent me from Washington, June 12, 1913. The soft, green fruits are very good when fried like eggplant. They are also delicious baked, after being peeled and boiled until tender in a little water; they should be baked only long enough to dry off the water." (*Ward.*)

47900. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceæ.**Guayacan.**

From Zacapa, Guatemala. Collected by Dr. F. S. Johnson. Received July 19, 1919.

"The *guayacan*, sometimes called by Americans *ignum-vitæ*, is found in abundance upon the plains of the lower Motagua valley, in the vicinity of El Rancho, Zacapa, and other towns. It is a small tree, sometimes attaining 30 feet in height, usually somewhat spreading in habit, with a trunk sometimes gnarled and twisted and having slender branches. The leaves are small and delicate. Toward the end of the dry season, i. e., in February or March, the tree comes into flower and is then a mass of lavender-purple, distinguishable for long distances across the plains. It remains in bloom for several weeks.

"The wood is exceedingly hard. Though difficult to work, it is of value for cabinet purposes. The heartwood is rich brown in color, while the sapwood which surrounds it is light yellow. Both take a fine polish.

"The tree thrives in a warm climate, with little rainfall. The soil upon which it grows is often rocky and poor. Whether it will stand any frost can not be stated, but it seems likely that it may succeed in parts of California, Arizona, and perhaps Florida. It should be given a trial as an ornamental." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44858.

47901. CANARIUM OVATUM Engl. Balsameaceæ. Pili nut.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received July 19, 1919.

This Philippine species is becoming known in the United States through the shipments of nuts which have reached many of our large markets in recent years. It is described by P. J. Wester as a tree about 50 to 80 feet high, adapted to a moist climate with abundant rainfall.

"The fruit is black, smooth, and shining, and contains one seed, the 'pili nut,' inclosed in a fleshy husk which is edible when cooked. The nuts are oblong, triangular, and pointed at both ends; the kernel is of excellent quality. It is rarely cultivated. While the pili occurs in several other provinces, all the nuts marketed are obtained in Sorsogon, Albay, and Ambos Camarines." (*Philippine Agricultural Review*, vol. 9, p. 242.)

"Since the tree is strictly tropical in its requirements (so far as known), it probably will not succeed in the United States unless it be in extreme southern Florida. It should be tried in Porto Rico, Cuba, and other parts of the American Tropics." (*Wilson Popenoe*.)

47902 to 47910. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilisima* Pohl.)

From Port of Spain, Trinidad, British West Indies. Cuttings presented by Mr. W. G. Freeman, Acting Director of Agriculture. Received July 22, 1919.

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| 47902. " <i>Maman l'enfant</i> ." | 47907. "No. 12." |
| 47903. " <i>Manioc Sellier</i> ." | 47908. "No. 13." |
| 47904. " <i>Mata Hotel</i> ." | 47909. "No. 14." |
| 47905. " <i>Parasol</i> ." | 47910. "No. 15." |
| 47906. " <i>Turkey Claw</i> ." | |

47911 to 47914.

From Buitenzorg, Java. Presented by the director, Plant Breeding Station. Received July 22, 1919.

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| 47911 to 47913. <i>RICINUS COMMUNIS</i> L. Euphorbiaceæ. | Castor-bean. |
| 47911. The ordinary form. | 47913. Var. <i>rubra</i> . |
| 47912. Var. <i>inermis</i> . | |
| 47914. <i>SESAMUM ORIENTALE</i> L. Pedaliaceæ. | Sesame. |
| A white-seeded variety. | |

47915. GOSSYPIUM sp. Malvaceæ. Mexican tree cotton.

From Mexico. Presented by Dr. C. A. Purpus, Paso del Macho, Vera Cruz. Received July 22, 1919.

"Capsules of cotton grown here at an altitude of 3,000 feet. The cotton trees reach a height of 10 to 12 feet and flower and fruit throughout the year." (*Purpus*.)

47916. JATROPHA CURCAS L. Euphorbiaceæ.

From Mada, Yucatan, Mexico. Presented by Mr. Alberto Tacea. Received July 23, 1919.

"Seeds of this plant are usually regarded as purgative, yet in this locality they are eaten and are used for confectionery." (*Tacea.*)

47917. DAMMARA AUSTRALIS Lambert. Pinaceæ. Kauri pine.

(*Agathis australis* Steud.)

From Auckland, New Zealand. Presented by Mr. J. W. Poynton. Received July 23, 1919.

A lofty forest tree, with a rounded, bushy head, usually ranging from 80 to 100 feet high, but it is often of greater size. The trunk varies in diameter from 4 to 10 feet, but occasionally attains 20 feet. The bark is glaucous-gray, falling off in large flat flakes. The sessile leaves are very thick and leathery. The cones are erect, almost spherical when ripe, and 2 to 3 inches in diameter; the broad, thin scales fall away from the axis at maturity. The tree is abundant in the northwestern peninsula of North Island, from sea level up to an altitude of 2,000 feet. The timber is not excelled by any other for the variety of uses for which it is adapted, and is remarkable for its strength, durability, and the ease with which it is worked. The resin, or *kauri gum*, so important for making varnish, is still dug in large quantities on the sites of previous forests, or obtained from those still living. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 645.)

For previous introduction, see S. P. I. No. 46387.

47918. MACADAMIA TERNIFOLIA F. Muell. Proteaceæ. Macadamia.

From Sydney, Australia. Purchased from Anderson & Co. Received July 24, 1919.

"Nuts of the thin-shelled variety."

For previous introduction and description, see S. P. I. No. 44769.

47919 to 47925.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received July 24, 1919. Quoted notes by Mr. Wester.

47919. CITRUS WEBBERII Wester. Rutaceæ.

"*Mangapug*. The largest known loose-skinned citrus fruit in the world. It is citron yellow, has 13 to 15 locules, very thin skin, and juicy flesh. It is eaten by the natives in Cotabato. This is apparently a rare form, for I saw no trees anywhere during my stay in Cotabato, although I went as far as to Fort Pikit in the interior. Nowhere did I see any signs of canker, though I was on the lookout for this disease."

47920. IPOMOEA NYMPHAEAEFOLIA Blume. Convolvulaceæ.

(*I. peltata* Choisy.)

Morning-glory.

"*Burakan*. This is a most gorgeous vine with its immense leaves and masses of bright-yellow flowers."

The specific name was originally spelled *nymphaefolia* by Blume and was corrected to *nymphaeaeifolia* in *Index Kewensis*.

47919 to 47925—Continued.

47921. IPOMOEA PES-CAPRAE (L.) Roth. Convolvulaceæ. **Morning-glory.**
(*I. biloba* Forsk.)

A branching, glabrous, perennial vine with prostrate, succulent stems sometimes 60 feet long. The suborbicular leaves approach 4 inches in width and are notched at the apex. The funnellform flowers, about 2 inches long, are borne during summer and autumn in clusters on a stout peduncle. This is one of the most characteristic plants of the sea beaches of warm and tropical America. (Adapted from Britton, *Flora of Bermuda*, p. 300.)

47922 to 47924. RUBUS spp. Rosaceæ. **Bramble.**

"These brambles from high altitudes in northern Luzon may do well in Florida."

47922. RUBUS sp. **47924.** RUBUS sp.

47923. RUBUS sp.

47925. (Undetermined.)

"*Buol*. This is a plumlike, yellow, acid fruit growing on a spiny, rather attractive shrub near the seashore in Davao and would probably make a good jelly or marmalade."

47926 and 47927. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**

From Dairen, Manchuria. Presented by Mr. A. A. Williamson, American consul. Received July 26, 1919.

These improved varieties have the advantage of containing more oil than other varieties and of being uniform in shape and size. They possess a very fine luster. Furthermore, the growing of these varieties is known to bring in about 15 to 20 per cent greater crop from the same area of land. (Adapted from *Commerce Reports*, March 14, 1919, p. 1232.)

47926. "*Shiheigai-hakka*. (*Ssuping kai*, white flower; or *Suping kai*, small bean.)"

47927. "*Kaigen-hakka*. (*Kaituan*, white flower; or *Kaiyuan*, small bean.)"

47928. BRASSICA BESSERIANA Andrz. Brassicaceæ. **Mustard.**

From Aden, Arabia. Presented by Mr. Addison E. Southard, American consul. Received July 28, 1919.

"Two kinds of mustard are grown in the Yaffai and Dthala districts of the Aden hinterland and in the Arabian Red Sea districts of Dubham, Shargah, Koraisha, Hojaria, and other places. These two kinds are known in Arabic as *khardal* (or *ghardal*) and *tartar*. The first-named variety yields but little oil, while the latter yields proportionately a good deal of oil. The clerk in this consulate was sent to canvass the Arab families in Aden and Sheikh Othman, with whom he has acquaintance, and succeeded in obtaining from the medicine chest of one old gentleman a few grams of the *khardal* (or *ghardal*) variety, which are herewith inclosed." (*Southard*.)

47929. ANACARDIUM EXCELSUM (Bert. and Balb.) Skeels. Anacardiaceæ.
(*A. rhinocarpus* DC.)

From New York, N. Y. Presented by H. P. Finlay & Co., Ltd. Received July 28, 1919.

"Seeds, called *Mijagua*, that come from Venezuela, where they are used as a substitute for Indian corn in the feeding of hogs. These seeds are much cheaper than Indian corn in Venezuela." (*H. P. Finley.*)

A majestic tree, related to the cashew nut, found at altitudes ranging from sea level to 2,700 feet, in torrid regions. The wood, being hard and heavy, is worked with difficulty, but it is used in making boats and canoes. Fish are very fond of the fruit, and it is stated that in ancient times the Indians in Talamanca used the cut-up bark of this tree to stupefy the fish and thereby to catch them more easily. (Adapted from *Pittier, Plantas Usuales de Costa Rica, p. 92.*)

47930 to 47939.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 28, 1919. Quoted notes by Mr. Wright.

47930. METROSIDEROS TOMENTOSA A. Rich. Myrtaceæ.

"*Pohutukawa*. One of the most beautiful of flowering trees and very valuable as a bee plant; the honey made from this is of excellent flavor and is pure white. This tree, about 40 feet in height, is found on the hillsides, along the beach, and even grows out of the sides of the sea cliffs. In many cases, thriving trees grow just above high-water mark, where the roots are frequently washed by the tide. Like *M. robusta*, it yields a hard wood which is used for making knees for boat building. Strange to say, *M. tomentosa* is found in the wild state only near the sea, although it grows well inland if protected from frost."

For previous introduction, see S. P. I. No. 42852.

47931. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. Sweet orange.

"*Dunning's Seedless* (navel orange). Seedling, from the Washington Navel, grown in Queensland, Australia, where it is said to surpass the Washington Navel."

47932. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid. Amygdalaceæ.

"*Coffee's Myrobalan*. This variety we use for the working of European plums and prunes (*Prunus domestica*). They grow well and make a good union on it. It strikes almost as freely as a willow."

47933 and 47934. PRUNUS SALICINA Lindl. Amygdalaceæ.

Japanese plum.

47933. "*Patterson*. A Satsuma seedling, said to be the latest of plums (yellow flesh)."

47934. "*Purple King. Doris* × *Hale*. A large Japanese plum of incomparable beauty, having very firm flesh of good quality. The best of the Japanese section; it surpasses all the other plums in vigor."

47935. PRUNUS sp. Amygdalaceæ.

Hybrid plum.

"*Wilson's Early*. Said to be the earliest hybrid plum grown; an extra good shipper."

47930 to 47939—Continued.**47936.** PRUNUS sp. Amygdalaceæ.

"*Precious*. Hybrid cherry plum. An early bearer and a heavy cropper."

47937. PRUNUS sp. Amygdalaceæ.

"*Early Jewel*. Hybrid Japanese plum. An early plum resembling *October Purple*."

47938. PRUNUS sp. Amygdalaceæ.

"*Morrison's Stock*. Used for the working of Japanese and hybrid plums (not for European). These plums grow very strong on it; and cuttings strike readily, provided they are not planted too late. This variety flowers, but never fruits."

47939. PYRUS sp. Malaceæ.**Pear.**

"*Corona*. *Bartlett* × *Beurre Clairgeau*. Good in quality and very handsome; should make a great commercial variety."

47940. BAUHINIA sp. Cæsalpiniaceæ.

Plants grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seeds collected by Dr. J. N. Rose, associate curator, National Herbarium. Numbered for convenience in recording distribution.

"No. 22119. August, 1918. This plant was very common on the dry hills above Huigra, Ecuador, associated with cacti, fourcroya and other semiarid plants. It forms a small round bush, about 3 to 4 feet high, with the characteristic 2-lobed leaf of the Bauhinia. The flowers are borne in small clusters of fours or fives and suggest, in a way, small red-flowered fuchsias. The calyx is cut on one side and is pushed off the petals like a spathe. The petals, which are nearly an inch long, are spread only a little at the tip and at first suggest a tubular flower. The plant was seen nowhere else, although it was quite common at Huigra at an altitude of about 4,000 feet. The flowers are so attractive that we believe it might prove a valuable addition to our ornamentals, especially in the semiarid region of the Southwestern States." (*Rose*.)

47941. TRITICUM AESTIVUM L. Poaceæ.**Common wheat.**(*T. vulgare* Vill.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received August 5, 1919.

"*Fritissi* wheat; harvested south of Tuggurt, Algeria, April, 1919." (*Trabut*.)

"Probably a club wheat of the common type." (*C. E. Leighty*.)

47942. ALEURITES TRISPERMA Blanco. Euphorbiaceæ. **Banucalag.**

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, Porto Rico Experiment Station. Received August 5, 1919.

"You sent us in 1909 seed of *Aleurites trisperma*, under S. P. I. No. 26050. This introduction is producing more seed than *A. fordii* or *A. moluccana*, and I am sending you a bag of it. The plant grows well with us and the seed is easily gathered." (*May*.)

47943 to 47945. ZEA MAYS L. Poaceæ. Corn.

From Rio de Janeiro, Brazil. Presented by Capt. Amilcar A. B. Magalhaes.
Received August 5, 1919.

"These ears which we are sending you were obtained here, in the State of Rio de Janeiro, from seeds distributed by this Commission and brought from Matto Grosso to the Corn Exposition held in this capital in 1918. This product is not a perfect reproduction of the original, it being apparent that some kernels have suffered from the influence of common corn which the farmer planted very close to the plat allotted to the pure seed. These kernels are distinguished by a hardness which shows in the external parts, while the indigenous corn, richer in cornstarch, is normally soft, even after drying, as is shown in most of the kernels.

"The ears of indigenous corn have fewer kernels on the cob, but the kernels are more perfect than those on the ear sent you at this time."

47943. Kernels red.

47945. Kernels yellow.

47944. Kernels white.

47946 and 47947. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

From Fresno, Calif. Presented by Mr. A. C. Jewett. Received August 7, 1919.

"Two varieties of Afghan melons which mature very late in the fall. They are very superior to the common run of melons." (*Jewett.*)

47946. No. 1.

47947. No. 2.

47948. PARKIA TIMORIANA (DC.) Merr. Mimosaceæ. Cupang.
(*P. roxburghii* Don.)

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received August 8, 1919.

"A handsome timber tree, the seeds of which are roasted and used for coffee." (*Wester.*)

47949. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ. Peach.
(*Prunus davidiana* Franch.)

From Dundee, Ill. Presented by the D. Hill Nursery Co., who purchased them from the Yokohama Nursery Co., Yokohama, Japan. Received August 9, 1919.

Seeds of the *davidiana* peach, part of a shipment for stock purposes from Japan by the D. Hill Nursery Co., Dundee, Ill. The seeds presumably came from China. So far as the United States Department of Agriculture is informed, this is the first commercial introduction of *davidiana* peach pits into the United States.

47950. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. Japanese apricot.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co., Ltd. Received at Chico, Calif., August 30, 1919.

Introduced for the use of specialists in the Department.

For previous introduction, see S. P. I. No. 46694.

47951. SOLANUM QUITOENSE Lam. Solanaceæ. Naranjilla.

From Guayaquil, Ecuador. Presented by Dr. H. R. Carter, assistant surgeon general, United States Marine Hospital, Baltimore, Md., who obtained them from Dr. M. E. Connor, Guayaquil. Received August 9, 1919.

"The fruit of the naranjilla is about the size of a mandarin orange; it is orange-yellow, but not flattened as much as the mandarin. The interior resembles that of a tomato or eggplant. I was told by Mr. Elizade, secretary of state of Ecuador, that it grew in the warm countries near Quito, i. e., at a lower altitude; and I feel reasonably sure that I saw a growing plant in the barren country on the upper Magdalena near Girardot, Colombia, but having no opportunity to examine it I am not positive. This plant resembled a large eggplant, 4 to 5 feet high, and was covered with fruit, some yellow and some green. I am told by the same man that it fruits when young, i. e., the first season; and from what I heard I thought it might do so from Thomasville, Ga., southward, and in southern California. The fruit, which ripens in July, is too acid to be eaten out of hand, although I liked it, but it is used as a flavor for frescos (soft drinks) and ice cream." (Carter.)

47952 to 47954.

From Vereeniging, Transvaal. Presented by Mr. J. Burt Davy. Received August 11, 1919.

47952. AGATHOSMA CHORTOPHILA Eckl. and Zeyh. Rutaceæ.

"Leaves of various species of *Agathosma*, of the Cape region, are used like buchu, but are of a more delicate and agreeable odor." (*National Standard Dispensatory, 1905, p. 1335.*)

47953. BAROSMA BETULINA (Bergius) Bartl. and Wendl. Rutaceæ.**Buchu.**

The honey buchu, a branching, evergreen shrub, the best variety of buchu, is found on South African mountain slopes in red sandy loam, at altitudes between 1,000 and 2,000 feet. It is bushy and compact and reaches a height of 3 to 4 feet, though it may grow taller. On account of the starlike purple flowers this plant compares favorably, as an ornamental, with the gardenia and camellia. The small light-green leaves are smooth and leathery and are covered on each surface with oil glands. A greenish yellow oil is extracted from the leaves by using alcohol or boiling water. When exposed to cold, the oil deposits a solid barosma camphor which, when purified, has the odor of peppermint. The leaves are harvested by clipping the twigs at the beginning of March. The oil content is highest in January and February, but the seeds are then still on the plants and clipping at this time would result in their loss for propagating purposes. In clipping, care is taken to have a sufficient number of buds for the next year's growth. Leaves of one year's growth are far superior to those 2 years old. They are astringent and contain a bitter substance which acts beneficially on the stomach. The Hottentots and Bushmen use a solution of the leaves for bladder and kidney complaints, and the roots for snake bites. (Adapted from *The Agricultural Journal of the Union of South Africa, vol. 6, p. 80*, and *The Agricultural Journal, Cape of Good Hope, vol. 6, p. 147.*)

47952 to 47954—Continued.**47954. BAROSMA CRENULATA (L.) Hook. Rutaceæ. Buchu.**

The large-leaved buchu, the kind most esteemed in the colony, although not the highest priced in London, is often distinguished as the "true buchu." It is a twiggy shrub, 3 to 4 feet high, with smooth purplish branchlets and leaves 1 to 1½ inches long. The pale purplish flowers, produced in October and November, are very plentiful and last for a long time. The uses are the same as those of *B. vetulina*. (Adapted from *The Agricultural Journal, Cape of Good Hope, vol. 6, p. 147.*)

47955. PARTHENIUM ARGENTATUM A. Gray. Asteraceæ. Guayule.

From Saltillo, Mexico. Presented by the Cia. Explotadora de Caucho Mexicano, through Mr. H. C. Morgan, American consul. Received August 11, 1919.

"Seeds from the guayule plant, which yields a certain kind of commercial rubber. The seeds were collected from this year's flowers." (*Morgan.*)

47956. ACHRADELPHA MAMMOSA (L.) O. F. Cook. Sapotaceæ. Sapote.

(*Lucuma mammosa* Gaertn.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. José C. Zeledon. Received August 12, 1919.

"Few other fruits are of such importance to the natives of Mexico and Guatemala as the sapote, which grows wild in the forests of Guatemala, Tabasco, and Chiapas. It is often cultivated, but much of the fruit consumed in these regions is gathered from wild trees. Elsewhere in tropical America it is planted in gardens, notably in Cuba, where it is a favorite fruit. The Central American common name, *zapote* (spelled sapote in English), is taken from the Aztec *tzapotl*, a generic name applied by the ancient Mexicans to all soft sweet fruits. In Cuba it is called *mamey sapote* and *mamey colorado*.

"The sapote becomes a large tree, sometimes attaining 80 or 90 feet in height. It thrives only in regions where the climate is warm and rather moist; it can not stand the cold winters of California, and for some reason it has not succeeded in southeastern Florida, although it is apparently not the cold that interferes with its growth in the latter region. The fruits are the size of small muskmelons, but elliptic in form; they have a rough russet-brown outer covering about an eighth of an inch thick, salmon-colored or reddish flesh that is soft, melting, sweet, and of rich flavor, and a single large, elliptic, glossy-brown seed. A poor sapote resembles a squash in taste, but a good one is rich and pleasant flavored. The fruit is eaten fresh, or made into jam, or frozen to form a sherbet." (*Wilson Popenoe.*)

47957. CASIMIROA sp. Rutaceæ.

From Los Angeles, Calif. Budwood presented by Mr. Milo Baker. Received August 21, 1919.

"Budwood from a tree grown from a cutting received from Central America some years ago and budded into a white sapote tree. This budded tree is fruiting this year for the second time. The fruit is practically seedless and about the size of a smallish apple; the entire fruit is edible and very rich. The tree seems to be a vigorous grower and a prolific bearer." (*Baker.*)

"The cuttings received are more pubescent than those of the common *Casimiroa edulis* (the white sapote), and I suspect they belong to one of the other

species of this genus, probably *C. sapota* or *C. tetrameria*. It is not rare for *C. edulis* to produce seedless fruits, and, so far as I know, the other species of *Casimiroa* produce fruits much like those of *C. edulis* in character." (*Wilson Popenoe.*)

For an illustration of a seedless white sapote, see Plate II.

47958. OLEARIA FURFURACEA (A. Rich.) Hook. f. Asteraceæ.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 28, 1919.

A freely branching shrub or small tree, 6 to 20 feet high, native to the North Island of New Zealand. The alternate leaves, 2 to 4 inches long and 1 to 2 inches broad, vary in shape from oblong to broadly ovate. They are coriaceous, green above, and clothed below with a dense silvery tomentum. The small heads of white flowers are borne in large, much-branched corymbs on long, slender peduncles. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 284.)

47959 to 47962.

From Georgetown, Demerara, British Guiana. Presented by Mr. J. B. Harrison, director, Science and Agriculture, Department Botanic Gardens. Received August 18, 1919.

47959. ANAXAGOREA BREVIPES Benth. Annonaceæ.

"*Black yarri-yarri.*" A tree with yellow, medium-hard wood which is used for fishing rods. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 99.)

47960. CHEYSOBALANUS ICACO L. Rosaceæ.

Icaco.

"*Kulimiro.*" A small tree lining the banks of the Kaituma River, adjacent to the savanna region. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 102.)

47961. CLIBADIUM SYLVESTRE (Aubl.) Baill. Asteraceæ.

"*Kunamí.*" A shrub which is ground up and made into pellets for poisoning fish. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 102.)

47962. OCOTEA RODIEL (Schomb.) Mez. Lauraceæ.

"*Bibiru, Greenheart.*" A well-known tree which grows to a large size. The wood is used for wharf piles, in shipbuilding, and other constructional work. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 106.)

**47963. LIMONIUM BRASSICAEFOLIUM (Webb) Kuntze. Plumbagina-
(*Statice brassicaefolia* Webb.) [ceæ.**

From Tangier, Morocco. Presented by M. Jules Goffart. Received August 18, 1919.

A subshrubby plant, 1½ feet high, native to the Canary Islands. The obovate leaves have sinuate margins. The branches are 2-winged, with the wings very broad; the branchlets are 3-winged. The spikelets are 2-flowered, 2 to 3 fasciated, at the ends of the branches; the calyx is purple, with glabrous tube and denticulate margin; the corolla is yellowish white. (Adapted from *Curtis's Botanical Magazine*, pl. 5162.)

47964. ORYZA SATIVA L. Poaceæ.**Rice.**

From Vercelli, Italy. Presented by Dr. Novello Novelli, director, R. Stazione Sperimentale di Riscicoltura e delle Coltivazioni Irrigue. Received August 21 and 26, 1919.

"*Precoce dellarole.*"

Procured for the use of the rice specialist of the Bureau of Plant Industry.

47965 to 47967.

From Belem, Para, Brazil. Presented by Dr. J. Simão da Costa. Received August 22, 1919.

47965. OENOCARPUS BATAUA Mart. Phœnicaceæ.**Palm.**

A tall, majestic tree with a large smooth trunk, generally distinctly ringed; the leaves are terminal, pinnatisect. with linear segments; the spadices spring from beneath the leaves and are simply branched; the spathe is large, fusiform, and woody and falls off as soon as the spadix escapes from it; the flowers are monoëcious, and the fruit is nearly globular, 1-seeded, with an edible covering. All species of this genus afford oil and "yukissé" (palm-drink) from the fruits, and they are also used for various other purposes. The leaves serve as a thatch, and from the nerves of the decayed petioles the Indians make arrows for their blowpipes. The oil is colorless and sweet and excellent not only for lamps but for cooking. The shopkeepers of Para buy these oils of the Indians and mix them in equal proportions with olive oil, retailing the whole as olive oil, from which indeed it can scarcely be distinguished even by the best judges. For frying fish this oil is equal either to olive oil or butter. Native to the Amazon Valley at an altitude of not more than 1,600 feet above the level of the sea. (Adapted from *Seemann, Popular History of the Palms, p. 270.*)

47966. VIROLA SEBIFERA Aubl. Myristicaceæ.**Ucuíba.**

"A tree inhabiting the lowlands of the Lower Amazon, which produces in June and July a fruit about the size of a cherry with a brown paper-thin shell. This fruit contains an abundance of oil and stearin, and since each tree produces about 2 barrels of nuts a week during the fruiting season, there seems to be here a promising source of soap material. The timber also is valuable, being hard and dense and reddish brown in color, almost like mahogany." (*Lange, Lower Amazon, pp. 34, 407, 467.*)

47967. VOUACAPOUA AMERICANA Aubl. Fabaceæ.

(*Andira excelsa* H. B. K.)

"A tree found in the lower Amazon region, which yields timber of excellent quality. It is also called Amazon wood." (*Lange, Lower Amazon, pp. 88, 461.*)

47968 to 47972.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received August 22, 1919. Quoted notes by Dr. Bertoni.

47968. BRITOA SELLOWIANA Berg. Myrtaceæ.

"Native name in Guarani, *Nyandu-apihsa*; in Portuguese, *Siete Capotes*. A well-known little fruit tree, very productive."

47968 to 47972—Continued.**47969.** CYPHOMANDRA sp. Solanaceæ.

Tree-tomato.

"Said to be edible."

47970. EUGENIA sp. Myrtaceæ."Native name in Guarani, *Anyangapirih-apua*. A species with round cherry-colored fruit; a low shrub, very resistant to cold; fruit good."**47971.** MANIHOT TWEEDIEANA Muell. Arg. Euphorbiaceæ."Native name in Guarani, *Gwasú-mandió*. The Indians claim that by subjecting this species to annual cultivation, in a few years they obtain an edible variety."**47972.** SOLANUM CHACOENSE Bitter. Solanaceæ.

Potato.

(*S. tuberosum guaraniticum* Bertoni.)

"The tubers, thicker than those of *S. commersonii*, have a strong and somewhat potatolike flavor and are not usually eaten. But, under cultivation, there appear at times edible tubers with a potato flavor; this happens also sometimes in the wild state, but as an unstable variation, according to my results. It is a plant worth studying, especially by crossing with the common potato, for in this region it is not attacked by any disease or insect; it produces two or three times a year; and it thrives in dry and rather poor soils where the common potato is not resistant."

47973. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

From Ventimiglia, Italy. Presented by the director, La Mortola Botanic Gardens. Received August 25, 1919.

An Australian tree 30 to 40 feet high, with slender branches, staminate flowers in slender spikes, and globular fruiting cones not more than a third of an inch in diameter. The wood is dark colored, close grained, and prettily marked. (Adapted from *F. M. Bailey, Queensland Flora, pt. 5, p. 1491.*)

"This species has proved hardier in the Everglades of Florida than *C. equisetifolia* and appears to be a much handsomer form." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 44532.

47974. CASSIA ANGUSTIFOLIA Vahl. Cæsalpiniaceæ.

Senna.

From Tangier, Morocco. Presented by M. Jules Goffart. Received August 25, 1919.

This plant is one of the sources of the drug known as senna. It is grown extensively in India and Arabia. Watt in his Commercial Products of India says of its culture: "It is sown on red or black clay loams, fairly liberally ploughed and manured, the sowing being in May. Weeding has to be attended to, but irrigation is hardly if ever necessary. The season for collecting the leaves is June to December. The yield is said to be 1,000 pounds an acre, which allows a handsome margin for profit."

47975 to 47983.

From St. Vincent, Cape Verde Islands. Collected by Dr. H. L. Shantz. Received August 26, 1919. Quoted notes by Dr. Shantz.

47975. CAJAN INDICUM Spreng. Fabaceæ.

Pigeon-pea.

"(No. 5. St. Vincent. July 29, 1919.) Pigeon-peas from market; said to be grown on San Antonio, the island north of St. Vincent. Mixed; the size of a small pea."

47975 to 47983—Continued.

47976. CITRUS LIMONIA Osbeck. Rutaceæ. **Lemon.**

"(No. 2. St. Vincent. July 29, 1919.) Lemon budwood. Only a few grown on this island; only a few trees seen."

47977 and 47978. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

47977. "(No. 9. St. Vincent. July 29, 1919.) Beans from the market, grown on San Antonio. Brown, with large admixture of black and variegated forms."

For an illustration of this bean as it grows in Florida, see Plate III.

47978. "(No. 8. St. Vincent. July 29, 1919.) Beans from market, grown on San Antonio. Dull white."

47979 to 47982. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

47979. "(No. 6. St. Vincent. July 29, 1919.) Beans from market. Large flat; white or white and red. Grown on San Antonio."

47980. "(No. 7. St. Vincent. July 29, 1919.) Beans from market, grown on San Antonio. White; looks like a bush Lima."

47981. "(No. 10. St. Vincent. July 29, 1919.) Beans from market. Red. All beans in the market are mixed. Grown on San Antonio."

47982. "(No. 10A. St. Vincent. July 29, 1919.) Beans from market. Grown on San Antonio. Mottled."

47983. TAMARINDUS INDICA L. Cæsalpinaceæ. **Tamarind.**

"(Nos. 4 and 13. St. Vincent. July 29, 1919.) Tamarind fruits from the largest tree on the island. Flowers and ripe fruits at the same time. Used to make a drink by putting the fruit in water (like lemonade)."

47984 to 47986. TRITICUM AESTIVUM L. Poaceæ.

(*T. vulgare* Vill.)

Common wheat.

From Sydney, New South Wales. Presented by Mr. George Valder, under secretary and director, Department of Agriculture. Received August 27, 1919. Quoted notes by Mr. Valder.

47984. "Crossbred wheat (fixed). *Dreadnaught* × *Cleveland* × *Rymer* × *Bunyip* (No. 1 early strain) from Bathurst Experiment Farm."

47985. "Crossbred wheat (fixed). *Dreadnaught* × *Cleveland* × *Rymer* × *Bunyip* (No. 2 early strain) from Bathurst Experiment Farm."

47986. "*Sutton's Sensation* from Bathurst Experiment Farm."

47987 and 47988.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received August 27, 1919. Quoted notes by Mr. Bircher.

47987. EUGENIA PUNGENS Berg. Myrtaceæ. **Guabiyu.**

"A bush from South America, with pungent leaves and myrtlelike-flowers. The black fruits, generally in pairs, are about an inch across and contain a sweet yellow flesh which incloses one or two large green seeds. Although the fruit, at present, is insipid in flavor, it might be improved by culture."

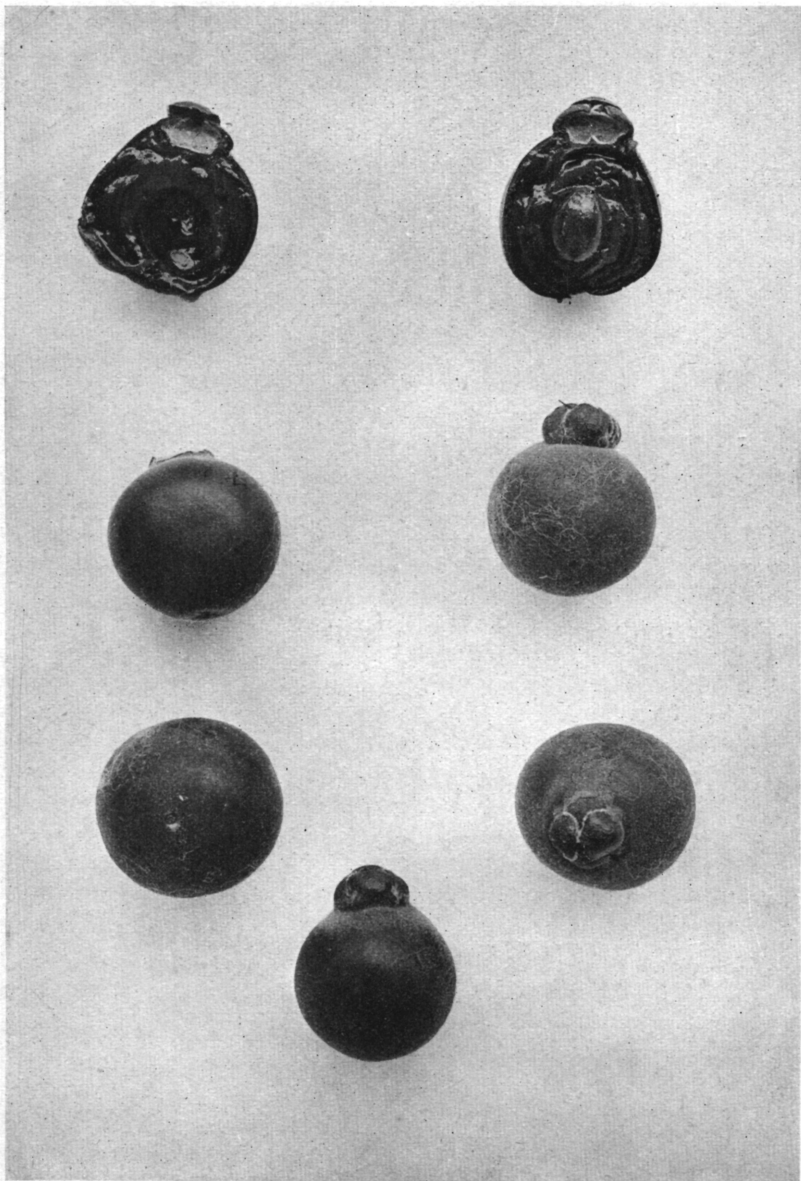
For previous introduction, see S. P. I. No. 45108.

The fruits of this species are illustrated in Plate IV.



GATHERING BONAIVIST BEANS IN SOUTHERN FLORIDA. (DOLICHOS LABLAB L., S. P. I. NO. 47977.)

The bonavist bean is a perennial rank-growing species which forms a satisfactory ground cover in orchards. It produces its pods clustered on short erect stalks which project above the foliage, making them easy to gather. Its beans, both when young and green and when dried, are an excellent vegetable which deserves to be known in all frostless regions where the plant will grow. (Photographed by David Fairchild, Miami, Fla., February 11, 1919; P25266.)



THE GUABIYU, AN EXCELLENT FRUIT RELATED TO THE GUAVA. (EUGENIA PUNGENS BERG., S. P. I. No. 47987.)

The guabiyu is a Paraguayan shrub, is sufficiently hardy to grow out of doors in California and Florida, and is of attractive appearance. Its purplish black fruits, generally produced in pairs, are very juicy and of pleasant subacid flavor. Very few of the little-known myrtaceous fruits are of such good quality as this. (Photographed by E. L. Crandall, from fruits sent in by P. D. Barnhart, Sawtelle, Calif., October 16, 1917; P20878FS.)

47987 and 47988—Continued.**47988. EUGENIA SUPRA-AXILLARIS** Spring. Myrtaceæ.

"A glossy-leaved evergreen shrub from eastern Brazil, which bears clusters of white flowers and black, globose, 1-seeded fruits in clusters of 3 to 10. The fruits are about the size of small cherries and somewhat resemble juniper berries in flavor."

For previous introduction, see S. P. I. No. 45109.

47989 to 47994.

From Gwelo, Southern Rhodesia. Presented by Mr. J. Burt Davy. Received August 30, 1919. Quoted notes by Mr. Davy.

47989. BAIKIAEA sp. Cæsalpiniaceæ.

"*M'Saasa*, a tall evergreen tree, with a straight trunk, characteristically dominant over considerable areas of the midlands of Mashonaland, Rhodesia, forming fairly thick forests. The bast fiber is very strong and is regularly used by natives for making game nets and for other purposes requiring great strength. These seeds were collected from a tree in Umvuma, where the summer rainfall is 25 inches."

47990. CASSIA LAEVIGATA Willd. Cæsalpiniaceæ.

"A rapidly growing ornamental shrub from Umvuma, Mashonaland, useful for a quick cover to prevent erosion and at the same time to add nitrogen to the soil."

47991. COMBRETUM sp. Combretaceæ.

"A small tree, yielding a rubber in quantity. This tree was growing on a magnesian dike on the Rhodesdale Ranch, Umvuma, Mashonaland, where the summer rainfall is 25 inches and the winters dry. The tree is plentiful, but only one was seen bearing fruit."

47992. GOSSYPIUM sp. Malvaceæ.

Cotton.

"A wild cotton from Melsetter, Mashonaland, July, 1919."

47993. HEBBIA sp. Anacardiaceæ.

"A small evergreen tree growing on a magnesian dike, on the Rhodesdale Ranch, Umvuma, Mashonaland, July 11, 1919."

Received as *Anaphrenium* sp. This genus is now referred to *Heertia*.

47994. SECURIDACA LONGIPEDUNCULATA Fres. Polygalaceæ.

"*Violet tree*. A small evergreen, with a strong bast fiber and ornamental, violet-colored flowers. It is growing on the Rhodesdale Ranch, Umvuma, where the summer rainfall is 25 inches."

47995. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, Agricultural Experiment Station. Received September 2, 1919.

"S. C.-12/4. We are getting splendid results here with this cane. We now have over 100 acres planted on this island. Plantations which have trial areas report from 25 per cent up to 90 per cent more sugar per acre than from standard cane." (*Smith*.)

47996. BROSIMUM ALICASTRUM Swartz. Moraceæ. Breadnut tree.

From Ojitas, Yucatan, Mexico. Presented by Mr. E. H. Thompson, through Mr. George Totten, jr., Washington, D. C. Received September 4, 1919.

"Two quarts of *ramon* [breadnut] seed, from a fine tree. The leaves of the *ramon* tree form the principal source of fodder for the cattle of Yucatan." (Totten.)

47997 and 47998.

From Bogota, Colombia. Presented by Mr. M. T. Dawe. Received September 8, 1919.

47997. ASTBOCARYUM sp. Phœnicaceæ.**Palm.**

"In my recent journeys I came across a palm known as *guere*. It is found in the forests of the Darien country and grows from sea level to altitudes of about 400 meters. The palm is about 10 meters in height and bears large hanging racemes of scarlet-colored fruits, the nuts of which yield a useful oil." (Dawe.)

47998. PRIORIA COPAIFERA Griseb. Cæsalpiniaceæ.

"Seeds of the *cativo* tree. This tree is abundant in the Gulf of Uraba and yields a resin known locally as 'cativa,' which is used for calking boats. I understand that the tree is also found in the Canal Zone, so it, or its product, is probably well known. I may mention that the tree is very abundant in the lowlands of this country and that the resin could be obtained in very large quantities should it possess any commercial value." (Dawe.)

47999. ERYNGIUM FOETIDUM L. Apiaceæ.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino. Received September 8, 1919.

A wild herbaceous plant, widely distributed throughout the West Indies and South America, which, because of its very agreeable odor, is used as a condiment in Cuba and Porto Rico. In the former country it is especially popular as a green dressing with "Pescado a la isleña," literally, "fish a la Canaries." An infusion of the plant is considered efficacious as a febrifuge. (Adapted from *Revista de Agricultura, Comercio y Trabajo, Cuba, vol. 2, p. 343.*)

48000. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

From Del Monte, Calif. Presented by Mr. T. Lee, Hotel del Monte, from trees grown at Del Monte. Received September 10, 1919.

"*Yang mei*. The beautiful dark-purple fruits are the size of crab apples and can be eaten out of hand, made into compotes, pies, sirup, and wine. There is great variation in the habit and productivity of the trees, and also in the color, size, and taste of the fruits. The trees are evergreen and thrive best in well-drained rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California." (Frank N. Meyer.)

48001 to 48011.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received September 12, 1919. Quoted notes by Dr. Cramer.

48001 to 48010. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

"I am mailing 13 boxes of seeds of *Elaeis guineensis*, which were collected from trees grown in our garden at Sumatra."

This palm is very important economically. The fruit is used by the natives for food, the leafstalks and leaves for thatching houses, and the fleshy outer layer and kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 533.)

48001. "Banga K from tree 46 I, which was grown from seed imported from Kamerun."

48002. "Banga K from tree 47 I, which was grown from seed imported from Kamerun."

48003. "Banga K from tree 54 I, which was grown from seed imported from Kamerun."

48004. "Banga K from tree 55 I, which was grown from seed imported from Kamerun."

48005. "Denden 7 from tree 46 II, which was grown from seed imported from Sao Thome Island, Portuguese West Africa."

48006. "Denden 7 from tree 54 II, which was grown from seed imported from Sao Thome Island, Portuguese West Africa."

48007. "Nsombo C from tree 43 II, which was grown from seed imported from the Belgian Kongo."

48008. "Nsombo D from tree 23 II, which was grown from seed imported from the Belgian Kongo."

48009. "Nsombo D from tree 24 II, which was grown from seed imported from the Belgian Kongo."

48010. "Nsombo D from tree 59 II, which was grown from seed imported from the Belgian Kongo."

48011. MIMUSOPS KAUKI L. Sapotaceæ.

"Seeds of *Mimusops kauki* with big fruits. The taste resembles very much that of *Achras zapota*, but the fruit is not eaten very often by Europeans; it is a tree that likes to grow near the sea."

48012. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, through Mr. Augustus I. Hasskarl, American vice consul, Rio de Janeiro. Received September 10, 1919.

"*Lagrimas de Nossa Senhora* (tears of Our Lady). This plant is a vigorous grower and produces, under almost any local conditions, great crops of excellent forage. It reaches a height of 10 feet or over, and a single plant often produces 40 to 50 shoots. The yield in green forage under favorable conditions runs very high, from 10 to even 20 tons to the acre, and the yield of grain is also very heavy. The seeds are very hard and if allowed to mature require crushing or grinding before feeding. Possibly the most important use of this plant

is for soiling—cutting four or five times during the year. The plant stools well, continually sending up new shoots or stems, and lasting, in Brazil, for some years. In temperate climates it would be an annual, as are teosinte and maize. Its favorite habitat is a low moist or even marshy soil, but it will grow successfully in dry soil, or luxuriantly in very wet localities, or even in water." (*Day*.)

For previous introduction, see S. P. I. No. 47617.

48013. PRUNUS SUBCORDATA Benth. Amygdalaceæ.

From Klamath Falls, Oreg. Presented by Mr. Elmer Applegate. Received September 15, 1919.

Obtained for experimental purposes for Department experts.

48014. JUGLANS CATHAYENSIS Dode. Juglandaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, assistant superintendent of parks. Received September 15, 1919.

"*Juglans cathayensis* is said to grow 70 feet tall, but it does not show any tendency to be arborescent here. Our plants, which were received from the Arnold Arboretum in 1911, are about 10 years old, 8 feet tall, and bushy in habit. They began bearing 2 years since. The nuts germinate readily." (*Dunbar*.)

48015 to 48017.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received September 18, 1919.

48015. BERBERIS PRUINOSA Franch. Berberidaceæ. **Barberry.**

A robust evergreen shrub, probably 10 feet or more in height, native to southwestern China. Its leaves are of leathery texture, up to 2½ inches long, lustrous green above, often grayish beneath, not unlike in general appearance those of the Himalayan *Berberis aristata*. It gets its name from the rich pruinose (or plum-colored) bloom that covers the fruits. (Adapted from *Gardeners' Chronicle*, vol. 54, p. 336.)

48016. CARAGANA AMBIGUA Stocks. Fabaceæ.

Shinaluk. A subshrubby leguminous plant, with large conspicuous flowers that are said to be eaten by the natives of Baluchistan, whence this plant comes. It is said to be found at altitudes of 5,000 to 9,000 feet. (Adapted from *Hooker, Journal of Botany*, vol. 4, p. 145.)

48017. CARAGANA MICROPHYLLA Lam. Fabaceæ. **Altagana.**

Variety *crasse-aculeata*. Distinguished from the typical form of *C. microphylla* by its strong spines, which in reality are thickened stipules from the base of the rachis, and by its beautiful foliage, which is more abundant, glabrous, and persistent than in the typical form. A vigorous variety of this highly polymorphic species. (Adapted from *Fruticetum Vilmorinianum*, p. 57.)

48018 and 48019. TRIFOLIUM REPENS L. Fabaceæ.

White clover.

From Reading, England. Purchased from Sutton & Sons. Received September 19, 1919.

Introduced for experimental work by specialists of the Department of Agriculture.

48018. "White, or Dutch."

48019. "Wild White (Kentish)."

48020. RHEUM sp. Polygonaceæ.

Rhubarb.

From Durban, Natal, Africa. Roots purchased from R. Mason & Son through Mr. William W. Masterson, American consul. Received September 20, 1919.

“A kind of garden rhubarb that is grown here, which will be a valuable introduction if similar results can be obtained with it in America. This rhubarb in the early spring (October here) is tender and crisp and is used extensively for the table. Unlike our rhubarb, which soon becomes fibrous and tough, this rhubarb lasts about seven months and is as good during that time as when it first came on the market in the spring. I do not know whether this difference is caused by the climate, soil, or other local reasons, or whether it is another kind of rhubarb. I only know it is delicious, is invariably good and tender, and lasts over half the year.” (*Masterson.*)

48021. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

From Chile. Presented by Mr. Hudson Maxim, Landing, N. J. Received September 23, 1919.

“Chile beans which I obtained from a member of the Du Pont Company who traveled in Argentina and Chile. These beans grow in a wet district at a high altitude in the Andes and are very frost resistant. From early August until the ground freezes in the fall one may have the very best of string beans from this variety, and the large juicy pods, which are borne most prolifically, may be eaten even after they have been pretty well filled with seeds. By the latter part of August the beans are large enough to be used as Limas, and they are superior to any that I know. The plants want very rich soil and an abundance of water and climbing space; they reach a height of 20 feet or more. The dry beans are hard, plump, and glossy.” (*Maxim.*)

48022. BETA VULGARIS L. Chenopodiaceæ.

Sugar beet.

From Naarden, Holland. Presented by Kuhn & Co., through Mr. Joseph W. Pincus. Received September 30, 1919.

Introduced for variety tests being carried on by Department specialists. The following table shows results of experimental tests with this variety:

Location of test.	Sugar in the beet.	Yield per acre.	
		Beets.	Sugar.
	<i>Per cent.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Bohemia.....	19.37	35,543	6,885
Zeeland, Holland.....	16.93	39,677	6,717

48023. RUMEX ABYSSINICUS Jacq. Polygonaceæ.

From Loanda, Angola, Portuguese West Africa. Presented by Mr. John Gossweiler, Servicos de Agricultura. Numbered September 16, 1919.

“This Rumex has proved a most interesting plant, reaching a height of 7 to 8 feet in one season and yielding, from the first of June all through the summer, an abundance of succulent green leaves that make an excellent substitute for spinach. It promises to be an excellent plant for our Southern States, where summer green-leaved vegetables are very scarce.” (*Peter Bisset.*)

48024 to 48034.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received September 18, 1919.

48024. ACER CAMPBELLII Hook. f. and Thoms. Aceraceæ. **Maple.**

A large deciduous tree, with smooth gray bark; the chief maple of the northeast Himalayas at altitudes above 7,000 feet. The growth is moderate, and the grayish white wood is fairly hard, shining, and close grained. It is used extensively for planking and for tea boxes. This tree plays an important part in the regeneration of the hill forests, because it reproduces freely either by seed or coppice. (Adapted from *Gamble, Manual of Indian Timbers, p. 100.*)

48025. BOMBAX MALABARICUM DC. Bombacaceæ. **Silk-cotton tree.**

Ngiu or *red silk-cotton tree*. A silk-cotton tree, common in the northern provinces of Siam. The tree may attain a height of 160 feet or more and a girth of 8 feet. The trunk and branches are thorny and the flowers are red. It grows in far larger numbers in the jungle than near the villages, for the most part spontaneously. As soon as the fruit reaches maturity it is gathered. A tree about 65 feet high yields on the average 3,000 to 6,000 pods. If by chance these are left too long upon the tree, the shell bursts and the seeds, together with the silk cotton that surrounds them, drop out. The cotton obtained from this tree is yellowish white and almost as fine and glossy as silk. (Adapted from *Commerce Reports, July 20, 1914, p. 378.*)

48026. CASUARINA DEPLANCHEANA Miquel. Casuarinaceæ.

A tree or shrub, native to New Caledonia, with whorled, erect, somewhat stout branches. Its wood is very heavy and durable, excellent for turners' and wheelwrights' work. The natives use it to make their war clubs and tomahawks. (Adapted from *DeCandolle, Prodrromus, vol. 16, pt. 2, p. 342*, and *Annales du Muséum Colonial de Marseille, 2d ser., vol. 9, p. 236.*)

48027. CENTAUREA RAGUSINA L. Asteraceæ.

"A round bush, sometimes nearly 6½ feet across, which grows best in a vertical position on rocks or walls and is then strikingly effective. Native to Crete and Dalmatia." (*Proschowsky.*)

48028. CORONILLA GLAUCA Jusl. Fabaceæ.

Sea-green or *day-smelling Coronilla*. A small round bush with beautiful glaucous-green foliage and pure-yellow flowers. This very ornamental shrub, native to southern France, remains almost constantly in bloom in a greenhouse and is admirably adapted for use in bouquets. The flowers are remarkably fragrant by day and almost scentless at night. (Adapted from *Curtis's Botanical Magazine, pl. 13.*)

48029. DODONAEA VISCOSA (L.) Jacq. Sapindaceæ.

A small shrub, native to Australia, with smooth red branches and obovate, coriaceous leaves. The few-flowered racemes are shorter than the leaves. The small flowers, with large purple anthers and red filiform styles, are diæcious. (Adapted from *Edwards, Botanical Register, pl. 1051.*)

48024 to 48034—Continued.

48030. *LIMONIUM FRUTICANS* (Webb.) Kuntze. Plumbaginaceæ.

(*Statice fruticans* Webb.)

Sea-lavender.

A remarkably ornamental shrubby plant, native to the Canary Islands, bearing ample corymbs of bicolored flowers; the bright-violet calyces and snowy-white corollas, which resemble morning-glories, are made more vivid by the small red bracts and by the bright-green wings of the flower stalks. The stout red stem is ringed, and each red petiole is bordered by the attenuated base of its glossy-green, leathery leaf. The rigid much-branched scapes are about three times the height of the loose rosette of obovate, crisply revolute leaves. (Adapted from *Flore des Serres et des Jardins de l'Europe*, vol. 4, p. 525.)

48031. *MACKAYA BELLA* Harvey. Acanthaceæ.

A tall, slender, nearly glabrous ornamental shrub with erect branches, native to Natal. The leaves are sinuate-toothed and veiny. The many-flowered racemes, 4 to 6 inches long, bear masses of pale-lilac campanulate flowers, nearly 2 inches in length, with the corolla throat delicately penciled with reticulated purple veins. This is perhaps the most beautiful of the Acanthaceæ. (Adapted from *Curtis's Botanical Magazine*, pl. 5797.)

Received as *Asystasia bella*; this species is now usually referred to *Mackaya*.

48032. *SEMELE ANDROGYNA* (L.) Kunth. Convallariaceæ.

"A most strikingly beautiful climber, of tropical appearance, growing to a height of 10 to 12 meters (33 to 39 feet). I grew this very drought-resistant species for more than 20 years before it produced seeds, and it was also always sterile elsewhere; I think, therefore, that it may interest you to receive a few more seeds, the plant being rare because of its unproductiveness, since the imported seeds from the Canary Islands have never germinated." (*Proschowsky*.)

48033. *ZANTHOXYLUM ALATUM PLANISPINUM* (Sieb. and Zucc.) Rehd. and Wils. Rutaceæ.

Kou-hua-chiao. An ornamental shrub or small tree, abundant in rocky places and by the side of streams in China, Chosen, and Japan. It is armed with stout, spreading prickles in pairs, and the handsome leaves are pinnately compound, 3 to 8 inches long, with a conspicuously winged rachis. The small pods are red and warty, disclosing lustrous-black seeds at maturity. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 6, p. 3538, and *Sargent, Plantae Wilsonianae*, vol. 2, p. 125.)

48034. *ALBIZZIA LOPHANTHA* (Willd.) Benth. Mimosaceæ.

"Var. *neumannii*. A shrub or small tree, native to southwestern Australia, 6 to 20 feet in height; it is more beautiful than the type. It is of rapid growth and produces enormous nodules on the roots (each nodule weighing up to 1 or 2 pounds). This tree will grow in the poorest soil. It is naturalized in my garden." (*Proschowsky*.)

48035 to 48075.

From Tangier, Morocco. Presented by M. Jules Goffart, Société d'Horticulture de Tanger. Received August 12, 1919.

48035. ACACIA ARMATA R. Br. Mimosaceæ. Kangaroo thorn.

This simple-leaved, prickly acacia has a shrubby stem, 10 to 20 feet high, with graceful branches which are leafy to the tip. The long stamens give a soft fluffy appearance to the heads of opened flowers which are borne on axillary peduncles longer than the leaves. This plant is much grown for hedges, though less manageable than various other hedge plants, and not so fireproof; it is more important for covering coast sand with an unapproachable prickly vegetation. The wood is small, but beautifully grained, sound, and durable. Native to southern Australia. (Adapted from *Maiden, Useful Native Plants of Australia, p. 349*, and *Curtis's Botanical Magazine, pl. 1653*.)

48036. ACACIA BONARIENSIS Gillies. Mimosaceæ.

An almost glabrous acacia from southern Brazil, with angular branches sparsely equipped with short, recurved spines. The long bipinnate leaves and branches are glabrous; the youngest leaflets and the peduncles are silky hairy, as are also the short, panicle flower spikes. (Adapted from *Hooker, Botanical Miscellany, vol. 3, p. 207*.)

For previous introduction, see S. P. I. No. 42321.

48037. ACACIA BRACHYBOTRYA Benth. Mimosaceæ.

A handsome shrub, several feet in height, silvery white with a close silky pubescence. It bears a small number of axillary racemes of tomentose many-flowered heads, and has very short leaves. Native to southeastern Australia. (Adapted from *Hooker, London Journal of Botany, vol. 1, p. 347*.)

48038. ACACIA CALAMIFOLIA Sweet. Mimosaceæ.

An entirely glabrous plant with rounded slender branches. The leaf-stalks, or leaves as they are usually called, are filiform, compressed, drooping, and compact. The small yellow flowers are erect on a very short stalk. It is an attractive ornamental, especially when in full bloom. It is said to be an excellent tan-bark species, containing 20 per cent of tannin. Native to southeastern Australia. (Adapted from *Edwards, Botanical Register, vol. 10, p. 839*.)

48039. ACACIA CULTRIFORMIS A. Cunn. Mimosaceæ.

A tall bushy shrub, glabrous and often mealy glaucous when young; native to New South Wales. The triangular leathery leaves (phyllodia) densely cover the angular branchlets. The numerous racemes, of many globular heads, are much longer than the leaves. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 375*.)

This plant, if kept well pruned, forms an excellent hedge. For many years it has been cultivated in the open in California and is considered a desirable shrub.

48040. ACACIA CYANOPHYLLA Lindl. Mimosaceæ. Blue-leaved wattle.

A handsome shrub from Western Australia, 18 feet in height, with drooping branches and glabrous, lanceolate phyllodia; the lower ones are 1 foot, the upper 6 inches in length. The numerous large golden-yellow flowers are grouped in 3 to 5 heads borne on short racemes. The pods are long and narrow. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 364*.)

48035 to 48075—Continued.

48041. ACACIA CYCLOPS A. Cunn. Mimosaceæ.

A shrub 6 to 10 feet in height, from southwestern Australia. The flowers are in dense globular heads and the pods are flat, coriaceous, and twisted. The black spherical seeds are encircled in double folds by a thickened and richly colored funicle. This shrub is used in South Africa for fixing drift sand on seashores. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 3, and *Bentham, Flora Australiensis*, vol. 2, p. 388.)

48042. ACACIA ELONGATA Sieber. Mimosaceæ.

This slender curved-leaved acacia is a graceful species frequent on the Blue Mountains of New South Wales. It has drooping angular branches, and the younger ones are green and glabrous. The phyllodia are long and linear and bear clusters of peduncled globose heads of deep-yellow flowers in their axils. These clusters, which so profusely cover the leafy branches even to the tips, make this a remarkably ornamental plant. It is especially suitable for damp sandy land. (Adapted from *Curtis's Botanical Magazine*, p. 3337.)

48043. ACACIA EXTENSA Lind. Mimosaceæ.

A graceful shrub from Western Australia, with smooth 4-angled branches and very long, pointed leaves (phyllodia). The erect racemes, 6 to 9 inches long, are very leafy with scythe-shaped leaves between the flower heads. (Adapted from *Edwards, Botanical Register*, vol. 23, app. p. 15.)

48044. ACACIA FALCATA Willd. Mimosaceæ.

A tree 20 to 30 feet in height, with few slender branches and small yellow flowers in dainty spherical clusters on racemes borne in the axils of the dark glossy-green falcate leaves. The bark is important for tanning. The timber, which is sometimes called "lignum-vitæ," has yellow sapwood and light-brown heartwood; it is hard, heavy, and tough, and is much prized for stock-whip handles and for bending for coach-building purposes. The tree is an excellent one for raising a woody vegetation on drift sand. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 355, *Mueller, Select Extra-Tropical Plants*, p. 5, and *Loddiges, Botanical Cabinet*, vol. 12, pl. 1115.)

48045. ACACIA HOMALOPHYLLA A. Cunn. Mimosaceæ.

A small tree, abundant on the barren heaths of the interior of New South Wales, where it is one of the "spearwoods" of the natives. In Victoria, it grows on the saltbush flats and yields the close-grained, prettily marked myall wood. The gum is eaten; and the hard, heavy wood is used for boomerangs. On account of its solidity and fragrance, this dark-brown wood is much sought after for turners' work. Perhaps its most extensive use is in the manufacture of tobacco pipes. It is well adapted for cabinetmaking purposes; and fancy articles, such as rulers and napkin rings, are often made from it. It will grow in the bleakest and most arid localities wherever frost is not severe. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 357; *Mueller, Select Extra-Tropical Plants*, p. 6; and *Bailey, Queensland Flora*, pt. 2, p. 495.)

48046. ACACIA JUNCIFOLIA Benth. Mimosaceæ.

A tall shrub with slender branches and long needlelike leaves (phyllodia) tipped with a sharp point. The short peduncles are solitary or in pairs

48035 to 48075—Continued.

and bear small globular fuzzy heads of flowers. The narrow pods are half the length of the leaves. Native to northern and eastern Australia. (Adapted from *Mueller, Australian Species of Acacia, vol. 1, pt. 2, pl. 8.*)

Received as *Acacia pinifolia*.

48047. ACACIA JUNIPERINA Willd. Mimosaceæ. Prickly wattle.

An Australian shrub, 8 to 12 feet in height, with numerous gracefully drooping branches covered with short hairs; the flower clusters are delicately beautiful. The wood is light, white, and tough, and much esteemed by lumbermen for maul handles. (Adapted from *Loddiges, Botanical Cabinet, vol. 4, pl. 398*, and *Maiden, Useful Native Plants of Australia, p. 358.*)

48048. ACACIA LINIFOLIA (Vent.) Willd. Mimosaceæ.

A small tree or shrub, 12 to 18 feet in height, native to New South Wales and Queensland; very ornamental, with delicate branches and foliage. The leaves are the same length as the spikes of globular heads of sweet-scented yellow flowers. The tough, close-grained, soft, elastic wood is suitable for ax handles and perhaps for cabinet purposes; the heartwood is reddish in color. (Adapted from *Maiden, Useful Native plants of Australia, p. 358*, and *Curtis's Botanical Magazine, pl. 2168.*)

48049. ACACIA LONGIFOLIA (Andrews) Willd. Mimosaceæ.

An evergreen acacia from New South Wales, with a branching ashy-brown trunk, 20 to 30 feet high. The axillary flower spikes are shorter than the leaves and are so entirely covered with sessile citron-yellow flowers that they resemble catkins. The faint odor of the flowers is similar to that of peach blossoms. This is a valuable ornamental and a good shade tree for narrow streets. The bark is used as a tan for light leathers. The rapid-growing tree renders important service in subduing loose coast sand, the lower branches striking root into the soil; it should be disseminated on extensively bare sand shores in regions where no severe frosts occur. The timber is light, tough, hard, and durable and is used for tool handles, etc. (Adapted from *Maund's Botanist, vol. 2, pl. 77*, and *Mueller, Select Extra-Tropical Plants, p. 7.*)

48050. ACACIA MACRADENIA Benth. Mimosaceæ.

A glabrous tree, native to Queensland, 30 to 50 feet in height with lanceolate leathery leaves (phyllochia) from 6 to 12 inches in length. The clusters of small globular heads of flowers on their short stems are arranged like bunches of grapes. The beautiful, close-grained, blackish wood is capable of taking a very high polish. (Adapted from *Maiden, Useful Native Plants of Australia, p. 359*, and *Mueller, Australian Species of Acacia, vol. 1, pt. 5, pl. 7.*)

48051. ACACIA MELANOXYLON R. Br. Mimosaceæ.

An Australian hard-wooded tree, attaining a height of 100 feet; though of slow growth, it sometimes flowers when under 20 feet in height. The lanceolate phyllochia, 3 to 4 inches long, are leathery and evergreen. The elongated flat pod is often curved into a circle; and the orbicular seeds, each encircled by double folds of a long dilated scarlet funicle, hang on the tree for months, making this pyramidal acacia a beautiful street tree. The mature wood, which is very dark, makes an excellent substitute for black walnut for furniture and grillwork; and it is considered by some to

48035 to 48075—Continued.

be the most valuable of all Australian timbers. It is celebrated for its hardness and durability and is much valued for boat building, bridges, railroad carriages, tool handles, etc. The figured wood is cut into veneers. It is an excellent wood for bending under steam and is largely used for oil casks. As a fuel it is equal to hickory. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 359, and *Bentham, Flora Australiensis*, vol. 2, p. 388.)

48052 and 48053. ACACIA MICROBOTRYA Benth. Mimosaceæ.

48052. *Badjong*. A tall shrub from southwestern Australia, with a diameter of 1 to 1½ feet, which produces an edible gum. It prefers river valleys and lines brooks naturally. A single tree may yield 50 pounds of gum in a season. The aborigines store the gum in hollow trees for winter use; it has a pleasant sweetish taste. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 8, and *Maiden, Useful Native Plants of Australia*, p. 213.)

48053. Received as *Acacia myriobotrya*, which is considered synonymous with *A. microbotrya*. It is deemed best to grow these separately for the purpose of ascertaining the status of this form.

48054. ACACIA MONILIFORMIS Griseb. Mimosaceæ.

Tusca. A shrub with fragrant yellow flowers, common in the subtropical forests of Tucuman, Argentina, armed with straight spines and bearing dusty, 4-angled branches and petioles and glabrous leaves. The pods are linear, flat, and woody leathery; when young they are used as forage for cattle. (Adapted from *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 19, p. 136.)

For previous introduction, see S. P. I. No. 42322.

48055 and 48056. ACACIA NERIIFOLIA A. Cunn. Mimosaceæ.

48055. A handsome tree, native to eastern Australia, 40 to 50 feet in height, with slender branchlets, mealy tomentose when young but soon glabrous. The small globular flower heads are in simple slender racemes shorter than the linear phyllodia. The flat straight pods are several inches long. The heartwood is light yellow, the rest is of a darker color. It is prettily marked, close grained, and tough. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 363, and *Bentham, Flora Australiensis*, vol. 2, p. 863.)

48056. Received as *Acacia iteaphylla*, which is considered a synonym of *A. neriifolia*. It is deemed best to grow both for the purpose of determining the status of this form.

48057. ACACIA PODALYRIÆFOLIA A. Cunn. Mimosaceæ. **Silver wattle.**

A shrub 4 to 6 feet in height, covered with hoary powder. Its neat gray ovate leaves and numerous long yellow racemes tipping the branches make it a very decorative species. The wood is pinkish in color and nicely marked. Native to Queensland. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 364.)

48058 and 48059. ACACIA PYCNANTHA Benth. Mimosaceæ.

Golden wattle.

48058. A small rapid-growing tree with coriaceous leaves (phyllodia) and masses of fragrant bright-yellow flowers. The tree is second only to *Acacia mollissima* in yielding tanbark. The bark

48035 to 48075—Continued.

is often superior in quality to that of the black wattle, but less in quantity, as the tree is smaller, reaching its maximum height at 30 feet. It exudes an abundance of gum, useful in cotton printing. Perfume is made from the flowers, and an aqueous infusion of the bark is used to preserve ropes, nets, and fishing lines. The wood is pale and easily worked and used for staves, tool handles, etc. The plant is useful as a sand binder. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 364, and *Mueller, Select Extra-Tropical Plants*, p. 12.)

48059. "A pendulous variety of the foregoing." Goffart.

48060 and 48061. ACACIA RICEANA Henslow. Mimosaceæ.

48060. A Tasmanian shrub, in general appearance much like *Acacia verticillata*, 3 to 4 feet high, with elongated and gracefully drooping branches. The surface of the dark-green awl-shaped leaves is covered with minute dots. The pale citron-colored flowers, on yellow peduncles and bearing many long exerted stamens, are in fluffy globular heads. The spikes are well down the stem from the leafy tip, and glimpses of the brown stalk between the daintily poised clusters remind one of Japanese art. (Adapted from *Maudslayi's Botanist*, vol. 3, pl. 135.)

48061. "A slightly spiny variety of the foregoing." (Goffart.)

48062. ACACIA ROSTELLIFERA Benth. Mimosaceæ.

A tall shrub or small tree from Western Australia, with graceful glabrous branches. The thick, linear-lanceolate phyllodia are 2 to 5 inches long. The few flower heads are in short racemes. (Adapted from *Hooker, London Journal of Botany*, vol. 1, p. 356.)

48063. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ.

(*A. arabica* Willd.)

A pubescent shrub with yellow flowers, which produces the white transparent gum arabic called gum thus. This tree yields an abundance of transparent gum, "nupe," and a good soluble adhesive gum, "mozambique." The wood is strong and durable and makes excellent knees and crooked timber in shipbuilding. In India it is used for wheels, agricultural implements, tool handles, railway sleepers, and fuel. A decoction of the bark is used as a substitute for soap. The pods are used for tanning in North Nigeria and for dyeing clothes a dingy yellow in Nubia and Egypt. Pods from North Nigeria have been found to yield when used for tanning a pale fawn-colored, but rather soft leather, worth about £6 per ton in England. The pods have been found to coagulate rubber latex and are also used for making ink. The leaves and green pods are given as fodder to goats, sheep, cows, and camels; and the tender young pods are sometimes eaten as a vegetable. In India the bark is of greater importance for tanning purposes, and the pods are used almost exclusively to remove the lime from skins and hides before tanning them. The trees come to maturity in about three years, though if grown for the bark they are considered at their best when from 4 to 6 years old. In order to attain the best results for tanning bark and fuel it is recommended, for financial reasons, that the trees be uprooted and the plantations renewed every 6 to 10 years. If grown for timber, from 20 to 40

48035 to 48075—Continued.

years would be required for full development. (Adapted from *Don, General History of the Dichlamydeous Plants, vol. 2, p. 414*, and *Holland, Useful Plants of Nigeria, pt. 2, p. 288*.)

48064. ACACIA SENEGAL (L.) Willd. Mimosaceæ.

A tree widely distributed in tropical Africa and cultivated in India. It has pinnate leaves and long, dense, clublike racemes of tiny flowers bristling with long stamens. This plant yields the true gum arabic of commerce, which is used for giving luster to crêpe and silk, for thickening colors and mordants in calico printing, in the manufacture of ink and blacking, as a mucilage, and for confectionery and medicinal purposes. The gum is more abundant in the dry season, exuding usually at the forking of the branches. In Kordofan the gum is obtained from both wild and cultivated trees, and in the gardens the trees are artificially cut (strips of the outer bark being removed) shortly after the rains cease; the first collection of gum is made about 60 days after cutting, and the garden is completely picked over every fourth day thereafter until the rains begin again and new leaves appear, at which stage the exudation ceases. The period of production is given at from 3 to 20 years, beginning when the trees are 3 or 4 years old and 8 feet in height. A plantation of about 10 acres has been estimated to yield from 1,200 to 1,500 pounds of gum in the course of a season. (Adapted from *Holland, Useful Plants of Nigeria, pt. 2, p. 293*, and *Engler and Prantl, Die Natürlichen Pflanzenfamilien, vol. 3, pt. 3, p. 112, fig. 68*.)

48065. ACACIA STRICTA (Andrews) Willd. Mimosaceæ.

A shrub 3 to 6 feet high, with linear phyllodia. The paired axillary heads of yellow flowers are borne freely in spring on short peduncles well down from the leafy tips of the branches. The seedling first produces 4 or 5 pinnate leaves, then changes its leaf form and produces only entire leaves. The wood is of a beautiful texture, sound and durable, but too small for anything but a very limited use. Native to Tasmania and southeastern Australia. (Adapted from *Loddiges, Botanical Cabinet, vol. 1, pl. 99*, and *Maiden, Useful Native Plants of Australia, p. 637*.)

48066. ACACIA SUAVEOLENS (J. E. Smith) Willd. Mimosaceæ.

A rather small species, native to Tasmania and eastern Australia, with few and slender branches; it frequently flowers when 2 years old. The linear leaves are four times the length of the small axillary spikes, which bear clusters of yellow flowers and red bracts. The flowers continue for a long time and have a delicate, pleasing form and a very agreeable odor. (Adapted from *Bailey, Queensland Flora, pt. 2, p. 490*.)

48067. ACACIA VERTICILLATA (Ait.) Willd. Mimosaceæ.

A shrub 6 to 10 feet in height, recommended as a hedge and as an ornamental. The solitary oblong spikes of yellow flowers, like fluffy catkins, are borne in the axils of the whorled linear phyllodia. Native to Victoria and Tasmania. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 334*.)

48068. ACACIA VISCO Lorentz. Mimosaceæ.

An Argentine acacia, sparsely armed with recurved spines. The smooth sessile flowers, with numerous, long stamens, form scythe-shaped legumes which approach a maximum width of 1½ inches. The leaves

48035 to 48075—Continued.

are pinnately compound. (Adapted from *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 24, p. 122.)

The striped walnut-colored wood is hard and durable. It is highly valued for its resistance to moisture and is used for all kinds of cabinet-work.

For previous introduction, see S. P. I. No. 43453.

48069. ACACIA sp. Mimosaceæ.

Sent in as *Acacia bartheriana*, for which a place of publication has not been found. Miss Katherine Jones, in Bailey's Standard Cyclopedic of Horticulture, vol. 1, p. 189, gives *A. bartheriana* Hort. as a synonym for *A. berteriana* (?), but our sample does not agree with the seeds of this species.

48070. ACACIA sp. Mimosaceæ.

Sent in as *Acacia donkelarii*, for which a place of publication has not been found. Miss Jones states, in Bailey's Standard Cyclopedic of Horticulture, vol. 1, p. 189, that *A. donkelarii* is a trade name for *Mimosa* (?), but our sample does not agree with the seeds of this genus.

48071. ACACIA sp. Mimosaceæ.

Sent in as *Acacia hispida*, for which a place of publication has not been found. Miss Jones, in Bailey's Standard Cyclopedic of Horticulture, vol. 1, p. 189, states that *A. hispida* Hort. is a synonym for *Robinia hispida*, but our sample does not agree with the seeds of this species.

48072. ACACIA sp. Mimosaceæ.

Sent in as *Acacia ovalifolia*, for which a place of publication has not been found.

48073. ACACIA sp. Mimosaceæ.

Sent in as *Acacia sepiaria*, for which a place of publication has not been found.

48074. PIPTADENIA CEBIL Griseb. Mimosaceæ.
(*Acacia cebil* Griseb.)

A handsome tree, attaining a height of 60 feet, forming forests in subtropical Argentina. The smooth pinnate leaves bear, in their axils, clusters of long-peduncled globose heads of white funnel-shaped flowers with long exserted stamens. The unarmed pubescent branches and petioles are cylindrical. The bark is astringent and is used in working leather. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 405, and *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 24, p. 136.)

48075. PIPTADENIA RIGIDA Benth. Mimosaceæ.

An unarmed tree or shrub from subtropical South America, which furnishes the angico gum, similar to gum arabic. The small stiff leaflets are linear and shining above. The long, slender, stiff-winged legumes contain flat ovate seeds which are rich in tannin; the wood serves for naval construction. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 405, and *Hooker, London Journal of Botany*, vol. 4, p. 338.)

Received as *Acacia angico*.

48076. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Tucuman, Argentina. Plants presented by Mr. W. E. Cross, director, Agricultural Experiment Station. Received August 26, 1919.

Kavangire.

"We have made an attempt to trace the history of the Kavangire cane. In so far as our knowledge goes, cane bearing this name has been sent out only from the experiment station at Tucuman, Argentina, recently. Dr. Britz Zerbau, who was formerly chemist at that station, informs me that the variety was imported into Argentina from the experiment station at Cayana, Brazil, about the year 1909. We have not succeeded in finding out from where the cane was sent to Brazil." (*E. W. Brandes.*)

48077 to 48080.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

48077. HORDEUM VULGARE NIGRUM (Willd.) Beaven. Poaceæ Barley.

Gatami. "A very early variety, introduced from Manchuria. It produced good yields in the Great Plains under extremely unfavorable conditions." (*H. V. Harlan.*)

For previous introduction, see S. P. I. No. 20796.

48078. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. Poaceæ Barley.

Skinless. "Feed barley." (*Richardson.*)

For previous introduction, see S. P. I. No. 42101.

48079 and 48080. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.

48079. Purple Hull-less. "This barley has shown promise in the Rocky Mountain region." (*H. V. Harlan.*)

48080. White Hull-less. "This is more commonly known as *Nepal*. It has been more frequently introduced into the United States than any other variety, and has appealed to farmers because of the absence of awns. It has given superior yields only in high mountain regions and is preferred in some localities for hay." (*H. V. Harlan.*)

48081. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received September 26, 1919.

"*Djali bras.* In these times of searching for articles of food, it is perhaps worth the trouble to consider here a plant which is not generally known. I mean the *djali bras*. (The name is given to the plant as well as to the fruits.)

"The *djali watol* is better known. The Javanese children string the fruits of this plant as beads for necklaces and bracelets. The *djali bras* has kernels inclosed in a hard skin, while the *djali watol* is a hard mass. Herein the two species differ from each other. By virtue of its hard seed coat the *djali bras* can be preserved for a long time without being attacked by insects, so that it is a valuable article to provide in times of famine.

"The plant will grow everywhere, and yet it is seldom cultivated and is not generally known even among the Javanese. The *djali bras* is prepared as a

food in various ways. Steamed it can be used in the place of rice, as far as nutrition and digestibility are concerned. Prepared as a porridge it has the taste of oatmeal and is as good to eat as the latter. If ground into meal and mixed with wheat flour, half and half, bread can be made from it. The bread is much more delicious and not so sour as the common kleffe bread used here in the Dutch Indies. Pancakes and pastries can also be made from the meal. The plant can be grown on all sorts of soil. More attention should be paid to this plant than has been hitherto.' (P. W. Van der Broek.)

"*Djali bras* and *djali watol* are two species, both of which belong to the genus *Coix* or *Chionachne* of the family Gramineæ. Job's-tears is a common name for either both, or especially for *djali watol*; hence, also the scientific name *Coix lacryma-jobi*.

"Some details about *djali* are found in an article by Van der Kemp in the *Tijdschrift voor Nijverheid en Landbouw*, vol. 20, p. 32. According to Van der Kemp, only two species of the edible *djali* are distinguished: *Djali padi*, *Coix koenigii*, originally from Sumatra, rare at Java; and *djali ketan*, the common *Coix agrestis*.

"For the following information I am obliged to Heyne. There appears in a report by the Internationale Crediet en Handelsvereniging Rodderdam at Cheribon, dated 1912, a statement to the effect that about 1,000 piculs (a picul is 133½ lbs.) of *djali* were exported annually to Palembang and to the east coast of Sumatra. The price varied in the shipping harbors in the same year between 6 and 7 gulden (a gulden, or guilder, is \$0.402) per picul.

"There are divergent reports as to the food value of *djali*. However, that it is a nourishing and wholesome product is certain." (Excerpted from W. G. Boorsma, *Teysmannia*, vol. 29, No. 1, p. 59.)

48082. CASSIA TORA L. Cæsalpiniaceæ.

From the Belgian Kongo. Presented by Father Hyacinthe Vanderyst, Mission Catholique, Leverville, Moyen Kwilu. Received September 29, 1919.

An erect, almost glabrous annual, widely distributed through tropical Africa and through the Tropics generally. The plant attains a height of 2 to 3 feet, although the stem occasionally becomes arborescent in Guinea. From the seeds is made a most useful yellow dye, suitable for tasar silk; this is regularly sold to dyers to combine with indigo to produce a green shade. The seeds are also roasted and ground to form a substitute for coffee. Along the Gambia River, on the west coast of Africa, the stalks and tender leaves are eaten as food. The leaves and roots are each used as a remedy for ulcers and ringworms. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 275; *Holland, Useful Plants of Nigeria*, pt. 2, p. 260; and *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 224.)

48083. EUGENIA sp. Myrtaceæ.

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart. Received September 29, 1919.

"An interesting *Eugenia* from South America, especially valuable for ornamental planting in California and Florida. It is evergreen, with small dark glossy-green leaves. The young leaves and twigs are a beautiful red. The plants lend themselves to shearing and will make excellent hedge plants as well as trained specimens for tubs, etc." (*Peter Bisset*.)

48084 and 48085.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

48084. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

Square Head. "Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia." (*Richardson.*)

48085. AVENA SATIVA ORIENTALIS (Schreb.) Richter. Poaceæ. **Oats.**

Black Tartarian. "A late black side oat grown to a limited extent in the United States." (*C. W. Warburton.*)

48086. ROSA CORIIFOLIA Fries. Rosaceæ. **Rose.**

From Bell Station, Md. Presented by Dr. Walter Van Fleet. Received September 8, 1920.

"Variety *frobeli*. A promising rose for budding or grafting stock. This rose has been introduced through several sources under the name of *Rosa laxa*. It was grown at the Arnold Arboretum under the name *R. laxa* for several years. *R. coriifolia* is related to the common dog rose, *R. canina*. It is a strong grower, with upright and nearly smooth stems; the flowers are white, the fruit globose and red. The vigor and hardiness, together with its upright and nearly smooth stems and lack of suckers, make it a promising plant for stock. It seeds readily and prolifically and the seedlings come very true. Fruiting plants are to be found at the Arnold Arboretum, Jamaica Plain, Mass., and in the collections of Dr. W. Van Fleet, Bell Station, Md. The rose appears to be perfectly hardy." (*B. T. Galloway.*)

48087. CORDEAUXIA EDULIS Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

From Italian Somaliland, Africa. Nuts presented by the governor of Italian Somaliland, through Capt. Vannutelli, of the Italian Legation. Received September 19, 1919.

"A leguminous shrub or small tree not very far removed from our common cassia. It is also related to the carob and to the Kentucky coffee tree. The plant is an evergreen and is reported so far only from Somaliland and from a region known as the Haud, a waterless desert south of Bohotleh on the southern frontier of the British Protectorate. The kernels have a rather good flavor and are rich in sugar and carbohydrates and have also a very satisfactory amount of proteids. It is said that the natives stew and eat them. The nutritive ratio is 1:6.5, which is very good." (*B. T. Galloway.*)

48088 to 48102.

From Johannesburg, Transvaal. Purchased from the Agricultural Supply Association, through Mr. J. Burt Davy, botanist. Received September 24, 1919. Quoted notes by Mr. Davy.

48088 and 48089. AVENA SATIVA L. Poaceæ. **Oats.**

48088. "*Boer* oat. The principal oat grown for forage, i. e., oat hay, before the Anglo-Boer War, and valued for the fineness of its straw. Almost ousted by the Algerian oat and now very rare. The *Boer* oat always contains some black kernels among the brown. The glumes have a characteristic roughness which readily distinguishes them from *Algerian*. Grown under irrigation."

48089. "*Heijira* rustproof oats. A rather recent introduction which has been grown with some success in the dry districts of the Western Transvaal and is claimed to be rust resistant."

48088 to 48102—Continued.

- 48090.** AVENA STERILIS L. Poaceæ. **Oats.**
 “*Cape Algerian*. Since the Anglo-Boer War this oat has largely replaced the old *Boer* oat, being considered less subject to rust. The straw is coarser, however, than that of the *Boer* oat.”
- 48091.** CHAETOCHELOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
 (*Setaria italica* Beauv.)
 “*Boer Manna* millet. An old South African strain of *Setaria italica*, largely grown in the summer rainfall region, especially before the Anglo-Boer War, for horse feed, but now largely replaced by *teff* (*Eragrostis abyssinica*).”
- 48092.** HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**
 “*Cape barley* (*Transvaal Early*). This type of barley has been grown for generations in South Africa under unfavorable moisture conditions. Given better soil treatment and more moisture, it can be grown into a good, plump, heavy grain. It is used to some extent by local maltsters, but is more largely grown for green winter feed for horses and milch cows.”
- 48093.** HORDEUM INTERMEDIUM CORNUTUM (Schrad.) Harlan. Poaceæ. **Barley.**
 “*Barley Wheat*. A naked barley grown to a limited extent under irrigation to provide green fodder for horses and dairy cows during the dry winter months. Several strains have been met with during the last 15 years, but this is almost the only one now met with in the Transvaal, and it is scarce.”
- 48094.** MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**
 “*Cape lucern*. A local strain of *Medicago sativa* grown for years by the ostrich farmers of the Oudtshoorn Valley and well acclimatized. This seed germinates more quickly than the imported *Provence*. Considerable quantities of Cape-grown seed have been shipped to Europe and Australia since the ostrich slump, and it is believed that this has been resold as *Provence* and as *Hunter River lucern*.”
- 48095.** PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.**
 (*P. typhoideum* Rich.)
 “*M'Myouti*. A South African strain grown for food by the Bantu tribes of tropical and subtropical Transvaal and now being grown by Europeans for fodder and silage for live stock.”
- 48096.** SECALE CEREALE L. Poaceæ. **Rye.**
 “*Orange Free State rye*. A strain of rye-corn which has become adapted to the droughty conditions of the Orange Free State, where it is often grown on the eastern borders with the sole aid of the sparse winter rains. Lack of winter moisture accounts for the rather poor development of the grain.”
- 48097 to 48100.** TRITICUM AESTIVUM L. Poaceæ. **Common wheat.**
 (*T. vulgare* Vill.)
48097. “*Transvaal Wolkoren* wheat. A favorite soft white wheat, grown under irrigation in the Transvaal bushveld, with an average rainfall during the summer season of about 20 inches and great heat. One of the oldest of the South African wheats. It is also grown in Namaqualand and the northwestern part of the Cape Province.”

48088 to 48102—Continued.

48098. "*Transvaal Kleinkoren* wheat. A very famous old wheat, considered by expert millers the best of the South African milling wheats. It is grown under similar conditions to *Wolkoren*. There are two strains, *red* and *white*, but it is impossible to get seed of either of them pure. The Boers consider that the soil affects the color and gradually changes white wheat to red or vice versa."

48099. "*Gemsbok Oudebaard* wheat. An old Cape Colony bearded white wheat, grown under irrigation in the karoo, Britstown Division, Cape Province, where the rainfall is about 10 inches and the heat intense. It is a heavy yielder and the favorite wheat in that part of the country. It is recommended for trial in Arizona and New Mexico, under irrigation."

48100. "*Red Victoria*. This wheat is grown commercially only on the eastern high veld of the Transvaal; that is to say, in the districts of Ermelo, Bethel, Standerton, Carolina, and Wakkerstroom, where the rainfall is about 33 inches per annum, mainly in the summer months.

"It is grown as a winter crop, sometimes under irrigation, but in seasons where we receive a little winter rain it is treated as a dry-land crop and is considered the only wheat which can be successfully grown in those districts as a dry-land winter crop. It is sown in the months of July, August, and September; and it is perhaps the only wheat which can be grown as late as September. *Red Victoria* appears to be somewhat rust resistant; it is harvested in the early summer and therefore subject to the early summer rains, which bring rust to most wheat crops. The grain, although small in appearance, is said to mill well. This may fit in where climatic conditions do not suit regular varieties, and I would suggest the advisability of crossing *Red Victoria* with some other of your regular varieties, on account of its rust-resisting tendency."

48101. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

"*Zwaartbaard*. An old Transvaal durum wheat, almost lost during the Anglo-Boer War. It is recommended for its relative hardness; also known as *S. A. Medeah*."

48102. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*Dhal*. Grown for food by the Bantu tribes of tropical and subtropical Transvaal and Natal. It has been taken up by white farmers in Rhodesia as a green-manure crop."

48103 to 48144.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

"The following barley and oat varieties may be of interest to you. Some of them will be familiar to you as American-grown varieties obtained from the United States some years ago and grown here ever since; those marked with an asterisk (*) are of Australian breeding. Barleys Nos. 36 and 49 are two recent crossbreeds." (*Richardson*.)

Introduced for specialists in the United States Department of Agriculture.

48103 to 48144—Continued.

48103 to 48114. AVENA SATIVA L. Poaceæ.

Oats.

48103. *Bonanza*. "A midseason white oat grown to some extent in the northern United States." (C. W. Warburton.)

48104. *Clydesdale*. "An old Scotch variety grown to some extent in the northern United States." (C. W. Warburton.)

48105. *Danish Island*. "A midseason white oat grown to some extent in the United States." (C. W. Warburton.)

48106. *Dun*. "An English winter oat similar to the *Winter turf* of the United States." (C. W. Warburton.)

48107. *Gold Queen*. "Obtained by the Department of Agriculture, Victoria, from Mr. J. W. Broatch, Moose Jaw, Saskatchewan." (Richardson.)

48108. *Norway King*. "Obtained by the Department of Agriculture, Victoria, from Mr. J. W. Broatch, Moose Jaw, Saskatchewan." (Richardson.)

48109. **Ruakura*. "A rust-resistant oat developed from a single plant of *Argentine* oats selected by Primrose McConnell, of the Ruakura Experiment Farm, New Zealand, in 1908. This variety appears to be resistant to both stem and crown rust in the United States, but experiments here indicate that it has little commercial value. It is of probable interest to plant breeders." (C. W. Warburton.)

"It has never been claimed that the new oat is apparently rustproof. What can be claimed is that it is the most resistant to disease of all the varieties tested at Ruakura." (*Journal of Agriculture, New Zealand, vol. 6, p. 133.*)

"This oat was imported from New Zealand, having originated as a variation in a crop of *Argentine* oats at the Ruakura Experiment Farm, in the Dominion. It is claimed that it is rust resistant and a wonderful yielder. It has not been tried sufficiently long in this State to allow of any further comment, except that when sown beside *Algerian*, on the south coast this season, it promised particularly well and compared more than favorably with that variety from a green-fodder point of view." (*Agricultural Gazette, New South Wales, vol. 25, p. 1018.*)

48110. *Sunrise*. "This is a very early oat, ripening quite a week before *Algerian*. The straw is a foot taller than that variety and liable to lodge in some seasons, though of much the same stoutness as *Algerian*. It stools rather sparsely, and the grain is fairly long, grayish white, plump, with a thin husk. *Sunrise* is recommended only for the warmer districts and should not be sown so early as *Algerian*. It occupies a similar place among oats to *Firbank* among wheats. It is a natural crossbreed from *Algerian* oats. Among the oats recommended for further trial at the Experiment Farms." (*Agricultural Gazette, New South Wales, vol. 25, pt. 3, p. 236.*)

48111. *Swedish*. "Presumably the well-known midseason white oat, *Swedish Select*." (C. W. Warburton.)

"Forwarded from the Panama Exposition, San Francisco, to the Department of Agriculture, Victoria." (Richardson.)

48103 to 48144—Continued.

48112. *Tartar King*. "A midseason white side oat grown to a limited extent in the northeastern United States." (C. W. Warburton.)

48113. *Tartar King*. "A midseason white side oat grown to a limited extent in the northeastern United States." (C. W. Warburton.)

48114. *White Tartarian*. "The well-known late white side oat, which is grown to a limited extent in the northern United States. Identical with *White Russian*." (C. W. Warburton.)

48115 to 48120. AVENA STERILIS L. Poaceæ. Oats.

48115. *Algerian*. "A variety commonly grown in Australia and New Zealand and presumably originally from northern Africa. Quite similar to *Red Rustproof*." (C. W. Warburton.)

48116. *Argentine*. "Presumably from a commercial lot of oats from Argentina." (C. W. Warburton.)

48117. *Calcutta*. "A red oat originally from India." (C. W. Warburton.)

48118. **Glen Innes*. "Evidently a selection from *Algerian*." (C. W. Warburton.)

"This variety was bred by Mr. J. T. Pridham, of Cowra Experiment Farm, New South Wales." (Richardson.)

48119. **Guyra*. This matures at about the same season as *Algerian*, with straw about equal in height to that variety, not coarse, but strong. It stools very fairly, and has a compact head with dark-brown plump grain which has a medium strong awn like its parent, *White Ligowo*. The husk is not thick. *Guyra* is suited to typical oat districts. It is a cross between *Algerian* and *White Ligowo*, and is one of the oats recommended for further trial at the Experiment Farms. (Adapted from *The Agricultural Gazette, New South Wales, vol. 25, pt. 3, p. 236.*)

48120. **Lachlan*. "Evidently a selection from *Algerian*." (C. W. Warburton.)

"This variety was bred by Mr. J. T. Pridham, of Cowra Experiment Farm, New South Wales." (Richardson.)

48121 to 48132. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ.

Barley.

48121. *Archer*. "Two-rowed malting barley." (Richardson.)

"One of the most widely grown barleys in England. It takes its name from its arrow-shaped spike." (H. V. Harlan.)

48122. *Chevalier*. "The most widely known of English varieties. It originated as a plant selected by the Rev. Chevalier, from whom it received its name. It is a commercial crop in the Gallatin Valley, Montana, and in the Salinas Valley, Calif." (H. V. Harlan.)

48123. *Duckbill*. "This variety has been regularly grown in Victoria as a malting barley for many years. It was probably imported from England." (Richardson.)

48103 to 48144—Continued.

48124. *Garton's Regenerated Maltster*. "Originated by Garton's seed firm in England." (*H. V. Harlan.*)
48125. **Gisborne*. "Widely grown in New Zealand and Australia." (*H. V. Harlan.*)
48126. **Golden Grain*. "Two-rowed malting barley." (*Richardson.*)
48127. *Goldthorpe*. "Feed barley." (*Richardson.*)
"An erect, late-seasoned, large-kerneled barley, widely grown in England." (*H. V. Harlan.*)
48128. *Hannchen*. "Originated by the Svalof Plant-Breeding Association, Svalof, Sweden. This has proved to be the best of the Swedish barleys under American conditions and has given good yields in the Western and Plains States." (*H. V. Harlan.*)
48129. *Kirgizean*. "A variety forwarded to the Department of Agriculture, Victoria, from the Imperial Garden, Petrograd, in 1913." (*Richardson.*)
48130. *Primus*. "Originated by the Svalof Plant-Breeding Association, Svalof, Sweden. (*H. V. Harlan.*)
"Heads borne on strong culms which are bent above almost horizontally. The kernel is especially well formed and full, ripens early, scarcely a day or so later than *Hannchen*, and the plant is especially productive. It is quite certainly, as far as quality is concerned, the highest grade yet known among the *Imperial* barleys. It is well suited to heavy cold loams and clay soils such as are to be found in middle Sweden." (*N. H. Nilsson.*)
48131. *Princess*. "A pedigreed variety, originated on the grounds of the Svalof Plant-Breeding Association, Svalof, Sweden. It is characterized by an especially strong straw and an excellent quality of grain. It is remarkably well suited for heavy clay soils where there is danger of the grain falling." (*David Fairchild.*)
48132. **Pryor*. "Two-rowed malting barley." (*Richardson.*)
- 48133 to 48144. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**
48133. *California Feed*. "More properly known as *Coast*; a commercial variety of the Pacific and Mountain States. Probably originated in North Africa and likely introduced into California by Spanish missionaries." (*H. V. Harlan.*)
48134. *Cape*. "Two-rowed malting barley." (*Richardson.*)
"Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)
48135. *Chilean C*. "Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)
48136. *Chilean D*. "Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)
48137. **Kinver*. "Two-rowed malting barley." (*Richardson.*)
48138. *Manchurian*. "Originally from Manchuria; it has given good yields in the northern Mississippi Valley." (*H. V. Harlan.*)
48139. *No. 36*. "Introduced from New South Wales to Victoria in 1917; a selection of seed barley imported into that State." (*Richardson.*)

48103 to 48144—Continued.

- 48140.** *No. 49.* "Introduced from New South Wales to Victoria in 1917; a selection of seed barley imported into that State." (*Richardson.*)
- 48141.** *Odessa.* "Introduced from Odessa, Russia, and thought to be the most promising barley for South Dakota conditions." (*H. V. Harlan.*)
- 48142.** **Roseworthy Oregon.* "Six-rowed field barley, with dark-colored grain, produced by Prof. Perkins, Roseworthy College, South Australia." (*Richardson.*)
- 48143.** *Sea of Azov.* "This was introduced by a local produce merchant from seed imported from Russia." (*Richardson.*)
- 48144.** *Short head.* "Six-rowed field barley, with dark grain, produced by Prof. Perkins, Roseworthy College, South Australia." (*Richardson.*)

48145. SOLANUM MAMMOSUM L. Solanaceæ.

From Ecuador. Collected in 1918 by Dr. J. N. Rose, associate curator, United States National Museum. Numbered in October, 1919, for convenience in recording distribution.

"This *Solanum* has large thorny leaves, and bears a large deep-yellow fruit, about 3 inches long and 2 inches through, with five small fingerlike protuberances projecting from the side, at the base. The fruit lasts for a long time, both on the plant and after being picked, and is quite a curiosity." (*Peter Bisset.*)

For previous introduction, see S. P. I. No. 46374.

48146. RAPHIA VINIFERA Beauv. Phœnicaceæ. Palm.

From Aburi, Gold Coast, West Africa. Purchased from Mr. W. D. Tudhope, Director of Agriculture, Agricultural Department of the Gold Coast Colony, Ashanti, and Northern Territories. Received October 3, 1919.

The *bamboo* or *wine palm*, so called because the natives make wine from the sap of the trunk, is native to west and central tropical Africa, the commonest tree in the swamps and lowlands which line the waterways. Dense thickets of these graceful palms, traversed only by the wine gatherer or the bamboo cutter, push their way into the lagoons and extend over the flood grounds, and even for a distance of 15 to 20 miles up the river valleys into the interior. African bass, a valuable brush fiber, and raffia are both obtained from this palm. The strong whalebonelike bast fiber, contained in the lower portions of the leafstalk, is very easily extracted by a simple process of soaking and beating, and is then made into excellent brooms and brushes. Raffia is prepared by peeling off the cuticle, with some of the underlying fibrovascular bundles, on one or both sides of the leaf. It is used locally for woven fabrics, cloth, hats, and matting. The loose strips of raffia are in demand as tie bands by gardeners. In length of fiber, but more especially in yield of cellulose, it is superior to esparto grass, *Stipa tenacissima*, which is valuable for making rope, brooms, baskets, paper, etc. The following analysis proves the worth of *Raphia vinifera* for paper making: Moisture, 9.8 per cent; ash, 2.7 per cent; cellulose, 60.8 per cent. Ultimate fibers (length), 1.5 to 2.5 mm. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1891, No. 49, p. 38, and *Jackson, Journal of the African Society*, vol. 1, p. 299.)

48147 to 48149. TRITICUM spp. Poaceae.**Wheat.**

From Santa Ursula, Teneriffe, Canary Islands. Purchased from Mr. G. V. Perez. Received October 6, 1919.

"Of the two wheats, *Jarinegro* and *Morisco*, the first is much more prolific, but the people here do not like it because it does not contain as much flour. However, it must be rich in vitamins and I consider it a very valuable wheat. The peasants at Laguna (Teneriffe) are fond of mixing and sowing the two together; they do not sow *Jarinegro* nearly as much as they did in the past because of the appearance of the flour. It may be a very superior food, notwithstanding its appearance." (Perez.)

48147. TRITICUM DURUM Desf.
Jarinegro.

48148 and 48149. TRITICUM [AESTIVUM L.
(*T. vulgare* Vill.)

48148. Morisco.

48149. Received as a mixture of *Jarinegro* and *Morisco* from which the durum wheat has since been removed and discarded.

48150. YUCCA ELATA Engelm. Liliaceae.**Palmilla.**

(*Y. radiosa* Trelease.)

From Las Cruces, N. Mex. Presented by Prof. J. G. Griffith, biologist, Agricultural Experiment Station, through Mr. L. H. Dewey, Botanist in Charge of Fiber Investigations. Received October 7, 1919.

A very striking arborescent yucca, the larger trees reaching a height of 5 to 7 meters [16 to 23 feet], simple, or with a few short branches at the top. The long pallid leaves are white margined, rigidly divergent, and reach a maximum width of half an inch; they are soon finely and copiously filiferous. The white bell-shaped flowers with lanceolate petals are in large panicles on long exserted peduncles, often twice the length of the rest of the plant. The capsule is stout, oblong, and unusually symmetrical, very smooth, and of a clear straw color at maturity; the seeds are exceptionally large, some are nearly half an inch long. (Adapted from *Report of the Missouri Botanical Garden*, vol. 13, p. 56.)

48151. METROSIDEROS TOMENTOSA A. Rich. Myrtaceae.

From Bay of Plenty, New Zealand. Presented by Mr. Charles G. Hallet. Received October 6, 1919.

"Seeds of a very ornamental tree, of a spreading nature, which grows along our northern coasts. In midsummer, it is covered with crimson flowers which secrete large quantities of light-colored, mild-flavored nectar. The tree makes a good windbreak, withstanding gales and salt spray splendidly; the crooked limbs are much used for knees and cleats in boat building. The tree is probably as sensitive to frost as the fig or the lemon. Collected at Napier." (Hallet.)

48152. DECAISNEA FARGESII Franch. Lardizabalaceae.

From Rochester, N. Y. Presented by Mr. John Dunbar, assistant superintendent of parks. Received October 10, 1919.

"A very attractive ornamental shrub reminding me somewhat of the Oregon grape (*Berberis aquifolium*) in habit; from E. H. Wilson's collection." (David Fairchild.)

An erect shrub, 7 to 16 feet in height, very common in moist woods and thickets in western Hupeh and in Szechwan between 2,000 and 8,500 feet in altitude. The deep-blue fruit contains a white pulp in which are imbedded the numerous flattened jet-black seeds. The pulp is edible but of insipid flavor. The fruits are commonly eaten by monkeys on Mount Omei and elsewhere in that region. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 344.*)

48153 to 48160.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received October 11, 1919. Quoted notes by Mr. Harrison.

48153. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"*Toyahama cabbage.* A variety of pai ts'ai which attains, with good cultivation, a weight of 30 to 40 pounds."

48154. CAPILLIPEDIUM PARVIFLORUM (R. Br.) Stapf. Poaceæ. **Grass.**

"A native grass, 4 feet in height, called *bluegrass.*"

48155. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

A tree attaining a maximum height of 100 feet, found along mountain river banks in eastern Australia. The wood is used for yokes, tools, shingles, etc. A yoke was unimpaired after having been in use for 14 years. The foliage is much relished as pasturage. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 197.*)

48156. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

"*Mammoth cucumber.* This cucumber grows to a very large size, almost as large as a medium-sized vegetable marrow, and keeps well. The flesh is very firm, crisp, and sweet."

48157. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

"*Saccaline.* A perennial sorghum, 12 feet in height, which yields 15 to 20 tons per acre."

48158. PANICUM PARVIFLORUM R. Br. Poaceæ. **Grass.**

"One of our best native grasses, a very heavy yielder of nutritious fodder. It is 3 to 4 feet in height and grows well in sandy soil."

48159. PASPALUM LARRANAGAI Arech. Poaceæ. **Grass.**

"*Giant paspalum grass.* A frost-resistant grass, 5 or 6 feet in height, which gives a heavy yield and is much relished by stock. A good grass for moist land."

48160. THEMEDA QUADRIVALVIS (L.) Kuntze. Poaceæ. **Grass.**

"*Kangaroo grass.* A splendid grass 3 to 5 feet high, always relished by stock. Worthy of careful propagation."

48161. CAPSICUM ANNUM L. Solanaceæ. **Red pepper.**

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Numbered November, 1919.

"Seed from plants grown at the Yarrow Plant Introduction Field Station, season of 1919, from seeds received April 22, 1919. This pepper is grown in Cuba under the name of the *Creole*. The beautiful golden-yellow fruit is about 3 inches long by 2 inches thick. The flavor is quite mild." (*Peter Bisset.*)

48162. DIOSPYROS sp. Diospyraceæ. Persimmon.

From Puerto Bertoni, Paraguay. Presented by Dr. M. Bertoni. Numbered October, 1919.

"*Kaki silvestre*. A species of *Diospyros*, indigenous to the forests of eastern Paraguay and commonly found in rocky places in the open woods on the banks of the Rio Parana. It is a small tree, 20 to 26 feet high, and quite leafy; it produces a great abundance of almost spherical fruits, about an inch in diameter, which mature in autumn. *Kaki silvestre* apparently does not suffer from the effects of temperatures above -3° C. [27° F.]. It could possibly be used advantageously as a stock with *Diospyros kaki*." (Bertoni.)

48163. PISTACIA ATLANTICA Desf. Anacardiaceæ.

From Tripoli, Libya, Africa. Presented by Dr. O. Fenzi, director, Stabilimento Orticolo Libico. Received October 15, 1919.

A tree, native to northwestern Algeria, 35 to 49 feet in height, with many woody branches in a dense head. The blue drupe is somewhat fleshy and about the size of a pea. The tree is frequently found in sandy uncultivated fields not far from the city of Gafsa and seems to have been cultivated at one time by the inhabitants. A resinous gum flows from the bark of the trunk and branches at various times of the year, especially in summer, and hardens to a pale yellow color. It has a pleasant aromatic odor and taste, scarcely distinguishable from the oriental mastic gum, and called by the same name, *huelc*, by the Moors. It thickens in plates covering the branches, or in irregular balls differing in thickness and shape, often the size of a finger. Some of these become detached from the tree and are scattered on the ground. The Arabs collect this substance in autumn and winter and chew it to whiten the teeth and sweeten the breath (Adapted from *Desfontaines, Flora Atlantica, vol. 2, p. 364.*)

It is one of the species used for stocks for the true pistache.

48164 to 48170.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received October 14, 1919. Quoted notes by Mr. Wright.

48164. ALECTRYON EXCELSUM Gaertn. Sapindaceæ.

"A handsome evergreen tree, commonly called the New Zealand oak."

A tree 30 to 60 feet high, with black bark; the young branches, the under surfaces of the compound leaves, the paniced inflorescences, and the capsules are clothed with a silky, ferruginous pubescence. The globose, shining, jet-black seeds, from which the Maoris formerly extracted an oil, are half embedded in a scarlet, fleshy, cup-shaped aril. The tree yields a tough, elastic timber valuable for ax handles, bullock yokes, etc. (Adapted from *Cheeseman, Manual of the New Zealand Flora, p. 103.*)

48165. ENTELEA ARBORESCENS R. Br. Tiliaceæ.

One of the handsomest of small trees, which used to be common along the north coast of the North Island. In some places this tree is called the *New Zealand mulberry*, on account of the shape of the large heart-shaped leaves, which are beautifully veined, soft, and wilt quickly when gathered. The pure-white flowers with crumpled petals are produced in large drooping clusters, each single blossom being about an inch in diameter. The fruit is dark brown and rough, with inch-long bristles. The wood is remarkably light and was used by the Maoris for floats

48164 to 48170—Continued.

for their fishing nets and in the construction of small rafts. It is about half the weight of cork and is sometimes termed the "cork-wood" tree. It has been suggested that it might be utilized for life belts. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 242.*)

48166. GAULTHERIA OPPOSITIFOLIA Hook. f. Ericaceæ.

"This dainty little New Zealand shrub, which produces two crops of charming heathlike flowers during the year, should be in every garden. It is especially suitable for rock gardens, as it is usually found growing on steep clay banks, where very little nourishment is obtained."

48167. GAYA LYALLII (Hook. f.) Baker f. Malvaceæ.

(*Plagianthus lyallii* Hook. f.)

"The giant-flowered southern lacebark of New Zealand. This is without doubt the most beautiful of our hardy large shrubs. It produces large clusters of pure-white cherrylike blossoms, hanging most gracefully on long stems. In colder parts this plant is deciduous. It is one of the easiest to cultivate, as it transplants easily and will grow from cuttings or seed."

48168. LEPTOSPERMUM SCOPARIUM NICHOLLII (Darr-Smith) Turrill. Myrtaceæ.

A red-flowered variety of this very abundant tree or shrub, the beautiful colonial counterpart of the English broom or gorse, sometimes 30 feet in height. Early voyagers and colonists sometimes used its pungent leaves in place of tea. Indeed, the whole plant, including leaves, flowers, fruit, and young shoots, is highly aromatic, and the oil which it contains will perhaps, in the future, be put to some useful purpose. The wood is largely used for fences and firewood. The Maoris made use of it for their paddles and spears, and a bunch of the twigs makes an excellent broom. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 272.*)

48169. OLEA CUNNINGHAMII Hook. f. Oleaceæ.

"A very fine flowering shrub."

It bears whitish branches, downy young shoots, linear-oblong leathery leaves 3 to 6 inches long, and small greenish white flowers in dense erect racemes. The drupes are half an inch long. Native to North Island, New Zealand. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 334.*)

48170. VERONICA SPECIOSA R. Cunn. Scrophulariaceæ.

A rare and beautiful stout shrub from North Island, New Zealand, with crimson flowers in large dense racemes. The leaves are oblong, thick, shining, 1 to 4 inches long and an inch broad, with a 2-layered epidermis. It flourishes best when in reach of the sea spray. Many varieties of this plant are cultivated in gardens. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 376.*)

48171 to 48189.

From Cape Town, Cape Province. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 24, 1919. Quoted notes by Dr. Shantz.

48171. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"(No. 16. St. Vincent, Cape Verde Islands. July 28, 1919.) A few black seeds. All seeds in the market are very impure."

48171 to 48189—Continued.

48172 and 48173. *CUCURBITA PEPO* L. Cucurbitaceæ. Squash.

48172. "(No. 14. St. Vincent, Cape Verde Islands. July 28, 1919.) White seeds of a cucurbit sold in market. There was no fruit with this seed. Apparently a few plants are grown where water can be obtained to irrigate."

48173. "(No. 15. St. Vincent, Cape Verde Islands. July 28, 1919.) Yellowish seeds of a cucurbit. Procured with the preceding number."

48174. *FELICIA* sp. Asteraceæ.

"(No. 29. Kirstenbosch, Cape Province. August 25, 1919.) A low-growing spreading plant, 3 inches high, with bright-blue asterlike flowers, suitable for borders. It is sparse in habit of growth, but the flowers are unusually attractive."

48175. *OXALIS* sp. Oxalidaceæ.

"(No. 35. Table Mountain, Cape Town. August 23, 1919.) An unusually large white-flowered oxalis. The leaves form a mat on the soil surface, and the flowers are almost sessile. It is a very attractive plant. The plants prefer granitic or sandy soil and grow in rather dry locations."

48176. *PARKINSONIA ACULEATA* L. Mimosaceæ.

"(No. 11. St. Vincent, Cape Verde Islands. July 28, 1919.) This is used as a hedge plant almost exclusively in the cultivated and irrigated valley of this island. It is very similar to a form found in Arizona. Seed purses, sold on the streets, are, I believe, made from the seeds of this tree."

48177 and 48178. *PENNISSETUM CILIARE* (L.) Link. Poaceæ. Grass.

48177. "(No. 19. St. Vincent, Cape Verde Islands. July 29, 1919.) From the Mattiato Ranch. Seeds of a grass grown for burros and goats, especially where there is a little irrigation."

48178. "(No. 40. Mowbray, Cape Town. August 27, 1919.) *Buffel grass*. A new drought-resistant grass, not so good when green but excellent when ripe. The seeds of this grass were obtained from Starke Bros., Rosebank, near Mowbray, who regard it as one of the best finds. It is said to be especially valuable after it has completed its growth and dried in place, forming an excellent dry feed. It would seem to be best adapted to areas of occasional drought."

48179. *PHYLLANTHUS ACIDUS* (L.) Skeels. Euphorbiaceæ. Iba.
(*P. distichus* Muell. Arg.)

"(No. 12. St. Vincent, Cape Verde Islands. July 28, 1919.) A tree, with compound leaves, called *gruzierra* by the natives and *amloi* by the Hindus. The white fruit, almost an inch in diameter, is very pleasant to the taste and is used for pickles."

48180 and 48181. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha.

48180. "No. 20. Groot Constantia, Cape Province. August 23, 1919.) The Cape gooseberry, said to be introduced from Peru, is a bushy annual, 1 to 2 feet high, which grows as a weed. This is one of the most important jam fruits of the Cape Region, and is served everywhere in hotels and on trains. At Port Elizabeth I



A FAVORITE PROTEA OF CAPE PROVINCE. (*PROTEA LATIFOLIA* R. BR., S. P. I. No. 48183.)

Owing to lack of understanding of the methods of handling plants of this genus, they have been neglected by American horticulturists. As they are among the most beautiful and popular of the many handsome ornamental plants of South Africa, we should make an effort to learn the secrets of their successful culture. The species here shown, which has purple-tinted flower heads 4 inches broad, should be given a careful trial in California and Florida. It probably will not do well on soils which contain much lime. (Photographed by Dr. H. L. Shantz, Kirstenbosch, Cape Province, September 7, 1919; P36117FS.)



A GOOD STREET TREE FOR ARID TROPICAL REGIONS. (THESPESIA POPULNEA (L.) SOLAND., S. P. I. NO. 48186.)

The island of St. Vincent, one of the Cape Verde group, off the western coast of Africa, has a very dry climate. Practically the only street tree grown there is *Thespesia populnea*. Its use for this same purpose on the moister islands of the Pacific Ocean gives no hint of its ability to thrive under adverse conditions. (Photographed by Dr. H. L. Shantz, St. Vincent, Cape Verde Islands, July 28, 1919; P36039FS.)

48171 to 48189—Continued.

found a few fresh ones in a fruit store. They are rather tart, more so than our ground cherries. This plant should be given a thorough trial in several parts of the United States. On the dry plains and irrigated sections it may do well, and would prove very valuable as an annual fruit crop. It will also probably grow well in southern California and in the Southern States. In the Cape region it is allowed to grow in waste places as a weed, but it is highly prized by all."

48181. "(No. 38. Mowbray, Cape Town. August 27, 1919.) This grows as a weed everywhere in the Cape region, and makes most delicious jam. It is short lived and dies each winter, although there is no frost here."

48182. *PROTEA LANCEOLATA* E. Mey. Proteaceæ.

"(No. 131. Kirstenbosch, Cape Province. August 25, 1919.) A very attractive shrub with light-yellow flowers and pale yellowish green foliage, not as striking as some of the other Proteas when in flower, but of decided value as a decorative plant. The habit and requirements are the same as those of the other Proteas."

48183. *PROTEA LATIFOLIA* R. Br. Proteaceæ.

"(No. 24. Cape Town, Cape Province. August 24, 1919.) A wonderful Protea, with flowers 4 inches across. The Cape region is noted for its beautiful flowers, and of these none are more popular than the large flowers of the Proteas. The shrubs are 2 to 6 feet high and bear the large flower on the tip of almost every branch. Seeds only are sent, but these are said to grow easily, and it will be possible to test the seedlings on several types of soil. Acid, or at least humus, soils should be tried in Florida and California."

For an illustration of this plant in bloom, see Plate V.

48184. *PROTEA LEPIDOCARPODENDRON* L. Proteaceæ.

"(No. 27. Kirstenbosch, Cape Province. August 25, 1919.) This is one of the most striking plants of this group. The flowers are grouped into large heads 3 inches long, and when open are 4 to 6 inches across. The black-tipped purple bracts, which appear like petals fringed with long black silky hairs, produce a very pleasing effect, and I doubt if a more attractive ornamental could be grown. This plant grows well from seed and should be tried in acid soil. It should grow in the leached soils of southern California; there is little lime, however, in the soil where it grows naturally."

48185. *PROTEA SUSANNAE* Phillips. Proteaceæ.

"(No. 28. Kirstenbosch, Cape Province. August 25, 1919.) A beautiful Protea with a very large flower. The seeds are said to grow readily, and I hope we can succeed in bringing them to flower. If this is once done, their popularity will be assured."

48186. *THESPESIA POPULNEA* (L.) Soland. Malvaceæ.

"(No. 17. St. Vincent, Cape Verde Islands. July 28, 1919.) The street tree of St. Vincent, where it appears to grow without irrigation."

For an illustration of this tree used as a street tree, see Plate VI.

48171 to 48189—Continued.

48187. *URSINIA CAKILEFOLIA* DC. Asteraceæ.

“(No. 26. Kirstenbosch, Cape Province. August 25, 1919.) An unusually attractive plant with fine foliage and a mass of flowers of a very brilliant reddish orange. As a border for walk or driveway it will all but rival *Mesembryanthemum*. This *Ursinia* is an annual, 10 to 12 feet high; it flowers early and continuously and should do well.”

48188. *VIRGILIA CAPENSIS* (L.) Lam. Fabaceæ.

“(No. 30. Kirstenbosch, Cape Province. August 25, 1919.) A handsome quick-growing tree, attaining a height of 20 feet, with a dark rough bark, finely divided compound leaves, and profuse dense racemes of pink sweet-scented flowers. The wood is used chiefly for ox yokes, etc. This plant should be tried in the South and also in the Southwest, especially in California.”

48189. *WATSONIA* sp. Iridaceæ.

“(No. 34. Table Mountain, Cape Town. August 23, 1919.) This plant looks like a *Gladiolus*. The leaves are sword shaped and the flowers very attractive.”

48190. *PYRUS* sp. Malaceæ.

Pear.

From Lawrence, Kans. Cuttings presented by Mr. T. E. Griesa. Received November 26, 1919.

“A medium-sized pear resembling a small *Bartlett* in shape and color. Flesh tender, melting, buttery, nearly sweet, rich, and good to very good in quality. According to Mr. Griesa, the tree was given to him some six years ago by his brother. It was propagated from a seedling tree originating on the farm of Mr. O. H. Ayer, a few miles south of Mr. Griesa's place. Only a few of the trees were propagated, and the one on Mr. Griesa's place is probably the only one in existence at this time. The tree started bearing when it had been set four years. It ripened several fine fruits that year, and last year (1918) was full of bloom, but the fruit was killed by late frost. This year (1919) the tree is loaded with fruit. It was set in an orchard with *Bartlett*, *Clapp Favorite*, and *Douglas*. The *Bartlett* and *Clapp Favorite* have long since died of fire-blight, but the new variety and the *Douglas* show no signs of blight. According to Mr. Griesa, the tree is as large as apple trees set in the same orchard fourteen years ago.

“The pear was submitted to Messrs. H. P. Gould and C. P. Close, of the Office of the Horticulturist, United States Department of Agriculture. The description of the fruit given above is in part quoted from a statement from Mr. Close. Mr. Gould reports that externally the pear resembles a *Bartlett* but internally it looks more like a *Kieffer*.” (*B. T. Galloway*.)

48191. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

From Sydney, New South Wales. Presented by Mr. George Valder, under-secretary and director, Department of Agriculture. Received October 14, 1919.

“Sorghum known as ‘Saccalene.’ This is not a perennial sorghum, but it can be cut several times during the season, fresh growth being made from the roots. It yields a heavier crop than any other sorghum yet tested by this department and retains its succulence for a longer period after being frosted.

It will be found that this crop gives the best results when grown on good soil where the rainfall is fairly high or where irrigation can be practiced. Sowing should be made early in the spring." (*Valder.*)

48192 to 48213.

From La Reole, Gironde, France. Presented by Mrs. Rachel Severin. Received October 2, 1919. Quoted notes by Mrs. Severin.

"French and Spanish selected cereals which grow well in the Aquitanian region from Bordeaux and Toulouse to Nantes and Paris."

48192 and 48193. AVENA STERILIS L. Poaceæ. Oats.

48192. "*Ligowo* × *Brie* (cross between *Ligowo* and *Brie*)."

For previous introduction of *Ligowo*, see S. P. I. No. 612.

48193. "*Noire Maroc* (Black oats of Morocco)."

48194 and 48195. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ.

Barley.

48194. "*Staf Tunisie* (*Staf* barley from Tunis)."

48195. "*Mecknes Maroc* (*Mecknes* barley from Morocco)."

48196 and 48197. SECALE CEREALE L. Poaceæ.

Rye.

48196. "*Limousin* (*Limousin* rye). From the central plateau region of France."

48197. "*Landes* (*Landes* rye). From the Province of Landes."

48198 to 48207. TRITICUM AESTIVUM L. Poaceæ. Common wheat.

(*T. vulgare* Vill.)

48198. "*Bladette*. From hillside land near Toulouse."

48199. "*Blé Blanc de La Reole* (*La Reole* white); very successful in alluvial lands near Bordeaux."

48200. "*Blé Blanc de La Reole* (*La Reole* white); bearded sport from near Bordeaux."

48201. "*Blé de Gironde* (*Gironde* wheat), from near Bordeaux; very good for loam."

48202. "*Blé Rouge de Bordeaux* (red wheat from Bordeaux); successful through all the world."

48203. "*Blé Tendre* (tender wheat); from Tunis."

48204. "*Candéal de Sovia* (*Sovia* wheat); from Spain."

48205. "*Candéal fino* (fine wheat); from Spain."

48206. "*Rieti* × *Japhet* No. 30."

"One of the parents, *Rieti*, is one of the finest of the Italian wheats; it is very early, productive, and rust resistant; it can stand very high temperature, and does not lodge." (*Schribaux.*) This was crossed by Prof. Schribaux, of Paris, with the yellow-grained *Japhet*.

For previous introduction of the parent wheats, see S. P. I. Nos. 17994, 23628, 26084, and 44949.

48207. "*Rouge d'Alsace* × *Bordeaux*. Crossed by Prof. Schribaux."

"*Rouge d'Alsace* is a winter wheat and *Bordeaux* is a very productive wheat; it is hoped that the hybrid will combine resistance to cold with great yields." (*Schribaux.*)

48192 to 48213—Continued.

48208 to 48212. TRITICUM DURUM Desf. Poaceæ. Durum wheat.

48208. "*Carita de ratón* (rat's delight); from Spain."

48209. "*Enano de Jaen* (dwarf from Jaen); from Spain."

See S. P. I. No. 47888 for previous introduction.

48210. "*Fanfarron* (bully); from Spain."

48211. "*Raspinegro* (rough black); from Spain."

See S. P. I. No. 47890 for previous introduction.

48212. "*Rubio enlargado d'Atlemtege* (large red from Atlemtege); from Spain and Portugal."

48213. TRITICUM TURGIDUM L. Poaceæ. Poulard wheat.

"*Poulard d'Australie* (Australian Poulard); grows very well in southwestern lands."

48214. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.
(*Nephelium litchi* Cambess.)

From Santa Barbara, Calif. Cuttings presented by Mr. E. W. Hadley.
Received October 7, 1919.

"Cuttings from an interesting lychee tree growing in a garden on East Sola Street, Santa Barbara, Calif., lately owned by Mr. E. W. Hadley. There are only two lychee trees (of which we have records) that have fruited in the open in the United States, this one and one near Tampa, Fla. These cuttings were obtained for propagation, so that plants can be tried in other sections to see if this variety is more frost resistant than those previously tested." (*Peter Bisset*.)

48215 to 48220.

From Vereeniging, Johannesburg, Transvaal. Presented by Mr. J. Burt Davy. Received October 8, 1919. Quoted notes by Mr. Davy.

48215. ACACIA SIEBERIANA DC. Mimosaceæ.

"(No. 136.) *Kecombwi*. A deciduous tree, on alluvial flats on the outer fringe of river vegetation."

A shrub or small tree, from Portuguese West Africa, reaching a height of 30 feet, with a very beautiful dilated crown and whitish flowers. The very hard, acute, white spines are 2 to 3 inches long, and the wood is hard and whitish. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, pt. 1, p. 313.*)

48216. MARKHAMIA PAUCIFOLIOLATA Wildem. Bignoniaceæ.

"(No. 177.) From Elizabethville."

A tree with compound leaves and young branches yellow pubescent, native to the Belgian Kongo. The oval stipules are sharp-pointed, and the campanulate flowers are in dense panicles. The wood is useful for construction work. (Adapted from *Wildeman, Études sur la Flore du Katanga, p. 131.*)

48217. TACCA PINNATIFIDA Forst. Taccaceæ. Fiji arrowroot.

"(No. 131.) On termite nests."

Found from India to tropical Australia and Polynesia, also in Madagascar. This perennial plant will live even on sandy shores, and it is not unlikely that it will endure a temperate climate. From the tubers

48215 to 48220—Continued.

the main supply of the Fiji arrowroot is prepared. The Tacca starch is much valued in medicine, and is used particularly in cases of dysentery and diarrhea. Its characteristics are readily recognized under the microscope. From the leaves and flower stalks light bonnets are plaited. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 521.)

48218. XYLOPIA sp. Annonaceæ.

"(No. 135.) From Cataract Island, Zambezi River."

48219. (Undetermined.)

"(No. 169.) *Kafiecfi*. From Elizabethville."

48220. (Undetermined.)

"(No. 128.) *Moolembive*."

48221 and 48222.

From Buitenzorg, Java. Purchased from Mr. R. D. Rands, Department of Agriculture. Received October 15, 1919.

48221. CANARIUM INDICUM Stickm. Balsameaceæ.

Kanari.

(*C. commune* L.)

A large ornamental tree, native to Java and grown to a great extent in that country as a shade tree and for its edible nuts. The tree is notable for its remarkable buttressed trunk and ornamental yellow blossoms. The dark-purple fruits are produced in great abundance almost throughout the year. The kernel of the fruit is edible and is used in the production of oil for burning and other purposes; it has a very high food value, and the proportion of fat is 72.3 per cent as against 65 per cent in the case of walnuts, filberts, and hazelnuts. The nuts are very hard and require a hammer to break them. (Adapted from *Milsum, Fruit Culture in Malaya*, p. 55.)

For previous introduction, see S. P. I. No. 20808.

48222. CANARIUM MOLUCCANUM Blume. Balsameaceæ.

Bageja.

"A large tree, native of the Moluccas, quite similar in growth to the kanari, but having larger nuts about halfway in size between the kanari and pili; the kernels are of excellent flavor and quality." (*Philippine Agricultural Review*, vol. 9, p. 203.)

48223. EUGENIA AQUEA Burm. f. Myrtaceæ.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, of the Middle Egypt Botanic Station. Received October 17, 1919.

A medium-sized tree, with smooth evergreen foliage and large white flowers; native to the Moluccas and Ceylon. It is planted extensively in Bengal and Burma. The fruit, which is about the size of a loquat and flattened at the end, is either pale rose colored or white and has an aromatic taste. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 283.)

48224. AVENA NUDA Hoejer. Poaceæ.

Oats.

From Nanking, Kiansu, China. Presented by Mr. John H. Reisner, University of Nanking. Received October 21, 1919.

"*Hull-less* oats a small field of which I found on a recent trip to Shansi. The oats were found near Kih sien, on the central Shansi plain." (*Reisner*.)

48225 to 48228.

From Honolulu, Hawaii. Collected by Mr. J. F. Rock, of the College of Hawaii. Received October 15, 1919.

48225. *FICUS* sp. Moraceæ.

Fig.

“(No. 626.) A small undershrub, collected in Hongkong, July, 1919; grows in shade to a height of 4 to 5 feet.” (Rock.)

48226. *HEMIGRAPHIS* sp. Acanthaceæ.

“(No. 634.) A semierect acanthaceous creeper, with large blue trumpet-shaped flowers. Native to Siam. Collected in July, 1919.” (Rock.)

48227 and 48228. *HYDNOCARPUS ANTHELMINTHICA* Pierre. Flacourtiaceæ.

A tree reaching a height of about 50 feet, with reddish yellow, heavy, close-grained wood. (Adapted from *De Lancssan, Les Plantes Utiles des Colonies Françaises, p. 303.*)

48227. “(No. 630.) Collected in Bangkok, Siam, August, 1919. Much used in China as a treatment for leprosy.” (Rock.)

48228. “(No. 631.) Collected in Bangkok, Siam, July, 1919. The seeds of this tree are much used in China as a treatment for leprosy.” (Rock.)

48229. BAMBOS TULDA Roxb. Poaceæ.

Bamboo.

From Allahabad, India. Presented by Mr. P. H. Edwards, The Jamna School. Received October 22, 1919.

“Katanga bamboo.” (Edwards.)

The common Bengal bamboo which is arborescent and has dark-green stems and pale soft leaves, pubescent beneath. The young shoots are pickled when only about 2 feet high; the split culms are used for mats, baskets, and window shades; the wood is strong and is largely used for roofing and scaffolding. This bamboo is the variety used for making fishing rods. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 393.*)

For previous introduction, see S. P. I. No. 44240.

48230 to 48261.

From Victoria Falls, Rhodesia. Presented by Mr. J. Burt Davy. Received October 15, 1919. Quoted notes by Mr. Davy, except as otherwise noted.

48230. *ACACIA REHMANNIANA* Schinz. Mimosaceæ.

“(No. 95.) From granitic soils, Fort Rickson, Matabeleland.”

48231. *ALBIZZIA* sp. Mimosaceæ.

“(No. 84.) A small tree growing in granitic soil at Matoppo Hills, Matabeleland.”

48232. *ALBIZZIA* sp. Mimosaceæ.

“(No. 96.) Found growing in basaltic formation at Victoria Falls.”

48233. *AMERIMNON* sp. Fabaceæ.

(*Dalbergia* sp.)

“(No. 97.) From basaltic formation at Victoria Falls.”

48234. *BAIKIAEA PLUMJUGA* Harms. Cæsalpiniaceæ. **Rhodesian teak.**

“(No. 80.) Native names, *i-gusi, makoosi*. The wood is much valued for construction, sleepers, etc.; it is said to be very hard to work.”

A tree, 49 to 66 feet in height, native to central Africa, with pubescent branches and shining glabrous compound leaves, pubescent beneath. **The**

48230 to 48261—Continued.

long silky racemes and fruits are golden yellow. (Adapted from *Warburg, Kunene-Sambesi Expedition, p. 248.*)

48235. BARYXYLUM AFRICANUM (Sond.) Pierre. Cæsalpiniacæ.
(*Peltophorum africanum* Sond.)

“(No. 59.) A valuable wood from Bulawayo; Chilengi names, *i-kani, munyri.*”

An unarmed tree, 20 to 30 feet in height, from Lower Guinea and south-central Africa. The yellow flowers are in erect racemes and the flat indehiscent legumes have a winglike margin. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 260.*)

48236. BAUHINIA MACRANTHA Oliver. Cæsalpiniacæ.

“(No. 73.) A small ornamental tree, with large white flowers, from Victoria Falls.”

A pubescent shrub, 4 to 5 feet in height, with thin leathery compound leaves and very large flowers, 2 or 3 together on short terminal peduncles; the obovate petals are $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, pinnately veined from a prominent deliquescent midrib. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 289.*)

48237. BAUHINIA sp. Cæsalpiniacæ.

“(No. 86.) *M'weew.* A ‘sausage’ tree.”

48238. BERLINIA sp. Cæsalpiniacæ.

“(No. 78.) A small leguminous tree.”

48239. BRACHYSTEGIA sp. Cæsalpiniacæ.

“(No. 99.) A leguminous tree, from Victoria Falls, on Kalahari sand formation. It is said to be good timber.”

48240. BRIDELIA MICRANTHA (Hochst.) Baill. Euphorbiacæ.

“(No. 89.) The leaves of this tree are browsed by cattle.”

A tree 20 to 40 feet in height, with a dense wide-spreading head and elliptic, slightly coriaceous leaves, shining above and also glabrous or minutely puberulous below. Native to Upper and Lower Guinea, Uganda, and German East Africa. (Adapted from *Oliver, Flora of Tropical Africa, vol. 6, p. 620.*)

48241. CASSIA ABBREVIATA Oliver. Cæsalpiniacæ.

“(No. 76.) From Victoria Falls.”

A shrub or tree, attaining 15 to 25 feet, with compound leaves 1 foot in length and terminal racemes of red or yellow flowers. The tomentose legumes are 12 to 15 inches long. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 271.*)

48242. COMBRETUM APICULATUM Sond. Combretacæ.

“(No. 62.) A small tree, found in the scrub on granitic soil, at Bulawayo.”

A small erect unarmed tree from South Africa, with many grayish yellow branches, racemes of small yellow flowers, and small golden yellow fruits bearing four shining and glabrous wings. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 2, p. 510.*)

For previous introduction, see S. P. I. No. 28342.

48230 to 48261—Continued.

48243. COMBRETUM IMBERBE Wawra. Combretaceæ.

“(No. 68.) A large tree with hard heavy wood; from Victoria Falls.”

A very tall tree, from the forests of Benguela, with red-veined, white scaly leaves and dense racemes of small, long-stemmed flowers followed by dark-red 4-winged scaly fruit. (Adapted from *Sitzungsberichte der Mathematisch, Naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften*, vol. 38, p. 556.)

48244. COMBRETUM RHODESICUM Baker. f. Combretaceæ.

“(No. 61.) A small tree, growing in granitic soil in the scrub at Bulawayo.”

A Rhodesian tree with round branches and small leaves, light colored below. The dense spikes of flowers are followed by fruits having 4 light-brown scarios wings. (Adapted from *Journal of Botany*, vol. 37, p. 435.)

48245. COPAIVA COLEOSPERMA (Benth.) Kuntze. Cæsalpiniaceæ.

(*Copaifera coleosperma* Benth.)

“(No. 72.) *Mosouri, masibi*. The Rhodesian mahogany.”

A handsome evergreen tree which is one of the best timbers of Southern Rhodesia. The aril used to be eaten by Bushmen. The district of Kosibi is named after the tree.”

“The red aril is used in preparing a nourishing drink.” (*Oliver, Flora of Tropical Africa*, vol. 2, p. 314.)

48246. COPAIVA MOPANE (Kirk) Kuntze. Cæsalpiniaceæ.

(*Copaifera mopane* Kirk.)

“(No. 82.) *Mopane*. One of the best timbers of Southern Rhodesia.”

A fine forest tree, native to Lower Guinea and the Mozambique district, with a trunk often 2 feet in diameter. The kidney-shaped seeds are most extraordinary, the testa being deeply wrinkled with large resinous glands like blisters. This tree is the ironwood of the country, abundant in dry clay plains, forming large monotonous shadeless forests. The leaves fold up at the junction of the leaflets and turn down at the node; they are thus shadeless during the dry season at noon. The excellent resin-colored blood-red wood is called “Sangue de Drago false;” it is heavy, durable, and difficult to work. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 315, and *Hiern, Catalogue of Welwitsch's African Plants*, pt. 1, p. 303.)

48247. DIOSCOREA sp. Dioscoreaceæ.

Yam.

“(No. 74.) Bulbils from Victoria Falls.”

48248. DIPLORHYNCHUS MOSSAMBICENSIS Benth. Apocynaceæ.

“(No. 55.) A small tree which yields a rubber in quantity but of doubtful quality. The tree is plentiful, but not many were seen bearing fruit. From Rhodesdale, on a magnesian dike.”

“Native to Lower Guinea, the Belgian Kongo, and Mozambique district.” (*Oliver, Flora of Tropical Africa*, vol. 4, pt. 1, p. 107.)

48249. FLACOURTIA sp. Flacourtiaceæ.

“(No. 88.) A thorny evergreen tree with edible fruits, from Cataract Island, Zambezi River.”

48250. GOSSYPIUM sp. Malvaceæ.

“(No. 63.) A small tree from Matoppo Hills, Matabeleland.”



THE MAHOGANY BEAN, A VALUABLE AFRICAN TIMBER TREE. (*PAHUDIA QUANZENSIS* (WELW.) PRIN, S. P. I. NO. 48253.)

This tree, sometimes called "Rhodesian mahogany" or "pod mahogany," occurs in southeastern Africa. Its wood very much resembles that of true mahogany (*Swietenia mahagoni*), but is of coarser grain. As an ornamental tree it may have value for shade, its large pealike flowers are very attractive in appearance, and the handsomely marked beans are used for necklaces. The species is probably somewhat drought resistant, not particular as to soil, and may stand a little frost after it has attained a growth of a few years. (Photographed by Dr. H. L. Shantz, Lourenco Marques, Mozambique, October 25, 1919; P36567FS.)

48230 to 48261—Continued.

48251. *KIRKIA ACUMINATA* Oliver. Simaroubaceæ.

"(No. 65.) A deciduous tree which grows readily from poles planted in the ground during the rainy season. It is common near Bulawayo and north to Broken Hill."

A glabrous tree with compound leaves, 6 inches to 1 foot long, clustered at the ends of the branches. The numerous flowers are in broad leafy panicles and are followed by dry 4-angled fruits which separate into four cocci suspended from a persistent carpophore. Native to Mozambique district. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 311.*)

48252. *LONCHOCARPUS CAPASSA* Rolfe. Fabaceæ.

(*L. violaceus* Oliver.)

"(No. 60.) *Clitamuzi*, i. e., kraal-spoiler, because the wood is not considered suitable for brush kraals. From Bulawayo, Matabeleland."

A tree 20 to 30 feet high, with leaves toward the ends of the branches and twigs. The purplish pink sweet-scented flowers are in dense racemes. Native to Mozambique and Abyssinia. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 2, 263*, and *Hiern, Catalogue of Welwitsch's African Plants, pt. 1, p. 281.*)

48253. *PAHUDIA QUANZENSIS* (Welw.) Prain. Cæsalpiniaceæ.

(*Afzelia quanzensis* Welw.)

Mahogany bean.

"(No. 66.) *Mukamba, mbandi*. A deciduous tree from Victoria Falls."

An unarmed tree, 15 to 30 feet in height, with coriaceous leaflets and large papilionaceous flowers. Native to Lower Guinea, south-central Africa, and the Mozambique district. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 302.*)

For previous introduction, see S. P. I. No. 12360.

An illustration of this tree is shown in Plate VII.

48254. *PENNISSETUM* sp. Poaceæ.

Grass.

"(No. 87.) Vleis [temporary lakes] near Shangani, southern Rhodesia."

48255. *PSEUDOLACHNOSTYLIS* sp. Euphorbiaceæ.

"(No. 83.) Said to be poisonous. From Victoria Falls."

48256. *PTEROCARPUS ANGOLENSIS* DC. Fabaceæ.

"(No. 64.) *Mukwa, um vagazi*. Kajat from granitic kopjes [hillocks] Matoppo Hills, Matabeleland. Valuable timber which grows well from cuttings or poles stuck in the ground during the wet season; poles cut off and planted about 8 years ago are now trees about 1 foot in diameter. Something like 60 per cent of the cuttings are said to strike."

48257. *RICINODENDRON RAUTANENII* Schinz. Euphorbiaceæ.

"(No. 67.) *Megongo, n'goma*. A handsome large deciduous tree, with smooth bark of a purplish brown tint. Sometimes called the *Zambezi almond*. The nuts are said to be edible; the shell is very hard, and the seed is said to be most difficult to germinate. From the Zambezi basin at Victoria Falls."

48230 to 48261—Continued.

The *Manketti* [or megongo] nuts are the product of a euphorbiaceous tree which grows in the South African veld, forming vast forests near the Omaramba River. The kernels of the nuts are oily and are eaten by the natives. The kernels yielded 57.2 per cent of bright-yellow liquid oil, which had a saponification value of 191.5 and an iodine value of 133.6 per cent; it is therefore a semidrying oil. It appears that this oil can be used for food. It is, however, very difficult to extract the kernels, owing to the softness of the latter and the extreme hardness of the shells.

The pulpy mesocarp should have a moderate nutrient value, but trials would be necessary before it could be definitely recommended as a cattle feed. Its composition is as follows: Moisture, 16.6 per cent; crude protein (of which 6.5 is true protein and 1.4 other nitrogenous substances), 7.9 per cent; fat, 1.62 per cent; carbohydrates, etc. (by difference), 65.4 per cent; cellulose, 3.0 per cent; ash, 5.5 per cent. Nutrient ratio, 1:8.6; food units 89. (Adapted from *The International Review of the Science and Practice of Agriculture*, January, 1918.)

48258. *TERMINALIA SERICEA* Burchell. Combretaceæ.

"(No. 69.) From Victoria Falls."

A tree attaining a height of 82 feet, with a dense round or flat-topped crown and silvery silky leaves and inflorescence. It is a widely distributed and variable species, extending along the southeastern coast of Africa, Bechuanaland, German Southwest Africa, and Angola. It is known as *napini*, or *gum-copal tree*. The wood is very hard, burns well, and is described as oily; it is said to make good posts, durable underground, only the sapwood, of which there is very little, being eaten by termites, or "white ants." The heartwood is yellow, with darker streaks; it takes a good surface and shows well under varnish; it is used for furniture, agricultural implements, carts, and domestic utensils. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 53, p. 67.)

48259. *TERMINALIA* sp. Combretaceæ.

"(No. 98.) From basaltic formation near Victoria Falls."

48260. *XYLOPIA* sp. Annonaceæ.

"(No. 92.) Fruit said to be edible. From Victoria Falls."

48261. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.

"(No. 58.) A good, hard timber from Bulawayo, Matabeleland, making good, durable fence posts. The fruit is edible."

An edible-fruited tree, 20 to 30 feet in height, native to Upper and Lower Guinea, Abyssinia, and the Mozambique district. The fruit is said to be used for making bread which tastes like gingerbread and also for the preparation of a pleasant beverage. In South Africa a paste made of the leaves is applied to glandular swellings. A decoction of the root is used in lumbago and taken internally for all scrofulous diseases and for swollen glands of the neck.

The wood is tough and used chiefly for wagon work. The seeds are used by Mussulmans for rosaries. In Cape Colony the plant is sometimes used for hedges. It requires deep alluvial soil. (Adapted from *Holland, Useful Plants of Nigeria*, p. 162, and *Oliver, Flora of Tropical Africa*, vol. 1, p. 380.)

48262 to 48282.

From Darjiling, India. Presented by Lieut. Col. A. T. Gage, director of the Botanical Survey of India, through Mr. G. H. Cave, curator, Lloyd Botanic Garden, Darjiling. Received October 21, 1919.

48262. BASELLA RUBRA L. Basellaceæ.

A succulent, herbaceous, freely branched climber, native to Bengal, and cultivated throughout India. It is sometimes spoken of as the Malabar nightshade. The juice of the leaves is used in native medicine for catarrhal affections of children, and the leaves and stems are used as a potherb (made into a curry) by natives of all classes. Scarcely a village exists, in Bengal at least, where a hedgerow covered with this favorite potherb may not be seen. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 404.*)

For previous introduction, see S. P. I. No. 45023.

48263. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

An evergreen tree, attaining a height of 80 feet, native to the eastern Himalayas, Khasi Hills, and the hills of Martaban, at altitudes of 3,000 to 8,000 feet. The wood is rough, grayish brown, moderately hard, close grained, and durable. It is much used in Darjiling for planking and for door and window frames. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 545.*)

For previous introduction, see S. P. I. No. 47649.

48264. BUDDLEIA ASIATICA Lour. Loganiaceæ.

A large evergreen shrub, native to Bengal, Burma, and southern India, ascending to altitudes of 4,000 feet, chiefly found in second-growth forests, deserted village sites, and savannas. The young branches are tomentose; the leaves, 2 to 4 inches long, are glabrous above, whitish tomentose beneath; the small white odorous flowers are borne in dense axillary spikes. The wood is gray and moderately hard. (Adapted from *Cooke, Flora of Bombay, vol. 12, p. 183*, and *Watt, Dictionary of the Economic Products of India, vol. 1, p. 546.*)

For previous introduction, see S. P. I. No. 47650.

48265. CLEMATIS NAPAULENSIS DC. Ranunculaceæ. Clematis.

A slender, nearly glabrous, woody climber, native to the temperate Himalayas from Gurlwal to Bhutan. The flowers are numerous on short pedicels which bear, at the middle, connate bracts forming a 2-lipped cup in which the bud is sessile. These 4-petaloid oblong sepals are silky outside. The flat, margined achenes are hairy. (Adapted from *Hooker, Flora of British India, vol. 1, p. 2.*)

48266. DENDROCALAMUS HAMILTONII Nees. and Arn. Poaceæ. Bamboo.

The common bamboo of northern Bengal and Assam, with culms sometimes attaining a height of 80 feet, much curved and bent, forming thickets of nearly impenetrable growth. They are used for building purposes and for making mats and baskets. The young shoots are eaten in Sikkim. The flowers are purple; and sporadically flowering clumps, especially from injured specimens, are common. (Adapted from *Gamble, Manual of Indian Timbers, p. 752.*)

For previous introduction, see S. P. I. No. 43287.

48262 to 48282—Continued.

48267. *DILLENIA PENTAGYNA* Roxb. Dilleniaceæ.

A conspicuous deciduous tree, found in dry forests and open grasslands, as well as in the more open sal forests in northern India. Except the teak, perhaps, it has the largest leaves of any of the Indian forest trees, for they often reach 2 feet in length. The flowers, which appear in the hot season, are yellow, in fascicles on the branches, and the fruit is small and fleshy. The flower buds and fruit are eaten and have a pleasant acid flavor. The leaves are sometimes used for plates, and for thatching huts. The wood is durable and has much the character of beech; it makes good charcoal; it is used for construction purposes, for posts, joists, etc. (Adapted from *Gamble, Manual of Indian Timbers, p. 6.*)

For previous introduction, see S. P. I. No. 39109.

48268. *DUABANGA SONNERATIODES* Buch.-Ham. Lythraceæ.

A lofty deciduous tree, with light-brown bark which peels off in thin flakes; native to Assam, Chittagong, Burma, Nepal, and eastern Bengal (ascending to 3,000 feet). The gray, yellow-streaked wood is soft, seasons well, takes a good polish, and neither warps nor splits. Canoes cut out of the green wood are used at once, even when liable alternately to wet and the heat of the sun. In northern Bengal and Assam it is now very extensively used for tea boxes; it is also made into cattle troughs and other ordinary domestic utensils. The seeds are small, but germinate freely, so that for planters this is one of the most useful of trees. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 196.*)

48269. *ERIANTHUS HOOKERI* Hack. Poaceæ.

Grass.

A tall perennial grass with a large, silky, densely branched panicle of villous, rusty-red spikelets; native to the Sikkim Himalayas, Bhutan, and Calcutta. (Adapted from *Hooker, Flora of British India, vol. 7, p. 125.*)

48270. *GYNURA NEPALENSIS* DC. Asteraceæ.

A tall, handsome shrubby species, hoarily pubescent, leafy, with many corymbose heads of yellowish or purplish flowers. The leaves are 3 to 7 inches long and hoary pubescent on both surfaces. Native to the temperate Himalayas from Kumaon to Bhutan at altitudes ranging from 2,000 to 5,000 feet and in the mountains near Moulmein, at Martaban at altitudes of 4,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India, vol. 3, p. 333.*)

For previous introduction, see S. P. I. No. 39116.

48271. *LOBELIA PYRAMIDALIS* Wall. Campanulaceæ.

Lobelia.

An herb, 2 to 7 feet in height, native to the Khasi Mountains, Pegu, and at altitudes ranging from 3,000 to 9,000 feet in the Himalayas from Gurhwal eastward. The widely branched stem bears glabrous linear leaves and many-flowered racemes of purple-rose or whitish flowers. (Adapted from *Hooker, Flora of British India, vol. 3, p. 426.*)

For previous introduction, see S. P. I. No. 47707.

48272. *MAESA CHISIA* D. Don. Myrsinaceæ.

An evergreen shrub or small tree, with thin reddish bark and soft light-brown wood, common over large areas of country in the Darjiling Hills, coming up gregariously on hill slopes which have at one time

48262 to 48282—Continued.

been cultivated and then abandoned. For affording protection to planted trees of more valuable timber, put out in lines or in patches cut in the shrubby growth, I can imagine nothing better. Native to the eastern Himalayas, from Nepal to Bhutan, at 4,000 to 6,000 feet, and in the Khasi Hills at 3,000 to 5,000 feet. (Adapted from *Gamble, Manual of Indian Timbers*, p. 438.)

For previous introduction, see S. P. I. No. 47711.

48273. MICROMELUM PUBESCENS Blume. Rutaceæ.

A small evergreen tree, native to eastern and northern India, Ceylon, and the Andamans. The bark is thin and white, and the hard close-grained wood is yellowish white. (Adapted from *Gamble, Manual of Indian Timbers*, p. 125.)

48274. OSBECKIA STELLATA Don. Melastomaceæ.

An ornamental shrub from 2 to 7 feet high, with reddish branchlets and membranous leaves 2 to 6 inches in length. The delicately beautiful lilac-rose flowers have four ovate ciliate petals $1\frac{1}{2}$ inches across. The conspicuous stamens are incurved, and the calyx tube is pale green with green-stalked stellate hairs, each bearing eight reddish rays. (Adapted from *Curtis's Botanical Magazine*, pl. 8500.)

For previous introduction, see S. P. I. No. 39126.

48275. PREMNA SCANDENS Roxb. Verbenaceæ.

A tree 20 to 40 feet in height, or a large climber, native to northeast Bengal, Sikkim, Bhutan, and Assam. The leaves are 11 inches long and 4 inches wide, borne on short petioles. The small greenish or yellowish flowers are in 4-inch to 10-inch lax, dense, compound corymbs. The small globose drupes are tubercled. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 573.)

48276. PRUNUS CERASOIDES D. Don. Amygdalaceæ.

(*P. puddum* Roxb.)

A large deciduous tree, with brilliant rose-red or white flowers, native to the Himalayas from the Indus to Assam, between 2,500 and 7,000 feet, to the Khasi Hills, and to the hills of Upper Burma. It is often cultivated. The brown shining bark peels off in thin horizontal layers and the moderately hard, scented wood has a pretty shining silver grain. The wood is used in the Punjab Himalayas for walking sticks, which are made from saplings or from root suckers; in Darjiling it is occasionally used for furniture. The seeds are strung in rosaries. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314, and *Gamble, Manual of Indian Timbers*, p. 313.)

48277. RUBIA CORDIFOLIA L. Rubiaceæ.

Madder.

A herbaceous perennial which grows abundantly in the Punjab Himalayas from 3,200 to 10,000 feet, and in the Suliman Range. Like the European madder, the root furnishes a red dye, a mixture of alizarin and purple bronze but less lasting than that of the European madder. It is considered astringent, purgative, emetic, and useful in skin diseases. The fleshy fruit is used to overcome obstructions of the liver. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 625, and *Stewart, Punjab Plants*, p. 116.)

For previous introduction, see S. P. I. No. 47780.

48262 to 48282—Continued.**48278. RUBUS ELLIPTICUS** J. E. Smith. Rosaceæ.**Raspberry.**

A large thorny shrub, native to all Indian hill regions over 4,000 feet. The fruit is yellow and has the flavor of the raspberry; it is commonly eaten out of hand and is also made into preserves in the Himalayas; it is one of the best of the wild fruits of India. (Adapted from *Gamble, Manual of Indian Timbers, p. 317.*)

For previous introduction, see S. P. I. No. 47781.

48279. THYSANOLAENA MAXIMA (Roxb.) Kuntze. Poaceæ.**Grass.**

A large grass, with broad bamboolike leaves and dense panicles of very small flowers, found in shady places in the forests almost throughout India. The leaves are used for fodder and the flower panicles for brooms, especially in Hindu temples. (Adapted from *Gamble, Manual of Indian Timbers, p. 742.*)

For previous introduction, see S. P. I. No. 14922.

48280. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ.

"The Chinese fan or coir palm, cultivated in gardens in southern Shensi and southern Kansu as an ornamental tree, reaches a height of 30 to 40 feet. Withstands successfully winter temperatures, unprotected of -12° C., as happened in Huihsien on November 1, 1895, when all the palms around there died. Of value as a fine ornamental garden and park tree for all such parts of the United States where the mercury does not go much below 10° F. Chinese name *Tauing shu*, meaning 'coir-palm tree.'" (*Frank N. Meyer.*)

For previous introduction, see S. P. I. No. 44670.

48281. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ.

A tall unarmed, fan-leaved palm, native to the temperate Himalayas from Nepal eastward, the Khasi Hills, Munnipore, and Burma, all at altitudes above 4,000 feet. The slender trunk, 20 to 30 feet tall, is for the most part naked annulate, clothed beneath the crown with persistent leaf sheaths; the young parts are covered with soft scurfy hairs. The rigidly leathery leaves, 4 to 5 feet in diameter, are cut about half way down into linear 2-lobed segments; the petiole is $1\frac{1}{2}$ to $2\frac{1}{2}$ feet long, the sheath leaving stiff erect fibers. The nodding spadix bears yellow flowers; the pistillate flowers are sessile and solitary. The bluish drupe is half an inch long. (Adapted from *Hooker, Flora of British India, vol. 6, p. 436.*)

For previous introduction, see S. P. I. No. 47814.

48282. TRIUMFETTA TOMENTOSA Boj. Tiliaceæ.

An herb or undershrub with a hispid stem and variable leaves, 4 by 3 inches, stellate hairy above, pubescent beneath. The yellow flowers are in dense interrupted spikes and the hispid fruit, the size of a large pea, is covered with straight spines. (Adapted from *Hooker, Flora of British India, vol. 1, p. 394.*)

For previous introduction, see S. P. I. No. 47818.

48283 to 48285.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Lamao Experiment Station. Received October 25, 1919. Quoted notes by Mr. Wester.

48283. CITRUS HYSTRIX DC. Rutaceæ. Cabuyao.

"Seed of a variety of *Citrus hystrix*, with oblate and very juicy fruits. It is very resistant to the citrus canker and should therefore be of more than ordinary value in breeding canker-resistant citrus fruits."

For previous introduction and description, see S. P. I. No. 40824.

48284. FLACOURTIA JANGOMAS (Lour.) Gmel. Flacourtiaceæ. Paniála.
(*F. cataphracta* Roxb.)

"A small spiny tree, the fruits of which may be made into an excellent jelly. It should prove hardy in southern Florida."

48285. SPONDIAS PINNATA (L.) Kurz. Anacardiaceæ. Lanno.
(*S. mangifera* Willd.)

"Should prove hardy in southern Florida."

A rather tall deciduous tree of wide distribution, bearing yellowish, sweet, edible fruits, about the size of a large cherry. It is rare in cultivation. (Adapted from *The Philippine Agricultural Review*, vol. 9, p. 230.)

48286. FRAGARIA DALTONIANA J. Gay. Rosaceæ. Strawberry.

From Calcutta, India. Presented by Mr. Percy Lancaster. Received October 25, 1919.

A somewhat hairy, slender perennial herb, with filiform runners and petiolulate few-toothed leaflets. The solitary white flowers are followed by curious, bright-scarlet fruits an inch long and half an inch broad, with but little flavor. Native to the Sikkim Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 345.)

48287 to 48289.

From Cape Town, Cape Province. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 26, 1919. Quoted notes by Dr. Shantz.

48287. SOLANUM ACULEASTRUM Dunal. Solanaceæ.

"(No. 22. Cape Town. August 24, 1919.) A large, coarse-fruited, prickly shrub, 8 feet high, with fruits 2 inches in diameter. The natives use bits of the fruit for allaying toothache in hollow teeth."

48288. SOLANUM SODOMEUM HERMANNI Dun. Solanaceæ.

"(No. 23. Cape Town. August 24, 1919.)" A shrubby, spiny *Solanum* with purple flowers followed by globose fruits $1\frac{1}{4}$ inches in diameter, which are at first green variegated with white, and finally yellow. Native to Europe. (Adapted from *Thiesselon-Dyer, Flora Capensis*, vol. 4, sec. 2, p. 96.)

48289. SOLANUM sp. Solanaceæ.

"(No. 36. Kirstenbosch, Cape Province. August 25, 1919.) A large-fruited *Solanum*; smooth fruit."

48290 to 48301. MANIHOT ESCULENTA Crantz. Euphorbiacæ.*(M. utilisissima Pohl.)***Cassava.**

From Antigua, British West Indies. Cuttings presented by the curator, Botanic Station, Tortola, Virgin Islands. Received October 27, 1919.

48290. <i>Bitter.</i>	48296. <i>Pacho 3.</i>
48291. <i>Blancita.</i>	48297. <i>Pacho 4.</i>
48292. <i>French.</i>	48298. <i>Paloma.</i>
48293. <i>Hclada 15.</i>	48299. <i>Red Greenaway.</i>
48294. <i>Negrita.</i>	48300. <i>Rodney.</i>
48295. <i>Negrita 12.</i>	48301. <i>White Greenaway.</i>

48302. Eriobotrya japonica (Thunb.) Lindl. Malacæ. Loquat.

From Altadena, Calif. Budwood collected by Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received October 30, 1919.

"*Tanaka*. This excellent loquat was introduced into the United States some years ago by Dr. Fairchild, but the material obtained by him has apparently been lost, and the buds sent herewith have been taken from a tree growing at the West India Gardens, which was grown from budwood sent from Algeria by Dr. L. Trabut in 1911.

"*Tanaka* is a large loquat, noted for its fine flavor and excellent keeping qualities. It is oval or nearly round in form, deep orange in color, with meaty orange-colored flesh. The season of ripening is late, and it is probably because of this that the variety has not been planted commercially in California. In recent years, however, it has become apparent that some of the late-fruited varieties, such as *Thales* (considered by some to be identical with *Tanaka*, and certainly very closely allied to this variety), may be cultivated profitably, if in a region well suited to their growth." (*Popenoe.*)

48303. ASPARAGUS sp. Convallariacæ.

From Kenkelbosch, Cape Province. Roots collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 31, 1919.

"(No. 73. September 8, 1919.) A broad-leaved, nonspiny form valuable for decoration. An unusually pretty and attractive vine, abundant in the 'bush,' where the soil is dry for many months in the year." (*Shantz.*)

48304 to 48426.

From China. Collected by Mr. G. Forrest and presented by Mr. H. J. Elwes, Colesborne, England. Numbered October 31, 1919. Quoted notes by Mr. Forrest.

"The 'A' numbers are the serial numbers under which the seeds were sent out. Where a Forrest number is also given, Mr. Forrest had reason to suppose that the seed was that of a plant similar to one from which he had taken herbarium specimens perhaps at a considerably earlier date." (Extract from *letter of the Director of Laboratory, Royal Horticultural Society Gardens, October 5, 1920.*)

48304. ARDISIA CRISPA A. DC. Myrsinacæ.

"A 842. Forrest No. 13687."

A red-fruited shrub, 10 to 20 feet in height, found with oak scrub at altitudes ranging from 6,000 to 7,000 feet, near Luchang, northwest Yunnan, China. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 7, p. 52.*)

48304 to 48426—Continued.

48305. *BUDDLEIA CARYOPTERIDIFOLIA* W. W. Smith. Loganiaceæ.

"A 841."

A shrub, 5 to 6 feet high, native to western China. The foliage is remarkable because of the large irregular crenations of the leaves; the attractive flowers are pale lavender. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 8, p. 179.*)

48306. *BUDDLEIA GLABRESCENS* W. W. Smith. Loganiaceæ.

"A 843."

A robust shrub, 4 to 9 feet high, with fragrant deep blue-lavender flowers with rose-tinged tubes and throats. It is a native of Yunnan, China, where it grows in open situations at altitudes of 8,000 to 9,000 feet. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 9, p. 85.*)

48307. *CLEMATIS STANLEYI* Hook. Ranunculaceæ.

Clematis.

An erect shrubby clematis from the Transvaal, with very variable foliage and flowers. In the native state the flower stems are 2 to 3 inches long, while in cultivation they reach a length of 8 to 10 inches; the flowers vary from 1 to nearly 3 inches in diameter, and in color from white to pinkish purple. The roots are fleshy. (Adapted from *Curtis's Botanical Magazine, pl. 7166.*)

48308. *DAPHNE PAPYRACEA* Wall. Thymelæaceæ.

"A 10. Forrest No. 13769."

A shrub 4 to 8 feet high, growing with scrub in side valleys on the eastern flank of the Tali Range at altitudes between 9,000 and 10,000 feet, western Yunnan, China. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 7, p. 258.*)

48309. *GAULTHERIA FRAGRANTISSIMA* Wall. Ericaceæ.

"A 844. Forrest No. 16622."

A very fragrant evergreen shrub or small tree, found in the mountains of India from Nepal eastward to Bhutan. In summer it is covered with white or pinkish flowers which are followed by beautiful racemes of blue-purple fruits. (Adapted from *Curtis's Botanical Magazine, pl. 5984.*)

48310. *LONICERA HENRYI* Hemsl. Caprifoliaceæ.

Honeysuckle.

"A 716. Forrest No. 14955."

Lonicera henryi is a native of western China and is valuable and interesting, for, with the exception of *Euonymus radicans* and *Vinca minor*, it is the only vine with evergreen leaves which is hardy in this climate. It has long dark-green pointed leaves and axillary clusters of flowers which are rose colored when they first open, but soon become orange-red; they are without odor. On the slopes of its native mountains this plant clammers over rocks and bushes; and, like other clinging honeysuckles, it will do best when allowed to grow naturally in this way." (*Arnold Arboretum Bulletin of Popular Information, July, 1916.*)

48311. *LONICERA PILEATA* Oliver. Caprifoliaceæ.

Honeysuckle.

"A 713. *Lonicera ligustrina yunnanensis*. Forrest No. 15327."

This form is now referred to *L. pileata*, differing from the species, according to Mr. Rehder, only in the very small suborbicular to broadly

48304 to 48426—Continued.

ovate, thickish leaves. *L. pileata* is a much-branched, low, evergreen shrub from central and western China, about 1 foot high, with slender branches, oblong-lanceolate dark-green leaves, half an inch to an inch long, and pale-yellow flowers in almost sessile pairs. (Adapted from *Curtis's Botanical Magazine*, pl. 8060.)

48312. LORANTHUS sp. Loranthaceæ.

Mistletoe.

"A 720."

48313. MECONOPSIS EXIMIA Prain. Papaveraceæ.

"A 735. Forrest No. 15089."

A very handsome biennial with nodding, deep blue-purple flowers which have grayish yellow anthers. It is found in open stony pasture lands in southeastern China at altitudes ranging from 12,000 to 14,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1915, p. 159.)

48314. MECONOPSIS HENRICI Bur. and Franch. Papaveraceæ.

"A 733. Forrest No. 14234."

An annual or biennial low poppylike plant from western China with numerous scapes which bear large purple-violet flowers about 3 inches across, with orange anthers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2019.)

48315 to 48318. MECONOPSIS INTEGRIFOLIA (Maxim.) Franch. Papaveraceæ.

A hardy stout-stemmed biennial, from 1½ to 3 feet high, native to Yunnan and the northwestern part of Kansu, China, where it ascends to an altitude of 13,000 feet. The plant is densely clothed with long, silky, yellowish brown hairs. The numerous linear-lanceolate leaves are 6 inches to a foot long, and the beautiful yellow flowers are 5 or 6, or sometimes even 10, inches in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 8027.)

48315. "A 723. From the Mekong-Salwin Divide."

48316. "A 730. Type."

48317. "A 731. From Tali Shan."

48318. "A 734. Forrest No. 14678."

48319. MECONOPSIS PSEUDOINTEGRIFOLIA Prain. Papaveraceæ.

"A 14."

A biennial Chinese poppy, from 1 to 3 feet in height, with 1-flowered scapes bearing very large, bright-yellow flowers from 4 to 8 inches across. It comes originally from southwestern Tibet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2018.)

48320. MECONOPSIS RUDIS Prain. Papaveraceæ.

"A 727."

One of the so-called *blue poppies* which impart a curious charm to the stony alpine tracts in southwestern China at altitudes ranging from 11,000 to 16,000 feet. The plant reaches a height of 1 to 3 feet and has prickly leaves and stems; the attractive flowers, in racemelike cymes, are bright blue or purplish blue, and over 2 inches wide. (Adapted from *Curtis's Botanical Magazine*, pl. 8568.)

48304 to 48426—Continued.

48321. *MECONOPSIS SPECIOSA* Prain. Papaveraceæ.

"A 726."

A very fine Chinese species, of which Mr. George Forrest says in *Gardeners' Chronicle* (3d ser., vol. 63, p. 31): "The only species in Yunnan which is scented. It is deliciously fragrant, the fragrance resembling that of our own Dutch hyacinths."

48322. *MECONOPSIS WALLICHII* Hook. Papaveraceæ.

"A 736. Forrest No. 15883."

A beautiful hardy biennial from the mountains of Sikkim, India, where it raises its glorious pyramids of mauve-colored flowers to a height of 7 feet or more. In winter the well-developed gray-green rosettes of leaves are very attractive. (Adapted from *The Garden*, vol. 79, p. 175.)

48323. *MECONOPSIS* sp. Papaveraceæ.

"A 724."

48324. *MECONOPSIS* sp. Papaveraceæ.

"A 725. Related to *M. speciosa*."

48325. *MECONOPSIS* sp. Papaveraceæ.

"A 728. Related to *M. henrici*."

48326. *MECONOPSIS* sp. Papaveraceæ.

"A 729. Related to *M. lancifolia*."

48327. *MECONOPSIS* sp. Papaveraceæ.

"A 732. Forrest No. 14118."

48328 and 48329. *MELIOSMA CUNEIFOLIA* Franch. Sabiaceæ.

A graceful deciduous shrub from Yunnan, China, where it is found in the Lichiang Mountains at altitudes of 8,500 to 10,000 feet above the sea, in open sunny situations. It reaches an average height of about 24 feet, has long narrow leaves, and fragrant, soft, creamy-white flowers which are produced in great abundance. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 59, p. 279.)

48328. "A 739. Forrest No. 14873."

48329. "A 740."

48330. *MILLETTIA* sp. Fabaceæ.

"A 703."

48331. *NEILLIA* sp. Rosaceæ.

"A 746. Forrest No. 14342."

48332. *OSMANTHUS DELAVAYI* Baill. Oleaceæ.

"A 838. Forrest No. 15373."

A beautiful evergreen shrub from southwestern China, whose dense axillary clusters of pure-white fragrant flowers render it a decidedly attractive ornamental. The dark-green ovate leaves are an inch or so long and have serrate margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 55, p. 257.)

48333 and 48334. *OSTRYOPSIS DAVIDIANA* Decaisne. Betulaceæ.

A deciduous shrub, 3 to 5 feet high, native to North China. It forms a rounded bush resembling a hazel, but has the fruits in clusters of 8 to

48304 to 48426—Continued.

12 at the ends of the twigs. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 116.)

48333. "A 12."

48334. "A S40."

48335. *PARASYRINGA SEMPERVIRENS* (Franch.) W. W. Smith. Oleaceæ.
(*Syringa sempervirens* Franch.)

"A S34."

An evergreen shrub, up to 9 feet in height, found originally in thickets in mountainous regions of Yunnan, China, ascending to 12,000 feet above sea level. The foliage is leathery, and the fragrant flowers are light creamy yellow. (Adapted from *Transactions and Proceedings of the Botanical Society of Edinburgh*, vol. 27, p. 96.)

48336 and 48337. *PHILADELPHUS DELAVAYI* L. Henry. Hydrangeaceæ.

Mock orange.

A vigorous Chinese shrub, native to the Province of Yunnan, with large thick leaves. It produces, toward the middle of May, an abundance of pure-white flowers in racemes. On the lower side of each petal is a longitudinal, median, pale-yellow stripe, visible through the transparent petal. This plant is said to be even more hardy than *P. coronarius*. (Adapted from *Revue Horticole*, vol. 75, p. 13.)

48336. "A S35."

48337. "A S37."

48338. *POLYGONUM FORRESTII* Diels. Polygonaceæ.

"A S27. Forrest No. 14425."

A low herbaceous plant with a long creeping rootstock, found on hill-sides in Yunnan, China. It is from 2 to 4 inches in height, and has white or creamy-white flowers. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 258.)

48339. *POLYGONUM LICHANGENSE* W. W. Smith. Polygonaceæ.

"A 805."

An erect, somewhat woody plant 2 to 4 feet high, native to Yunnan, China, where it grows on the margins of mixed forests at altitudes of 10,000 to 11,000 feet. The flowers are creamy white. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 3, 197.)

48340. *POLYGONUM POLYSTACHYUM* Wall. Polygonaceæ.

"A 806. Forrest No. 14237."

A shrubby, vigorous perennial from the Himalayas, where it ascends to 14,000 feet. It grows about 5 feet high, and in late autumn produces large terminal panicles of white flowers. It does best in moist places. (Adapted from *Gardeners' Magazine*, vol. 52, p. 929, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2742.)

48341. *POLYGONUM* sp. Polygonaceæ.

"A 808."

48342. *POTENTILLA FRUTICOSA* L. Rosaceæ.

"A 803. Forrest No. 14989. A form related to *P. veitchii* but very dwarf."

48343. *POTENTILLA VEITCHII* Wilson. Rosaceæ.

"A 804. Lichiang Range; flowers white."

A charming evergreen shrub of neat rounded habit, 3 to 5 feet in height, native to upland thickets above 6,000 feet altitude, western China.

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The numerous flowers, three-fourths of an inch to 1¼ inches wide, are usually solitary at the ends of short twigs. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 50, p. 102.)

48344. POTENTILLA sp. Rosaceæ.

"A 798."

48345. POTENTILLA sp. Rosaceæ.

"A 799."

48346. POTENTILLA sp. Rosaceæ.

"A 800."

48347. POTENTILLA sp. Rosaceæ.

"A 801."

48348. POTENTILLA sp. Rosaceæ.

"A 802."

48349. POTENTILLA sp. Rosaceæ.

"A 836. Forrest No. 15205. A form related to *P. fruticosa*, with deep-orange flowers."

48350. PRIMULA BATHANGENSIS Petitm. Primulaceæ.

Primrose.

"A 781. Forrest No. 14247."

A Chinese primula from western Szechwan, China, where it was originally found growing near hot springs. The numerous clusters of yellow flowers are borne on weak scapes and the heart-shaped leaves are intensely green. (Adapted from *Bulletin Herbarium Boissiere*, vol. 8, p. 365.)

48351 and 48352. PRIMULA BEESIANA Forrest. Primulaceæ. Primrose.

A remarkable Chinese primula, found growing close to the snow line in the mountainous parts of Yunnan. Under favorable circumstances the scape rises to a height of more than 3 feet, and produces its whorls of showy flowers in the early summer. The flowers are a glowing velvety purple with conspicuous yellow eyes. The plant is very free flowering and quite hardy. (Adapted from *Bees, Guaranteed Hardy Plants, 1913-14*, p. 11.)

48351. "A 789. Forrest No. 15359."

48352. "A 762."

48353. PRIMULA BELLA Franch. Primulaceæ.

Primrose.

"A 771. From Tali Range."

In damp, sandy, mountain pasture land on the Mekong-Salwin Divide, western Yunnan, China, this attractive primula was originally collected. It is little more than 2 inches in height, but bears beautiful pale-rose or deep bluish rose flowers with greenish white eyes, faintly fragrant. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 4, p. 225.)

48354. PRIMULA BULLEYANA Forrest. Primulaceæ.

Primrose.

"A 747. Lichiang Range."

This beautiful Chinese primula comes from the Lichiang Mountains in Yunnan, where it grows nearly to the snow line. It forms a stout plant, covered, at the end of May and the beginning of June, with splendid orange-scarlet flowers; the stems of these flowers reach a length of 20 inches, making them excellent for cut flowers. This plant prefers a semi-

48304 to 48426—Continued.

shaded, damp situation, and appears to be entirely hardy. (Adapted from *Bees, Guaranteed Hardy Plants, 1913-14*, p. 11, and from *Florists' Exchange, vol. 36, p. 996*.)

48355. PRIMULA CALLIANTHA Franch. Primulaceæ.

"A 776. Forrest No. 15795."

A plant from 4 to 9 inches in height, with fragrant flowers which are deep rose-lavender with a green, thick, and fleshy eye and tube. The plant thrives in moist, open situations on mountain meadows on the summit of the Tali Range, at altitudes of 12,000 to 13,000 feet, in western Yunnan, China, from September through October. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 7, p. 84*.)

48356. PRIMULA sp. Primulaceæ.

"A 782. Forrest No. 14403."

Received as *Primula chrysopa*, for which a place of publication has not been found.

48357. PRIMULA DELAVAYI Franch. Primulaceæ.

Primrose.

"A 756. From Tali Shan."

A primula from southwestern China, with thin, papery, roundish leaves about 3 inches long, which appear after the flowers. The bright-purple hairy flowers are borne on 1-flowered, densely hairy scapes which are loosely enveloped up to the middle with brownish, very broad scales. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 5, p. 2797*.)

48358 and 48359. PRIMULA DRYADIFOLIA Franch. Primulaceæ.

Primrose.

A smooth, small-leaved Chinese primula, with long scapes bearing clusters of three to five nearly sessile, violet flowers. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 5, p. 2799*.)

48358. "A 783. Forrest No. 14814."

48359. "A 785. Forrest No. 15160."

48360. PRIMULA DUBERNARDIANA Forrest. Primulaceæ.

Primrose.

"A 780. Forrest No. 14232."

A handsome primula from southeastern Tibet, where it forms dense cushions 1 to 2 feet in diameter, in dry situations on the ledges and in the clefts of mountain cliffs, at altitudes ranging from 8,000 to 9,000 feet. The flowers are a beautiful shade of pale rose, with bright-yellow eyes. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 4, p. 221*.)

48361. PRIMULA FORRESTII Balf. f. Primulaceæ.

Primrose.

"A 749. From Lichiang Range."

A handsome primula found originally in the mountains of northwestern Yunnan, China, at altitudes of 9,000 to 11,000 feet. The foliage is densely coated with glandular hairs, and in the fresh state has a peculiar, but not unpleasant, aromatic odor. The flowers are large and numerous, of a deep shade of orange, and fragrant. The plant is said to be hardy but can not stand dampness, being adapted to sunny and dry situations. In its native country it is found in greatest luxuriance in the crevices and on the ledges of dry limestone cliffs. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 45, p. 274*.)

48304 to 48426—Continued.

48362. PRIMULA FRANCHETII Pax. Primulacæ. Primrose.

"A 774. Forrest No. 14065."

A plant found in moist rocky situations on mountain meadows, at altitudes ranging from 10,000 to 12,000 feet, on the Mekong-Salwin Divide to the northwest of Tsekou Mission, southeastern Tibet. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 7, p. 51.*)

48363. PRIMULA GIRALDIANA Pax. Primulacæ. Primrose.

(*P. muscarioides* Hemsl.)

"A 769."

A Chinese primula originally found in open grassy situations in the mountains of Yunnan. The rather fleshy, light-green crenate leaves are 4 to 5 inches long, and the purplish blue or almost violet flowers occur in densely capitate spikes. (Adapted from *Curtis's Botanical Magazine, pl. 8168.*)

48364. PRIMULA LICHANGENSIS Forrest. Primulacæ. Primrose.

"A 772. Forrest No. 13976."

A handsome plant from the Lichiang Mountains, Yunnan, China, where it reaches a height of 6 to 14 inches, growing on ledges and boulders in dry shady places. The fragrant flowers vary from light rose to almost crimson, with greenish yellow eyes. The foliage is very variable. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 50, p. 473.*)

48365. PRIMULA LITTONIANA Forrest. Primulacæ. Primrose.

"A 770."

A beautiful new primula from Yunnan, China, where it grows on mountain meadows at an altitude of 10,000 to 11,000 feet. From a tuft of grayish green, hairy leaves rises the scape, 1 to 2 feet in length, ending in a dense spike, sometimes 5 inches long. The blood-red bracts and calyxes of the flowers form a wonderful contrast with the purple flowers. The plant is perfectly hardy at the Royal Botanic Garden, Edinburgh. (Adapted from *Gardener's Chronicle, 3d ser., vol. 46, p. 15.*)

48366 to 48369. PRIMULA NIVALIS Pall. Primulacæ. Primrose.

An Asiatic primula, found from the Caucasus to the Himalayas, northward to the Baikal and Dahuria regions. The stout scape, 3 to 10 inches in height, bears a many-flowered umbel of erect purple or white flowers. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 5, p. 2808.*)

48366. "A 753. Form from Tali Shan."

48367. "A 755. Forrest No. 15383. An undescribed form."

48368. "A 775. Forrest No. 14108. An undescribed form."

48369. "A 779. Forrest No. 14217. An undescribed form."

48370. PRIMULA PINNATIFIDA Franch. Primulacæ. Primrose.

"A 787. Forrest No. 15229."

A hardy alpine primula from Yunnan, China, where it grows in grassy places on mountain slopes as high as 12,000 feet above sea level. Almost immediately upon the disappearance of the snow the beautiful, blue, fragrant flowers appear. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 4, p. 224.*)

48304 to 48426—Continued.

48371 and 48372. PRIMULA PSEUDOSIKKIMENSIS Forrest. Primulacæ.

Primrose.

This primula from western China differs from *P. sikkimensis* in having shorter leaves and larger flowers. It grows to a height of 12 to 18 inches, and has fragrant, bright canary-yellow flowers. In its native habitat it is found in the crevices and on ledges of limestone cliffs, at altitudes ranging from 11,000 to 12,000 feet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2897.*)

48371. "A 752."

48372. "A 761. From Lichiang Range."

48373. PRIMULA PULCHELLA Franch. Primulacæ.

Primrose.

"A 777. Forrest No. 15722."

An interesting Chinese primula from Yunnan, from 6 inches to a foot in height, with violet, pale-purple, or lilac flowers with purple calyxes. It is a fine plant for the rockery and prefers peaty or sandy soil. The under sides of the leaves, which are not at their full length until after flowering, are covered with a charming golden farina. (Adapted from *Gardeners' Magazine, vol. 56, p. 962.*)

48374 and 48375. PRIMULA SECUNDIFLORA Franch. Primulacæ.

Primrose.

This is one of the finest Chinese primulas; it is a native of the Lichiang Mountains in northwestern Yunnan, where it ascends almost to snow level, 15,000 feet above the sea. On the lower plateaus, at 11,500 feet altitude, this plant forms dense colonies, with scapes up to 14 inches in height. The fragrant flowers are a beautiful shade of deep crimson, faintly tinged with purple, and droop gracefully from the scapes. The calyxes are ruddy purple, marked with white lines along the margins. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 51, p. 281.*)

48374. "A 767. From Lichiang Range." 48375. "A 768."

48376. PRIMULA SERRATIFOLIA Franch. Primulacæ.

Primrose.

"A 773. Forrest No. 13959."

A very attractive primula from western China, of which Mr. George Forrest says: "The banks of the streams were covered with the lovely yellow, orange-striped flowers and bright green foliage." (*Gardeners' Chronicle, 3d ser., vol. 63, p. 32.*)

48377 and 48378. PRIMULA SIKKIMENSIS Hook. Primulacæ. Primrose.

Originally found in the Himalayas of Sikkim, India, this is one of the most elegant of the hardy alpine primulas. The drooping, pale-yellow flowers, borne in umbels on slender scapes, always attract the attention because of their beauty. It is excellent for the rock garden, and thrives best in peaty soil. (Adapted from *Gardeners' Magazine, vol. 52, p. 869.*)

48377. "A 750; type. Lichiang Range."

48378. "A 751; type. From Tali Shan."

48379. PRIMULA SINOPURPUREA Balf. f. Primulacæ.

Primrose.

"A 778. Forrest No. 14117."

An attractive Chinese primrose, densely covered with a golden farina and bearing large flowers which are violet with white eyes. (Adapted from *Irish Gardening, May, 1919, p. 77.*)

48304 to 48426—Continued.

48380. PRIMULA SPHAEROCEPHALA Balf. and Forr. Primulaceæ. Primrose.

"A 754."

A delicately perfumed primula from southwestern China, which bears small globular heads of attractive purplish flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2801.*)

48381. PRIMULA VINIFLORA Franch. Primulaceæ. Primrose.

"A 760."

A perennial Chinese primula, discovered originally in the Province of Yunnan. The oblong leaves are sometimes $3\frac{1}{2}$ inches in length, and the 7-flowered scape is about 2 inches long. The large vinelike purple flowers appear before the leaves in the wild state, but under cultivation both leaves and flowers appear at about the same time. (Adapted from *Curtis's Botanical Magazine, pl. 854.*)

48382. PRIMULA VITTATA Bur. and Franch. Primulaceæ. Primrose.

"A 786. Forrest No. 15207."

A herbaceous perennial with long narrow leaves up to 6 inches in length. The purple flowers are borne on a stout scape about 8 inches long. This primrose is a native of Szechwan and Yunnan, China. (Adapted from *Curtis's Botanical Magazine, pl. 858.*)

48383. PRIMULA WARDII Balf. f. Primulaceæ. Primrose.

"A 784. Forrest Nos. 14445 and 14945."

This is a valuable acquisition to horticulture, is one of the freest of growers and seeders, and is most floriferous. It is a foot or slightly more in height and is native to the mountains of Yunnan, China, where it inhabits damp meadows and pastures. The fragrant greenish yellow flowers are blue eyed. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 9, p. 59.*)

48384. PRIMULA sp. Primulaceæ. Primrose.

"A 788. Forrest No. 15344."

Received as *P. verringtonensis*, for which a place of publication has not been found.

48385. PRIMULA sp. Primulaceæ. Primrose.

"A 13."

48386. PRIMULA sp. Primulaceæ. Primrose.

"A 748. *P. nivalis* section."

48387. PRIMULA sp. Primulaceæ. Primrose.

"A 757. Related to *P. denticulata*; from Tali Range."

48388. PRIMULA sp. Primulaceæ. Primrose.

"A 758. Related to *P. bella*."

48389. PRIMULA sp. Primulaceæ. Primrose.

"A 759. A form related to *P. nivalis*; from the Lichiang Range."

48390. PRIMULA sp. Primulaceæ. Primrose.

"A 763. From Tali Range."

48391. PRIMULA sp. Primulaceæ. Primrose.

"A 764."

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48392. PRIMULA sp. Primulacæ. Primrose.
 " A 765."
48393. PRIMULA sp. Primulacæ. Primrose.
 " A 766."
48394. PRIMULA sp. Primulacæ. Primrose.
 " A 790."
48395. PRUNUS sp. Amygdalacæ.
 " A 7."
48396. PRUNUS sp. Amygdalacæ.
 " A 8."
48397. PRUNUS sp. Amygdalacæ.
 " A 9."
48398. PRUNUS sp. Amygdalacæ.
 " A 811."
48399. PRUNUS sp. Amygdalacæ.
 " A 845."
48400. PYROLA sp. Pyrolacæ.
 " A 832. Related to *Pyrola forrestii*."
48401. PYRUS sp. Malacæ.
 " A 819."
48402. PYRUS sp. Malacæ.
 " A 820."
48403. PYRUS sp. Malacæ.
 " A 824. From the upper Mekong."
48404. ROETTLERA sp. Gesneriacæ.
 " A 872. From Tali Range."
48405. ANCYLOSTEMON CONVEXUM Craib. Gesneriacæ.
 " A 873. Forrest No. 15930."
- A stemless perennial, 48 inches in height, with deep ruddy-orange flowers; found on humus-covered boulders and trees along the eastern flank of the Tali Range, Yunnan, at altitudes of 9,000 to 10,000 feet.
- For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 235.
48406. BRIGGSIA FORRESTII Craib. Gesneriacæ.
 " A 874. Forrest No. 16096."
- A perennial alpine plant, stemless, with pale rosy purple flowers with a tinge of yellow on the lip; found on moist, shady, moss-covered rock along the Shwelee-Salwin Divide, Yunnan, at an altitude of 10,000 feet.
- For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 237.
48407. ROSA OMEIENSIS PTERACANTHA (Franch.) Rehd. and Wils. Rosacæ.
(R. sericea pteracantha Franch.) Rose.
 " A 878."

A robust, much-branched thorny bush, native to western China, where it grows at altitudes of 3,000 to 11,000 feet. Because of its fine single

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white flowers, large red prickles, and bright-red fruits, this is an exceedingly attractive rose. (Adapted from *Curtis's Botanical Magazine*, pl. 8218.)

48408. *RUBUS ALEXETERIUS* Focke. Rosaceæ. Bramble.

"A 849. Forrest No. 15334."

A spiny shrub, 4 to 7 feet in height, with arched branches, ternate hairy leaves, white flowers, and large yellow edible fruits. It is a native of the eastern flank of the Lichiang Mountains of western China, where it frequents shady rocky situations in pine forests. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 75.)

48409. *RUBUS LINEATUS* Reinw. Rosaceæ. Bramble.

"A 857."

A very attractive suberect plant with softly pubescent branches and leathery leaves composed of three to five leaflets. It is native to the Himalayas of Sikkim, India, where it grows at altitudes of 6,000 to 9,000 feet. The white flowers grow in short axillary heads and terminal silvery panicles, and the fruits are small and red. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

48410. *RUBUS LOROPETALUS* Franch. Rosaceæ. Bramble.

"A 858."

A small, creeping, woody vine with graceful, erect, flowering stems and trifoliate, finely dentate leaves. Its native home is in the forests of Yunnan, China, at an altitude of 3,200 meters (about 10,000 feet). (Adapted from *Franchet, Plantes D'elcarayana*, p. 293.)

48411. *RUBUS LUTESCENS* Franch. Rosaceæ. Bramble.

"A 856. Forrest No. 15332."

A small shrub, 9 to 12 inches in height, growing in open grassy places on the eastern slopes of the Lichiang Mountains, Yunnan, China, at altitudes of 10,000 to 11,000 feet. The flowers are a pale canary yellow. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 73.)

48412. *RUBUS MICRANTHUS* D. Don. Rosaceæ. Bramble.

(*R. lasiocarpus micranthus* Hook.)

"A 848. Forrest No. 15329."

A large rambling plant with colored bark covered with powdery bloom. The prickles are small and compressed, and the leathery leaves, 3 to 10 inches long, are almost plaited by the strong straight veins which are very prominent on the glaucous under surface. The deep-pink flowers are small, and the petals rarely exceed the densely woolly calyx. The fruit, less than half an inch in diameter, is hoary and nearly spherical, with numerous dry or fleshy, red or orange drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 339.)

48413. *RUBUS* sp. Rosaceæ. Bramble.

"A 847. Forrest No. 15328."

48414. *RUBUS* sp. Rosaceæ. Bramble.

"A 850. Forrest No. 15447."

48415. *RUBUS* sp. Rosaceæ. Bramble.

"A 851. Forrest No. 15647."

48304 to 48426—Continued.

48416. RUBUS sp. Rosaceæ. Bramble.
 "A 852. Forrest No. 15849."
 48417. RUBUS sp. Rosaceæ. Bramble.
 "A 853. Forrest No. 15900."
 48418. RUBUS sp. Rosaceæ. Bramble.
 "A 854. Forrest No. 15902."
 48419. RUBUS sp. Rosaceæ. Bramble.
 "A 855. Forrest No. 16070."
 48420. SILENE MONBEIGII W. W. Smith. Silenaceæ.
 "A 721. Forrest No. 14104."

An ornamental perennial from Yunnan, China; the plant is 6 to 20 inches in height, with the branches of the inflorescences terminating in usually 3-flowered cymes of large pink flowers; found growing on open dry stony situations at an altitude of 7,000 feet.

For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 226.

48421. SORBUS VILMORINI C. Schneid. Malaceæ. Mountain ash.
 "A 817."

A very interesting shrub from Yunnan, China. Its graceful, finely cut foliage, white or somewhat pinkish flowers, and bright, translucent, rosy red fruits make it an attractive ornamental. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 682.*)

48422. THERMOPSIS BARBATA Royle. Fabaceæ.
 "A 706. Forrest No. 14099."

A densely shaggy perennial herb, about 1 foot in height, with oblanceolate leaflets and stipules just like the leaflets in texture and shape. It bears racemes of 6 to 12 short-stalked flowers with deep-purple corollas 1 inch long. (Adapted from *Hooker, Flora of British India, vol. 2, p. 62.*)

48423. (Undetermined.) Fabaceæ.
 "A 704."

48424. (Undetermined.) Fabaceæ.
 "A 705. Forrest No. 15923."

48425. (Undetermined.) Fabaceæ.
 "A 707. From Tali Range."

48426. (Undetermined.)
 "A 846. From the Mekong-Salwin Divide."

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