Issued October, 1923.

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 APRIL 1 TO JUNE 30, 1921.

(No. 67; Nos. 52855 to 53895.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

Issued October, 1923.

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 APRIL 1
TO JUNE 30, 1921.

(No. 67; Nos. 52855 to 53895.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT

15 CENTS PER COPY

CONTENTS.

ILLUSTRATIONS.

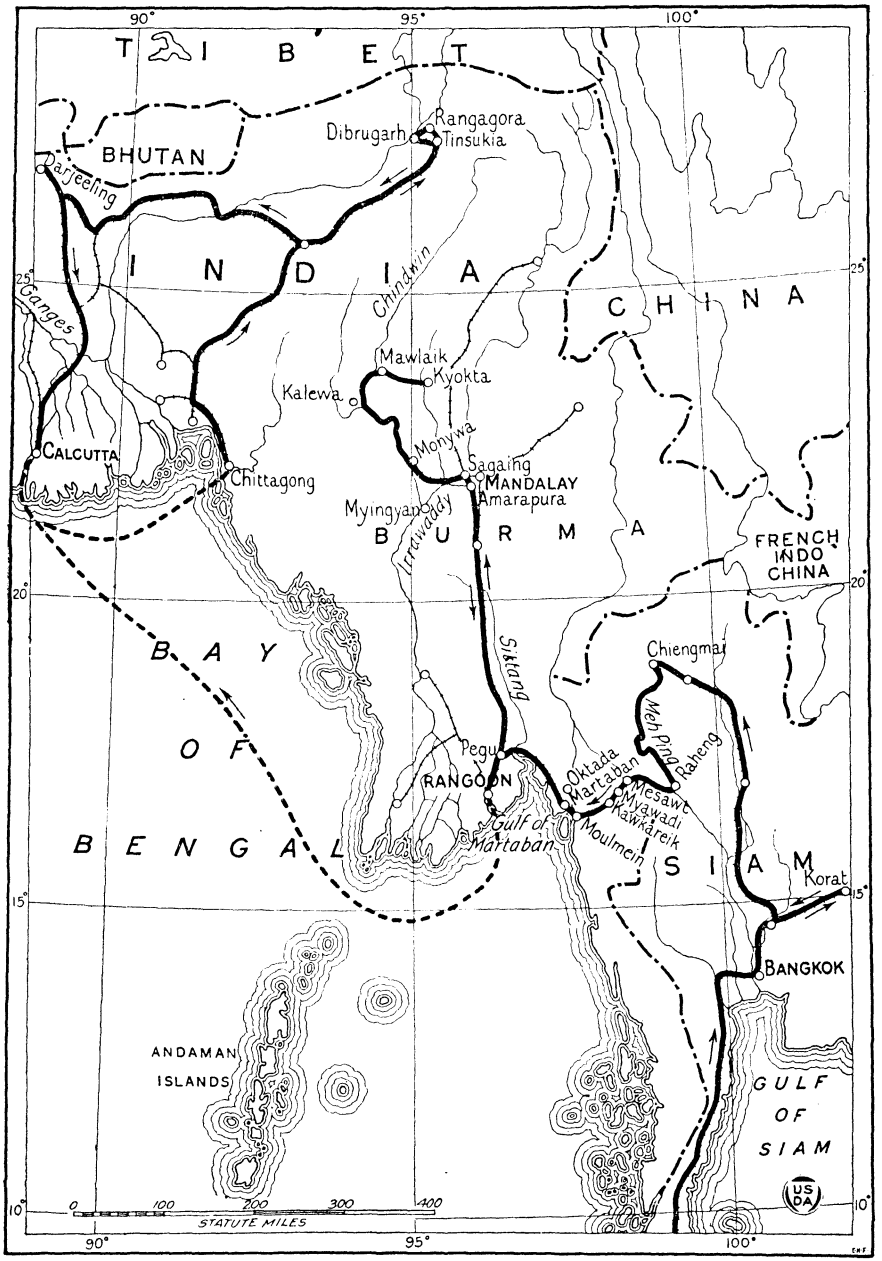


FIG. 1.—Map of Burma, Assam, and Siam, showing the route followed by J. F. Rock in his successful hunt for the true chaulmoogra tree, which yields the oil now considered a specific for leprosy. A large part of the country explored was practically unknown botanically. The first authentic photographs ever made of the true chaulmoogra tree and its relatives, which Mr. Rock succeeded in obtaining, have served to clear up the confusion existing as to the source of this exceedingly important product.

INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1921 (NO. 67; NOS. 52855 TO 53895).

INTRODUCTORY STATEMENT.

This sixty-seventh inventory contains a part of the plant collections made by our Agricultural Explorer Wilson Popenoe in the highlands of Ecuador. These collections represent real exploration work of a strenuous and dangerous character in a country through which no one travels easily and in the remote regions of which most trying hardships—poor food, almost impassable roads, and malaria—are constant companions of the explorer. To penetrate into these regions, to bring out collections of living plants, and to land them successfully in the United States is a feat which deserves special mention, for it must not be forgotten that in some portions of this tropical country the hardships of travel have changed very little since the days when Robert Spruce visited them in search of the cinchona tree.

The collection consists of 47 species of plants carefully selected from the hundreds of curious and interesting species which compose the flora of Ecuador. Because of Mr. Popenoe's wide acquaintance with the horticultural plants in America, particularly those suited to the warmer parts of it, these should have a special interest to the experimenters who will read these descriptions. Owing to the difficulty of identifying Ecuadorian plants many of the species here described are not yet botanically classified further than as to their genera. The collections are numbered S. P. I. 53177 to 53217, 53485, and 53754 to 53758.

Among the more interesting plants from Ecuador are the Chota Valley avocados (Nos. 53182 to 53185 and 53895), which belong to the Mexican race but are unusually large and of excellent quality. These provide a strain of this hardy Mexican race which hitherto has not been tried in this country.

The discovery of the presence of the potato disease, *Phytophthora infestans*, in this the very home of the cultivated potato, which fact has been abundantly established by Professor Pachano, removes the mystery of the origin of this disease, which has puzzled pathologists for many years. Differences in the susceptibility of the different sorts were observed, but no resistant strains appear to be known there, although excellent varieties were secured and introduced (Nos. 53187 to 53197).

The Ecuadorian walnut, *Juglans* sp. (No. 53198), called there tocte, appears to be a valuable nut and forest tree.

A true sweet corn (No. 53217) from 7,000 feet altitude may indicate to the plant breeder the origin of the sweet corns of our gardens and may be useful in producing a variety for our own warmer regions.

Two promising new species of Rubus of good quality (*R. roseus*, No. 53218, and *R. adenotrichos*, No. 53219); a beautiful Andean barberry, *Berberis quinduensis* (No. 53177); the hard-shelled passion fruit, *Passiflora maliformis* (No. 53180), of promise for California; the quiqui, *Osteomeles obtusifolia* (No. 53485), a new tropical hawthornlike shrub which has been used as a stock for the apple in Ecuador; and the higacho, *Carica chrysopetala* (No. 53754), which resembles the mountain papaya, *Carica candamarcensis*, but is specifically distinct and may contribute material for the breeding problem of producing a small sweet-fruited papaya which can be shipped like a tomato or an avocado; are some of the plants which Mr. Popenoe found and introduced.

While Mr. Popenoe was carrying out a difficult piece of exploration work in Ecuador, Joseph F. Rock, our newly appointed agricultural explorer, was searching for the source of chaulmoogra oil in Siam and Burma. This oil, or rather the ethyl esters of its constituent chaulmoogric acid, which were originally discovered and described by Dr. Frederick B. Power, has come into great prominence as a cure for leprosy through the researches of Doctor Dean and his collaborators in Honolulu. The source of the oil, which comes into commerce through Burma, was quite obscure when Mr. Rock first took up the study of these trees and was commissioned as an agricultural explorer to investigate the whole subject; no photographs had ever been made of them. He spent several months in the jungles of Siam and Burma and went through experiences quite as thrilling and dangerous as any to which explorers in tropical countries are liable, including a unique one with a man-eating tiger. In the course of his explorations (fig. 1) he traversed the northern mountainous part of Siam, bordering on Burma, which had not previously been visited by botanists. Not only has he in large measure solved the problem of the source of chaulmoogra oil, but he obtained seeds of the true chaulmoogra tree (*Taraktogenos kurzii*, No. 53844) and of the more important allied trees, including *Hydnocarpus wightiana* (No. 52859) and also *H. castanea* and *H. anthelminthica* (recorded in Inventory No. 66 under Nos. 52514 and 52465), as well as the false chaulmoogra tree, *Gynocardia odorata* (No. 53121), which for years was erroneously supposed to be the source of chaulmoogra oil. Though Mr. Rock's main quest was the chaulmoogra trees—which quest he has described in Department Bulletin No. 1057, entitled "The Chaulmoogra Tree and Some Related Species," and in the National Geographic Magazine for March, 1922—he nevertheless obtained seeds of other trees and plants of great interest to those whose climatic surroundings will permit their cultivation.

The success of the bor (*Ziziphus mauritiana*) on the calcareous soils of southern Florida makes those who are already interested in this new fruit anxious to compare with the plants sent in from Mauritius Rock's variety (No. 52858) from the upper Chindwin River of Burma.

Plant breeders who are trying to produce larger and finer fruited varieties of blackberries and raspberries can not fail to be interested in the strains of the Hawaiian species of Rubus (*R. macraei*, Nos. 53480 to 53482, 53625, 53759, 53760, and 53847). The problem will be to find a suitable moist, cool, but not too cold, climate in which to grow both these Hawaiian and Mr. Popenoe's Ecuadorian species of Rubus.

The brilliant-berried *Vaccinium meyenianum* (No. 53488), from the volcano of Kilauea, and the showy white-flowered *Fagraea auriculata* (No. 53483), as well as the forest tree *Sterculia macrophylla* (No. 53484), which Mr. Rock introduced, will, it is hoped, find places in this country.

An unusual number of valuable species has been presented to the department by foreign institutions and by interested foreign amateurs, to whose generosity we have always been indebted in the past.

The Hon. Vicary Gibbs, of Herts, England, has sent us 21 varieties of the beautiful aster (*Aster novi-belgii*, Nos. 53009 to 53029), some of which are sure to beautify the dooryards of this country.

Victor O. Fletcher, of Hobart, Tasmania, has sent four new grasses (Nos. 53115 to 53118) that are proving valuable for forage on the dry hills of Tasmania, where the rainfall totals only 14 inches annually.

Sir David Prain, director of the Royal Botanic Gardens at Kew, has favored us with 19 new or rare species of Rubus (Nos. 52939 to 52951 and Nos. 53535 to 53540) and a very unusual collection of Berberis, Lonicera, Clematis, Rosa, Viburnum, and Cotoneaster (Nos. 53627 to 53752).

Consul Cavin, of Tananarive, Madagascar, presents a remarkable collection of the coffee species now recognized by botanists as distinct (Nos. 53454 to 53462).

Consul Goding, of Guayaquil, sends in a salmon-pink shaddock, or grapefruit (No. 53611).

Through the kindness of Messrs. Kenoyer and Dudgeon, of Ewing Christian College at Allahabad, India, we have come into possession of a remarkable collection of Indian tree and shrub seeds (Nos. 53563 to 53590). This includes *Bauhinia vahlii* (No. 53567), which they say is put to more uses than almost any other forest plant except the bamboo. It is a gigantic climber with white flowers turning to cream color and large flat leaves which are sewed together to make plates, cups, and even rough tablecloths, umbrellas, cloaks, and rain capes. It has grown well in southern Florida in Charles T. Simpson's hammock. The collection also contains *Boswellia serrata* (No. 53569), the source of Indian olibanum, used as an ingredient in incense; *Diospyros tupru* (Nos. 53572 and 53573), a tropical persimmon tree as yet not cultivated in India; nine flowering trees of promise for Florida (Nos. 53574 to 53582); two stately trees (*Sterculia urens*, No. 53588, and *Terminalia tomentosa*, No. 53589) suitable for street use; a variety of purple-stemmed wheat from the Ganges Valley (No. 53590); and a species of jujube (*Ziziphus xylopyrus*, No. 53593), the charred fruits of which make a black dye for leather.

John McLaren, superintendent of Golden Gate Park, San Francisco, has contributed a new ornamental Chilean shrub with small edible fruits possessing a raspberry flavor, *Eugenia luma* (No. 53591).

Benito Carrasco has sent in a plant for covering bare arid soils, which produces ivory-white berries with a pineapple flavor, *Salpichroa rhomboidea* (No. 53608).

Friends of P. H. Rolfs will watch with interest the growth of two new grasses from Minas Geraes, Brazil (*Axonopus* sp., No. 52917, and *Brachiaria plantaginea*, No. 52918); the former, he finds, covers the ground there more densely than does the best St. Augustine grass, being very persistent and crowding out everything else.

Before he was wounded and obliged to return to America, the noted naturalist, George K. Cherrie, of the American Museum of Natural History in New York, sent in some seeds of a remarkable blackberry (*Rubus* sp., No. 53545) which he discovered on the Zamora River in Ecuador at an altitude of 5,500 feet. Of it he remarks, "I do not believe I have ever seen such tremendous clusters of berries. The latter are large and to me very fine flavored."

P. J. Wester, to whom we are indebted for many Philippine plants, presents in this inventory a new and practically seedless variety of the mabolo, a tropical persimmon (*Diospyros discolor*, No. 53555), which is sweeter, more juicy, and of better flavor than the ordinary sort and ought to be distributed throughout the Tropics.

Doctor Proschowsky, of Nice, France, whom few correspondents have equaled in generosity, has added to his gifts the wild apple from the high plateau of Indo China (*Malus laosensis*, No. 52900). Since this grows into a large tree and produces fruit similar in shape, color, and flavor to certain cider pears of Normandy, but grows wild in the dense forests of Indo China, it may possibly prove valuable either as a stock or in the creation of an apple which can be grown in southern latitudes. The wild apple (*Malus doumeri*, No. 53008), which Mr. Miéville, of the Agricultural Station at Chieng Khuang, sent in from Laos, Indo China, may prove similarly useful.

P. C. Standley, of the National Museum, has recently described a tropical persimmon (*Diospyros conzattii*, No. 53176), which produces fruit superior, in his opinion, to that of *D. ebenaster*, and resembles somewhat the delicious sapodilla. It may prove suitable for cultivation in parts of Florida, Hawaii, and Porto Rico.

The spiny palms of the genus Acrocomia have proved to be very rapid growers in southern Florida, some of them equaling the coconut in this respect when planted on pinelands. In view of its ability to withstand severe drought, its hardiness, and the value of its kernels, the macauba palm (*Acrocomia sclerocarpa*, No. 53487), which Thomas R. Gwynn has sent in from Paraguay, would appear to be a most desirable introduction.

The fundi grass of Nigeria (*Digitaria exilis*, No. 53486) Professor Piper reports has proved remarkably promising for forage in the Southern States.

The apricot of Harput, Syria (No. 52914), which grows to be as large as a peach and possesses a remarkable flavor, deserves to be tried in California.

The rapid-growing timber tree of China (*Catalpa bungei*, No. 52909), which Frank N. Meyer reported as growing to 100 feet in height and 15 feet in diameter and furnishing a light, strong, durable, and nonwarping timber resembling walnut, has shown itself at home in Maryland and deserves to be widely tried in those regions where the chestnut blight has destroyed the American chestnut trees.

Dendrocalamus strictus (No. 53610), the forest bamboo of India, which grows to a height of 100 feet and, unlike most other species, produces seeds in abundance, deserves to be widely grown throughout the regions warm enough for its culture.

Hydrangea petiolaris (No. 52937) is a remarkable deciduous climber which is ideal for covering the trunks of old dead trees and is serviceable—like the Japanese ivy—for screening rock and brick walls.

The palangi (*Brassica rugosa*, No. 53542), an early cold-weather crop growing in the hills of the central, eastern, and western Himalayas and cultivated in Nepal, may be worthy of special study. The leaves of its loose head are plucked and eaten as fast as they develop, and an oil is extracted from its seeds. Has any plant breeder worked with this species?

As illustrating a new reason for introducing foreign plants, special attention might be called to the collections of grasses, barberries, legumes, borages, etc., which have been received from Sweden, Denmark, and Holland for the use of the pathologists of the department who are engaged in studying the great problem of controlling the rusts of cereals. These rusts have stages in which they inhabit as secondary hosts a variety of plants, notably the barberries.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels, and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. Miss Patty Newbold has assisted in the compilation of descriptive notes.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 29, 1922.

INVENTORY.[1]

52855 to 52858.

From Burma, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 4, 1921. Quoted notes by Mr. Rock.

52855. CANAVALI sp. Fabaceæ.

"*Tayok Pedalet.* Native to Upper Burma. This bean is extensively cultivated in Mandalay and is considered to contain a higher percentage of nitrogen than any other bean found in India or Burma."

52856. HIBISCUS sp. Malvaceæ.

"*Ma ha ka.* A Siamese plant from the forests near Lampang, northern Siam. A beautiful large-flowered scandent bush. Tubers of this plant were sent from Chiengmai."

52857. PHASEOLUS CALCARATUS Roxb. Fabaceæ. **Rice bean.**

"*San to hai.* A bean indigenous to Upper Burma and cultivated in Mandalay. The beans are eaten with rice when mature. Collected February 3, 1921."

52858. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. **Bor.**
(*Z. jujuba* Lam., not Mill.)

"A shrub with small, red, sweet-acid fruits the size of a large cherry, from a wild plant found near Okma on the upper Chindwin River. Specimen No. 843. Collected February 1, 1921."

For previous introduction, see S. P. I. No. 46720.

52859. HYDNOCARPUS WIGHTIANA Blume. Flacourtiaceæ.

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 15, 1921.

"(Calcutta, India. March 8, 1921.) These seeds were found in old fruits under two trees about 30 feet high which were loaded with immature fruits. I examined a number of these seeds and found that they were still in good condition. They will require sandy soil. At present the oil from the seeds is used in Calcutta (School of Tropical Medicine) in the treatment of leprosy." (*Rock.*)

For previous introduction, see S. P. I. No. 51362.

52860. PEUCEDANUM OSTRUTHIUM (L.) Koch. Apiaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received April 5, 1921.

A perennial herb native to the French Alps. The acid aromatic root is used in medicine, particularly in veterinary practice. It is utilized also for the preparation of some kinds of Swiss cheese. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 366.*)

---

[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 this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction; and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

52861 and 52862.

From San Jose, Costa Rica. Seeds presented by Sr. A. Tonduz. Received April 11, 1921.

52861. CANAVALI PLAGIOSPERMA Piper. Fabaceæ.

"From the gardens of Sra. Amparo de Zeledon, Puntarenas." (*Tonduz.*)

A species based on specimens grown from seeds received from Mauritius in 1913; also received from Nicaragua in 1917. The seed resembles the sword bean in appearance, but it has the short hilum of the jack bean.

52862. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"From the gardens of Sra. Amparo de Zeledon, Puntarenas." (*Tonduz.*)

52863. DIOSCOREA TRANSVERSA R. Br. Dioscoreaceæ. Queensland yam.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received April 12, 1921.

"A species common in coastal Queensland, where it produces small tubers of excellent quality." (*White.*)

For previous introduction, see S. P. I. No. 1331.

52864. LEYCESTERIA FORMOSA Wall. Caprifoliaceæ.

From Beaverton, Oreg. Plants presented by Benjamin W. Gothard. Received April 15, 1921,

"One of the handsomest and most useful of ornamental shrubs for all sections where the temperature does not fall much below zero. It is not subject to pests, is in bloom for months, and if cut down by severe frost it renews itself within a short time. Last winter, in sheltered situations, it endured zero temperature without injury. Here in Oregon it roots freely from hardwood cuttings in open ground when put in during November or December." (*Gothard.*)

A Himalayan bush, 6 feet high, allied to our Viburnums. The pink flowers backed by red bracts are borne in dense sprays at the end of fresh wood shoots.

For previous introduction, see S. P. I. No. 41558.

52865. FICUS MACROPHYLLA Desf. Moraceæ.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, Department of Botany and Forestry. Received April 16, 1921.

One of the best Australian avenue trees; it has proved of value in southern California.

"The milky sap of this tree yields a very fair caoutchouc. The fiber of the root is of great durability." (*Maiden, Useful Native Plants of Australia, pp. 225 and 623.*)

For previous introductions, see S. P. I. Nos. 3494 and 37140.

52866. SOLANUM QUITOENSE Lam. Solanaceæ. Naranjilla.

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic W. Goding, American consul general. Received April 19, 1921.

For use in hybridizing experiments to secure disease resistance.

For previous introduction, see S. P. I. No. 50607.

52867. DIOSCOREA PENTAPHYLLA L. Dioscoreaceæ. Round yam.

From Aulnay sous Bois, France. Tubers presented by Prof. R. de Noter, director, École d'Acclimatation et de Recherches Agricoles. Received April 7, 1921.

Variety *hortorum*.

"*Igname ronde de Chine* (round yam of China). The tubers made the first season, from plants grown from 'eyes' dug and replanted, weigh 1½ kilograms each; the second year the tuber may weigh 4 to 5 kilograms. The plant requires light sandy clay or, better, calcareous, richly fertilized soil. The tubers are gathered at the first frost and stored in the cellar. Storage for two years does not injure but improves the tubers. This yam is an excellent vegetable of delicate flavor and makes delicious fritters, cakes, and soufflés. The leaves, after the harvest, are used as cattle feed." (*De Noter.*)

52868 and 52869. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

From Erfurt, Germany. Purchased from Ernst Benary. Received April 21, 1921. Quoted notes by Mr. Benary.

Introduced for specialists of the department.

52868. "Short green early." **52869.** "Short green Parisian."

52870 to 52889.

From Christiania, Norway. Seeds presented by Dr. N. Wille, director, Botanic Garden. Received April 1, 1921.

Introduced for experimental work in cereal-rust control.

52870. ACONITUM LYCOCTONUM L. Ranunculaceæ. **Monkshood.**

A yellow-flowered ornamental yielding an alkaloid similar to aconitin.

52871. AGROPYRON sp. Poaceæ. **Wheat-grass.**

Received as *Triticum sibiricum* (=*Agropyron sibiricum*), but the seeds are unlike those of that species that have been received heretofore.

52872. AIRA CAESPITOSA L. Poaceæ. **Hair-grass.**

This tufted perennial grass often forms excellent forage in mountain meadows.

52873. AIRA FLEXUOSA L. Poaceæ. **Hair-grass.**

A very slender grass with delicate purplish inflorescences.

52874. BERBERIS CHINENSIS Poir. Berberidaceæ. **Barberry.**

For previous introduction, see S. P. I. No. 36737.

52875. BERBERIS CHINENSIS Poir. Berberidaceæ. **Barberry.**

Received as *Berberis spathulata*, which is now considered to be the same as *B. chinensis*.

52876. BERBERIS GUIMPELI Koch and Bouche. Berberidaceæ. **Barberry.**

A hardy barberry, 4 to 6 feet tall, with handsome purplish fruits.

For previous introduction, see S. P. I. 44525.

52877. BERBERIS INTEGERRIMA Bunge. Berberidaceæ. **Barberry.**

A rather variable but attractive black-fruited species up to 6 feet tall.

For previous introduction, see S. P. I. No. 49060.

52878. × COLUTEA MEDIA Willd. Fabaceæ. **Bladder senna.**

Ornamental shrub, 10 feet tall, with orange and reddish yellow flowers and grayish green foliage.

52879. COLUTEA ORIENTALIS Mill. Fabaceæ. **Bladder senna.**

Flowering shrub similar to the preceding but of lower growth. Flowers during the summer.

For previous introduction, see S. P. I. No. 33314.

52880. ELYMUS ARENARIUS L. Poaceæ. **Lyme-grass.**

A coarse perennial grass used for sand binding on the seacoast.

For previous introduction, see S. P. I. No. 52795.

52870 to 52889—Continued.

52881. KOELERIA ALPICOLA Gren. and Godr. Poaceæ. **Grass.**

A tufted low perennial grass from the high mountain slopes.

Received as *Koeleria australis*, but the sample does not agree with that species.

52882. MELICA NUTANS L. Poaceæ. **Melic grass.**

A looseiy tufted European grass useful for grazing.

52883. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

An attractive hardy annual with rose-colored, funnel-shaped flowers, closely allied to Anchusa.

For previous introduction, see S. P. I. No. 51041.

52884. SECALE sp. Poaceæ. **Rye.**

Received as *Secale montana*, but the sample does not agree with that species.

52885. SYMPHYTUM OFFICINALE L. Boraginaceæ. **Comfrey.**

Hardy perennial sometimes grown as a border plant for its foliage.

52886. THALICTRUM GLAUCUM Desf. Ranunculaceæ. **Meadow rue.**

An attractive hardy perennial 2 to 5 feet tall, with handsome gray-green, much-divided foliage and dainty yellow flowers.

52887. THALICTRUM MINUS NUTANS Regel. Ranunculaceæ. **Meadow rue.**

A form of this dainty border plant, a foot or more in height.

52888. TORRESIA ODORATA (L.) Hitchc. Poaceæ. **Holy grass.**

A low sweet-scented perennial grass used for basket making.

52889. TRISETUM SPICATUM (L.) Richter. Poaceæ. **Downy oat-grass.**

An erect tufted grass of value for grazing on high mountain slopes.

For previous introduction, see S. P. I. No. 28543.

52890 to 52892. CORCHORUS OLITORIUS L. Tiliaceæ. **Jute.**

From Dacca, Bengal, India. Seeds presented by Robert S. Finlow, fiber expert to the Government of Bengal, through Lieut. Col. A. T. Gage, director, Botanical Survey of India, Calcutta. Received April 8, 1921.

Nalta jute. A tall, herbaceous, sometimes woody annual, 1 to 5 meters high, sparingly branched, and bearing smooth, ovate-lanceolate leaves and small yellow flowers. The many-seeded beaked capsule is perfectly cylindrical. (Adapted from *Bureau of Agriculture, Philippine Islands, Farmers' Bulletin No. 11, p. 8.*)

The following varieties are named selections which are introduced for testing by the Office of Fiber Investigations:

52890. Green. **52892.** R30.

52891. R26.

For previous introduction, see S. P. I. No. 25052.

52893 and 52894.

From Aulnay sous Bois, France. Presented by Prof. R. de Noter, École d'Acclimatation et de Recherches Agricoles. Received April 4, 1921. Quoted notes by Professor de Noter.

52893. ATRIPLEX HORTENSIS L. Chenopodiaceæ. **Orache.**

"Seeds of a variety with an exceedingly delicate flavor; it is easy to clean with very little waste. It brings three times the price of ordinary spinach [in France]; the plant is 2¼ meters (6½ feet) high and

52893 and 52894—Continued.

furnishes 1 kilogram (2⅕ pounds) at a single picking, 44 large succulent leaves, 20 to 30 centimeters long. It loses only one-fourth of its weight in cooking, while common spinach loses three-fourths of its weight and requires 300 leaves to make a kilogram. It makes a delicious salad. The plant is very hardy and easy to cultivate in any climate. The seeds can be sown at the end of February in northern Europe, and the plant thrives as well as it does in warm countries. The leaves are ready for picking two months after sowing, and on fertile soil the plant will yield all summer; any surplus can be fed to animals.

"The seeds, milled and bolted into flour, make an excellent feed. The analysis of the seeds shows the following percentages: Protein, 24.62; fat, 6; sugar and starch, 53.70; cellulose, 1.92; mineral matter, 3.46; water, 10.30. In Mexico this brown flour is used to make cakes.

"The stalks can be used for the extraction of cellulose and the manufacture of paper. An analysis of the dried stalks shows percentages as follows: Protein, 3; fat, 1.20; sugar and starch, 35.50; cellulose, 46.04; mineral matter, 5.16; water, 9.10."

For previous introduction, see S. P. I. No. 2003.

52894. POLYMNIA EDULIS Wedd. Asteraceæ.

"Tubers of a strong herbaceous plant, very decorative with its tall stalks 1.5 meters high, beautiful foliage, and yellow, autumnal flowers. The numerous, clustered, clean tubers are white, almost transparent, excessively sweet, and have a slight pear flavor. They are eaten raw in their native country, where they are keenly relished. The leaves, stalks, and tubers are greedily eaten by animals. The enormous quantity of sugar in the tubers yields three times as much alcohol as can be distilled from the Irish potato. Molasses can also be made from the tubers. A half-decayed tuber grew a plant which bore 32 tubers 15 to 20 centimeters long, weighing 3 kilograms.

"This hardy plant occurs wild and is also cultivated in the Andes Mountains. In Algeria irrigation is necessary. In any case, half of the foliage can be used during the summer for feed. At harvest the tubers are stored in a cellar. The plant is easily lifted from the soil and is superior to the Jerusalem artichoke and the sunflower in that it leaves nothing behind."

52895 to 52897.

From Kulara, Queensland, Australia. Seeds presented by J. A. Hamilton. Received April 14, 1921.

52895. ALBIZZIA LOPHANTHA (Willd.) Benth. Mimosaceæ.

A rapid-growing tree from Western Australia. The bark contains 8 per cent of tannin and the dry root 10 per cent of saponin. Cattle browse on the leaves. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 117, 315, and 537.*)

For previous introduction, see S. P. I. No. 8243.

52896. ALPHITONIA EXCELSA (Fenzl) Reissek. Rhamnaceæ.

A tree 50 feet high, one of the characteristic trees of the Brigalow scrubs of New South Wales, Queensland, and northern Australia, with hard close-grained durable wood which takes a high polish; it is suitable for gunstocks, coopers' staves, and for indoor purposes. The wood is tough and warps in drying; near the outside it is pinkish and the inner wood is dark brown. The bark is occasionally used for tanning. (Adapted from *Maiden, Useful Native Plants of Australia, p. 373.*)

52897. PLEIOGYNIUM SOLANDRI (Benth.) Engl. Anacardiaceæ.
(*Spondias pleiogyna* F. Muell.)

A tree native to Queensland; the hard dark-brown wood with red markings resembles that of the American walnut. The grain is fairly close and splits quite straight. It is an excellent wood for the joiner or cabinetmaker and is also suitable for turnery. (Adapted from *Maiden, Useful Native Plants of Australia, p. 599.*)

52898 to 52900.

From Nice, France. Presented by Dr. A. Robertson Proschowsky, Jardin d'Acclimatation. Received April 18, 1921. Quoted notes by Doctor Proschowsky.

52898. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"Seeds of varieties of peaches from Laos, French Indo China."

52899. CYPERUS ESCULENTUS L. Cyperaceæ. **Chufa.**

"Tubers which can be kept in sand in perfect state for months and which have a very good taste like very sweet almonds. The plant grows with the greatest facility, does not require much moisture, and yields an abundant crop. When the tubers are planted in March the crop is ripe in October and November."

For previous introduction, see S. P. I. No. 43578.

52900. MALUS LAOSENSIS (Cardot) Cheval. Malaceæ. **Laos apple.**
(*Pyrus laosensis* Cardot.)

Seeds of an interesting species of apple growing wild on the high plateaus of Indo China at Tranninh at an altitude of 1,500 meters and also on certain mountains of the Tonking. It is a large tree which produces fruit similar in shape, color, and flavor to certain cider pears of Normandy. A drink has been made of it the color of which recalls the Normandy pear cider. Although this species grows in the dense forest and is uncared for by the mountain people, it may have been cultivated and improved in the past. The trees from which this seed was obtained may be remnants of specimens cultivated as sacred trees around certain Laos pagodas where the priests cared for them. (Adapted from *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, Paris, vol. 170, p. 1129.*)

52901. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Reading, England. Tubers presented by Sutton & Sons. Received April 20, 1921.

"*Dunnotar Castle.* The crop yielded over 13 tons per acre." (*Sutton.*)

For use in breeding work.

52902. CALAMUS sp. Phœnicaceæ. **Rattan palm.**

From Lamao, Bataan, Philippine Islands. Seeds presented by Adn. Hernandez, Director of Agriculture. Received April 26, 1921.

"*Bejuco* seed." (*Hernandez.*)

For a discussion of rattan palms in the Philippines, see Brown and Merrill, Philippine Palms and Palm Products, pages 34 to 54.

52903 and 52904.

From Nairobi, Kenia, Africa. Seeds presented by Alexander Holm, Director of Agriculture. Received April 8, 1921.

52903. CAPRIOLA sp. Poaceæ. **Grass.**

"Probably an undescribed species of Capriola." (*C. V. Piper.*)

52904. CAPRIOLA sp. Poaceæ. **Grass.**

"Apparently a mixture of two species of Capriola." (*C. V. Piper.*)

52905. DIOSCOREA ESCULENTA (Lour.) Burkill. Dioscoreaceæ. **Lesser yam.**

From Dominica, British West Indies. Tubers presented by A. Keys, acting curator, Botanic Gardens. Received April 11, 1921.

"*Silver.* This yam is better known locally as the 'Silk yam.'" (*Keys.*)

"A small-tubered, smooth, tough-skinned yam having white flesh of good quality." (*R. A. Young.*)

52906 to 52908. DIOSCOREA ALATA L. Dioscoreaceæ.

Greater yam.

From Antigua, British West Indies. Tubers presented by F. G. Harcourt, agricultural superintendent. Received April 11, 1921.

52906. "*Bottle-Neck Lisbon.* This variety is economically preferred to the ordinary Lisbon yam, the tubers being of better shape and less forked; also generally considered to be of slightly better quality." (*Harcourt.*)

"A light-brown, rather thin-skinned, white-fleshed yam. The tubers reach a weight of several pounds each. The quality is excellent, the flesh being mealy, fine grained, and of rich but delicate flavor when cooked." (*R. A. Young.*)

52907. "*Lisbon.* A yam of very good quality. The tubers are irregular in shape, showing a tendency to forking." (*Harcourt.*)

"A white-fleshed yam of excellent quality, fine grained and of delicate, rich flavor when cooked. The skin is light brown and rather thin. The tubers usually attain a weight of several pounds each." (*R. A. Young.*)

52908. "*Horn.* The tubers of the *Horn* yam usually curve upward, i. e., toward the surface of the soil, and are rather brittle." (*Harcourt.*)

"A white-fleshed yam having dark-brown, rather thick skin. The flesh remains white when cooked and is of good quality, though the texture is not quite so fine as that of the Lisbon varieties. The tubers are long and generally curved. They commonly attain a weight of several pounds each." (*R. A. Young.*)

52909. CATALPA BUNGEI Meyer. Bignoniaceæ.

From Nanking, Kiangsu, China. Seeds presented by J. L. Buck, College of Agriculture and Forestry, University of Nanking. Received May 3, 1921.

"A rapid-growing Chinese tree, up to 100 feet in height, with a trunk 10 to 15 feet in circumference a few feet above the ground. The wood, which is strong, light, durable, and nonwarping, resembles walnut to a large extent and is in much demand for fine furniture. The tree might be cultivated in the semiarid sections of the United States where the winters are not too severe. It prefers a porous soil and is easily propagated from suckers which spring up from the roots that are near the surface of the ground." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 44664.

52910. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

From China. Seeds collected by Frank N. Meyer, Agricultural Explorer of the United States Department of Agriculture. Numbered April, 1921.

These seeds were found in Mr. Meyer's baggage with no descriptive notes.

52911. ZEA MAYS L. Poaceæ. **Corn.**

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 19, 1920. Numbered April, 1921.

"(No. 493a. Collected at Bogota market. October 14, 1920.) Flint corn of the variety commonly seen in this region. Of interest to those engaged in corn breeding."

52912. PTEROCARPUS ERINACEUS Lam. Fabaceæ.

From Ibadan, Southern Provinces, Nigeria. Seeds presented by John G. Davis, acting Director of Agriculture. Received April 6, 1921.

A more or less deciduous tree 15 to 20 meters high, with a straight trunk, spreading crown, and pubescent branchlets. The glabrous leaves are unequally

pinnate. The flowers are in terminal panicles with racemose branches. The tree extends into Natal, Swaziland, the Transvaal, to the West Coast, and from the coast to the Matapos. A valuable and durable timber found in great abundance and the most valuable asset Mozambique Province has in its tropical forests. It produces also the African gum *kino*. (Adapted from *Sims, Forest Flora of Portuguese East Africa, p. 44.*)

52913. ALLIUM CEPA L. Liliaceæ. **Onion.**

From Valencia, Spain. Seeds presented by John R. Putnam, American consul. Received April 1, 1921.

Seeds of the onion which is grown on an extensive scale in Denia, Spain. These onions come upon the American market in a peculiar type of package and are the large yellow or straw-colored onions sold as Spanish onions.

52914. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Aleppo, Syria. Seeds presented by Digby A. Willson, vice consul in charge. Received April 6, 1921.

"The apricot grown in the Harput (Kharpoot) district is recognized to be the most luscious and most sought for noncitrus fruit in the Near East. In order that our Department of Commerce and our Department of Agriculture may understand the climate under which the Harput apricot is cultivated, the following information is given:

"The city of Harput is situated in about the same altitude as Denver, Colo., being slightly more than 5,000 feet above sea level. During the summer, which is very hot, little water is found in the district, owing to the entire lack of rain in the summer months, but the winter is extremely cold and snowstorms are not infrequent. The apricot trees usually grow throughout the city in the various gardens, which are irrigated from small streams supplying sufficient water for the cultivation of the trees after the spring rains. Great care is exercised in the cultivation of the Harput apricot, resulting in a delicious fruit about the size of an ordinary peach; the apricots are ripe and ready for picking about the last of May or the first days in June. I am informed by many naturalized Americans from the Harput district that these apricot trees will grow in southern California." (*Willson.*)

52915. SCLEROCARYA BIRREA (A. Rich.) Hochst. Anacardiaceæ.

From Matarîa el Saff, Egypt. Seeds presented by A. Bircher, director, Middle Egypt Botanic Station. Received April 7, 1921.

A tree with narrow, glabrous, 9 to 23 foliolate leaves tufted at the ends of the branches. The elliptic, entire, leathery pinnæ are 2 inches in length. The globose, glabrous, whitish yellow drupes, 1 inch long, are borne singly on stout peduncles. A fermented liquid is prepared from the sweetish acid flesh. The stony nut contains two or four seeds of a walnutlike flavor. Native to Upper Guinea and the Nile land. (Adapted from *Tancredi, Colonia Eritrea, p. 112*).

52916. MELILOTUS ALBA Desr. Fabaceæ. **White sweet clover.**

From Madrid, Spain. Seeds presented by A. Frederico Gredills, curator, Botanic Garden. Received April 5, 1921.

For experimentation by the Office of Forage-Crop Investigations.

52917 to 52922.

From Bello Horizonte, Minas Geraes, Brazil. Seeds presented by Prof. P. H. Rolfs, through Prof. C. V. Piper, United States Department of Agriculture. Received April 1, 1921. Quoted notes by Professor Rolfs.

52917. AXONOPUS sp. Poaceæ. **Grass.**

"Collected at Vicosa. A grass that has some very good points, for grazing purposes, very leafy, covering the ground more densely than *St. Augustine* at its best. Where the leaves are not cropped off by grazing it stands about 8 inches tall. Zebu have grazed it considerably.

52917 to 52922—Continued.

It is very persistent in its own patches and crowds out practically everything else. The patches that I saw produced very little seed; possibly more will be produced when we get into the beginning of the dry season."

52918. BRACHIARIA PLANTAGINEA (Link) Hitchc. Poaceæ. **Grass.**

"Collected at Ponto Novo; where it occurred it crowded out practically everything else. It made a dense covering, the leafy part of it standing about 2½ feet tall. I saw it growing at all the points visited and find it also present here at Bello Horizonte. It looks as though it may be perennial here. The seed habits seem to be good, as it appears to ripen about all at the same time."

For previous introduction, see S. P. I. No. 21961.

52919. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepense* Pers.)

"Collected at Ligacao. Appears to be a sorghum that grows natively as a weed."

52920. PASPALUM sp. Poaceæ. **Grass.**

"Collected at Furtados de Campos."

52921. PASPALUM sp. Poaceæ. **Grass.**

"Collected at Ligacao."

52922. VALOTA INSULARIS (L.) Chase. Poaceæ. **Grass.**

"Collected at Ponto Novo. Occurs rather abundantly along the roadside."

52923. LAUROCERASUS ILICIFOLIA (Nutt.) Roemer. Amygdalaceæ.
(*Prunus ilicifolia* Walp.)

From Los Angeles, Calif. Seeds presented by P. D. Barnhart. Received April 5, 1921.

"Wild cherry, for trial as stock and as an ornamental evergreen tree." (*Barnhart.*)

For previous introduction, see S. P. I. No. 39584.

52924 to 52926. LILIUM spp. Liliaceæ. **Lily.**

From Ootacamund, Bombay Presidency, India. Presented by F. H. Butcher, curator, Government Botanic Gardens and Parks. Received April 1, 1921.

52924. LILIUM NEILGHERRENSE Wight.

Bulbs of an Indian lily with a globose bulb 5 to 7.5 cubic millimeters in diameter, with a stiff stem 3 to 6 decimeters high, creeping at the base, and with 30 to 40 crowded leaves. The one to three white ascending fragrant flowers are 15 to 18 cubic millimeters long and trumpet shaped. The perianth segments are oblanceolate, reflexed only at the tips. (Adapted from *Botanical Gazette, vol. 27, p. 242.*)

52925. LILIUM NEPALENSE D. Don.

Bulbs of a magnificent species, of striking beauty, generally considered too tender for open-air culture except in the more favored parts of England, introduced from Nepal in 1824. The plant grows 1 to 3 feet high and bears nodding bell-shaped flowers of a beautiful soft yellow, the lower half of the gracefully recurved segments being blotched with bright purple-brown and shaded with maroon. (Adapted from *Journal of Horticulture and Home Farmer, 3d ser., vol. 54, p. 348.*)

52926. LILIUM NEILGHERRENSE Wight.

Seeds of S. P. I. No. 52924.

52927. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From Arch Creek, Fla. Tubers presented by J. DeHoff. Received April 23, 1921.

"I procured one tuber in 1893, when I first came to Avon Park, Fla., from a neighbor, H. G. Burnett, who had in his garden a few which he procured from his father-in-law at Fort Myers where small quantities have been grown, I understand, for 50 years. I had kept seed from year to year since that time, no more though, than I wanted myself, until year before last when somehow they made several times more seed bulbs than I ever saw before. This last year they again made only very few seed tubers. I received them under the name of 'White Jamaica yam.' I grew them for five years near Palatka (at Florahome) and they did well on high hammock land. Down here in Dade County, on very light sandy and rocky land, they produce as much as sweet potatoes and, with me, take the place of Irish potatoes; the latter will not succeed on this dry soil at all. The yams keep for months." (*DeHoff.*)

"A white-fleshed yam, fairly dry when cooked, and of excellent quality. The vine produces aerial tubers, which are referred to in Mr. DeHoff's letter as 'seed tubers.'" (*R. A. Young.*)

For previous introduction, see S. P. I. No. 37943.

52928 to 52951.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received April 4, 1921.

52928. ACANTHOPANAX SETUENENSIS Harms. Araliaceæ.

A bush 2 to 3 millimeters high, native to western Hupeh, where it is found in thickets at altitudes of 1,800 to 2,100 meters. The white flowers, in short-peduncled umbels, are followed by black fruits. This species is closely related to *Acanthopanax leucorrhizus*, but is easily distinguished from it by the leaves with almost invariably three leaflets, by their glaucous underside, their more coriaceous texture, and by their more remote and shallower serration. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 599.*)

52929. ARALIA CHINENSIS GLABRESCENS (Franch. and Sav.) C. Schneid. Araliaceæ.

A black-fruited bush 3 millimeters high, native to China in thickets at altitudes of 900 to 2,700 meters. This variety differs from the type in the glabrous or nearly glabrous glaucescent under side of the leaflets; and from the equally glabrous *Aralia chinensis* variety *mandshurica* it differs chiefly in the usually smaller, more papery leaflets with smaller appressed teeth. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 567.*)

52930. BERBERIS EDGEWORTHIANA C. Schneid. Berberidaceæ. **Barberry.**

A small shrub native to Simla, British India, with yellowish gray branches and one to two parted yellowish spines about 2 centimeters long. The elliptic-lanceolate membranaceous leaves are green above and paler below, 1 to 3 centimeters long. The small flowers, 4 millimeters in diameter, are in dense cymes up to 3 centimeters long. (Adapted from *Bulletin Herbier Boissier, 2d ser., vol. 8, p. 263.*)

52931. BERBERIS FRANCISCI-FERDINANDI C. Schneid. Berberidaceæ. **Barberry.**

A rather striking species apparently most nearly related to the Himalayan *Berberis chitria*, which is well distinguished, however, by its puberulent branchlets, the longer stalked and numerous ovules, and by the distinct styles. The handsome shrub is 2 to 3 meters high, with red young branches, thereafter purplish, glabrous, and shining.

The simple, yellowish red spines are up to 2.5 centimeters long. The papery deciduous leaves are ovate or ovate-lanceolate with marginal spines 1 to 1.5 millimeters long. The yellow flowers 7 to 9 millimeters in diameter are in dense panicles 5.5 to 12 centimeters long. The scarlet ovate fruits are 12 millimeters in diameter. Native to thickets in western China at altitudes of 1,300 to 4,000 meters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 367.*)

52928 to 52951—Continued.

52932. BERBERIS sp. Berberidaceæ. **Barberry.**

Received as *B. leitchlinii*, for which a place of publication has not been found.

52933. BETULA MEDWEDIEWI Regel. Betulaceæ. **Birch.**

A lofty tree, with erect branches and twigs, found in forest borders at an altitude of 6,800 feet on Mount Somlia, Transcaucasia. The papery ovate leaves, glabrous and olive green above, are paler below and sometimes pilose on the veins. The staminate catkins are in short racemes at the tips of the branches. The cylindrical pistillate catkins are 3 to 3.5 centimeters long. (Adapted from *Gartenflora, vol. 36, p. 383.*)

52934. CLEMATIS MONTANA RUBENS Wilson. Ranunculaceæ.

A plant of exceptional beauty with rose-colored flowers 1½ to 2 inches in diameter, which are produced freely when the plant is only a foot high. It requires no background to show it to advantage, as in the case of the white flowers of the type, and is most suitable for training over old stumps, etc. Most of the flowers are produced in late May and June, and odd flowers continue to develop all summer. (Adapted from *The Garden, vol. 77, p. 84.*)

For previous introduction, see S. P. I. No. 52630.

52935. COTONEASTER ACUTIFOLIA VILLOSULA Rehd. and Wils. Malaceæ.

A very vigorous shrub 5 to 7 feet high, native to western Hupeh, with young shoots clothed with yellowish gray loose hairs, becoming smooth and purplish brown the second year. The leaves are 1½ to 4½ inches long, and the white flowers are rose tinted. The woolly, roundish, pear-shaped fruits are ultimately shining black. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 158.*)

52936. DAVIDIA INVOLUCRATA VILMORINIANA (Dode) Hemsl. Cornaceæ.

A tree 40 to 50 feet tall, native to western China, with alternate, ovate, bright-green leaves 2 to 4 inches long, inconspicuous flowers in terminal globular heads, and greenish yellow fruits with brown dots, nearly 2 inches long. The bracts are as in the typical form. (Adapted from *Curtis's Botanical Magazine, pl. 8432.*)

Received as *D. lacta*, which is now referred to this form.

For previous introduction, see S. P. I. No. 49669.

52937. HYDRANGEA PETIOLARIS Sieb. and Zucc. Hydrangeaceæ.

A hardy deciduous climber with deeply serrated, somewhat heart-shaped leaves about 4 inches long. The large flat corymbs, often 10 inches across, are composed mainly of small fertile blossoms which are inconspicuous and a few large white sterile blooms. As the number of showy flowers is small, the plant is not to be recommended as a wall climber, but as a tree climber, for clothing the trunks with foliage and flower, it can not be surpassed. It clings to the tree with rootlets thrown out from its lengthening growths and requires no wire or string. One plant ascended 40 feet in 13 years. (Adapted from *The Garden, vol. 64, p. 219.*)

52938. PYRACANTHA GIBBSII A. Jackson. Malaceæ.

A western Chinese shrub, up to 14 feet high, nearly spineless, with large, ovate-oblong, very variable leaves up to 3 inches long, white flowers, and scarlet, globular, abundant fruits about one-third of an inch in diameter. The leaves are commonly used for tea by the Chinese. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 16, p. 309.*)

For previous introduction, see S. P. I. No. 44399.

52928 to 52951—Continued.

52939 to 52951. RUBUS spp. Rosaceæ. **Bramble.**

52939. RUBUS ADENOPHORUS Rolfe.

A very distinct species with thick, armed stems, hairy flowering branches, and stipitate purple glands of unequal length. The hairy leaves are ternated (or the upper ones rarely simple) and green on both surfaces. The rachis, peduncles, and sepals are hairy, glandular, and a beautiful purple. The sepals recall a pincushion stuck full of black-headed pins. This glandular development extends to the stems and petioles. The rose-colored flowers with petals 5 millimeters long, are in 6 to 10 flowered racemes 3 to 4 centimeters long. The black edible fruit is 1 centimeter wide. (Adapted from *Kew Bulletin of Miscellaneous Information, 1910, p. 382.*)

For previous introduction, see S. P. I. No. 29975.

52940. RUBUS ALLEGHANIENSIS Porter.

One of the numerous forms of the cultivated blackberry, often known as *Rubus nigrobaccus* but apparently only a more or less stable form of *R. alleghaniensis.*

52941. RUBUS BIFLORUS QUINQUEFLORUS Focke.

A large, vigorous-growing bush with attractive, stout, "whitewashed" stems 12 to 15 feet in height and ornamental foliage. This plant produces rich, golden yellow, raspberrylike fruits of pleasant flavor which may prove of considerable value in the hands of the hybridist. (Adapted from *The Garden, vol. 76, p. 624.*)

For previous introduction, see S. P. I. No. 50294.

52942. RUBUS CHROOSEPALUS Focke.

The most valuable feature of this species is the very ornamental evergreen foliage, which may be compared with that of a lime tree. The slender stems, furnished with a few spines, grow 6 to 7 feet in a season. The simple cordate leaves, 4 inches long and 3½ inches wide, are glabrous above and white beneath. The flowers are borne in large panicles and have no decorative value; the fruits are small and blue. Native to Hupeh and Ichang at altitudes of 4,000 feet. The best use for the plant is to cover a pillar, pergola, or fence. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 51, p. 166.*)

52943. RUBUS FLOSCULOSUS Focke.

A deciduous shrub up to 12 feet high, with stout erect stems arching at the much-branched top. The pinnate leaves 4 to 7 inches long are smooth above and covered beneath with a close white felt. The small pink flowers in narrow racemes 2 to 4 inches long are followed by small, very dark red or black fruits which are good eating. Native to central and western China. (Adapted from *Wilson, A Naturalist in Western China, vol. 2, p. 31.*)

For previous introduction, see S. P. I. No. 50296.

52944. RUBUS GIRALDIANUS Focke.

A deciduous Chinese bramble with ornamental foliage and attractive slender white stems. To get the best effect, at least 8 or 10 plants should be grouped together and the old growths cut out in autumn to expose the full beauty of the previous summer's shoots. (Adapted from *The Garden, vol. 76, p. 624.*)

For previous introduction, see S. P. I. No. 50297.

52945. RUBUS INOPERTUS Focke.

A climbing shrub with strong stems and ovate leaflets green on each surface. The short-pediceled flowers are axillary and clustered at the tips of the branches. Native to southern and central China at altitudes of 2,000 meters. (Adapted from *Bibliotheca Botanica (Species Ruborum), vol. 72, p. 182.*)

52928 to 52951—Continued.

52946. RUBUS LASIOSTYLUS Focke.

A stout, hardy plant, 4 to 12 feet high, strikingly ornamental with its thick, very spiny stems of a peculiar whitened character. The pinnate leaves are dark green above and silvery white beneath; when young, the leafstalks and veins are suffused with rose. The magenta-red flowers are followed by curious white woolly fruits which are sweet to the palate and said to be used for food in China, where it is native. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 31, p. 167,* and *Gardening Illustrated, vol. 28, p. 631.*)

For previous introduction, see S. P. I. No. 50298.

52947. RUBUS LASIOSTYLUS DIZYGOS Focke.

A shrub native to the uplands of western Hupeh at an altitude of 1,600 meters, with 5-pinnate leaves of the fertile branches and rose-colored flowers. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 53.*)

For previous introduction, see S. P. I. No. 44402.

52948. RUBUS PARVIFOLIUS L.

An East Asian and Australian plant which produces much finer fruit in the mountains of Australia than in the lowlands. It extends as a native to Japan. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 477.*)

For previous introduction, see S. P. I. No. 50301.

52949. RUBUS PHOENICOLASIUS Maxim. **Wineberry.**

A tall subscandent singularly handsome bramble with slender branches, native to Japan. The peduncles and calyx are clothed with close-set, long-spreading, stiff, gland-tipped, red-purple hairs which in the lower part of the stem are glandless and mixed with slender, straight, or recurved prickles. The pinnately 3-foliolate leaves are 5 to 7 inches long. The leaflets are green and glabrous above and covered with snow-white tomentum beneath. The flowers have minute pale rose-red petals and spreading narrowly lanceolate sepals 1 inch long. The ovoid-oblong fruits, three-fourths of an inch long, made up of about 40 scarlet glabrous drupes, are edible but mawkish. (Adapted from *Curtis's Botanical Magazine, pl. 6479.*)

For previous introduction, see S. P. I. No. 50302.

52950. RUBUS RUBESCENS Weihe.

A very robust bramble native to Europe, with strong canes which, however, do not ascend to any considerable height without support. The fruit is well developed and pleasantly flavored.

For previous introduction, see S. P. I. No. 50303.

52951. RUBUS XANTHOCARPUS Bur. and Franch.

A trailing Chinese bramble with large ovate bright-yellow fruits which are fragrant and palatable.

For previous introduction, see S. P. I. No. 50305.

52952 to 52954.

From South America. Seeds presented by J. B. Mertie, jr., United States Geological Survey. Received April 7, 1921.

52952. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

Esponja de aire.

52953 and 52954. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**

52953. Large. **52954.** Small.

52955. CALAMAGROSTIS COARCTATA (H. B. K.) Steud. Poaceæ. **Grass.**

From Sydney, New South Wales. Seeds presented by George Valder, undersecretary, Department of Agriculture. Received April 7, 1921.

An erect, cespitose grass, about a foot high, from cold mountainous regions in Ecuador and Colombia at an altitude of about 8,500 feet. The root is fibrous, and the leaves are very narrow. (Adapted from *Humboldt, Bonpland, und Kunth, Nova Genera et Species Plantarum, vol. 1, p. 143.*)

52956 to 53005. TRITICUM spp. Poaceæ. **Wheat.**

From Buenos Aires, Argentina. Seeds presented by the Cereal Exchange. Received April 8, 1921. Quoted notes by the Cereal Exchange.

Introduced for the Office of Cereal Investigations.

52956 to 52999. TRITICUM AESTIVUM L. (*T. vulgare* Vill.) **Common wheat.**

52956 to 52970. "*Barletta.*"

52956. "From southern Buenos Aires."

52957. "From eastern Buenos Aires."

52958. "From eastern Buenos Aires."

52959. "From eastern Buenos Aires."

52960. "From eastern Buenos Aires."

52961. "From eastern Buenos Aires."

52962. "From eastern Buenos Aires."

52963. "From eastern Buenos Aires."

52964. "From eastern Buenos Aires."

52965. "From eastern Buenos Aires."

52966. "From northern Pampa Central."

52967. "From central Pampa Central."

52968. "From southern Santa Fe."

52969. "From eastern Entre Rios."

52970. "From southern Cordoba."

52971 to 52976. "*Pampa.*"

52971. "From central Pampa Central."

52972. "From northern San Luis."

52973. "From eastern Buenos Aires."

52974. "From southern Buenos Aires."

52975. "From northern Pampa Central."

52976. "From southern Cordoba."

52977 to 52984. "*Hungaro.*"

52977. "From northern Pampa Central."

52978. "From eastern Buenos Aires."

52979. "From southern Santa Fe."

52980. "From southern Cordoba."

52981. "From southern Cordoba."

52982. "From southern Buenos Aires."

52983. "From eastern Buenos Aires."

52984. "From southern Buenos Aires"

52956 to 53005—Continued.

52985 to 52987. "*Ruso*."

52985. "From eastern Buenos Aires."

52986. "From eastern Buenos Aires."

52987. "From southern Pampa Central."

52988 to 52994. "*Ricti*."

52988. "From central Pampa Central."

52989. "From eastern Buenos Aires."

52990. "From eastern Buenos Aires."

52991. "From northern Buenos Aires."

52992. "From southern Cordoba."

52993. "From northern Pampa Central."

52994. "From southern Buenos Aires."

52995. "*Chubut*, from southern Buenos Aires."

For previous introduction, see S. P. I. No. 5464.

52996. "*Tuzulla*, from central Cordoba."

52997. "*Frances*, from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 5466.

52998. "*Australiano*, from northern Pampa Central."

52999. "*Australiano*, from northern Pampa Central."

53000 to 53005. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

53000. "*Candeal*, from southern Buenos Aires."

For previous introduction, see S. P. I. No. 41402.

53001. "*Candeal*, from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 41402.

53002. "*Candeal* (*R*), from the Province of Mendoza."

53003. "*Candeal* (*R*), from the Province of Mendoza."

53004. "*Taganrog*, from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 41043.

53005. "*Taganrog*, from eastern Buenos Aires."

For previous introduction, see S. P. I. No. 41043.

53006. DIOSCOREA ROTUNDATA Poir. Dioscoreaceæ. **Guinea yam.**

From Mayaguez, Porto Rico. Tubers presented by T. B. McClelland, horticulturist, Agricultural Experiment Station. Received April 28, 1921.

"A white-fleshed yam of excellent quality, and one of the most popular varieties grown in Porto Rico. The tubers are usually cylindrical, commonly weighing from 3 to 6 pounds each at maturity." (*R. A. Young.*)

53007. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Melbourne, Victoria, Australia. Seeds presented by F. H. Brunning. Received April 29, 1921.

A valuable annual which seeds freely and so maintains itself even on dry sandy soils. It is a splendid plant for improving bare arid pasture lands, which it greatly enriches, thereby adding to the carrying capacity. The clover spreads rapidly and yields an abundance of good pasturage.

For previous introduction, see S. P. I. No. 52356.

53008. MALUS DOUMERI (Bois) Cheval. Malaceæ. **Tonking apple.**

From Laos, Indo China. Seeds presented by R. Miéville, director, Station Agricole du Tranninh, Chieng Khuang, through M. Auguste Chevalier, Agronomie Coloniale, Ecole Pratique des Hautes Etudes, Paris, France. Received April 25, 1921.

"An interesting wild apple native to the high plateaus of French Indo China, at altitudes of 800 to 2,000 meters (2,600 to 6,500 feet), notably on Langbian and the lesser mountain ranges. It is a large tree which produces fruits similar in form, flavor, and color to certain varieties of Normandy cider pears.

"Although the species grows in the open forest and is uncared for by the present mountaineers, it must have been cultivated and improved at some ancient time. There remain specimens cultivated as sacred trees around certain Laos pagodas; here the trees were cared for by priests." (*Cheralier.*)

53009 to 53030. ASTER spp. Asteraceæ. **Aster.**

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, Aldenham House Gardens. Received April 20, 1921.

53009 to 53029. ASTER NOVI-BELGII L.

53009. *Belgian Queen.* An excellent, much-branched, late-blooming variety 6½ feet high, with well-clothed flowering sprays which are very beautiful on the bush or in a vase. The flowers are rich blue-purple, and the disk keeps yellow, which is a valuable asset. (Adapted from *The Garden, vol. 84, p. 610,* and from *Country Life, vol. 45, p. 376.*)

53010. *Bluebeard.* A light, graceful variety, 6 feet high, with pretty, soft-blue flowers. (Adapted from *The Garden, vol. 84, p. 610,* and from *Country Life, vol. 45, p. 376.*)

53011. *Blue Gem.* The bluest purple of any Michaelmas daisy known. (Adapted from *The Garden, vol. 84, p. 610.*)

53012. *Blushing Bride.* A variety with flowers of a very pale pink. (Adapted from *The Garden, vol. 84, p. 610.*)

53013. *Brightest and Best.* A very effective variety 4 feet high, with a remarkably handsome habit and magenta flowers. (Adapted from *The Garden, vol. 84, p. 610,* and from *Country Life, vol. 45, p. 376.*)

53014. *Brussels.* Reported as a variety of good habit and vigorous constitution, which reaches a height of 4 feet and bears enormous, single, pale-lavender flowers in graceful sprays.

53015. *Captain Fryatt.* Said to be one of the best of the pale mauves, 4½ feet high, of free growth and excellent for cutting.

53016. *Climax.* A beautiful new variety said to be 5 feet high, with large lavender flowers 2 inches across.

53017. *General Leman.* A variety with flowers of the purest deep rose without any blue in it. This color is superb under artificial light. (Adapted from *The Garden, vol. 84, p. 610.*)

53018. *Ghent.* Reported as a fine pale-pink variety.

53019. "*Joan Vaughan.* A new seedling aster." (*Gibbs.*)

53020. *Liege.* A good light-pink variety, very free flowering.

53021. *Malines.* A blue-flowered variety of great merit. (Adapted from *Country Life, vol. 45, p. 376.*)

53022. *Mons.* A most distinct and remarkably beautiful variety, 3 to 4 feet high, forming sharply rounded bushes completely covered with deep-pink single flowers which all open at the same time. This fine, healthy, sturdy variety is fairly early and has a long flowering period. The color is superb under artificial light. (Adapted from *Gardeners' Chronicle, vol. 68, p. 285,* and from *The Garden, vol. 84, p. 610.*)

53023. "*Namur.* A new seedling aster." (*Gibbs.*)

53009 to 53030—Continued.

53024. *Nurse Carell.* A soft-pink variety said to be 4½ feet high, of excellent quality and very free flowering.

53025. "*President.* A new seedling aster." (*Gibbs.*)

53026. "*Robinson V. C.* A new seedling aster." (*Gibbs.*)

53027. *Sam Banham.* A pure-white seedling from *Climax*, reported as identical with that variety except in color; excellent for cutting.

53028. "*The Queen.* A new seedling aster." (*Gibbs.*)

53029. *Ypres.* A variety with a stiff bushlike habit and pale-pink flowers. (Adapted from *The Garden, vol. 84, p. 610.*)

This variety is said to be 3 feet high, of very free growth, and the flowers have a fine yellow eye.

53030. ASTER VIMINEUS Lam. Asteraceæ. **Aster.**

"*Desire.* A new seedling aster." (*Gibbs.*)

53031 to 53080.

From Copenhagen, Denmark. Seeds presented by Axel Lange, curator, Botanic Garden of the University. Received April 28, 1921.

Introduced for experiments with leaf rusts of grains and grasses.

53031. AGROPYRON OBTUSIUSCULUM Lange. Poaceæ. **Wheat-grass.**

A perennial grass native to the temperate regions of both hemispheres.

53032. ALKANNA LUTEA (Desr.) A. DC. Boraginaceæ. **Yellow alkanet.**

A hardy European plant with golden yellow trumpet-shaped flowers, somewhat resembling *Anchusa italica* except in flower color.

Received as *Nonnea lutea*, which is now referred to *Alkanna lutea*.

53033. BAPTISIA AUSTRALIS (L.) R. Br. Fabaceæ.

A handsome, stout, perennial herb 4 to 6 feet high, native to eastern North America, with lupinelike indigo-blue flowers an inch long in loose-flowered, long, terminal racemes.

For previous introduction, see S. P. I. No. 4784.

53034. BERBERIS ARISTATA DC. Berberidaceæ. **Barberry.**

A Himalayan shrub 8 feet high, which bears stout spreading racemes of sessile bright-red berries which finally become bluish purple and bloomy.

53035. BERBERIS LYCIUM Royle. Berberidaceæ. **Barberry.**

A Himalayan shrub 6 feet high, bearing violet fruits in sessile racemes.

For previous introduction, see S. P. I. No. 49928.

53036. BROMUS ADOENSIS Hochst. Poaceæ. **Brome-grass.**

An Abyssinian plant about 1 to 2 feet high with softly hairy foliage and nodding panicles, 3 to 5 inches long, of shining awned spikelets.

53037. BROMUS LACINIATUS Beal. Poaceæ. **Brome-grass.**

A tall smooth perennial with large open drooping panicles of large spikelets.

53038. BROMUS RACEMOSUS L. Poaceæ. **Brome-grass.**

Chess or *cheat*, a smooth weed of waste places, introduced from Europe, sometimes infesting grain fields. It is 1 to 3 feet tall.

53039. CERINTHE MAJOR L. Boraginaceæ. **Honeywort.**

A showy annual 6 to 15 inches high with very rough leaves and flowers that are yellow below and purplish above, bearing showy bracts.

53031 to 53080—Continued.

53040. CLEMATIS GRAVEOLENS Lindl. Ranunculaceæ. **Clematis.**

A rapid climber found from the Himalayan region to Persia, bearing thin, pinnate, shiny leaves and cymes of yellow flowers, 1½ inches across, tinted with green.

For previous introduction, see S. P. I. No. 30765.

53041. CLEMATIS RETICULATA Walt. Ranunculaceæ. **Clematis.**

A slender climber native to the United States from South Carolina to Alabama and Florida, which bears very coriaceous reticulated leaves and solitary, axillary, nodding bell-shaped flowers.

For previous introduction, see S. P. I. No. 11557.

53042. CLEMATIS VITALBA L. Ranunculaceæ. **Clematis.**

The most vigorous climber of the genus, ascending to 30 feet. It is native to Europe, northern Africa, and the Caucasus; and bears axillary panicles of dull-white flowers followed by fruits with long feathery styles from which it is called "old man's beard."

53043. CLEMATIS VITICELLA L. Ranunculaceæ. **Clematis.**

The type of one of the leading groups of garden clematis, and one of the parents of the Jackmanii type of hybrids. It climbs to a height of 12 feet; bears entire or 3-parted leaves and blue or purple flowers up to 2 inches in diameter growing singly or in threes. Native to southern Europe.

For previous introduction, see S. P. I. No. 49810.

53044. DELPHINIUM CONSOLIDA L. Ranunculaceæ. **Larkspur.**

An erect hairy European annual 1 to 1½ feet high, with blue or white flowers in loose panicles.

53045. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

An annual ornamental tropical bean climbing to a height of 20 feet, with long erect racemes of rather large purple or white flowers; the pods and seeds are eaten in the Tropics.

53046. ELYMUS ARENARIUS L. Poaceæ. **Lyme-grass.**

A stout coarse perennial native to the temperate regions of both hemispheres. It is used for binding coast sands. The seed is used by the Digger Indians for food.

Received as *Elymus geniculatus*, which is now referred to *E. arenarius*.

For previous introduction, see S. P. I. No. 24473.

53047. ELYMUS CAPUT-MEDUSAE L. Poaceæ. **Lyme-grass.**

An erect annual introduced from Europe.

53048. ELYMUS EUROPAEUS L. Poaceæ. **Lyme-grass.**

A tall European perennial with lax flat blades about half an inch wide and a narrow nodding bristly head 5 to 8 inches long.

Received as *Hordeum europaeum*, which is now referred to *Elymus europaeus*.

53049. ELYMUS GIGANTEUS Vahl. Poaceæ. **Lyme-grass.**

A grass native to Russia and Siberia.

53050. ELYMUS HIRSUTIGLUMIS Scribn. Poaceæ. **Lyme-grass.**

Southern wild rye, a grass with stout erect culms 3 to 5 feet high and ascending rough-hairy leaves 8 to 12 inches long.

53051. ELYMUS SIBIRICUS L. Poaceæ. **Lyme-grass.**

A tall grass with heavy overhanging heads found on fertile flats in higher mountain regions of Chihli Province, China. Of value possibly for grazing.

For previous introduction, see S. P. I. No. 36794.

53031 to 53080—Continued.

53052. ELYMUS VIRGINICUS SUBMUTICUS Hook. Poaceæ. **Lyme-grass.**

A coarse, Rocky Mountain perennial growing on rich low ground. It affords good pasturage and makes a coarse hay.

53053. ERANTHIS HYEMALIS (L.) Salisb. Ranunculaceæ. **Winter aconite.**

An erect perennial hardy herb 5 to 8 inches high, naturalized from Europe. Very desirable for half-shady places for its early show of bright-yellow flowers.

53054. HELLEBORUS FOETIDUS L. Ranunculaceæ. **Hellebore.**

A western European species with true stem 1 foot high, coriaceous leaves, and sepals green or bordered with bright purple, under 1 inch long.

53055 and 53056. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

53055. A tall grass native to the United States, cultivated since prehistoric times for the seed, which has been used for food, for the sweet juice, and for forage.

53056. A tall grass native to the United States, with flat blades and terminal panicles, cultivated for the edible seed, for the sweet juice, and for forage.

53057. HORDEUM NODOSUM L. Poaceæ. **Barley.**
(*H. secalinum* Schreb.)

A perennial grass abundant throughout the western half of the United States.

For previous introduction, see S. P. I. No. 43314.

53058. MILIUM EFFUSUM L. Poaceæ. **Millet grass.**

The only representative of the genus in America, a slender erect perennial 3 to 4 feet tall, found in the cool woods from Nova Scotia to Illinois.

53059. MYOSOTIS ARVENSIS (L.) Hill. Boraginaceæ. **Forget-me-not.**

An annual or biennial erect plant 7 to 20 inches high, native to Europe and Asia, which bears blue or white flowers.

53060. MYOSOTIS SCORPIOIDES L. Boraginaceæ. **Forget-me-not.**
(*M. palustris* Lam.)

The true forget-me-not of Europe and Asia, 6 to 18 inches high. The bright-blue flowers have a yellow eye.

53061. NIGELLA DAMASCENA L. Ranunculaceæ. **Love-in-a-mist.**

A hardy southern European annual 1 to 2 feet high, bearing bright-green finely cut leaves and large white or blue flowers with a very dense and fine involucre.

53062. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

For previous introduction, see S. P. I. No. 52883.

53063. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.**
(*P. typhoideum* Pers.)

A robust tropical annual 4 to 8 feet tall, with broad blades and a dense spikelike panicle 1 foot long. It is cultivated for the edible seed, for forage, and for soiling.

53064. POA ALPINA L. Poaceæ. **Spear-grass.**

A good pasture grass native to Kazan Province of the northern Volga region of European Russia.

For previous introduction, see S. P. I. No. 20618.

53031 to 53080—Continued.

53065. POA CAESIA J. E. Smith. Poaceæ. **Spear-grass.**

A glaucous Eurasian perennial with rather rigid culms 1.5 to 6 decimeters high and rather compact panicles 3 to 7 centimeters long.

53066. POA CHAIXII Vill. Poaceæ. **Spear-grass.**

A tall relatively coarse species, with rather broad blades and drooping panicles. Native to Europe and Asia Minor.

For previous introduction, see S. P. I. No. 16806.

53067. POLYPOGON MONSPELIENSIS (L.) Desf. Poaceæ. **Beard-grass.**

A common annual weed on the Pacific coast, with bristly green or yellowish spikes 1 to 6 inches long.

53068. SALVIA PRATENSIS L. Menthaceæ. **Sage.**

A hardy European perennial 2 feet high, with more or less blood-red maculate leaves and bright-blue or rarely reddish or white flowers 1 inch long.

53069. SECALE FRAGILE Bieb. Poaceæ. **Rye.**

A bearded grass native to the sandy steppes of Hungary and southern Russia.

53070. SIDALCEA MALVAEFLORA (DC.) A. Gray. Malvaceæ.

An erect or ascending hardy perennial 1 to 6 feet high, with small incised-crenate leaves and purple flowers 2 inches across. Native to California.

53071. STIPA CAPILLATA L. Poaceæ. **Feather grass.**

A perennial European, ornamental grass less than 2 feet high, used in the making of dry bouquets.

For previous introduction, see S. P. I. No. 20686.

53072. STIPA PENNATA L. Poaceæ. **Feather grass.**

An ornamental grass native to the steppes of Europe and Siberia. The culms are 2 to 3 feet high and occur in bunches. The panicles are very plumose.

For previous introduction, see S. P. I. No. 30609.

53073. THALICTRUM FLAVUM L. Ranunculaceæ. **Meadow rue.**

A European stout perennial herb 2 to 4 feet high, with large compound leaves and pale-yellow flowers with bright-yellow anthers.

53074 and 53075. THALICTRUM FLEXUOSUM Bernh. Ranunculaceæ. **Meadow rue.**

53074. A yellow-flowered perennial 1½ feet high, native to Germany.

53075. Received as *Thalictrum jacquinianum*, for which *T. flexuosum* is an earlier name.

53076. THALICTRUM FOETIDUM L. Ranunculaceæ. **Meadow rue.**

A white or yellow-flowered perennial three-fourths of a foot high, native to France.

53077. TRITICUM BICORNE Forsk. Poaceæ. **Wild wheat.**

A tufted annual, native to Egypt and Syria, with culms 30 to 60 centimeters high.

53078. TRITICUM DICOCCUM Schrank. Poaceæ. **Emmer.**

Supposed to be the original parent of all wheats in the world. It has great drought-resisting qualities and should do well in the arid tracts of the southern United States.

Received as *Triticum amyleum*, which is now referred to *T. dicoccum*.

For previous introduction, see S. P. I. No. 34369.

53031 to 53080—Continued.

53079. TRITICUM AESTIVUM × OVATUM. Poaceæ. **Hybrid wheat.**
(*Aegilops triticoides* Req.)

A European annual 2 feet high with narrow cylindrical spikes of closely appressed awned spikelets.

53080. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. **Catjang.**

A crop grown for its seeds and also used as a string bean in India.

Received as *Dolichos catjang,* which is now referred to *Vigna cylindrica.*

For previous introduction, see S. P. I. No. 35349.

53081 to 53114.

From Leyden, Netherlands. Seeds presented by Prof. Dr. J. M. Janse, director, Botanic Garden. Received April 15, 1921.

Introduced for experiments with leaf rusts of grains and grasses.

53081. ACONITUM LYCOCTONUM L. Ranunculaceæ. **Monkshood.**

A slender-stemmed perennial 3 to 6 feet high, native to Europe and Siberia, with deeply cut leaves and yellow or whitish flowers.

53082. ACONITUM NAPELLUS L. Ranunculaceæ. **Monkshood.**

The best known and most poisonous species of Aconitum; it is used in medicines. The erect stem is 3 to 4 feet high and the flowers blue. Native to the temperate north.

For previous introduction, see S. P. I. No. 20881.

53083. ACONITUM PANICULATUM Lam. Ranunculaceæ. **Monkshood.**

A European blue-flowered species.

53084. AGROPYRON CANINUM (L.) Beauv. Poaceæ. **Wheat-grass.**

A grass common in timber and timber clearings near Chita, Transbaikal region of eastern Siberia.

For previous introduction, see S. P. I. No. 24475.

53085. AGROPYRON ELONGATUM (Host.) Beauv. Poaceæ. **Wheat-grass.**
(*A. rigidum* Beauv.)

A perennial grass 1½ to 2 feet high, with rough linear leaves. Native to the sandy coasts of the Mediterranean and the alpine summits of Lebanon.

For previous introduction, see S. P. I. No. 17827.

53086. ANTIRRHINUM ORONTIUM L. Scrophulariaceæ. **Snapdragon.**

A slender annual, native to North America, 6 to 12 inches high, with small purple or white flowers.

53087. AQUILEGIA FRAGRANS Benth. Ranunculaceæ. **Columbine.**

A Himalayan plant 6 inches high, with yellow-striped flowers.

53088. ARRHENATHERUM ELATIUS (L.) Beauv. Poaceæ. **Tall oat-grass.**
(*A. avenaceum* Beauv.)

"This is occasionally cultivated in the humid regions of the United States as a meadow grasss under the name of tall oat-grass. It is a fairly satisfactory forage grass." (*A. S. Hitchcock.*)

53089. BERBERIS CRATAEGINA DC. Berberidaceæ. **Barberry.**

A deciduous shrub 5 feet high, with 6 to 10 flowered racemes 1 to 2 inches long and bluish black fruits. Native to Asia Minor.

53081 to 53114—Continued.

53090. BERBERIS HOOKERI Lem. Berberidaceæ. **Barberry.**
(*B. wallichiana* Hook., not DC.)

A deciduous shrub 5 feet high, native to Asia Minor, bearing bluish black fruits.

Received as *B. macrophylla*, which is a horticultural name for *B. hookeri*.

For previous introduction, see S. P. I. No. 49618.

53091. BORAGO OFFICINALIS L. Boraginaceæ. **Borage.**

A coarse hairy annual native to Europe and northern Africa, 2 feet high. The handsome blue flowers make it a widely known bee plant, and the young leaves are used as a potherb and in salad.

53092. BROMUS RIGIDUS Roth. Poaceæ. **Brome-grass.**

A weedy annual 2 feet tall, with hairy foliage and drooping panicles of long awned spikelets. Native to the Mediterranean region and naturalized in the United States.

53093. CERINTHE ALPINA Kit. Boraginaceæ. **Honeywort.**

A perennial with a recurved spike of 5-parted bell-shaped flowers. Native to the Alps and descending along the streams into the plains.

53094. CERINTHE MAJOR L. Boraginaceæ. **Honeywort.**

An ornamental annual 6 to 15 inches high, with showy bracted flowers yellow below and purplish above.

For previous introduction, see S. P. I. No. 53039.

53095. CERINTHE MINOR L. Boraginaceæ. **Honeywort.**

A European plant with yellow or purple-spotted flowers in long racemes.

For previous introduction, see S. P. I. No. 49867.

53096. CLEMATIS VITICELLA L. Ranunculaceæ. **Clematis.**

A southern European clematis which climbs to a height of 12 feet and bears entire or 3-parted leaves and single or 3-clustered blue or purple flowers up to 2 inches across.

For previous introduction, see S. P. I. No. 49810.

53097. DELPHINIUM AMOENUM Stev. Ranunculaceæ. **Larkspur.**

A pale blue-flowered perennial native to Siberia. Flowers in July.

53098. DELPHINIUM CASHMERIANUM Royle. Ranunculaceæ. **Larkspur.**

A Himalayan plant 10 to 18 inches high, with deep azure-blue flowers 2 inches long.

53099. DELPHINIUM ELATUM L. Ranunculaceæ. **Larkspur.**

A European species 2 to 6 feet high, bearing blue flowers with dark-violet petals.

For previous introduction, see S. P. I. No. 13685.

53100. ELYMUS DESERTORUM Kar. and Kir. Poaceæ. **Lyme-grass.**

A grass with flat blades with incurved margins and elongated spikes. Native to Siberia.

53101. HELLEBORUS FOETIDUS L. Ranunculaceæ. **Hellebore.**

A western European species with true stem 1 foot high and green or purple-bordered sepals 1 inch long.

For previous introduction, see S. P. I. No. 53054.

53102 to 53104. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ. **Barley.**

53102. A cultivated variety of 2-rowed barley. Received as *H. distichon*.

53081 to 53114—Continued.

53103. A cultivated variety of 2-rowed barley. Received as *H. distichon nutans.*

53104. A cultivated variety of 2-rowed barley. Received as *H. zeocriton.*

53105. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. Poaceæ. **Barley.**

A trifurcate, naked, 6-rowed, white, blue, or purple kerneled subspecies, the parent form of trifurcate barleys. Received as *H. aegyceras.*

53106. NIGELLA DAMASCENA L. Ranunculaceæ. **Love-in-a-mist.**

A hardy, southern European annual 1 to 2 feet high, bearing large white or blue flowers.

For previous introduction, see S. P. I. No. 53061.

53107. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

An attractive hardy procumbent annual native to the northern Caucasus. The white or purple flowers are funnel shaped.

For previous introduction, see S. P. I. No. 53062.

53108. RANUNCULUS AURICOMUS L. Ranunculaceæ. **Crowfoot.**

A hardy herbaceous perennial 1¼ feet high, with yellow flowers.

53109. SYMPHYTUM OFFICINALE L. Boraginaceæ. **Comfrey.**

A hardy tuberous-rooted perennial 3 feet high, with white, yellowish, purple, or rose flowers in drooping cymes. Native to Europe and Asia.

53110. THALICTRUM ANGUSTIFOLIUM L. Ranunculaceæ. **Meadow rue.**

A hardy herbaceous, yellow-flowered perennial 3 feet high, beautiful as a background for the herbaceous border. Native to Germany.

For previous introduction, see S. P. I. No. 49869.

53111. THALICTRUM DIPTEROCARPUM Franch. Ranunculaceæ. **Meadow rue.**

An erect perennial Chinese herb with large rose-colored flowers and pale-green leaflets, glaucous below.

53112. THALICTRUM FLAVUM L. Ranunculaceæ. **Meadow rue.**

A stout European perennial herb 2 to 4 feet high, bearing pale-yellow flowers with bright-yellow anthers.

For previous introduction, see S. P. I. No. 53073.

53113. TRITICUM BICORNE Forsk. Poaceæ. **Wild wheat.**

A tufted annual with culms 2½ feet long, native to Egypt and Syria.

For previous introduction, see S. P. I. No. 53077.

53114. TRITICUM SPELTA L. Poaceæ. **Spelt.**

The most popular wheat of antiquity and a favorite now in Germany and Switzerland, especially in poor soils. It is less susceptible to disease and to inroads by birds than the beardless varieties.

Received as *T. taanda,* but the sample is spelt.

For previous introduction, see S. P. I. No. 23898.

53115 to 53118.

From Hobart, Tasmania, Australia. Seeds collected by Victor O. Fletcher, Newnham Post Office, near Launceston, and presented by L. A. Evans, acting Director of Agriculture. Received April 30, 1921. Quoted notes by Mr. Evans.

"The soil here is very fertile, but the rainfall is only 14 inches, and we have no recognized rainy season."

53115. DANTHONIA SETACEA R. Br. Poaceæ. **Wallaby grass.**

"A valuable fodder plant if properly cultivated."

Wallaby grass, a perennial grass useful for artificial mixed pasture; it is principally valuable in the spring. (Adapted from *Maiden, Useful Native Plants of Australia, p. 82.*)

53116. FESTUCA BROMOIDES L. Poaceæ. **Fescue grass.**

A slender tufted annual up to 1 foot high, with a one-sided, slender panicle 2 to 6 inches long. (Adapted from *Bailey, Queensland Flora, pt. 6, p. 1917.*)

53117. POA sp. Poaceæ. **Spear grass.**

"Cattle grass."

53118. THEMEDA TRIANDRA Forsk. Poaceæ. **Rooi grass.**

One of the commonest grasses of the drier regions of Africa and a most valuable fodder grass. (Adapted from *Prain, Flora of Tropical Africa, vol. 9, pt. 3, p. 416.*)

For previous introduction, see S. P. I. No. 48787.

53119. MUSA sp. Musaceæ. **Banana.**

From Mount Silinda, Melsetter, Southern Rhodesia, Africa. Shoots presented by Dr. W. L. Thompson, American Board Mission in South Africa. Received May 4, 1921.

"A variety of banana, obtained from the natives, different from any I have ever seen elsewhere. We prize it for its eating qualities, although it is a poor yielder. We imagine that it may have a larger percentage of proteins than ordinary bananas, but have no real proof of it. It may require more tropical conditions for best development." (*Thompson.*)

53120 and 53121.

From Dibrugarh, Assam. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 4, 1921. Quoted notes by Mr. Rock.

53120. CARYOTA sp. Phœnicaceæ. **Palm.**

"(Collected in Dibrugarh, along the Brahmaputra River, Assam, February 19, 1921.) This palm, 70 to 80 feet high, is cultivated in Dibrugarh and grows wild on the banks of the Brahmaputra near the Himalayan foothills. It is quite different from *Caryota urens*, especially in its stature; it is much taller, the trunk being 40 feet high. The leaves are shorter but are arranged spirally on the trunk, giving the whole palm a curious appearance. The palm does not die after flowering, as is the case with *C. urens*. The fruiting panicles are much shorter, and the fruits are yellowish when ripe."

53121. GYNOCARDIA ODORATA R. Br. Flacourtiaceæ.
False chaulmoogra tree.

"(Collected in the Bherjan forest, 7 miles from Rangagora in northeastern Assam. February 22, 1921.) *Lemtam.* A tall, handsome tree found in certain forest tracts of northeastern Assam, with dark-green foliage and pendent branches. The trunk is often over a foot in diameter and 60 to 70 feet in height. The bark is lenticellate, while that of *Taraktogenos kurzii* is smooth. The large spherical depressed fruits are borne on the trunk and branches, while those of *T. kurzii*

53120 and 53121—Continued.

are borne on the ends of the branches in the leaf axils. The fruits are exceedingly fragrant when ripe and contain about twenty seeds embedded in shiny, sweet, yellowish pulp. Monkeys are very fond of the fruit flesh, and whole fruits are rarely found unless they be immature."

For previous introduction, see S. P. I. No. 51668.

53122 to 53175.

From Upsala, Sweden. Seeds presented by Dr. O. Juel, director, Botanical Garden. Received April 12, 1921.

Introduced for experiments with leaf rusts of grains and grasses.

53122. ACONITUM LYCOCTONUM L. Ranunculaceæ. **Monkshood.**

A slender perennial reaching a height of 6 feet, with yellow or whitish flowers. Native to Europe and Siberia.

For previous introduction, see S. P. I. No. 53081.

53123. ACONITUM SEPTENTRIONALE Koelle. Ranunculaceæ. **Monkshood.**

An Himalayan plant with pale-yellow or dull-purple flowers. This species yields much of the aconite of European commerce.

For previous introduction, see S. P. I. No. 51746.

53124. AGROPYRON VIOLACEUM (Hornem.) Lange. Poaceæ. **Wheat-grass.**

A perennial grass with culms usually decumbent at the base, 3 to 6 decimeters high. Native to Europe.

53125. AGROSTIS BOREALIS Hartm. Poaceæ. **Bent-grass.**

A European grass with tufted culms 1 to 4 decimeters high.

53126. ALKANNA LUTEA (Desr.) A. DC. Boraginaceæ. **Yellow alkanet.**

A hardy European herb with bluish, trumpet-shaped flowers. Received as *Nonnea lutea*, which is now referred to *Alkanna*.

For previous introduction, see S. P. I. No. 53032.

53127. ANTIRRHINUM ORONTIUM L. Scrophulariaceæ. **Snapdragon.**

A North American annual 6 to 12 inches high, bearing small purple or white flowers.

For previous introduction, see S. P. I. No. 53086.

53128. AQUILEGIA ATRATA Koch. Ranunculaceæ. **Columbine.**

A hardy perennial, native to Europe and Siberia, reaching 2 feet in height and with abundant violet flowers 1 inch long.

53129. AQUILEGIA VIRIDIFLORA Pall. Ranunculaceæ. **Columbine.**

A hardy perennial 1½ feet high, native to eastern Siberia and bearing several greenish flowers.

For previous introduction, see S. P. I. No. 42737.

53130. AVENA MONTANA Vill. Poaceæ. **Oat.**

A grass native to the Pyrenees Mountains.

53131. AVENA NUDA Hoejer. Poaceæ. **Oat.**

Hull-less oats cultivated in China for food and used for making flour.

For previous introduction, see S. P. I. No. 40650.

53132. AVENA STERILIS L. Poaceæ. **Oat.**

Animated oats, occasionally cultivated as a curiosity, the florets when moistened presenting spontaneous movements.

53133. AVENA STRIGOSA Schreb. Poaceæ. **Oat.**

A native of Europe and western Asia cultivated and occurring as a weed in cultivated fields.

For previous introduction, see S. P. I. No. 25364.

53122 to 53175—Continued.

53134. BRACHYPODIUM SYLVATICUM (Huds.) Beauv. Poaceæ. False brome-grass.

A grass native to woods and thickets throughout Europe and eastward through northern Asia to the Provinces of Shengking and Hupeh, China.

For previous introduction, see S. P. I. No. 32446.

53135. BROMUS BRIZAEFORMIS Fisch. and Mey. Poaceæ. Brome-grass.

A handsome ornamental grass 1 to 2 feet high with a one-sided nodding panicle. Native to the Caucasus and Persia.

For previous introduction, see S. P. I. No. 15978.

53136. CERINTHE ALPINA Kit. Boraginaceæ. Honeywort.

For previous introduction, see S. P. I. No. 53093.

53137. CLEMATIS ALPINA (L.) Mill. Ranunculaceæ. Clematis.

A slender plant 3 to 5 feet high, native to northwestern North America, Siberia, and southern Europe. The flowers are bright blue with many petallike stamens.

For previous introduction, see S. P. I. No. 5133.

53138. CLEMATIS ALPINA SIBIRICA (L.) Kuntze. Ranunculaceæ. Clematis.

A white-flowered form of *Clematis alpina*.

For previous introduction, see S. P. I. No. 237.

53139. CLEMATIS FLAMMULA L. Ranunculaceæ. Clematis.

A slender vigorous climber, native to the Mediterranean region. The dark-green leaves remain fresh until midwinter. The small numerous flowers are followed by white-plumed fruits.

For previous introduction, see S. P. I. No. 13925.

53140. CLEMATIS INTEGRIFOLIA L. Ranunculaceæ. Clematis.

A blue-flowered plant native to Hungary.

For previous introduction, see S. P. I. No. 49809.

53141. CLEMATIS PSEUDOFLAMMULA Schmalh. Ranunculaceæ. Clematis.

An herbaceous plant 1 to 2 feet high, growing in open fields in the northern Caucasus. The flowering season is May to June.

53142. DELPHINIUM CASHMERIANUM Royle. Ranunculaceæ. Larkspur.

For previous introduction, see S. P. I. No. 53098.

53143. DELPHINIUM ELATUM L. Ranunculaceæ. Larkspur.

Variety *intermedium*.

A variety of the polymorphous bee larkspur (see S. P. I. No. 53099).

53144. ELYMUS ARENARIUS L. Poaceæ. Lyme-grass.

A coarse perennial grass native to north temperate regions, used to bind coast sand.

For previous introduction, see S. P. I. No. 53046.

53145. ERANTHIS HYEMALIS (L.) Salisb. Ranunculaceæ. Winter aconite.

An erect European perennial 5 to 8 inches high, with bright-yellow flowers in early spring.

For previous introduction, see S. P. I. No. 53053.

53146. HELLEBORUS FOETIDUS L. Ranunculaceæ. Hellebore.

A western European species with a true stem a foot high, and green or purple-bordered sepals 1 inch long.

For previous introduction, see S. P. I. No. 53054.

53122 to 53175—Continued.

53147. HORDEUM SPONTANEUM C. Koch. Poaceæ. **Barley.**

An annular 2-rowed barley which is considered by some to be the wild form of the cultivated 2-rowed varieties. Native to the Caucasus.

For previous introduction, see S. P. I. No. 28885.

53148. LAPPULA MYOSOTIS Moench. Boraginaceæ. **Stickweed.**
(*Echinospermum lappula* Lehm.)

An erect grayish annual 5 to 6 decimeters high, with blue to whitish flowers. Naturalized from Europe.

53149. MELICA CILIATA L. Poaceæ. **Melic grass.**

A half-hardy, ornamental perennial grass native to Europe and northern Africa.

For previous introduction, see S. P. I. No. 16967.

53150. MELICA NUTANS L. Poaceæ. **Melic grass.**

Variety *pallens*.

A rather tall pale ornamental perennial grass native to Europe and northern Asia.

53151. MYOSOTIS ARVENSIS (L.) Hill. Boraginaceæ. **Forget-me-not.**

An annual or biennial erect plant 8 to 20 inches high, which bears blue or white flowers. Native to Europe and Asia.

For previous introduction, see S. P. I. No. 53059.

53152. MYOSOTIS STRICTA Link. Boraginaceæ. **Forget-me-not.**

A tender annual with small blue or whitish flowers. Native to Europe, the Orient, and northern Africa.

53153. NIGELLA DAMASCENA L. Ranunculaceæ. **Love-in-a-mist.**

A hardy southern European annual 1 to 2 feet high, bearing large white or blue flowers.

For previous introduction, see S. P. I. No. 53061.

53154. NONNEA ROSEA (Bieb.) Link. Boraginaceæ. **Rose alkanet.**

An attractive, hardy, procumbent annual native to northern Caucasus. The funnel-shaped flowers are white or purple.

For previous introduction, see S. P. I. No. 53062.

53155. POA ALPINA L. Poaceæ. **Spear-grass.**

A good pasture grass native to Kazan Province, northern Volga region, Russia.

For previous introduction, see S. P. I. No. 53064.

53156. POA CAESIA J. E. Smith. Poaceæ. **Spear-grass.**

A European perennial grass with rather rigid culms 1.5 to 6 decimeters high.

For previous introduction, see S. P. I. No. 53065.

53157. POA CHAIXII Vill. Poaceæ. **Spear-grass.**

A tall, relatively coarse species with rather broad blades and drooping panicles. Native to Europe and Asia Minor.

For previous introduction, see S. P. I. No. 53066.

53158. RANUNCULUS ACONITIFOLIUS L. Ranunculaceæ. **Crowfoot.**

Variety *platanifolius*.

A variety of the common white-flowered buttercup of Europe, with leaves like those of a plane tree.

53159. SESLERIA COERULEA Arduino. Poaceæ. **Moor-grass.**

A hardy, blue-gray perennial grass up to 1½ feet high, native to the British Isles.

53122 to 53175—Continued.

53160. STIPA PENNATA L. Poaceæ. **Feather grass.**

An ornamental grass with plumose panicles borne on culms 2 to 3 feet high which are in bunches. Native to the steppes of Europe and Siberia.

For previous introduction, see S. P. I. No. 53072.

53161. SYMPHYTUM ASPERRIMUM Donn. Boraginaceæ. **Comfrey.**

A coarse European perennial herb with short pricklelike hairs and purple flowers.

53162 to 53173. THALICTRUM spp. Ranunculaceæ. **Meadow rue.**

53162. THALICTRUM ANGUSTIFOLIUM L.

A hardy herbaceous perennial 3 feet high, with pale-yellow flowers, useful as a background for herbaceous borders. Native to Germany.

For previous introduction, see S. P. I. No. 49869.

53163. THALICTRUM AQUILEGIFOLIUM L.

The European "feathered columbine," 1 to 3 feet high, with large hollow stems, white flowers, and purple or white stamens.

53164. THALICTRUM DELAVAYI Franch.

A slender Chinese plant 2 to 3 feet high, with nodding purple flowers half an inch long.

53165. THALICTRUM FENDLERI Engelm.

A rather stout leafy plant native from southern Colorado westward and southward. The flowers are in compact panicles.

53166. THALICTRUM FLAVUM L.

Variety *heterophyllum*.

A European plant 2 to 4 feet high with leaves smaller than in *Thalictrum flavum* and slightly toothed and bearing compound, compact inflorescences of erect pale-yellow flowers.

53167. THALICTRUM FOETIDUM L.

A hardy herbaceous perennial less than a foot high, with white and yellow flowers. Native to France.

53168. THALICTRUM GLAUCUM Desf.

A glaucous southern European perennial herb 2 to 5 feet high, with erect panicles of yellow flowers.

53169. THALICTRUM KEMENSE Fries.

A plant with thin panicles of erect flowers and bipinnate leaves with round, 3-parted leaflets. Native to Europe, Asia, and northern Africa.

53170. THALICTRUM MINUS L.

A species 1 to 2 feet high native to Europe, Asia, and northern Africa, with loose panicles of drooping yellow or greenish flowers.

53171. THALICTRUM MINUS L.

Received as *Thalictrum dubium*, which is now referred to *T. minus*.

53172. THALICTRUM POLYGAMUM Muhl.

A branching species 3 to 8 feet high, with long leafy panicles of white flowers. Native to North America from Newfoundland and Canada to Florida and westward to Ohio.

53173. THALICTRUM SIMPLEX L.

A lilac or yellow-flowered species a foot high, native to Sweden.

53122 to 53175—Continued.

53174. TORRESIA ODORATA (L.) Hitchc. Poaceæ. **Holy grass.**

Holy grass, vanilla grass, or *Seneca grass,* native to Canada and the northern United States. It is sweet scented owing to the presence of coumarin. The Indians use the grass to make fragrant baskets.

Received as *Hierochloe odorata,* which is now referred to *Torresia odorata.*

53175. TROLLIUS EUROPAEUS L. Ranunculaceæ. **Globeflower.**

A hardy herbaceous perennial 15 inches high, with lemon-yellow globular flowers 1 to 2 inches in diameter. Native to wet upland meadows of northern Europe.

53176. DIOSPYROS CONZATTII Standl. Diospyraceæ. **Persimmon.**

From Cerro Espino, Oaxaca, Mexico. Seeds presented by P. C. Standley, United States National Museum. Received May 16, 1921.

"*Zapote negro montés,* collected at Cerro Espino, April, 1921, by Prof. C. Conzatti. The fruit is said to be better than that of *Diospyros ebenaster.*" (*Standley.*)

A tree of particular interest on account of the exquisite flavor of its edible fruit, 4 centimeters in diameter and 2 centimeters long. In quality it is comparable with the *chico-zapote* (*Achras zapota*). It is green skinned and much smaller than the common black sapote. Propagation of this magnificent tree is relatively simple on account of its vigor and the altitude at which it thrives, 1,000 meters above sea level. (Adapted from *Boletín de la Dirección de Estudios Biológicos, vol. 2, No. 3, p. 316.*)

53177 to 53217.

From Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received April 6, 1921. Quoted notes by Mr. Popenoe.

53177. BERBERIS QUINDUENSIS H. B. K. Berberidaceæ. **Barberry.**

"(No. 585a. Hacienda La Esperanza, near El Angel, Province of Carchi, Ecuador. February 15, 1921.) Seeds of *Espino.* A very pretty species of Berberis, similar to one obtained in Cundinamarca. From the mountains of Carchi Province, at about 12,000 feet elevation. This is one of the handsomest wild barberries I have seen in Ecuador. It makes an arborescent shrub up to 10 or 12 feet high, and has large, glossy, stiff, dark-green leaves. The flowers, which are produced in racemes about 3 inches long, are orange-yellow and half an inch broad. They are followed by small clusters of oval, blue-black fruits. The species is worthy of a trial in the southern United States, where it may prove to be of value as an ornamental."

53178. ONOSERIS SALICIFOLIA H. B. K. Asteraceæ.

"(No. 582a. Conraqui, near Ibarra, Ecuador. February 10, 1921.) Seeds of a low-growing, delicate plant which is abundant on dry rocky slopes in northern Ecuador at altitudes of 6,000 to 9,000 feet. It rarely surpasses 8 inches in height; the lively pink, daisylike flowers, about 2 inches broad, are borne on slender stems rising a few inches above the foliage. It flowers profusely and is recommended for trial as a border plant in the United States. It can probably be cultivated as an annual, though here it is, I believe, at least a biennial and probably a perennial."

53179. CHUQUIRAGA INSIGNIS Humb. and Bonpl. Asteraceæ.

"(No. 587a. Hacienda La Rinconada, Province of Carchi, Ecuador. February 15, 1921.) Seeds of *Chuquiragua,* from the páramo at an altitude of about 12,000 feet in Carchi Province. This plant, abundant on the high páramos of Ecuador, is said to have been sacred to the Incas. It is an unusually handsome thing and seems to me worthy of cultivation in other countries as an ornamental. It is a slender, half-shrubby plant, stiffly erect in habit, and reaching to 6 feet in height.

53177 to 53217—Continued.

The stems are clothed with narrow, stiff, sessile leaves of glossy dark-green color and are surmounted by heads of brownish orange flowers. The plant is noted in Ecuador because of the fact that its leaves will burn when green. The flower heads retain their color even when dry. The species will probably prefer a moist, rather cool climate such as that of the Pacific Northwest."

53180. PASSIFLORA MALIFORMIS L. Passifloraceæ. **Granadilla.**

"(No. 583a. Ibarra. Ecuador. February 14, 1921.) Seeds of *Granadilla de hueso*, grown in the valley of the Rio Chota, in northern Ecuador, at an altitude of about 6,000 feet. This species is a vigorous climber with ovate-cordate, light-green leaves about 3 inches long. The flowers have a large, conspicuous, whitish green calyx, and the corona is white, marked with purplish blue. The fruits are round, rarely more than 2 inches in diameter, with a thin shell yellowish green on the surface and whitish within. Though not more than an eighth of an inch thick, this shell is so hard that it is broken with difficulty. Within it are numerous small black seeds, each surrounded by juicy pulp of pale, orange-yellow color, and acid, highly aromatic flavor, similar to that of *Passiflora edulis*. The fruit is eaten out of hand and is a good one, worthy of cultivation in California and Florida, if it proves to be suitable for those States."

For an illustration of this new passion fruit from Ecuador, see Plate I.

53181. TACSONIA QUITENSIS Benth. Passifloraceæ.

"(No. 600a. From mountains near El Angel, Province of Carchi, Ecuador.) Seeds of *tacso*. From an elevation of about 12,000 feet. This wild plant much resembles the cultivated *T. mollissima* in foliage, flower, and fruit. It grows abundantly in ravines and among brush at high altitudes in northern Ecuador. The fruits are not much used by the natives, though they seem nearly as good as those of the cultivated *tacso*."

53182 to 53185. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

53182. "(No. 573. Hacienda San Vicente, Province of Carchi, Ecuador. February 17, 1921). Budwood of avocado No. 47. *Tamayo*. The parent tree stands in one of the huertas of the hacienda about half a mile north of the house at an altitude of 6,100 feet. This variety, so far as can be judged by an examination of the parent tree, is either a very unusual Mexican or else a hybrid between the Mexican and West Indian races. The fruit is of good size (about 18 ounces in weight) and of convenient oval form. In appearance it is fairly attractive, being smooth, with the surface light green, washed or overspread with maroon purple at the stem end. The skin is not woody; it resembles both in thickness and texture that of such large-fruited Mexican varieties as *Puebla* and *Gottfried*. The flesh is cream colored, with a very few inconspicuous fiber markings. The quality is very good. The seed is small and tight in the cavity. The tree appears to bear fair, but not heavy, crops.

"Formal description: Parent tree about 35 feet high, the trunk 18 inches thick at the base, dividing about 8 feet above the ground, and giving off the first branches at 12 feet. Crown oval, slender, open. Foliage when crushed has a very faint aniselike odor scarcely detectable.

"The fruit is broadly oval to obovoid in form; weight about 18 ounces; length about 4 inches and greatest breadth about 3¼ inches; base slightly tapering, the stem inserted to one side; apex very slightly and obliquely flattened; surface smooth, light green with numerous whitish green dots, and overspread with maroon purple or dull purple around the stem; skin thin, like that of the largest fruited Mexican varieties, rather tender; flesh cream

53177 to 53217—Continued.

colored, tinged green in a narrow zone close to the skin, with a few fiber markings but no tough fibers, the flavor rich and pleasant; quality good; seed relatively small, obovoid in form, tight in the cavity, with both seed coats rather closely surrounding the rough cotyledons. Principal season at San Vicente probably January and February.

"Because of the absence of well-defined seasons in the Chota Valley, where this and the following varieties are grown, avocado trees do not limit themselves to one crop during the year, but flower and fruit more or less continuously. For this reason it is not possible to calculate even approximately the season at which the Chota avocados will ripen in California or in Florida. This matter will have to be determined by trial.

"This variety is one of the most promising of the set obtained in the Chota Valley and is strongly recommended for trial throughout the avocado-growing regions of California and in the northern part of the avocado zone of Florida. It will probably prove to be hardier than the West Indian varieties."

53183. "(No. 575. Hacienda San Vicente, Province of Carchi, Ecuador. February 17, 1921.) Budwood of avocado No. 49. *Egas.* The parent tree stands in one of the huertas at the Hacienda San Vicente, about half a mile north of the house. This is a Mexican avocado, of much the same general character as *Puebla,* but having a relatively smaller seed than the latter. The fruit is broadly obovoid, 8 to 12 ounces in weight, and glossy maroon purple when fully ripe. The skin is of average thickness for a large-fruited Mexican avocado, the flesh devoid of fiber and of good quality. The seed is tight in the cavity; in some specimens it is very small, in others, medium sized. The parent tree is a very old and large one and is said to be very productive.

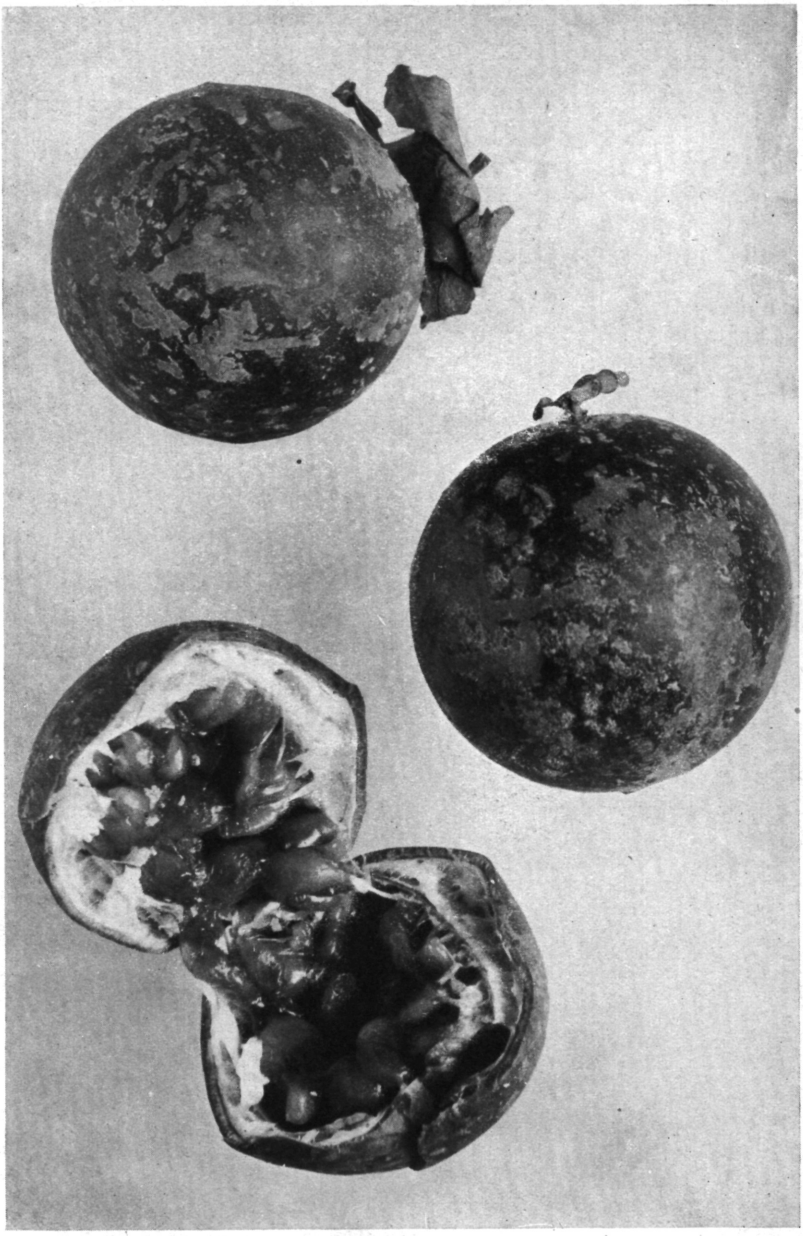
"Formal description: Parent tree 60 to 70 feet high, with the trunk 6 feet thick at the base and giving off a number of large branches 6 feet above the ground. The crown is broadly oval, fairly dense, and the foliage when crushed has a faint aniselike odor.

"The fruit is obovoid to broadly obovoid; weight from 6 to 12 ounces; length, 3½ to 4 inches; greatest breadth, 2½ to 3 inches; base broad, with the stem inserted somewhat obliquely in a moderately deep cavity; apex flattened obliquely, though not conspicuously so; surface smooth, glossy, deep-maroon purple, with very small light-maroon dots; skin thin, not very tough; flesh cream colored, devoid of fiber and with only very faint fiber markings, the flavor rich and pleasant; quality good; seed small to medium sized, broadly ovoid to almost oval, tight in the cavity with both seed coats closely surrounding the nearly smooth cotyledons. Season, December to February at San Vicente, with a few fruits maturing at other times of the year because of the peculiar climatic conditions of the region.

"Not as promising as avocado No. 47, but worthy of trial in California and Florida."

53184. "(No. 576a. Hacienda San Vicente, Province of Carchi. February 17, 1921.) Budwood of avocado No. 50. *Chota.* The parent tree stands in one of the huertas of the Hacienda San Vicente, about half a mile north of the house. This is a fine large Mexican avocado of attractive and convenient form, having a small seed and flesh of rich, pleasant flavor. The form is broadly elliptic to nearly round, the color deep purple when the fruit is fully ripe, and the seed tight in the cavity. This may possibly be a hybrid between the Mexican and West Indian, but I can see no definite indication that such is the case.

"Formal description: Parent tree 50 to 60 feet high, the trunk 3 feet thick at the base, branched at 10 feet above the ground. The crown is round, fairly dense, and the aniselike odor of the crushed leaves is fairly pronounced.

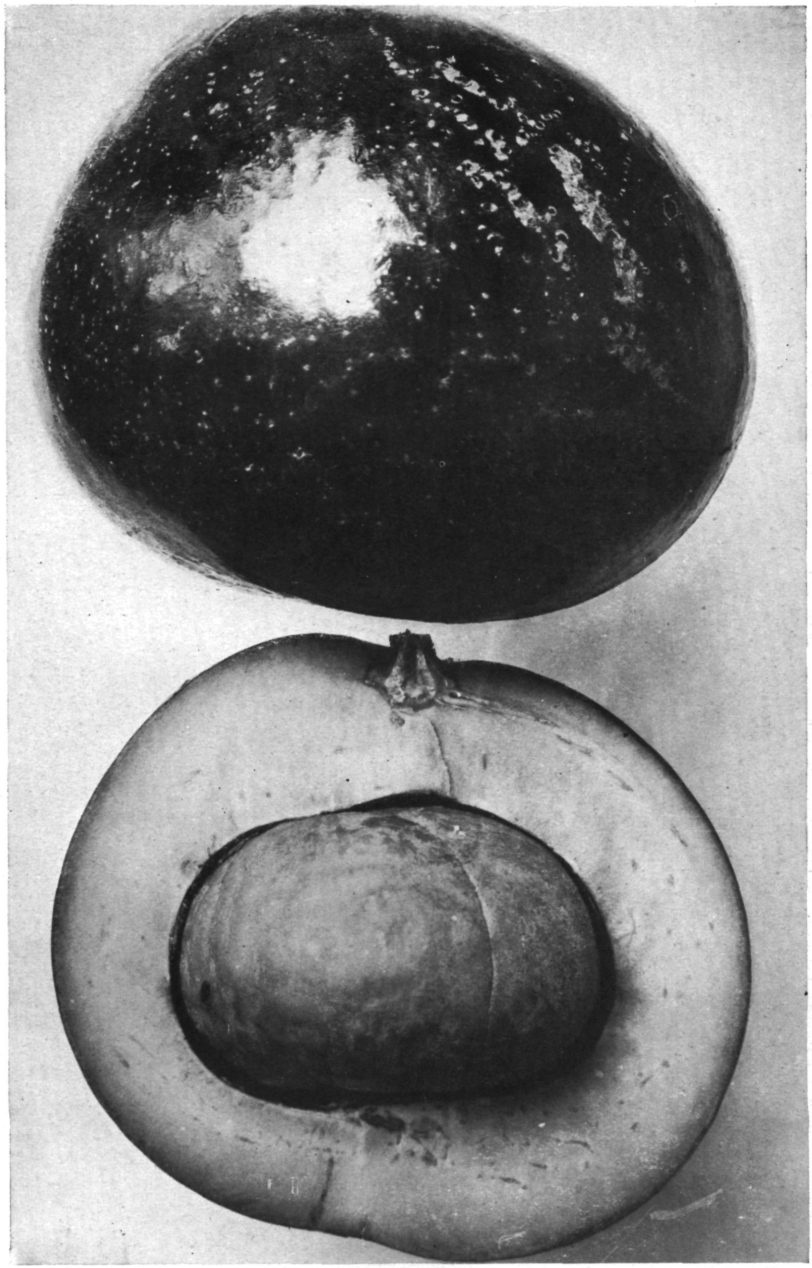


A HARD-SHELLED PASSION FRUIT FROM TROPICAL AMERICA. (PASSIFLORA MALIFORMIS L.; S. P. I. No. 53180.)

Several species of Passiflora are cultivated in the Tropics for their edible fruits as well as for the ornamental value of the plants themselves, which usually bear attractive flowers and are excellent for covering arbors and fences. One of the most interesting species is *Passiflora maliformis*, whose fruits are so hard-shelled that they must be broken with a club or some heavy instrument. The juicy flesh which surrounds the small black seeds is acid and highly aromatic. It is often used to prepare a refreshing drink. (Photographed by Wilson Popenoe, Ibarra, Ecuador, May 25, 1921; P18582FS.)

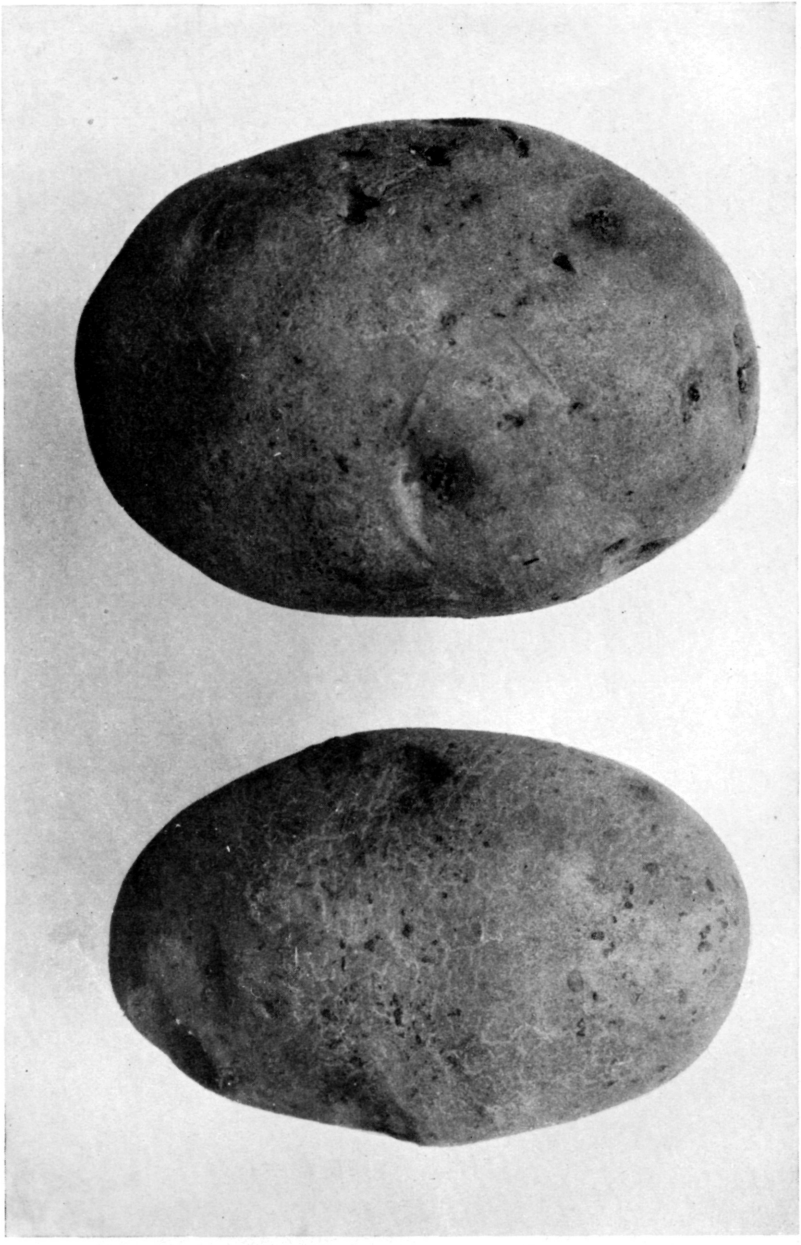
THE PARENT TREE OF THE CARCHI AVOCADO. (PERSEA AMERICANA MILL.; S. P. I. No. 53185.)

In the remote Andes of northern Ecuador lies a small region known as the Chota Valley. The Mexican avocado was introduced into this valley at an early day, and through selection and, probably, crossing with the lowland or West Indian race of avocados, many superior forms have been developed. These remained horticulturally unknown until 1921, when they were discovered by a representative of the United States Department of Agriculture and several of the best obtained for trial in the United States and other countries. As in other parts of tropical America there are few avocado orchards in Ecuador, most of the trees being found about the homes of the inhabitants or scattered among other fruit trees in small irregular plantings. (Photographed by Wilson Popenoe, San Vicente, Ecuador, February 18, 1921; P18414FS.)



THE CARCHI AVOCADO, A VARIETY OF THE MEXICAN RACE. (PERSEA AMERICANA MILL.; S. P. I. NO. 53185.)

This avocado, which belongs to the Mexican race in spite of the fact that it was found in a remote valley of northern Ecuador, seems worthy of trial in the United States because of its relatively large size and its excellent quality. It may prove hardier than most varieties of the Guatemalan race and therefore valuable for those parts of California and Florida which are subject to heavy frosts. (Photographed by Wilson Popenoe, Ibarra, Ecuador, February 19, 1921; P18426FS.)



THE YUNGARA POTATO, ONE OF THE BEST VARIETIES OF THE ECUADORIAN HIGHLANDS. (SOLANUM TUBEROSUM L.; S. P. I. NO. 53195.)

The Andean region, native home of the potato, contains many cultivated forms of interest and possible value to plant breeders. Some may prove useful in the development of early or late varieties; others may be found blight resistant; and still others are valuable for their excellent flavor and quality. Many have been introduced into the United States for trial. Yungara, a productive and late-maturing sort and one of the principal commercial varieties of Ecuador, where it is cultivated at altitudes between 10,000 and 12,000 feet, may be taken as an example of the best sorts which have been produced in the Andes. (Photographed, natural size, by Wilson Popenoe, Ambato, Ecuador, January, 1921; P18334FS.)

53177 to 53217—Continued.

"The fruit is broadly elliptic, oval, or nearly round; weight about 10 ounces; length about 3¾ inches, greatest breadth about 3½ inches; base rounded to bluntly pointed, with the stem inserted slightly to one side of the center; apex very slightly and obliquely flattened; surface smooth, somewhat glossy, dark purplish maroon to purple, with large, pale maroon-colored dots; skin of average thickness for a large-fruited Mexican avocado; flesh rich cream colored, with fiber markings and even a few tough fibers in some specimens, while others have none at all; flavor rich and pleasant; quality good; seed small, round-ovoid, tight in the seed cavity, with both seed coats surrounding closely the slightly rough cotyledons. Principal season of ripening at San Vincente from February to April.

"Numerous specimens of this variety were examined; some of them were of excellent quality, while others had objectionable fiber in them. The difference may have been due to variation in the stage of maturity. If the variety, when grown in the United States, produces fruits which, at the proper stage of ripeness, are quite free from fiber, it should prove to be a genuine acquisition. The flavor is rich and the flesh very abundant."

53185. "(No. 577. Hacienda San Vicente, Province of Carchi. February 17, 1921.) Budwood of avocado No. 51. *Carchi.* The parent tree is growing in one of the huertas of the Hacienda San Vicente, about half a mile north of the house. This variety, except for its color, might be called a Mexican Trapp. It has the form of the latter, and it also has a seed somewhat larger than the ideal; but if the size of the fruit increases when the variety is given the advantage of good culture in the United States, it may prove to be a valuable sort. The fruit is oblate, about 8 ounces in weight, purple when ripe, with yellow flesh of good flavor and quality. The seed is sometimes loose in the cavity.

"Formal description: Parent tree 30 feet high, the trunk 18 inches thick at the base and branching at 8 feet above the ground. The crown is round, dense, with the foliage of peculiar wrinkled appearance. The leaves when crushed have a pronounced aniselike odor.

"The fruit is oblate, sometimes oblique; weight about 8 ounces, length about 2¾ inches; base rounded to slightly flattened, the stem inserted obliquely; apex conspicuously and usually somewhat obliquely flattened; surface smooth, dull purple in the fully ripe fruit, with large dots of lighter purple; skin of about average thickness for a large-fruited Mexican avocado; flesh yellow, tinged with pale green close to the skin, nearly free from fiber markings, the flavor rich and pleasant; quality good; seed large, oblate, tight in the cavity, with both seed coats adhering closely to the nearly smooth cotyledons; occasionally the seed coats separate. Principal ripening season at San Vicente from January to March."

For an illustration of the parent tree of the Carchi avocado, see Plate II. Fruits of the Carchi avocado are shown in Plate III.

53186. RUBUS ROSEUS Poir. Rosaceæ. **Raspberry.**

"(No. 584a. Hacienda La Esperanza, near El Angel, Province of Carchi, Ecuador. February 15, 1921.) Seeds of *Mora de Rocota.* A rare berry from an altitude of 12,000 feet. It is nearly round, red, 1½ inches in diameter, and of good quality. The fruits are much like those of the Colombian berry (*Rubus macrocarpus*) in general appearance, but smaller and better in quality. This species seems to be the same as the *Huagra-mora*, from the slopes of the Volcano Tungurahua at an altitude of about 9,000 feet, and the *mora* which grows in the Cordillera de Zamora, in Loja Province. The plant is not a large grower. It forms clumps about 5 feet high, or sometimes scrambles over other plants, its canes reaching to about 8 feet in length. The

53177 to 53217—Continued.

leaves are trifoliolate, with glossy, oval to oblong-acute, serrate leaflets, often having a maroon tinge. The rosy purple flowers, about 1½ inches broad, are borne few in a cluster; they are followed by oval or conical fruits 1 to 1½ inches long, crimson in color, juicy, and of pleasant subacid flavor. The seeds are not objectionably large nor hard. The plant is not very productive. This raspberry is worthy of a careful trial in the southern and far western parts of the United States, where it seems likely to succeed. Its productiveness can probably be increased by systematic pruning."

53187. SOLANUM sp. Solanaceæ. Potato.

"(No. 586. Hacienda La Rinconada, Province of Carchi, Ecuador. February 15, 1921.) Tubers of a wild potato from the mountains of Carchi, at an altitude of 12,000 feet. It grows abundantly in certain places, preferring the protection of shrubby vegetation along ravines on the páramo. The plant resembles that of the cultivated potato; the tubers, however, are rarely more than an inch long by half an inch in thickness, and they are whitish brown in color, with white flesh. They are not used by the inhabitants of this region. The plants appear to be attacked by late-blight, as are cultivated potatoes in the same region."

53188 to 53197. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

53188. "(No. 589. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Cumara* grown at altitudes of 11,000 to 12,000 feet. This is a good variety, of commercial importance only slightly less than that of the *Cuerudas*. The tubers are long, almost white in color, with purplish areas around the deep eyes."

53189. "(No. 590. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Morada* from the Province of Carchi, where it is cultivated at altitudes of 11,000 to 12,000 feet. This is a variety of good quality, but of little commercial importance. The tubers are rather small, round, and dark purple."

For previous introduction, see S. P. I. No. 35507.

53190. "(No. 591. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Cueruda morada* (purple Cueruda), from the Province of Carchi, where it is cultivated at altitudes of 11,000 and 12,000 feet. Commercially one of the best and most important varieties in northern Ecuador, though it is not quite so extensively grown as *Cueruda blanca*. The tubers are oval, flattened, and purple with whitish areas around the shallow eyes; they possess excellent keeping qualities."

53191. "(No. 592. Hacienda La Rinconada, Province of Carchi, Ecuador.) Tubers of *Margarita*, from the Province of Carchi, where it is cultivated at altitudes of 10,000 and 12,000 feet. This is an important commercial variety, especially in the vicinity of Ibarra; the plants are, however, very susceptible to late-blight. The tubers are oval, flattened to an unusual degree, and of good size. The surface is pale whitish brown, with fine purplish markings, and the eyes are scarcely noticeable. The flesh is white, of excellent quality."

53192. "(No. 594. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of the *Rosa* potato, cultivated in the Province of Carchi, at altitudes of 11,000 to 12,000 feet. This is not an important or well-known variety. The tubers are oval, slightly flattened, deep rose in color, with shallow eyes."

53193. "(No. 595. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Cueruda blanca* (white Cueruda), cultivated in the Province of Carchi, at altitudes of

53177 to 53217—Continued.

11,000 and 12,000 feet. This is the most important commercial potato of Carchi Province. At Ibarra, where it is one of the favorite varieties in the market, it is known as *Pastuza*. It yields heavily, and the whitish brown, somewhat flattened, oval tubers are of good size and quality. The eyes are very shallow and not numerous."

53194. "(No. 596. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) Tubers of *Leche*, cultivated at altitudes of 11,000 to 12,000 feet. This is a good variety, of some commercial importance, especially in the vicinity of Ibarra. It yields heavily, and the round, whitish brown, rather large tubers are of good quality. They have, however, rather deep eyes."

53195. "(No. 597. Ibarra, Ecuador. February 12, 1921.) Tubers of *Yungara*, from the Hacienda La Rinconada, in the Province of Carchi, where it is cultivated at altitudes of 10,000 to 12,000 feet. This is probably the same as the Yungara of Ambato, but is not as important commercially in northern Ecuador as it is in the latter region. This productive and late-maturing variety yields oblong, medium-sized tubers, light rose colored with yellow areas around the few and not very deep eyes. The flesh is white and of good quality; the plant is not resistant to late-blight."

For an illustration of tubers of the Yungara potato, see Plate IV.

53196. "(No. 598. Ibarra, Ecuador. February 12, 1921.) *Pastuza*, from the Hacienda La Rinconada, in the Province of Carchi, where it is cultivated at altitudes of 11,000 and 12,000 feet; it is one of the favorite varieties in the market at Ibarra. This is probably the same variety as *Cueruda blanca* (white Cueruda). This is the most important commercial potato of Carchi Province. It yields heavily, and the whitish brown, somewhat flattened, oval tubers are of good size and quality. The eyes are very shallow and not numerous."

53197. "(No. 593. Hacienda La Rinconada, Province of Carchi, Ecuador. February 16, 1921.) *Amarga*, cultivated in the Province of Carchi, at altitudes of 11,000 and 12,000 feet. This is not an important or well-known variety. Its tubers are of irregular shape, rather small, pale rose in color, with deep eyes."

53198. JUGLANS sp. Juglandaceæ. **Walnut.**

"(No. 599a. Ibarra, Ecuador.) The *tocte* (black walnut) of northern Ecuador. Seeds obtained in the market of Ibarra. There are probably two species of Juglans in Ecuador which go under this name; one of them is *J. peruviana*, the other as yet undescribed. Both are found in the highlands, between altitudes of 6,000 and 10,000 feet; one or the other is abundant in nearly every town of the Sierra. The tree is sometimes called *nogal*, as well as *tocte;* the fruit is always known by the latter name.

"Luis Cordero (Enumeración Botanica) says of this tree in the Province of Azuay: 'It is most useful, since it furnishes, aside from its grateful fruit and its fine, solid, and beautiful wood, a tonic of probable efficacy, obtained from boiling the leaves.' The plant is much used by the Indians of Imbabura Province in the preparation of dyes.

"The *tocte* is abundant at Ambato. It can scarcely be termed a cultivated species in this region, since it is not commonly planted; but trees which spring up around cultivated fields and in dooryards are allowed to grow unmolested, and the fruit is utilized in a small way. The plant strongly resembles *Juglans nigra*, but the foliage is perhaps larger. The nuts are an inch and a half in diameter, with a very thick, bony shell deeply corrugated on the surface and a kernel of mild, pleasant flavor. Recently the species has been utilized in Ambato as a stock plant on which to graft *Juglans regia*.

53177 to 53217—Continued.

"In Ibarra the *tocte* is very abundant, and the nuts are commonly sold in the market. They are used to prepare a famous sweetmeat, the 'nogada' of Ibarra, made from brown or white sugar, milk, and walnut meats. At Otavalo the tree is quite abundant, as also in the southern part of Ecuador at Loja and Cuenca. The two species which go under this name are very similar in character."

53199 to 53215. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"(No. 580a. Ibarra, Ecuador. February 18, 1921.) *Torta.* A peculiar bean occasionally cultivated at Ibarra. The vine, which is slender, climbs over fences and low vegetation; the thin beans, resembling a Lima bean in size and outline, are curiously marked with various colors. They are not commonly eaten in this region, but are used by the children in playing various games. They may be of interest to our plant breeders because of the remarkable color combinations which they exhibit.

"They are not eaten here, though I am inclined to think they are edible."

53199. Black.

53200. Dark brown.

53201. Dark maroon flushed with black.

53202. Burgundy.

53203. Reddish brown with black flecks.

53204. Light tan.

53205. Blackish brown with a cream splotch.

53206. Black with stripes and splotches of yellowish green.

53207. Lemon yellow with black stripes.

53208. Cream with brown stripes.

53209. Cream with Burgundy stripes.

53210. Grayish white flushed with dark brown.

53211. Cream with black spots and black end.

53212. Cream with one end black.

53213. Cream with black ring around hilum.

53214. Lemon yellow with Burgundy spots and end.

53215. One half of surface dark brown; other half cream with brown spots.

53216. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

"(No. 588. Hacienda La Esperanza, near El Angel, Province of Carchi, Ecuador. February 14, 1921.) Tubers of *Papa chaucha.* An unusually early variety from an altitude of nearly 12,000 feet. The *chauchas* (Quichua, early) are a group of potatoes cultivated in the Ecuadorian highlands at altitudes of 8,000 to 12,000 feet. Commercially they are not very important, due to the fact that they do not keep as well as other varieties, but they are much cultivated for home use. The tubers are of good size; those of some varieties are of good quality, while others are rather inferior. The color of both surface and flesh is variable.

"The chauchas mature in about five months from the time of planting, when cultivated at an elevation of 12,000 feet; other varieties require seven to eight months. As soon as the plants come into bloom the tubers are considered to be mature and are dug for eating. Unlike other varieties, which must be dug and then stored for a period before they are resown, the chauchas can be resown immediately after digging. The yield is fairly heavy, but not as great as that of some of the late-maturing varieties.

53177 to 53217—Continued.

"Several varieties were mixed together in the lot sent under this number; none of them, however, is of the very best quality."

53217. ZEA MAYS L. Poaceæ. **Corn.**

"(No. 581a. Ibarra, Ecuador. February 19, 1921.) *Chulpi sara* (Quichua, wrinkled corn), from the market of Ibarra. A genuine sweet corn, the first I have found in tropical America. This is a native sweet corn, cultivated in the mountains of Ecuador at altitudes of about 7,000 to 9,000 feet. The ears are commonly 4 to 8 inches long, with the grains golden brown and wrinkled when dry. It is a variety not commonly seen in this region, but occasionally cultivated by the Indians. It may perhaps be useful in producing a variety of sweet corn for the warmer regions of the United States."

53218 and 53219. RUBUS spp. Rosaceæ.

From Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received April 21, 1921. Quoted notes by Mr. Popenoe.

53218. RUBUS ROSEUS Poir. Rosaceæ. **Raspberry.**

"(No. 602a. Upper slopes of the Volcano Tungurahua. March 10, 1921.) *Huagra-mora.* A choice large-fruited wild red raspberry from an altitude of 9,000 feet. Since this is found at altitudes of 9,000 to 12,000 feet, it may prove hardier than many of the other species we have obtained in these countries. The fruits are much like those of the Colombian berry (*R. macrocarpus*) in general character, but small and better in quality. They are up to about an inch and a half in length, deep red, and of very good flavor."

For previous introduction, see S. P. I. No. 53186.

53219. RUBUS ADENOTRICHOS Schlecht. Rosaceæ. **Blackberry.**

"(No. 603a. Upper slopes of the Volcano Tungurahua. March 10, 1921.) *Pondoa.* A wild blackberry which is a better fruit than many of the other wild blackberries of Ecuador. This is the common *mora* of the settlement known as Pondoa, which lies upon the slopes of the Volcano Tungurahua at an altitude of 7,500 to 8,500 feet. This is a vigorous species of Rubus, sending up stiff canes to a height of 15 feet. It does not climb, as a rule, but the stems frequently bend over and are supported by near-by vegetation. The leaflets are five in number, or sometimes three when the leaves arise from small shoots. The canes are clothed with stiff wine-red hairs. The racemes are often a foot in length; the flowers are rather small and pinkish white. The fruits are produced abundantly; they are oval to nearly round, about three-fourths of an inch long, purplish black when fully ripe, each one composed of many small drupelets set closely together. The flavor is rich and agreeably subacid; the seeds are soft and not troublesome in the mouth. This may be considered an excellent blackberry and one which merits horticultural attention. It should be tested in the southern and western portions of the United States."

53220 to 53225. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Winchester, England. Plants purchased from Millier & Sons. Received April 25, 1921. Quoted notes by Millier & Sons.

53220. "*New Red Dutch.*"

53221. "*Raby Castle.*"

53222. "*Scotch Red.*"

53223. "*White Dutch.*"

53224. "*White Transparent.*"

53225. "*White Versailles.*"

53226 to 53231. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Middle Green, England. Plants purchased from J. C. Allgrove, Langley, near Slough. Received April 25, 1921. Quoted notes by Mr. Allgrove.

53226. "*Fay's Prolific.*" 53227. "*Raby Castle.*"

For previous introduction, see S. P. I. No. 53221.

53228. "*Red Dutch.*"

A red-fruited variety with folded or cupped leaves which are not markedly thick or coarse. (Adapted from *Proceedings of the American Society for Horticultural Science, 1917, p. 65.*)

53229. "*White Dutch.*"

A white-fruited variety with folded or cupped leaves which are not markedly thick or coarse. (Adapted from *Proceedings of the American Society for Horticultural Science, 1917, p. 65.*)

For previous introduction, see S. P. I. No. 53223.

53230. "*White Dutch*, cut leaved."

53231. "*White Versailles.*"

A white-fruited variety with flat leaves not markedly thick or coarse and lightly pubescent on the lower surface. (Adapted from *Proceedings of the American Society for Horticultural Science, 1917, p. 65.*)

For previous introduction, see S. P. I. No. 53225.

53232 to 53237. RIBES VULGARE Lam. Grossulariaceæ. **Garden currant.**

From Bourg la Reine, Seine, France. Plants purchased from Nomblot-Bruneau. Received April 27, 1921. Quoted notes by Nomblot-Bruneau.

53232. "*Cerise blanche.*"

53233. "*Cerise rouge.*"

53234. "*Hollande blanche.*"

For previous introduction, see S. P. I. No. 53229.

53235. "*Hollande rouge.*"

For previous introduction, see S. P. I. No. 53228.

53236. "*Versaillaise blanche.*"

For previous introduction, see S. P. I. No. 53231.

53237. "*Versaillaise rouge.*"

53238. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon-pea.**

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Estación Experimental Agronómica. Received April 29, 1921.

"*Cyandul.*" (*Calvino.*)

This named variety was introduced for experimental use in the Office of Forage-Crop Investigations.

53239. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

From Bengazi, Libia, Africa. Seeds presented by the director of Economic and Financial Affairs, Servizi Agrari, Governo della Cirenaica. Received April 30, 1921. Quoted notes by the director.

"Barley grown in Cyrenaica under conditions of the greatest aridity."

53240 and 53241.

From Montevideo, Uruguay. Seeds presented by Sr. R. Salgueiro Silveira, Técnico del Laboratorio Agronómico. Received May 3, 1921. Quoted notes by Sr. Salgueiro.

53240. HELIANTHUS ANNUUS L. Asteraceæ. **Sunflower.**

"A plant cultivated here, of great importance for its seeds from which is extracted an edible oil, which is also useful in the paint industry. The red variety, which is 2 meters high, is used as props for tomatoes. Sheep and birds eat the seeds, and the stalks are burned and used as fertilizer."

53241. PHALARIS BULBOSA Jusl. Poaceæ. **Canary grass.**

"Seeds harvested in this country. The grass is of great food value."

A perennial tufted grass, with shiny leaves about two-fifths of an inch wide and roots penetrating the soil to a depth of nearly 3 feet; native to the Mediterranean countries. It is now cultivated in New South Wales, where it appears to be an excellent permanent winter grass for coastal and table-land districts. Owing to its deep roots it can endure a considerable amount of drought. Seeds are borne very sparsely on short stems thrown up from the center of the crown.

For previous introduction, see S. P. I. No. 44696.

53242. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**

From Montevideo, Uruguay. Seeds presented by Sr. R. Salgueiro Silveira, Técnico del Laboratorio Agronómico. Received April 25, 1921.

"Seeds, harvested in this country, of a castor-bean which I recommend." (*Salgueiro.*)

53243. PERSEA sp. Lauraceæ.

From Darjiling, India. Seeds secured by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 10, 1921.

"Bought March 4, 1921, in the Darjiling market from Tibetans, who are very fond of it. The fruits are green and the size of a small tennis ball, perfectly round; the flesh is like that of the avocado, both in color and taste. The fruit and seed are entirely different in shape from those of the avocado. These fruits come from an altitude of 7,000 feet and should therefore be quite resistant to light frosts, since there was plenty of snow at Darjiling this winter." (*Rock.*)

53244 to 53261.

From Quedlinburg, Germany. Seeds purchased from Carl Beck & Co. Received May 6, 1921.

Introduced for experimental work at the request of department specialists.

53244. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

Turkische Prunk oder Feuer.

53245 to 53261. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53245. *Don Carlos.*
53246. *Flageolet oder Pariser.*
53247. *Flageolet oder Pariser, weisse.*
53248. *Hinrichs Riesen.*
53249. *Hinrichs Riesen.*
53250. *Juli.*
53251. *Kaiser Wilhelm.*
53252. *Mont d'or.*
53253. *Phänomen.*
53254. *Schlachtschwert.*
53255. *Schlachtschwert.*
53256. *Schmalzgrosse.*
53257. *Wachs-Dattel.*
53258. *Wachs Flageolet.*
53259. *Zehnwochen.*
53260. *Zucker-Butter-Brech.*
53261. [Unlabeled.]

53262. OCHROMA LAGOPUS Swartz. Bombacaceæ. **Balsa.**

From Camaguey, Cuba. Seeds presented by John R. Johnson, through Dr. R. L. Luaces, director, Granja Escuela. Received May 9, 1921.

"I believe that this tree will produce very well at Miami, for the flowers form during March." (*Luaces.*)

A West Indian tree 18 meters high with brown tomentose to nearly glabrous, obscurely 3 to 5 lobed leaves 15 to 20 centimeters long, and yellowish white flowers 10 centimeters long. The utilization of the wood of Ochroma has brought that genus into prominence during the last few years. The manufacture of buoyancy and insulation products, such as life rafts, refrigerators, and parts of lifeboats and airplanes, especially in connection with the war, has become very extensive. Eighty thousand floats made of balsa wood were used in constructing the 250-mile submarine mine barrage in the North Sea; war vessels as well as transports were in so far as possible equipped with balsa life rafts and lifeboats; and special refrigerating trucks with balsa as the insulating material were used in France. The wood of the trees of this genus is the most notable among light-weight woods. It is generally known in Spanish America as "balsa," and that word has been transferred to and is in general use in the United States. Balsa is the Spanish word for raft, and it was applied to this tree because the Spanish colonists, when they migrated to the New World, found it in use by the natives for rafts.

Balsa is a very common and conspicuous tree in tropical America. It is distinguished not only by its light soft wood, but also by its large simple leaves, large solitary flowers, and very conspicuous fruit, which is not unlike a cotton boll on a large scale. When the fruit is matured, but has not finally burst, it looks much like a rabbit's foot and presumably from this the first species of Ochroma to be described received the specific name "lagopus." When the fruit finally bursts and the mass of down falls to the earth, it suggests the fur of a rabbit. The seeds are enveloped in this fur and are disseminated by it. They resemble small grape seeds and, unlike cotton, the "down" is not firmly and permanently attached to the seed.

The species of this genus most frequently occur in the lowlands and foothills, though rarely, if ever, where the soil is at all affected by brackish or salt water. They have not been discovered in the higher altitudes, that is, at more than 1,000 meters above sea level.

Balsa is usually a second-growth tree, though it does occur as an isolated tree in the primeval forest. It appears promptly and abundantly where clearings have been made by natural agencies, such as floods and fires, or by human cultivations. In this respect it might properly be called a tree "weed." The natural seeding in some places produces such an abundance of young plants as to suggest weeds in a neglected garden. The tree's growth is very rapid. In the natural state the wood is very perishable. One rarely sees the remains of trees of balsa in the tropical forests. They decay with apparently the same rapidity as a cotton fabric; the wood absorbs moisture readily and shrinks and warps badly. This is due undoubtedly to the feeble lignification of the cell walls and to the lack of aseptic properties such as the timber of oak and pine possess. It was only when engineers, after protracted investigation and experiments, overcame these defects that the wood could be fabricated into valuable products. (Adapted from *Journal of the Washington Academy of Sciences, vol. 9, p. 157.*)

For previous introduction, see S. P. I. No. 47593.

53263 to 53266. GOSSYPIUM BARBADENSE L. Malvaceæ. **Cotton.**

From Gizeh, Egypt. Seeds presented by T. Trought, botanist, Ministry of Agriculture. Received May 4, 1921. Quoted notes by Mr. Trought.

53263. "*Ashmouni*, second grade, selected."

For previous introduction, see S. P .I. No. 7030.

53264. "*Doumains Assili.*"

53265. "*Doumains Sakel.*"

53266. "*Zagora.*"

53267 to 53377.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received April 18, 1921. Notes from Vilmorin-Andrieux & Co.

53267 and 53268. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

53267. "*Cornichon fin de Meaux.* An early, very productive gherkin from Meaux, with small cylindrical fruits in great demand for pickling."

53268. "*Cornichon vert petit de Paris.* A small green gherkin from Paris, a very productive vigorous variety extensively cultivated. The fruits are ready for pickling about eight days from the time of the setting of the flowers and can be harvested continuously from July to October."

53269 to 53272. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53269. "*D'Espagne blanc* (white Spanish), a very hardy, productive bean."

53270. "*D'Espagne rouge.*"

53271. "*D'Espagne bicolore.*"

53272. "*D'Espagne varié.*"

53273 and 53274. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

53273. "*Du Cap marbré* (marble head). Seed spotted with red on a white ground."

53274. "*De Lima* (Lima). Short, very flat and large pods with large yellowish white seeds."

53275 to 53377. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53275. "*A rames extra-hâtif* (extra-early climber). An extremely early, very productive variety with long plump pods and white seeds."

53276. "*De Liancourt* (from Liancourt, Oise, France), with white, almost dull seeds. A hardy, vigorous, productive variety much esteemed for the dried seeds."

53277. "*Flageolet rouge à rames* (red climbing bean). An extremely productive variety with long, very delicate pods and excellent seeds."

53278. "*Nicard.* A white, flat-seeded variety suited to the South."

53279. "*Riz à rames* (climbing rice). A variety having a small white seed with very delicate skin which seems to melt in cooking."

53280. "*Rouge de Chartres* (red bean from Chartres). A variety extensively cultivated."

53281. "*Sabre à très grande cosse* (Sword variety with a very large pod). A vigorous variety yielding pods 25 to 30 centimeters long and most desirable because of its long season. The white seeds are excellent shelled fresh and the dry seed is also of excellent quality."

53282. "*De Sallandre amelioré* (improved Sallandre). A variety with very long pods well filled with fine large seeds. Highly esteemed for its productiveness."

53283. "*De Soissons blanc à rames, surchoix d'élite trié* (White Soissons Runner, choice selected variety). A variety with a very delicate flavor; one of the varieties most extensively cultivated for the dried seeds."

53284. "*De Soissons vert à rames* (Green Soissons Runner). A vigorous, productive variety with a strong stem reaching a height of about 3 meters and long pods containing ordinarily seven large, very green seeds of excellent quality."

53267 to 53377—Continued.

53285. "*D'Alger (beurre) noir à rames.*"
53286. "*Beurre blanc à rames.*"
53287. "*Beurre Couronne d'or.*"
53288. "*Beurre Roi des Mangetout à rames.*"
53289. "*Beurre du Mont-d'Or, à rames.*"
53290. "*Avant-gardé.*"
53291. "*Blanc geant sans parchemin.*"
53292. "*Blanc grand Mangetout.*"
53293. "*Mangetout du Maine.*"
53294. "*Mangetout de La Vallée.*"
53295. "*Mangetout de Saint-Fiacre.*"
53296. "*Mangetout de Saint-Fiacre blanc.*"
53297. "*Mangetout sans fil* (à rames)."
53298. "*Coco bicolore prolifique.*"
53299. "*Coco bicolore du Pape.*"
53300. "*Coco blanc.* H. gros Sophie."
53301. "*Coco rose à rames. H. de Prague marbre. H. boulot.*"
53302. "*Jaune d'or à rames.*"
53303. "*Phenomene à rames.*"
53304. "*Predome à rames.*"
53305. "*Princesse à rames. H. à la Reine.*"
53306. "*Quatre-à-quatre.*"
53307. "*Zebrè gris.*"
53308. "*De Bagnolet. H. petit gris. Suisse gris.*"
53309. "*Bagnolet vert.*"
53310. "*Bagnolet, à feuille d'Ortie.*"
53311. "*Barbes nain.*"
53312. "*Comtesse de Chambord. H. riz nain.*"
53313. "*Flageolet blanc extra.*"
53314. "*Flageolet blanc à longue cosse.*"
53315. "*Flageolet Chevrier, à grain toujours vert.*"
53316. "*Flageolet Merveille de France, à grain toujours vert.*"
53317. "*Flageolet Roi des verts.*"
53318. "*Flageolet nain Triomphe des chassis.*"
53319. "*Flageolet nain hâtif a feuille gaufrée. El à feuille d'Ortie.*"
53320. "*Flageolet très hâtif.*"
53321. "*Flageolet jaune ameliore H. prodige de Courtry. H. nain de Saint-Andre.* New variety."
53322. "*Flageolet noir.*"
53323. "*Flageolet rouge. H. dognon-de-coq.*"
53324. "*Flageolet beurre* (nain)."
53325. "*Flageolet rouge de Vitry.*"
53326. "*Empereur de Russie.*"
53327. "*Gloire de Lyon.*"
53328. "*Flageolet de Vitry blanc.*"
53329. "*Gros vert hâtif.*"

53267 to 53377—Continued.

53330. "*Incomparable. H. express.*"
53331. "*Incomparable à grain vert.*"
53332. "*Extra-précoce de Fontenay.*"
53333. "*L'Inepuisable.*"
53334. "*Du Perreux.*"
53335. "*Jaune cent-pour-un.*"
53336. "*Nain jaune extra-hâtif.*"
53337. "*Très hâtif de Cholet.*"
53338. "*Noir de l'Hermitage.*"
53339. "*Prince noir.*"
53340. "*Nain Parisien. H. Souvenir de Deuil.*"
53341. "*Merveille de Paris. H. petit gris.*"
53342. "*Noir hâtif de Belgique.*"
53343. "*Du Bouscat.*"
53344. "*Le Bleu.*"
53345. "*Rond blanc commun.*"
53346. "*Metis. H. Eclipse.*"
53347. "*Rouge d'Orléans.*"
53348. "*Nain de Lignereux (Nouv.).*"
53349. "*Sabre nain. H. très hâtif de Hollande.*"
53350. "*Shah de Perse.*"
53351. "*De Soissons nain. H. gros pied.*"
53352. "*St-Esprit. H. à la religieuse. H. à l'aigle.*"
53353. "*Suisse blanc. H. lingot.*"
53354. "*Suisse nain blanc hâtif.*"
53355. "*Suisse rouge (1er choix).*"
53356. "*Très nain précoce (Nouv.).*"
53357. "*D'Alger (beurre) noir nain.*"
53358. "*Beurre noir nain à longue cosse.*"
53359. "*Beurre nain Gloire d'Ollainville.*"
53360. "*Beurre nain de tous les jours.*"
53361. "*Beurre nain Merveille du Marché.*"
53362. "*Beurre blanc nain.*"
53363. "*Beurre nain sans rival.*"
53364. "*Beurre doré nain.*"
53365. "*Beurre nain de Digoin.*"
53366. "*Beurre nain du Mont-d'Or.*"
53367. "*Coco marbre nain. H. de Prague marbre nain. H. boulot nain.*"
53368. "*Nain blanc hâtif sans parchemin.*"
53369. "*Nain blanc quarantain.*"
53370. "*Nain blanc Unique.*"
53371. "*Jaune de la Chine.*"
53372. "*Jaune du Canada.*"
53373. "*Nain Lyonnais à très longue cosse.*"
53374. "*Nain Lyonnais à grain blanc.*"

53267 to 53377—Continued.

53375. "*Nain Mangetout extra-hâtif.*"

53376. "*Prédome nain.*"

53377. "*Princesse nain à grosse cosse.*"

53378. Rubus sp. Rosaceæ.

From Honolulu, Hawaii. Plants presented by Willis T. Pope, horticulturist, Agricultural Experiment Station. Received April 27, 1921.

"A variety found growing on the slopes of Tantalus on this island (Oahu)." (*Pope.*)

53379. Rubus sp. Rosaceæ.

From Honolulu, Hawaii. Plants presented by Willis T. Pope, horticulturist, Agricultural Experiment Station. Received May 9, 1921.

"*Hitchcock berry.* Obtained from the locality of Glenwood on the island of Hawaii." (*Pope.*)

53380 to 53442.

From Bohemia, Czechoslovakia. Presented by Josef Mazanek. Received April 5, 1921.

53380. Malus pumila Mill. Malaceæ. **Paradise apple.**

"*Paradise.* A bushy apple growing usually about 5 feet in height. Native to the Caucasus, from which place it probably was introduced into western Europe, where it is now extensively used as a dwarfing stock for apples. This shrubby tree produces red apples of fair quality, is very drought resistant, and stands high summer temperatures. May be used in hybridization work and in creating a strain of bush apples." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 42638.

53381 to 53401. Malus sylvestris Mill. Malaceæ. (*Pyrus malus L.*) **Apple.**

53381. *Panenske ceske.*
53382. *Mazankovo malinove.*
53383. *Misen ceska.*
53384. *Reneta kminova.*
53385. *Strymka.*
53386. *Vejlimek.*
53387. *Zapovezene.*
53388. *Astrachan bily.*
53389. *Astrachan cerveny.*
53390. *Limburske.*
53391. *Malinove z Holovous.*
53392. *Charlamowski.*
53393. *Parmena zlata zimni.*
53394. *Tosonovicke.*
53395. *Reneta muskatova.*
53396. *Car Ales.*
53397. *Salove.*
53398. *Prazske pestre.*
53399. *Sirecek.*
53400. *Jablone.*
53401. *Doucin.*

53402 to 53414. Prunus domestica L. Amygdalaceæ. **Prune.**

53402. *Sliva domaci.*
53403. *Dolanka.*
53404. *Vlaska.*
53405. *Eslinska.*
53406. *Reineclaude zelena.*
53407. *Merunkova zluta.*
53408. *Merunkova cervena.*
53409. *Althanova.*
53410. *Spendlik.*
53411. *Mirabelka rancyska.*
53412. *Kirke.*
53413. *Mirabelka mala lutea.*
53414. *Srestky domaci.*

53380 to 53442—Continued.

53415. PRUNUS MAHALEB L. Amygdalaceæ. **Mahaleb cherry.**

Mahaleb cherry, for use as stock upon which to bud Japanese flowering cherries.

For previous introduction, see S. P. I. No. 18243.

53416 to 53426. PRUNUS spp. Amygdalaceæ. **Cherry.**

53416. PRUNUS sp. *Uherka cerna.*

53417. PRUNUS sp. *Msenska Janovka.*

53418. PRUNUS sp. *Lauremanova chrupka.*

53419. PRUNUS sp. *Obrovska z Hedelfingen.*

53420. PRUNUS sp. *Germerdorfska.*

53421. PRUNUS sp. *Mramorova.*

53422. PRUNUS sp. *Amarelka stinna.*

53423. PRUNUS sp. *Denisenova zluta.*

53424. PRUNUS sp. *Nejrannejsi.*

53425. PRUNUS sp. *Amarelka kralovska.*

53426. PRUNUS sp. *Oorovska vizen ze Sibenaku.*

53427. PRUNUS sp. Amygdalaceæ. **Plum.**

St. Julien.

53428 to 53441. PYRUS COMMUNIS L. Malaceæ. **Pear.**

53428. *Muskatelka letni.*

53429. *Prasilka.*

53430. *Dielova maslovka.*

53431. *Solanka.*

53432. *Avranska ceska.*

53433. *Pastornice.*

53434. *Boskova lahvice.*

53435. *Koperecka.*

53436. *Krivice.*

53437. *Malovanka.*

53438. *Jakubka ceska.*

53439. *Vejcita letno.*

53440. *Dzbernice.*

53441. *Hrusne.*

53442. PRUNUS sp. Amygdalaceæ. **Cherry.**

Tresne.

53443 and 53444. DIOSCOREA spp. Dioscoreaceæ.

From Antigua, British West Indies. Tubers presented by F. G. Harcourt, agricultural superintendent. Received May 9, 1921. Quoted notes by Mr. Harcourt.

53443. DIOSCOREA ESCULENTA (Lour.) Burkill. **Lesser yam.**

"*Spratt,* or *Antigua cush-cush.* A light-brown, thin-skinned, white-fleshed yam, producing numerous small tubers. When cooked, the flesh is floury, fine grained, and of excellent quality, the flavor somewhat resembling that of the English potato."

53444. DIOSCOREA TRIFIDA L. f. **Yampi.**

"*The Trinidad yampi,* or *cush-cush.* A dark-brown, thin-skinned yam of excellent quality, producing rather small globose tubers. When cooked, the flesh is fine grained, possesses a glistening appearance, and has also a rich but delicate flavor. (There appear to be three variations of color—white, pink, and purple fleshed.)"

53445. SOLANUM MAGLIA Schlecht. Solanaceæ.

From Lima, Peru. Tubers presented by the director, Ministerio de Fomento, Estación Central Agronómica. Received June 27, 1921.

A nearly glabrous wild potato, native to Chile, with angled, winged stems about 2 feet high; compound, light-green leaves 4 to 8 inches long; compound cymes of white flowers 1 inch wide; and subglobose or oblong tubers

up to 1½ inches long, with smooth, reddish brown surfaces. When boiled the tubers shrink and become watery and insipid. (Adapted from *Curtis's Botanical Magazine, pl. 6756.*)

For previous introduction, see S. P. I. No. 44185.

53446 to 53450.

From Wellington, New Zealand. Seeds presented by A. H. Cockayne. Received May 10, 1921. Quoted notes by Mr. Cockayne.

Introduced for experiments by Department specialists.

53446. LOTUS ULIGINOSUS Schkuhr. Fabaceæ.

Received as *Lotus major*, which is a form of *L. corniculatus*, but the sample does not agree with seeds of that species.

For previous introduction, see S. P. I. No. 48635.

53447. LOTUS sp. Fabaceæ.

Received as *Lotus hispidus*, but the sample does not agree with seeds of that species.

53448. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"*Lucerne Marlboro.*"

53449 and 53450. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

53449. "*Hawkes Bay.*" 53450. "*Canterbury.*"

53451. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received April 18, 1921.

"*Cornichon de Toulouse* (gherkin from Toulouse)." (*Vilmorin-Andrieux & Co.*)

53452 and 53453.

From Allahabad, United Provinces, India. Seeds presented by William Benbower. Received April 14, 1921. Quoted notes by Mr. Benbower.

53452. ILEX sp. Aquifoliaceæ.

"Seeds of a black fruit that grew on a bush with hollylike leaves, collected in the hills of the Dehra Dun District, United Provinces, India."

53453. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

"*Kaiphal*, from the Dehra Dun District, United Provinces, India."

53454 to 53462. COFFEA spp. Rubiaceæ. Coffee.

From Tananarive, Madagascar. Seeds presented by J. G. Cairn, American consul. Received May 14, 1921. Quoted notes by Mr. Cairn.

"Varieties of Coffea cultivated on the east coast of Madagascar."

53454 and 53455. COFFEA CANEPHORA Pierre.

53454. This coffee thrives from sea level to an altitude of 1,000 meters and succeeds best at a height of 450 to 700 meters in a damp climate with abundant rain, the annual precipitation being 2,500 to 3,500 millimeters with a minimum of 2,000 millimeters and no long dry periods. Under favorable conditions a drought of two to three months' duration will do no harm, but if the drought extends beyond this the year's crop is seriously injured, though the trees do not appear to suffer permanently. The trees come into bearing at the age of 3 years and yield 875 to 1,300 kilograms per hectare under moderately favorable conditions and 1,700 to 2,300 kilograms on virgin soil and under favorable conditions. (Adapted from *Philippine Agricultural Review, vol. 9, p. 123.*)

53455. Variety "*Robusta.*" Apparently a robust form of *C. canephora.*

53454 to 53462—Continued.

53456. COFFEA CONGENSIS Froehn.

A tree with fuscous gray slender branches and glabrous subcoriaceous leaves, narrowly oval or elliptic; the fruits are oval. (Adapted from *Notizblatt des Königliches Botanischen Gartens und Museums zu Berlin, vol. 1, p. 235.*)

53457. COFFEA DEWEVREI Wildem. and Dur.

This species requires no shade and some plants yield 16 kilograms of berries in four months. From plants 34 to 38 months old, 8.3 kilograms of fresh berries make 1 kilogram of coffee. (Adapted from *Bulletin Agricole du Congo Belge, vol. 7, p. 293.*)

For previous introduction, see S. P. I. No. 50631.

53458. COFFEA EXCELSA Cheval.

A coffee which thrives from sea level to 700 meters, succeeds well on rather stiff clayey soils, and is quite drought resistant; it might be grown with an annual rainfall of 1,200 millimeters. It is the most resistant to drought and blight of any coffee, is of strong vigorous growth, and produces 1 kilogram of coffee from 7 to 8 kilograms of berries. *Excelsa* makes an excellent stock for other coffees. The first crop is obtained at the age of 4 to 5 years and a full crop at the age of 7 to 8 years. (Adapted from *Philippine Agricultural Review, vol. 9, p. 121.*)

For previous introduction, see S. P. I. No. 50632.

53459. COFFEA CANEPHORA KOUILOUENSIS Pierre.

A variety which yields 1 kilogram of coffee from 3.8 kilograms of berries. The small leaves make very dense shade and prevent the circulation of air, two causes which contribute to the development of the coffee blight, *Hemileia vastatrix*. (Adapted from *Bulletin Agricole du Congo Belge, vol. 7, p. 296.*)

53460. COFFEA LIBERICA Bull.

Among the Liberica types, *Coffea liberica* is the only one that has attained commercial importance. When first imported to Java this coffee was resistant to the blight and it was extensively planted; during recent years, however, a strain of the Hemileia has developed which so severely injures the Liberica that its cultivation has practically been abandoned. The yield averages 600 to 700 kilograms of coffee per hectare.

To produce 1 kilogram of marketable coffee, 10 kilograms of berries are required. The Liberica coffee has a large, hard berry which requires a special pulper. The Liberica coffee and all other closely allied varieties or species prefer low altitudes, from sea level to an altitude of 350 meters. All the coffees of this type succeed well even on rather stiff clayey soils and are quite drought resistant. (Adapted from *Philippine Agricultural Review, vol. 9, p. 121.*)

For previous introduction, see S. P. I. No. 51482.

53461 and 53462. COFFEA LAURENTII Wildem.
(*C. robusta* Hort.)

This variety was discovered in 1898 in the Kongo by Emile Laurent. One of the chief features of this new variety seems to be its immunity against disease. The plant grows very rapidly, and after eight months shows its first flowers. A small harvest is obtained in the second year, and the maximum production is reached in the fourth or fifth year. Clusters are numerous and contain 50 to 60 berries, which require 10 months to ripen. To make 1 kilogram of marketable coffee, 9 kilograms of the red berries are required.

The following are the yields per hectare of two plantations of *C. robusta* in Java, one of exhausted and one of virgin soil: Exhausted soil, second year, very little; third year, 485 kilograms; fourth year, 696 kilograms; fifth year, 1,066 kilograms. Virgin soil, second year, little; third year, 556 kilograms; fourth year, 1,657 kilograms. Trees properly

53454 to 53462—Continued.

cultivated have not shown the slightest falling off in yield at 12 years of age. (Adapted from *Daily Consular and Trade Reports, November 3, 1913.*)

53461. "*Robusta du Congo.*" 53462. "*Robusta du Java.*"

53463 and 53464. SOLANUM TUBEROSUM L. Solanaceæ.

Potato.

From La Paz, Bolivia. Tubers presented by W. Duval Brown, American consul. Received May 3, 1921. Quoted notes by Mr. Brown.

53463. "*Purple-marked variety.* Grown in Bolivia at a high altitude and supposed to be very resistant to frost."

53464. "*White variety.* Grown in Bolivia at a high altitude and supposed to be very resistant to frost."

53465 to 53467.

From Avondale, Auckland, New Zealand. Seeds presented by H. R. Wright. Received May 14, 1921. Quoted notes by Mr. Wright.

53465. ALOPECURUS PRATENSIS L. Poaceæ. Foxtail grass.

"New Zealand-grown grass from clayey hill country."

For previous introduction, see S. P. I. No. 34282.

53466 and 53467. PHLEUM PRATENSE L. Poaceæ. Timothy.

53466. "New Zealand-grown timothy from drained peat swamp."

53467. "New Zealand-grown timothy from light pumice soil."

53468 and 53469. COTONEASTER spp. Malaceæ.

From Calcutta, Bengal, India. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 9, 1921.

53468. COTONEASTER AFFINIS Lindl.

"Collected at an altitude of 7,000 feet in the Himalayas near Darjiling, India, March 4, 1921." (*Rock.*)

A large deciduous Himalayan shrub or small tree with leaves pubescent beneath and compound, spreading, many-flowered cymes. The numerous slender-stalked, brown, roundish fruits are in large spreading bunches. The white strong elastic wood is used for walking sticks in the northwest Himalayas. The shrub is hardy in England (Adapted from Brandis' *Forest Flora of India, p. 208.*)

For previous introduction, see S. P. I. No. 40173.

53469. COTONEASTER SIMONSI Baker.

"Collected at an altitude of 7,000 feet in the Himalayas near Darjiling, India, March 4, 1921." (*Rock.*)

For previous introduction, see S. P. I. No. 51493.

53470 and 53471.

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received May 9, 1921. Quoted notes by Mr. Rock.

53470. TERMINALIA MYRIOCARPA Heurck and Muell. Arg. Combretaceæ.

"A tall, important, and very valuable timber tree of northeast Assam, where it is a protected tree in the Dibrugarh forests. It reaches a height of 80 to 100 feet, is deciduous, and fruits in January and February when the tree is bare. The tree grows in the more open forest land at an altitude of about 500 feet. Seeds collected from a tree found between Rangagora and Berjan forests February 21, 1921."

For previous introduction, see S. P. I. No. 47855.

53470 and 53471—Continued.

53471. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ. **Palm.**

"A small-leaved fan palm from the Himalayas. These seeds came from specimens 40 feet in height, growing at an altitude of 7,200 feet near Darjiling. Collected March 3, 1921."

For previous introduction, see S. P. I. No. 50373.

53472 and 53473. HYDNOCARPUS spp. Flacourtiaceæ.

From Calcutta, Bengal, India. Seeds presented by Lieut. Col. A. T. Gage, director, Botanical Survey of India. Received May 27, 1921.

"From Tavoy, Burma, not previously represented in the museum collection. The seeds of both of these have a partially muricated testa which resembles that of *Hydnocarpus anthelminthica*." (*C. C. Calder.*)

53472. HYDNOCARPUS sp. Museum No. 37357.

53473. HYDNOCARPUS sp. Museum No. 37479.

53474. KHAYA NYASICA Stapf. Meliaceæ. **African mahogany.**

From Mount Silinda, Southern Rhodesia. Seeds presented by Dr. W. L. Thompson. Received May 27, 1921.

"One of our largest and most valuable timber trees." (*Thompson.*)

"A huge tree attaining a height of 150 feet or more and sometimes a diameter of 15 feet, one that I measured in the Inyamkuwha forest patch having attained this diameter at 8 feet from the ground just above the buttresses. Diameters of 5 to 8 feet are not uncommon. The trunk is almost invariably very straight and runs up to a considerable height before branching; the young saplings have much the appearance of young *Castilla elastica*. The bark is light gray, thick, smooth, or laminated, astringent in taste, and reminds one of quinine, hence the native name *umbaba* (to be bitter). The hard red timber has a handsome grain, easily worked, and weathers well above ground; it is untouched by Bostrychidæ or termites. The tree makes an enormous crown of handsome glossy foliage. The old trees are in full bloom at the commencement of November, and the fruits commence to ripen at the end of the following September, continuing to fall till December and littering the ground for some distance in every direction." (*E. G. Baker, Journal of the Linnean Society, vol. 40, p. 42.*)

53475. DIOSCOREA ALATA L. Dioscoreaceæ. **Greater yam.**

From Sebring, Fla. Tubers presented by J. B. Brown. Received June 1, 1921.

"The 63-pound yam was grown in one season; this particular one was planted near where the waste water was thrown and it got a fairly large quantity of water. I generally let them grow as long as they will. When we have no frost to kill the vines they will grow until March or April, and I then plant them a few weeks after they are dug, so that the growing season of the yam in question was about 11 months. Of course we have a dry season, and unless they are watered they do not thrive so well." (*Brown.*)

"A white-fleshed yam of very good quality from Panama. The underground tubers when of large size are irregular in shape. The vine produces tubers in the axils of the leaves, which are used for propagation." (*R. A. Young.*)

53476 and 53477. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. **Teff.**

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received June 1, 1921. Quoted notes by Vilmorin-Andrieux & Co.

A wonderful hay crop of the high veldt in the Transvaal and cultivated as a food grain in Abyssinia.

53476. "Seed of the reddish or brownish type."

53477. "White seed mixed with about 15 per cent of reddish type."

For previous introduction, see S. P. I. No. 48815.

53478 to 53482.

From Mauna Kea, Hawai i. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921. Quoted notes by Mr. Rock.

53478 and 53479. STYPHELIA GRAYANA Rock. Epacridaceæ.

"An exceedingly handsome shrub closely allied to the heath family. It is loaded nearly all the year with white, pink, or red berries, making an exceptionally showy appearance. The shrub grows at altitudes of 10,000 to 11,000 feet on the slopes of Mauna Kea, Mauna Loa, and Haleakala, Hawaiian Islands. Worthy of cultivation as an ornamental garden plant. Collected on Mauna Kea, Hawaii, at an altitude of 10,000 feet, in May, 1921."

53480 to 53482. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

"The Hawaiian giant raspberry, occurring at an altitude of about 6,000 feet. It is a straight bush with the older branches thornless. The fruits, borne at the drooping tips of the branches, are very numerous, over 2 inches in diameter, and exceedingly juicy; the seeds are comparatively small. The flesh is slightly bittter, but otherwise delicious. This berry is of great promise, as it grows in a region where frost is not uncommon in the winter months. It would grow well in the Sequoia regions of the Pacific coast. Collected in May, 1921, on Mauna Kea, Hawaii."

53480. "Red variety, from Mauna Kea, Keanakolu."

53481. "Selected red variety from Mauna Kea, Hawaii."

53482. "Yellow, selected variety, from Mauna Kea, Hawaii. The variety with orange-yellow fruits is spiny, but the fruits are even larger than those of the red variety and sweet instead of bitter."

53483. FAGRAEA AURICULATA Jack. Loganiaceæ.

From Singapore, Straits Settlements. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921.

"A medium-sized tree with drooping branches and large, handsome, fleshy leaves. The snow-white, bell-shaped flowers measure 6 to 7 inches across and 5 to 6 inches long. It is exceedingly handsome and certainly worthy of cultivation; it is, however, distinctly tropical, being native to the Malay Peninsula. Collected at Singapore in March, 1921." (*Rock.*)

53484. STERCULIA MACROPHYLLA Vent. Sterculiaceæ.

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921.

"A large tree with cordate suborbicular entire leaves which measure 10 to 12 inches long. It is native to the Malay Peninsula, but occurs also in Java." (*Rock.*)

For previous introduction, see S. P. I. No. 34366.

53485. OSTEOMELES OBTUSIFOLIA (Pers.) Kunth. Malaceæ.

From Loja, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received June 8, 1921.

"(No. 609a. May 7, 1921. Loja, Ecuador.) *Quiqui*, collected near the town of Loja, in southern Ecuador. It is common in this region, along the edges of ravines and among scrub at altitudes of 7,000 to 8,000 feet. The plant is an arborescent shrub reaching to 12 or 15 feet. It is armed with long sharp thorns and has oblong-elliptic, blunt or acute, dentate leaves about an inch long. The thin-skinned fruits, which are produced in small terminal clusters, are round to oblate, deep red, and up to half an inch in diameter. A small quantity of yellowish, mealy flesh surrounds several hard seeds. The

flavor of the fruit is subacid and slightly acrid, resembling that of some of the northern haws (Crataegus).

"This plant has been used at Loja as a stock on which to graft the apple, according to Dr. Ramon Eguiguren. It is introduced for trial as a stock plant in the United States." (*Popenoe.*)

53486. DIGITARIA EXILIS (Kippist) Stapf. Poaceæ. **Fundi.**

From Kaduna, Nigeria, Africa. Seeds purchased from P. H. Lamb, Director of Agriculture, northern Provinces. Received March 28, 1921.

"This grass in a single season's testing has proved remarkably promising as forage for our Southern States. In the northern Provinces of Nigeria it seems to be known under the name of *acha*." (*C. V. Piper.*)

53487. ACROCOMIA SCLEROCARPA Mart. Phœnicaceæ. **Macauba palm.**

From Horqueta, Paraguay. Seeds procured by Thomas R. Gwynn. Received May 4, 1921.

"*Mbocaya* (coco). The *coco*, from the roots up, is a most valuable plant. When very young the roots can be used as mandioca. When matured, the stem, from a foot or two above the roots toward the bud of the plant, makes excellent starch, which is just as good as that furnished by the mandioca plant; moreover, this part of the plant yields nourishing feed, without any preparation, for all kinds of livestock and fowls. The leaves make thread and twine from which the Indians make hammocks that for endurance are par excellence. The *coco* has a long, straight body, sometimes 80 feet in height, and from its top sends out its long, feathery, waving leaves. The fruits are formed at the base of the leaves like huge bunches of grapes. From two to four bunches are produced every year by a single tree. The oil from the kernel is better than any olive oil to be found in this country, and the soap made from it is equal to any toilet soap in use. The one drawback to this palm is the thorns on the stems of the leaves and on the trunk. Sometimes, however, the trunk is entirely free from thorns, especially when very tall and in its full vigor. The leaves also furnish feed for stock; in times of drought when pasture fails the natives fell the trees for their horses and cattle and split open the trunks so that the cattle may eat the pith." (*Gwynn.*)

For previous introduction, see S. P. I. No. 51742.

53488. VACCINIUM MEYENIANUM Klotzsch. Vacciniaceæ.

From Hawaii. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 11, 1921.

"Collected on Isoorora Hill, Northwestern District, British Guiana, in May, shrub 15 feet in height, native to the mountains of Hawaii, related to the ohelo berry (*Vaccinium reticulatum* Smith), and loaded with bright, cherrylike berries which are brilliant red for several months in the year. It grows at an altitude of about 4,000 to 5,000 feet and is especially abundant about the region of the Volcano Kilauea. The berry is less well known than the ohelo berry. Owing to the bright-red color of the berries they have been avoided for fear of their being poisonous. They are much juicier than the ohelo berries, but are often slightly bitter. Some, however, are sweet and delicious. The plant is peculiar to the Hawaiian Islands." (*Rock.*)

53489. CLUSIA sp. Clusiaceæ.

From Georgetown, Demerara, British Guiana. Seeds presented by R. Ward, superintendent, Botanic Gardens. Received June 9, 1921.

"Collected on Isoorora Hill, Northwestern District, British Guiana, in May, 1921." (*Ward.*)

The Clusias are opposite-leaved trees or shrubs, usually with roseate flowers, native to tropical America. They may be of value as ornamentals.

53490. OCHROMA LAGOPUS Swartz. Bombacaceæ. **Balsa.**

From Camaguey, Cuba. Seeds presented by Dr. R. L. Luaces, director, Granja Escuela. Received June 1, 1921.

"This tree grows rapidly, requiring only three years from seed to flower at this place, and makes a pretty shade tree. I believe that it will grow well in California and around Miami and Key West." (*Luaces.*)

For previous introduction see S. P. I. No. 53262.

53491 and 53492.

From Soledad, Cienfuegos, Cuba. Seeds presented by R. M. Grey, superintendent, Cuban Gardens. Received June 4, 1921.

53491. CASIMIROA EDULIS La Llave. Rutaceæ. **White sapote.**

A large tree with palmately compound leaves and small greenish yellow flowers. The delicious green sh yellow fruit, about the s ze of an orange, usually contains five large seeds. This fruit makes an excellent ice cream resembling that made from peaches. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 680.*)

For previous introduction, see S. P. I. No. 46661.

53492. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"Brown cotton." (*Grey.*)

53493. GOSSYPIUM BARBADENSE L. Malvaceæ. **Cotton.**

From Alexandria, Egypt. Seeds presented by A. N. Anagnosti, agent for E. A. Shaw & Co., New York City. Received May 16, 1921.

Suprema cotton.

53494. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Baguio, Benguet, Philippine Islands. Tubers presented by J. A. Wright, superintendent, Trinidad Agr cultural School, through P. J. Wester, agr cultural adviser, Bureau of Agriculture, Manila. Received June 14, 1921.

"These potatoes were grown near the mountain capital, one of the few places in the Philipp nes where potatoes are grown successfully." (*Wester.*)

53495. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. **Yampi.**

From Kingston, Jamaica. Tubers presented by W. S. Goodman, acting superintendent, Hope Gardens. Received June 21, 1921.

"*Jamaica yampi.* A white-fleshed medium-sized yam of excellent quality, said to be the most popular var ety in Jamaica." (*R. A. Young.*)

53496. CASIMIROA sp. Rutaceæ. **White sapote.**

From Orange, Calif. Budwood presented by C. P. Taft. Received June 21, 1921.

"Seedless sapote." (*Taft.*)

53497 to 53499. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Port Dickson, Negri Sembilan, Federated Malay States. Presented by Will P. Handover. Received June 11, 1921. Quoted notes by Mr. Handover.

53497. "*Green (Nyiur Puyah).*"

53498. "*Red (Nyiur Rajah).*"

53499. "*Yellow (Nyiour Gading).*"

53500 to 53527. PHASEOLUS spp. Fabaceæ. Bean.

From Reading, England. Seeds purchased from Sutton & Sons. Received April 4, 1921.

Introduced for experiments in breeding disease-resistant strains.

53500 to 53511. PHASEOLUS COCCINEUS L. Scarlet Runner bean.

53500. *Champion Scarlet.*
53501. *Chelsea Giant White.*
53502. *Ne Plus Ultra.*
53503. *Scarlet.*
53504. *Sutton's A–1.*
53505. *Sutton's Best of All.*
53506. *Sutton's Mammoth White.*
53507. *Sutton's Painted Lady.*
53508. *Sutton's Prize Winner.*
53509. *Sutton's Scarlet.*
53510. *Veitch's Hackwood Park.*
53511. *Veitch's Mammoth Scarlet.*

53512 to 53527. PHASEOLUS VULGARIS L. Common bean.

53512. *Canadian Wonder.*
53513. *Long-Podded Negro.*
53514. *Sutton's Canadian Wonder.*
53515. *Sutton's Everbearing.*
53516. *Sutton's Evergreen.*
53517. *Sutton's Forcing.*
53518. *Sutton's Green Gem.*
53519. *Sutton's Magnum Bonum.*
53520. *Sutton's Monster Negro.*
53521. *Sutton's Perfection.*
53522. *Sutton's Plentiful.*
53523. *Sutton's Prolific Negro.*
53524. *Sutton's Reliance.*
53525. *Sutton's Satisfaction.*
53526. *Sutton's Superlative.*
53527. *Sutton's White Haricot.*

53528 to 53531. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Saint Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, agronomist in charge, Agricultural Experiment Station. Received May 9, 1921.

53528. *S. C. 12/4.*

A cane which has shown the most promise in a test of 120 varieties (imported and Saint Croix seedlings which had given promise in previous trials). It has given a larger yield in weight than other good canes previously grown. The canes yield quite as much juice as the standard cane, *Ribbon*, and the juice is generally distinctly richer in sucrose. The canes are fairly stout, an average specimen having a circumference of 5 to 6 inches. The internodes are 5 to 7 inches long. An exceptionally good specimen in a rotation field had 33 joints and gave the following measurements: Weight of cane, 21 pounds; length, 12 feet; circumference, 6.25 inches. (Adapted from *Louisiana Planter and Sugar Manufacturer, vol. 66, p. 308.*)

53529. *S. C. 12/37.*

A cane which gives good results as a plant and also as a ratoon. It yielded 5.9 tons per acre, showing an increase of 2.1 tons per acre over the *Ribbon* control plats. The ratoons gave 22.1 tons per acre. (Adapted from *Report of the Agricultural Experiment Station in St. Croix, 1914–15, p. 18.*)

53530. *S. C. 13/13.*

This cane gave 6.2 tons per acre, showing an increase of 2.9 tons over *Ribbon* cane. The ratoons gave 13.2 tons per acre. (Adapted from the *Report of the Agricultural Experiment Station in St. Croix, 1914–15, p. 20.*)

53531. [No label.]

53532. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

From Dos Cabezos, Ariz. Seeds presented by E. J. Hands. Received May 9, 1921.

"Beans that I got on a recent trip into Chihuahua, Mexico. The natives who live in the foothills grow these beans without irrigation and, in fact, grow no other beans. These may develop into something better than the common 'frijol.'" (*Hands.*)

53533. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Yeungkong, Kwangtung, China. Seeds presented by Mrs. W. H. Dobson, Forman Memorial Hospital. Received May 9, 1921.

"The beans are said to be of long life, growing at all seasons in South China." (*Mrs. Dobson.*)

For previous introduction, see S. P. I. No. 50760.

53534. BROSIMUM ALICASTRUM Swartz. Moraceæ. **Breadnut tree.**

From Saint Jean le Blanc, Loiret, France. Seeds presented by E. Versin. Received May 12, 1921.

"The leaves are used extensively for forage purposes in Yucatan. The seeds are produced in great abundance and might be utilized as a source of industrial starch or perhaps distilled into alcohol." (*O. F. Cook.*)

For previous introduction, see S. P. I. No. 47996.

53535 to 53540. RUBUS spp. Rosaceæ. **Bramble.**

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Garden. Received May 14, 1921.

53535. RUBUS BIFLORUS QUINQUEFLORUS Focke.

This very ornamental variety, native to western Szechwan at altitudes of 5,800 to 6,800 feet, produces its clustered orange-yellow berries over so long a period as to be almost perpetual fruiting. Because of its wax-coated stems it is one of the most striking plants in the garden in autumn and winter. (Adapted from *Gardeners' Chronicle, vol. 46, p. 212.*)

For previous introduction, see S. P. I. No. 50294.

53536. RUBUS CHROOSEPALUS Focke.

A Chinese bramble with glabrous cordate leaves, white tomentose beneath, and small purplish flowers followed by black fruits. Native to Hupeh Province. (Adapted from *Focke, Species Ruborum, p. 1, p. 52.*)

For previous introduction, see S. P. I. No. 52942.

53537. RUBUS OMEIENSIS Rolfe.

A large, unarmed, straggling shrub with maplelike leaves, downy beneath, deeply divided stipules one-half to three-quarters of an inch long, and terminal, many-flowered panicles. The purple flowers, half an inch across, are followed by black, well-flavored fruits ripening late. Native to western China and found on Mount Omei. It grows up to 6,000 feet altitude and will probably be perfectly hardy. It makes growths 10 to 12 feet long in a season. (Adapted from *Bean, Trees, and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

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

53538. RUBUS THIBETANUS Franch.

An attractive, deciduous, Chinese shrub with purplish stems and dark lustrous green leaves, white felted below. The purple flowers, half an inch across, are followed by black roundish fruits of the same diameter, covered with a bluish bloom. (Adapted from *Focke, Species Ruborum, pt. 1, p. 179.*)

For previous introduction, see S. P. I. No. 42592.

53535 to 53540—Continued.

53539. RUBUS VEITCHII Rolfe.

An ornamental Chinese plant with pinnate leaves 3 inches long, silvery glaucous above and whitish beneath. The double pink flowers are not very freely produced. (Adapted from *The Garden, vol. 79, p. 518.*)

53540. RUBUS XANTHOCARPUS Bur. and Franch.

A perennial Chinese climber, 1 to 4 feet long, sparsely prickly or unarmed, which dies to the ground every year. The edible fruit is composed of many golden yellow drupes. It is cultivated for the fruit in Lithuania. Native to central and northwestern China. (Adapted from *Focke, Species Ruborum, pt. 1, p. 129.*)

For previous introduction, see S. P. I. No. 1004.

53541. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Melbourne, Victoria. Seeds presented by Messrs. Law, Somner, & Co. Received May 14, 1921.

Introduced for experiments by department specialists.

For previous introduction, see S. P. I. No. 53007.

53542. BRASSICA RUGOSA (Roxb.) Prain. Brassicaceæ. **Palangi.**

From Calcutta, India. Seeds presented by Lieut. Col. A. T. Gage, director, Botanical Survey of India. Received May 16, 1921.

An early cold-weather crop in the hills of the central, eastern, and western Himalayas. The permanent radical leaves form a loose cabbagelike head 1 foot in diameter. Later a stoutish stem, 4 to 6 feet high, is formed, its branches ascending to make a narrow pyramidal head 6 to 10 inches across. The succulent leaves, 12 to 15 inches long and 8 to 9 inches wide taper into thick white fleshy stalks 3 to 4 inches long and over an inch wide. The plant is cultivated in Nepal, where its leaves are plucked almost as fast as they are developed and used as a vegetable. An oil is extracted from the seeds. (Adapted from *The Agricultural Ledger, vol. 5, p. 11.*)

For previous introduction, see S. P. I. No. 46479.

53543 and 53544.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received May 18, 1921.

53543. HYOSCYAMUS MUTICUS L. Solanaceæ.

"A medicinal plant rich in hyoscyamine, from the Sudan." (*Trabut.*)

A thick-stemmed perennial with fleshy ovate leaves 4 inches long and violet-spotted whitish flowers nearly an inch in length. Like the henbane (*H. niger*) this plant, which is native to Egypt and western Asia, is likewise rich in hyoscyamine and is used medicinally. (Adapted from *Muschler, Manual Flora of Egypt, vol. 2, p. 853.*)

53544. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

"*Pelissier de Facé.* Hard wheat from the Medea region, 1920." (*Trabut.*)

53545. RUBUS sp. Rosaceæ. **Blackberry.**

From Ecuador. Seeds presented by George K. Cherrie, Newfane, Vt. Received May 23, 1921.

"A blackberry that I found growing in great abundance at a point known as Sabanilla on the River Zamora. The locality is at an altitude of about 5,500 feet, in the Ecuadorian 'Oriente.' The seeds were collected November 10, 1920, which must have been the height of the fruiting season. I do not believe I have ever seen such tremendous clusters of berries. On some of the bushes blossoms as well as ripe fruit were to be seen. The berries are large and to me were very fine flavored." (*Cherrie.*)

53546. DIGITARIA EXILIS (Kippist) Stapf. Poaceæ. **Fundi.**

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received May 24, 1921.

"*Atcha* from Aburi; used by the natives as a delicacy in food, being cultivated for that purpose. The seeds are ground and made into a sauce." (*Prain.*)

For previous introductions, see S. P. I. No. 52736.

53547. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**

From Los Angeles, Calif. Seeds presented by Russell C. Westcott. Received May 24, 1921.

"*Candlenut.* The tree, purchased in Santa Barbara, is about 20 years old and is now growing on the lawn. It is about 40 feet high and has formed a round head. The tree has never been injured by frost except in the freeze of 1912 when it was killed back to the main branches, but quickly recovered.

"These candlenuts are edible but are slightly laxative. The tree bore over a bushel of nuts last year, which is the largest crop it has ever had. It produces about two crops annually, although there are blossoms and nuts on it most of the time." (*Westcott.*)

For previous introduction, see S. P. I. No. 52755.

53548. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

From Rieti, Italy. Seeds presented by N. Strampelli, director, R. Statione Sperimentale di Granicoltura. Received May 25, 1921.

"*Carlotta Strampelli.* A wheat which thrives in any soil in any position; it produces best, however, in fresh, deep, fertile, moderately worked soil. The seeds should be sown early, preferably in rows." (*Strampelli.*)

53549 to 53554.

From Hamburg, Germany. Seeds presented by Ernst & Von Spreckelsen. Received May 28, 1921.

The following types were introduced for experimental work:

53549. LUPINUS ANGUSTIFOLIUS L. Fabaceæ. **Blue lupine.**

53550. LUPINUS LUTEUS L. Fabaceæ. **Yellow lupine.**

53551. ORNITHOPUS SATIVUS Brot. Fabaceæ. **Serradella.**

53552 to 53554. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

53552. Strain 1.
53553. Strain 2.
53554. Strain 3.

53555. DIOSPYROS DISCOLOR Willd. Diospyraceæ. **Mabolo.**

From Manila, Philippine Islands. Budded seedlings presented by Sr. Adn. Hernandez, Director of Agriculture, Department of Agriculture and Natural Resources, through P. J. Wester, horticulturist in charge, Lamao Experiment Station. Received June 25, 1921.

"Small budded seedless *mabolos*, variety *Manila*, from the original tree in Manila. Among the less well-known tropical fruits that are commonly propagated from seed, the *mabolo* is the first species to permanently contribute to tropical pomology a seedless fruit of greatly improved quality. During the past dry season experiments were made at Lamao that yielded very satisfactory results, and it was found that the *mabolo* is readily shield-budded. The ordinary *mabolo*, a medium-sized Philippine tree of vigorous growth and a desirable ornamental, with shining leaves 5 to 10 inches long, pubescent beneath, bears velvety, dull reddish, thin-skinned fruits 3 inches long and 3½ inches in

diameter, with whitish, firm, rather dry, sweet flesh of rather indefinite flavor, and four to eight large seeds.

"Notwithstanding its size and attractive appearance it has never gained the favor of the European, although very popular with the natives. This seedless variety is oblate, sweet, and juicy, and of good flavor, absolutely coreless, and without seed. Like the banana, the entire fruit is edible, the thin skin excepted, and it is a very superior fruit. According to the owner of the trees, 80 per cent of the fruit is seedless; the remainder contains from one to three seeds." (*Wester.*)

53556. FERRARIA WELWITSCHII Baker. Iridaceæ.

From Bela Vista, Angola. Bulbs presented by H. A. Neipp. American Mission. Received June 28, 1921.

"A number of bulbs, which may be of some interest should they blossom in America." (*Neipp.*)

53557. BROMUS UNIOLOIDES (Willd.) H. B. K. Poaceæ. **Brome-grass.**

From Vlakfontein, Colesberg, South Africa. Seeds presented by Col. A. J. Bester. Received May 25, 1921.

"*Rescue grass.* A grass which grows in the most exposed parts during the winter." (*Bester.*)

For previous introduction, see S. P. I. No. 34806.

53558 to 53562. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Bombay, India. Seeds presented by Grindlay & Co., through the Director of Agriculture, Bombay Department of Agriculture. Received May 28, 1921.

For experimental work of the Office of Forage-Crop Investigations.

53558. *Bile Fulgar.*
53559. *Hasarbija.*
53560. *Pattansali.*
53561. *Sadgar Nandyal.*
53562. *Yidgamfu.*

53563 to 53590.

From Allahabad, United Provinces, India. Seeds collected by Dr. L. A. Kenoyer and Winfield Dudgeon, Ewing Christian College. Received May 27, 1921. Quotes notes by Mr. Dudgeon.

53563. ACACIA CAESIA (L.) Willd. Mimosaceæ.

"A scandent shrub in pioneer monsoon-deciduous forests of peninsular India. Collected at Shankargarh, 25 miles south of Allahabad, April 8, 1921."

The flowers of this climbing shrub are pale yellow and are borne in stalked globose heads forming large panicles. Native to the Dekkan and Canara. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 451.*)

For previous introduction, see S. P. I. No. 30776.

53564. ACACIA LEUCOPHLOEA (Roxb.) Willd. Mimosaceæ.

"A conspicuous component of survival thorn scrub on the Indo-Gangetic Plains, and a pioneer in forest areas of peninsular India. Collected at Shankargarh, 25 miles south of Allahabad, April 8, 1921."

A large, fast-growing tree with yellowish bark used in the distillation of spirit. The bark also yields a strong fiber said to be much valued for fishing nets. Native to the plains of the Punjab and Rajputana and the forests of central and southern India and Burma. (Adapted from *Watt, Commercial Products of India, p. 15.*)

For previous introduction, see S. P. I. No. 33432.

53563 to 53590—Continued.

53565. ANOGEISSUS LATIFOLIA (Roxb.) Wall. Combretaceæ.

"Collected at Manikpur, April 21, 1920, in the forests of the low Vindhya Mountains."

A tree 60 to 70 feet high, with smooth, light-colored bark and pale, dull glaucous green leaves with a pink midrib. The small yellow flowers are in dense heads. The tree yields a useful gum, and the wood is very strong and tough. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 482.*)

For previous introduction, see S. P. I. No. 52283.

53566. ANOGEISSUS SERICEA Brandis. Combretaceæ.

"A medium-sized tree in monsoon-deciduous forests of peninsular India. Collected at Shankargarh, near Allahabad, India. April 8, 1921."

A tree with leaves silky pubescent beneath, and yellow flowers in globose heads, one-half to three-quarters of an inch in diameter. The small, leathery, winged fruits are tomentose. Native to Gujarat and Central Provinces, India. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 482.*)

53567. BAUHINIA VAHLII Wight and Arn. Cæsalpiniaceæ.

"A characteristic gigantic climber in climax monsoon-deciduous forests throughout peninsular India and up to 5,000 feet in the Himalayas. Collected in the upper (Himalayan) Ganges Valley, June 1, 1920. I should think it would stand a climate about like that of Virginia."

A climber, sometimes 100 feet long, covered with red-brown tomentum. The large terminal corymbs are composed of white flowers with petals an inch long, turning to cream-yellow. This species is put to more uses than almost any other forest plant except the bamboo. The large flat leaves are sewed together and used as plates, cups, rough tablecloths, umbrellas, cloaks, and rain capes; the seeds are roasted and eaten; the fibers of the bark are made into ropes; and a gum exudes copiously. Native to central and northern India, ascending to 5,000 feet; native name *taur.* (Adapted from *Collett, Flora Simlensis, p. 149.*)

For previous introductions, see S. P. I. No. 33559.

53568. BAUHINIA VARIEGATA L. Cæsalpiniaceæ.

"Native to the climax monsoon-deciduous forests throughout peninsular India and up to 5,000 feet in the Himalayas. Collected in the upper (Himalayan) Ganges Valley at Dharassu, June 1, 1920. I should think it would stand a climate about like that of Virginia."

A moderate-sized tree with short racemes of fragrant flowers, rose colored and variegated with red and yellow. Cultivated throughout India. The light or reddish brown wood is used for agricultural implements. The astringent bark is used for tanning and dyeing; the leaves and flower buds are eaten as vegetables; and the flower buds are often pickled. (Adapted from *Brandis, Forest Flora of India, p. 160.*)

For previous introduction, see S. P. I. No. 32787.

53569. BOSWELLIA SERRATA Roxb. Balsameaceæ.

"Collected near Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

A large tree, native to the mountains of India, with pinnate, hairy leaves, racemes of small pink flowers, and smooth capsules the size of an olive. This tree yields a most fragrant resin known as Indian olibanum, used as an ingredient in incense and various ointments. The rough, moderately hard timber is recommended for tea boxes and is used for fuel, for making charcoal, and for the manufacture of doors, bowls, etc. The tree enjoys a considerable immunity from being browsed or lopped for fodder, owing to its resinous leaves, and it has a great capability for withstanding forest fires. It is thus valuable in the reclothing of dry hills. (Adapted from *Transactions of the Asiatic Society in Bengal, vol. 9, p. 379,* and *Watt, Commercial Products of India, p. 174.*)

53563 to 53590—Continued.

53570. CASSIA FISTULA L. Cæsalpiniaceæ.

"Common in pioneer monsoon-deciduous forests throughout peninsular India and up to 4,000 feet in the Himalayas. Collected at Shankargarh, 25 miles south of Allahabad, India, April 8, 1921."

A moderate-sized tree with large, bright-yellow, fragrant flowers in lax, pendulous racemes 1 to 2 feet long. Common throughout India in the forest tracts in Trans-Indus on the hills near Peshawar, and ascends to 4,000 feet in the outer Himalayas. The red wood is beautifully mottled and streaked, hard, tough, is easily worked, and takes a fine polish, but is somewhat brittle and apt to crack. It is, however, very durable and is used for posts, plows, etc. The bark is used for tanning and dyeing, and red juice exudes from wounds in the bark, which hardens into a gum used like kino. The twigs and leaves are lopped for cattle fodder in Oudh and Kumaon. (Adapted from *Brandis, Forest Flora of India, p. 164.*)

For previous introduction, see S. P. I. No. 32316.

53571. CLERODENDRUM INFORTUNATUM Gaertn. Verbenaceæ.

"A component of survival woody vegetation of the plains, where human pressure is heavy. Collected at Shankargarh, 25 miles south of Allahabad, India, April 8, 1921."

An ornamental shrub 3 to 8 feet high, with white, sweet-scented flowers tinged with pink, followed by small black drupes seated on an enlarged pink calyx which sometimes reaches over an inch across the lobes when spread out. The large leaves, 4 to 10 inches long, are 3 to 8 inches wide. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 432.*)

53572 and 53573. DIOSPYROS TUPRU Buch.-Ham. Diospyraceæ.

A small tree with woolly branchlets and leathery leaves over 3 inches long. The smooth globose fruits are three-fourths of an inch in diameter. Native to the west Dekkan peninsula. (Adapted from *Hooker, Flora of British India, vol. 3, p. 563.*) Received as *Diospyros tomentosa* Roxb., which is now referred to *D. tupru.*

53572. "Collected at Manikpur, April 21, 1920."

53573. "A small tree characteristic in the pioneer monsoon-deciduous forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

53574. ERIOLAENA HOOKERIANA Wight and Arn. Sterculiaceæ.

"Collected near Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

A south Indian shrub or small tree with cordate leaves and few-flowered, lax racemose cymes of long-peduncled flowers 1½ inches across. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 131.*)

53575. EUPHORBIA ROYLEANA Boiss. Euphorbiaceæ.

"A treelike Euphorbia on the rocky cliffs and talus slopes in the range of the Bauhinia monsoon-deciduous forest in the outer Himalayas, at altitudes of 3,000 to 5,500 feet. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. I should think this would stand a climate about like that of Virginia."

A large shrub of cactuslike aspect attaining a height of 15 feet, with ascending 2 to 7 angled, thorny stems, 2 to 3 feet in girth. The sessile entire caducous leaves are inserted along the angles of the branches, and the yellow involucres, half an inch in diameter, are borne in sessile cymes. The milk contains a large amount of gutta-percha which has a sweet odor when fresh and is believed to be of value as a waterproofing material or as a paint for ships. (Adapted from *Collett, Flora Simlensis, p. 446,* and from *Watt, Commercial Products of India, p. 531.*)

53563 to 53590—Continued.

53576. FLACOURTIA SEPIARIA Roxb. Flacourtiaceæ.

"A common pioneer in the thorn forest over rocky peninsular India, and in the survival thorn scrub on the Indo-Gangetic Plains. Collected at Shankargarh, 25 miles south of Allahabad, April 8, 1921."

A shrub with long thorns; the stiff, glabrous, elliptic leaves are from one-half to 1½ inches long, and the small greenish flowers are solitary or in racemose clusters shorter than the leaves. Common in the hilly parts of the Konkan and Dekkan. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 56.*)

For previous introduction, see S. P. I. No. 34093.

53577. GARDENIA LATIFOLIA Ait. Rubiaceæ.

"Collected near Manikpur, in the forest of the low Vindhya Mountains, April 21, 1920."

A small tree 30 feet high, with a rounded head of dark-green glossy foliage and large, terminal, solitary, fragrant, white flowers which turn yellow in the evening; the corolla tube is 2 to 3 inches long. The white, yellowish tinged wood is close and fine grained, easily worked, and durable; combs are made of it, and it has been recommended for engraving and turner's work. Common in dry places in India except in the west. (Adapted from *Brandis, Forest Flora of India, p. 271.*)

53578. HIPTAGE BENGHALENSIS (L.) Kurz. Malpighiaceæ.
(*H. madablota* Gaertn.)

"An evergreen climber throughout India in climax monsoon-deciduous forests. Collected at Uttarkashi, upper (Himalayan) Ganges Valley, May 25, 1920. Will probably grow in a climate similar to that of Virginia."

A tall, climbing shrub with thick, entire glabrous leaves, 4 to 6 inches long and showy, fragrant flowers three-fourths of an inch across, in axillary racemes forming a terminal leafy panicle. The silky white petals have fringed, wavy margins, and the uppermost bears a large yellow spot. Native throughout India, in ravines and moist places, ascending to 3,000 feet. (Adapted from *Collett, Flora Simlensis, p. 56.*)

For previous introduction, see S. P. I. No. 33573.

53579. HOLARRHENA ANTIDYSENTERICA (Roth) Wall. Apocynaceæ.

"Collected near Manikpur, in the forest of the low Vindhya Mountains, April 21, 1920."

A small tree native throughout India, ascending to 3,500 feet, with corymbose cymes of white flowers which have a tube and ovate lobes half an inch long. Both bark and seeds of this plant are among the most important medicines of the Hindus. This is the true *conessi* or *kurtchi* bark and exfoliates in patches; it is astringent, antidysenteric, and anthelmintic. The seed yields a fixed oil and the wood ash is used in dyeing. The soft white wood is largely used for carving, furniture, and turnery. (Adapted from *Collett, Flora Simlensis, p. 311,* and *Watt, Commercial Products of India, p. 640.*)

For previous introduction, see S. P. I. No. 47692.

53580. JUSTICIA ADHATODA L. Acanthaceæ.
(*Adhatoda vasica* Nees.)

"A small survival shrub characteristic to the thorn scrub of peninsular India; and a woody ruderal in overpopulated areas throughout India. It is a pioneer in monsoon-deciduous forests and common up to 4,500 feet in the Himalayas. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920, in the Bauhinia forest range. Suitable, I should think, to a climate about like that of Virginia."

A glabrous shrub 4 to 8 feet high, native to India, with white flowers which are streaked and dotted with pink and are 1 to 2 inches long and borne in erect spikes 1 to 3 inches long. (Adapted from *Collett, Flora Simlensis, p. 376.*)

53563 to 53590—Continued.

53581 and 53582. LAGERSTROEMIA PARVIFLORA Roxb. Lythraceæ.

A large tree, native to the Dekkan Peninsula and at the base of the western Himalayas at altitudes of 1,000 feet, which attains a height of 50 to 70 feet with a straight stem often 30 feet to the first branch. The leathery leaves, green and glabrous above, pale or sometimes hoary tomentose beneath, are used to feed tasar silkworms. The white fragrant flowers, half an inch across, are in axillary or terminal panicles. The wood is valued for its timber, which is tough, elastic, and durable. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 612*, and *Brandis, Forest Flora of India, p. 239.*)

For previous introduction, see S. P. I. No. 47703.

53581. "Collected at Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

53582. "A component of pioneer monsoon-deciduous forests of peninsular India. Collected at Shankargarh, 25 miles south of Allahabad, India, April 8, 1921."

53583. LEUCOMERIS SPECTABILIS D. Don. Asteraceæ.

"A small tree composite, common in pioneer forest preceding climax Bauhinia forests in the outer Himalayas. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. Suitable probably to a climate like that of Virginia."

A shrub or small tree native to western Himalayan regions at altitudes of 2,000 to 5,000 feet, with entire glabrous leathery leaves densely velvety tomentose beneath, 4 to 14 inches long, and 1½ to 4 inches wide, narrowed at both ends. The white flowers half an inch long are in rounded corymbs, 4 to 8 inches in diameter. The achenes are densely silky with copious pappus. (Adapted from *Hooker, Flora of British India, vol. 3, p. 386.*)

53584. MALLOTUS PHILIPPINENSIS (Lam.) Muell. Arg. Euphorbiaceæ.

"Common in pioneer monsoon-deciduous forests of the outer Himalayas up to 5,000 feet. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. Suitable, I should think, to a climate about like that of Virginia."

A small dioecious tree with long-stalked leaves glabrous above and rusty tomentose beneath and minutely scarlet dotted. The globose scarlet capsules, one-third of an inch in diameter, are covered with a bright-red powder which is collected for export to be used for dyeing silk and in medicine. Native to India, ascending to 4,500 feet. (Adapted from *Collett, Flora Simlensis, p. 453.*)

53585. MAXIMILIANEA GOSSYPIUM (L.) Kuntze. Cochlospermaceæ.
(*Cochlospermum gossypium* DC.)

"Collected near Manikpur, in the forest of the low Vindhya Mountains."

A small tree with palmately lobed leaves, white tomentose beneath, and bright-yellow flowers 4 to 5 inches in diameter, in terminal panicles. Found on a few of the Konkan and Dekkan Hills and often planted near temples. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 53.*)

For previous introduction, see S. P. I. No. 43381.

53586. NATHUSIA SWIETENIOIDES (Roxb.) Kuntze. Oleaceæ.
(*Schrebera swietenioides* Roxb.)

"A tree commonly met in climax forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

A tree 40 to 50 feet high, with smooth pinnate leaves 4 inches long and white, brown-marked flowers, often 100 in each cyme. Native to the tropical Himalayas and the Dekkan Peninsula at altitudes of 1,000 to 4,000 feet, and to Pegu, India. (Adapted from *Hooker, Flora of British India, vol. 3, p. 604.*)

53563 to 53590—Continued.

53587. RANDIA ULIGINOSA (Retz.) Poir. Rubiaceæ.

"Collected near Manikpur, in the forests of the low Vindhya Mountains, April 21, 1920."

A small tree rarely reaching 20 feet high, with reddish brown, scaly bark, thick horizontal branches, many of them terminating in one to two pairs of strong sharp thorns half an inch long. The thin glabrous leaves, pubescent beneath, are clustered on suppressed branchlets. The solitary, fragrant, white flowers are 1 to 2 inches in diameter. The smooth, ovoid yellowish brown fruits, 2 to 3 inches long and containing numerous smooth seeds closely packed in pulp, are eaten after being boiled or roasted. Native throughout the Bombay Presidency. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 699.*)

For previous introduction, see S. P. I. No. 47769.

53588. STERCULIA URENS Roxb. Sterculiaceæ.

"A fine large tree commonly met in peninsular Indian climax deciduous forests, or farther south, in forests immediately preceding the climax. Collected at Shivpuri (Sipri), Gwalior State, India. To be grown where there is little or no danger of frost."

A large Indian tree with a straight trunk and white, smooth, papery bark, the outer surface thin and peeling off, the inner coat fibrous and netted. The glabrous leaves, velvety beneath and 8 to 12 inches long, are crowded at the ends of the branches. The numerous small yellow flowers are in terminal panicles appearing before the leaves. A gum called *katila*, which has been used as an inferior substitute for tragacanth (itself used as a substitute for gum arabic in medicine and in the arts) is obtained from the tree; the seeds are roasted and eaten by the poorer natives and in some parts of India are ground and used as a kind of coffee. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 123.*)

53589. TERMINALIA TOMENTOSA (Roxb.) Wight and Arn. Combretaceæ.

"A climax tree (dominant with *Tectona grandis* farther south) of monsoon-deciduous forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

A large tree, 80 to 100 feet high, with hard coriaceous leaves 5 to 9 inches long and dull-yellow flowers in erect terminal panicles. A common tree in the moister regions of India; it thrives best in heavy binding soils. The dark-brown wood, mottled with darker streaks, is used in northern India for house building, etc.; it is an excellent fuel and furnishes good charcoal; potash is made of it. The bark is used for tanning and the ashes of the bark are chewed with the betel leaf. The common tasar silkworm feeds on the leaves; lakh is occasionally gathered on the branches, and in Oudh and the Northwest Provinces the leaves are lopped for cattle fodder. (Adapted from *Brandis, Forest Flora of India, p. 226.*)

For previous introduction, see S. P. I. No. 47856.

53590. TRITICUM AESTIVUM L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

"Purple-stemmed wheat from the Himalayan portion of the Ganges Valley, at Ballu. Collected May 28, 1920. Should grow in a climate like that of Virginia."

53591. EUGENIA LUMA (Molina) Berg. Myrtaceæ.
(*E. apiculata* DC.)

From San Francisco, Calif. Seeds presented by John McLaren, superintendent, Golden Gate Park. Received April 23, 1921.

An ornamental Chilean shrub bearing small edible fruits reported to have a "refreshing flavor."

53592 and 53593.

From Allahabad, United Provinces, India. Seeds collected by Dr. L. A. Kenoyer and Winfield Dudgeon, Ewing Christian College. Received May 27, 1921. Quoted notes by Mr. Dudgeon.

53592. VALLARIS HEYNEI Spreng. Apocynaceæ.

"A twining shrub in pioneer places throughout India. Collected at Dharassu, upper (Himalayan) Ganges Valley, June 1, 1920. Adapted to a climate similar to that of Virginia."

A climbing shrub with white, fragrant flowers, three-fourths of an inch across, in axillary drooping cymes. The oblong, pointed fruits are 6 inches long. Native to the Sutlej Valley and throughout India, ascending to 5,000 feet. It is often cultivated in gardens. (Adapted from *Collett, Flora Simlensis, p. 311.*)

53593. ZIZIPHUS XYLOPYRUS (Retz.) Willd. Rhamnaceæ.

"A small thorny tree characteristic in thorn forests pioneer to monsoon-deciduous forests of peninsular India. Collected at Shivpuri (Sipri), Gwalior State, India, April 2, 1921."

A straggling shrub or, in favorable situations, a tree, with smooth leaves covered beneath with white or yellowish tomentum. The yellowish white to brownish wood is hard and tough, easily worked, and durable, and is used for cart-building and other purposes. The bark is used for tanning; the young shoots, leaves, and fruits serve as fodder for cattle and goats. The hard dry fruit is charred and makes a black dye for leather. The edible kernels are inclosed two to three in a large, thick, hard stone. Native to India and dry hot places in Ceylon. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 242,* and *Brandis, Forest Flora of India, p. 90.*)

53594. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, agricultural trade commissioner, United States Department of Agriculture, American Legation. Received June 18, 1921.

"Seeds of the *cherimoya* from Salta, Argentina." (*Bullock.*)

A tree 15 to 25 feet high, native to Ecuador and Peru. The fruit, considered by many people to be the most delicious of tropical dessert fruits, is light green, thin skinned, somewhat oval, with white, juicy, melting flesh of subacid delicate flavor suggestive of the pineapple and banana. Numerous black seeds are embedded in the flesh. Analysis of the fruit in Hawaii shows percentages as follows: Total solids, 33.81; ash, 0.66; acids, 0.06; protein, 1.83; total sugars, 18.41; fat, 0.14; fiber, 4.29.

Seedlings bear the third or fourth year and produce at least a dozen good fruits. A tree in Madeira is said to have produced 300 fruits in one season. (Adapted from *Popenoe, Manual of Tropical and Subtropical Fruits, p. 161.*)

For previous introduction, see S. P. I. No. 52375.

53595 to 53606. ZEA MAYS L. Poaceæ. Corn.

From Buenos Aires, Argentina. Seeds presented by D. S. Bullock. Received May 18, 1921. Quoted notes by Mr. Bullock.

53595. "1920 harvest."

53596. "1921 harvest."

53597. "*Maiz amarillo viejo,* 1920 harvest. From Luis Dreyfus & Co."

53598. "*Maiz colorado,* 1921 harvest. From Luis Dreyfus & Co."

53599. "*Maiz morocho,* 1920 harvest. From Luis Dreyfus & Co."

53600. "*Maiz colorado viejo,* 1920 harvest. From Luis Dreyfus & Co."

53601. "*Maiz amarillo,* 1920 harvest. From Grain Exchange of Buenos Aires."

53595 to 53606—Continued.

53602. "*Maiz colorado*, 1920 harvest. From Grain Exchange of Buenos Aires."

53603. "*Maiz amarillo canario*, 1920 harvest. From Grain Exchange of Buenos Aires."

53604. "*Maiz morocho perla*, 1920 harvest. From Grain Exchange of Buenos Aires."

53605. "*Maiz colorado Cuarenteno*, 1920 harvest. From Grain Exchange of Buenos Aires."

53606. "*Maiz morocho*, 1920 harvest. From Grain Exchange of Buenos Aires."

53607. CORONILLA VARIA L. Fabaceæ.

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Hortus Botanicus Bergianus. Received May 25, 1921.

A free-flowering European plant which blooms from June until September in Chicago and is at its best in July. The peduncles are crowned with dense umbels of pink and white flowers, and the plant is a pleasing feature for rockeries, ledges, or dry and semishady banks. It is too rampant for the border. (Adapted from *Gardening, vol. 5, p. 337.*)

53608 and 53609.

From Buenos Aires, Argentina. Seeds presented by Sr. Benito Carrasco, director, Botanic Garden. Received May 25, 1921.

53608. SALPICHROA RHOMBOIDEA (Gill. and Hook.) Miers. Solanaceæ.

An ornamental plant, native to Argentina, with very abundant leafy foliage and creeping, spreading branches which appear to be starred all over with small white flowers. The pretty, ivory-white, transparent berries somewhat resemble the pineapple in flavor and are eaten by the natives. The plant is very effective for covering bare arid spots where nothing else can be grown. It is hardy in Paris, France. (Adapted from *The Garden, vol. 35, p. 367.*)

53609. IPOMOEA FICIFOLIA Lindl. Convolvulaceæ. **Morning-glory.**

A large climber from the Kamerun region, with slender stems covered with starlike hairs and discolored leaves placed at intervals of 4 to 5 inches. The cymose inflorescence bears violet-rose, salver-shaped flowers 2 inches across and 2 inches long. The plant flowers from August until the middle of October. (Adapted from *The Gardeners' Chronicle, vol. 22, p. 410.*)

For previous introduction, see S. P. I. No. 8868.

53610. DENDROCALAMUS STRICTUS (Roxb.) Nees. Poaceæ. **Bamboo.**

From Dehra Dun, India. Seeds presented by R. D. Hole, forest botanist, Forest Research Institute and College, through Col. Edwin S. George. Received May 27, 1921.

"Seeds of a beautiful bamboo which has tremendous commercial value." (*George.*)

A bamboo native to India and extending to Burma, which grows on drier ground than bamboos generally. It attains a height of 100 feet and its strength and solidity render it fit for many select technical purposes. This bamboo endures great cold as well as dry heat and is useful for the consolidation of embankments, on account of the network of fibrous roots. It occasionally forms forests of its own, seeds almost annually, which is exceptional among the Bambusaceæ, and is readily grown from seed. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 165.*)

For previous introduction, see S. P. I. No. 40889.

53611. CITRUS GRANDIS (L.) Osbeck. Rutaceæ.
(*C. decumana* Murr.)

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic W. Goding, American consul general. Received May 26, 1921.

"A native Ecuadorian fruit, known locally as *toronja*, which has the appearance of a mammoth orange nearly as large as a medium-sized human head. The arrangement of the interior of the fruit resembles that of the orange, but the color is salmon and the taste an acid bitter similar to but more pronounced than that of the ordinary grapefruit, for which it is being used as a substitute in Ecuador.

"Were this fruit properly cultivated, so as to lessen the coarseness of its pulp, it would be prized as a food and would present an attractive appearance on the table." (*Goding.*)

53612 and 53613.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 15, 1921. Quoted notes by Mr. Rock.

53612. ARISTOLOCHIA ACUMINATA Lam. Aristolochiaceæ.

"Collected between Raheng and Mesawt, Siam, in the rain forest at Pang Ma Kham Pom, 2-days' journey from Raheng, December 18, 1920. A vigorous vine, climbing over shrubs and trees. No flowers seen."

53613. CASSIA FISTULA L. Cæsalpiniaceæ.

"Seeds collected from trees growing wild near Palut, in dry forests with Strychnos, Lagerstroemia, and teak, between western Siam and Lower Burma on the way from Raheng to Mesawt, December 17, 1920. It is a medium-sized tree in these dry forests and is semideciduous in the winter. The yellow flowers are produced in long pendent racemes."

For previous introduction, see S. P. I. No. 32316.

53614. TABERNAEMONTANA DONNELL-SMITHII Rose. Apocynaceæ.

From the city of Guatemala, Guatemala. Seeds presented by Sr. Jorge G. Salas, Dirección General de Agricultura, through Sr. Francisco Villacorta, Guatemalan consul general in New York. Received June 29, 1921.

"Seeds from a large tree which produces the *goma de cojon* of commerce." (*Salas.*)

A large shrub 10 to 20 feet high, occurring in Guatemala from the coast up the slopes of the volcanoes to altitudes of 5,000 feet. The natives call it *cobul* (varnish gum). The thin oblong leaves are 3 to 8 inches long, and the large yellow salver-shaped flowers are in few-flowered cymes. (Adapted from *The Botanical Gazette, vol. 18, p. 206.*)

53615. ERAGROSTIS TREMULA Hochst. Poaceæ. **Grass.**

From Gizeh, Egypt. Seeds presented by Thomas W. Brown, director, Ministry of Agriculture, Horticultural Section. Received June 30, 1921.

An annual, tufted grass, found throughout the Tropics, with ascending or erect stems up to 3 feet in height and light-green, flat leaves tapering to a long point. (Adapted from *Muschler, Manual Flora of Egypt, vol. 2, p. 125.*)

53616. ROLLINIA EMARGINATA Schlecht. Annonaceæ. **Araticuy.**

From Horqueta, Paraguay. Seeds presented by Thomas R. Gwynn, through the American consul, Asuncion, Paraguay. Received June 23, 1921.

"*Chirimouia.* A large fruit, extremely aromatic; the seeds are full of oil." (*Gwynn.*)

For previous introduction, see S. P. I. No. 25528.

53617 to 53620. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Poppelsdorf, Bonn, Germany. Tubers presented by Dr. E. Schaffnit. Received May 25, 1921.

"Potatoes known to be immune to the wart disease." (*Schaffnit.*)

53617. *Pepo.*
53618. *Rheingold.*
53619. *Thieler.*
53620. *Ursus.*

For previous introduction, see S. P. I. No. 33491.

53621. MELILOTUS ALBA Desr. Fabaceæ. **White sweet clover.**

From Groningen, Netherlands. Seeds presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received June 1, 1921.

Secured for experimental purposes.

For previous introduction, see S. P. I. No. 40937.

53622 and 53623.

From Tripoli, Libia, Africa. Seeds presented by Dr. E. O. Fenzi. Received June 1, 1921. Quoted notes by Dr. Fenzi.

53622. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

"*Bescna.* The bescna appears to be more prized for forage than for grain, although the natives assure me that it will keep in perfect condition for 100 years. This and *gssab* [S. P. I. No. 53623] are practically the only summer forage plants grown by the Arabs, under irrigation, of course."

53623. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.** (*P. typhoideum* Rich.)

"*Gssab.* The seed of the gssab has a better taste than *bescna* and always commands a higher price on the market. It also grows taller than *bescna* and yields more forage, but will need also much more water. It is claimed that it will ripen seeds in 40 days from date of sowing, which statement, however, I can not guarantee. From what I know *P. glaucum* finds its northern cultural limit in Libia.

53624. AVENA SATIVA L. Poaceæ. **Oat.**

From Aberystwith, Wales. Seeds presented by R. G. Stapledon, director, Welsh Plant-Breeding Station. Received June 4, 1921.

"*Sir Douglas Haig.* A Welsh oat which has more than three grains in a spikelet and was produced by a cross with *Avena nuda* as one of the parents." (*L. E. Thatcher.*)

53625. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

From Honolulu, Hawaii. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 6, 1921.

"Spineless variety from near Shipman Ranch, Kilauea, Hawaii. This variety grows epiphytically in the forks of large koa trees (*Acacia koa* Gray) and on fallen logs of the same species, inaccessible to cattle. The dark-red fruits attain a diameter of nearly 2 inches, are very juicy, and, though slightly bitter, are quite pleasant to the taste. The variety would likely improve under cultivation. The canes do not grow as straight as those of the yellow and red varieties on Mauna Kea (S. P. I. Nos. 53480 to 53482), but they are over an inch in diameter at the base; the whiplike branches are very scandent and rambling. These seeds came from a fern forest at an altitude of 4,500 feet on the slopes of Mauna Loa, Hawaii, May, 1921." (*Rock.*)

53626. AVENA BARBATA WIESTII (Steud.) Hausskn. Poaceæ. **Grass.**

From Gizeh, Egypt. Seeds presented by Thomas W. Brown, director, Ministry of Agriculture, Horticultural Section. Received June 7, 1921.

An erect, sparingly hairy grass up to 2 feet in height, with linear leaves up to 7 inches long. Secured for experimental purposes.

53627 to 53752.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Garden. Received April 30, 1921.

53627 to 53649. BERBERIS spp. Berberidaceæ. **Barberry.**

53627. BERBERIS AGGREGATA C. Schneid.

A shrub native to thickets in western Szechwan at altitudes of 4,000 to 9,500 feet. It attains a height of 5 feet and bears dense racemes of small yellow flowers followed by salmon-red fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

For previous introduction, see S. P. I. No. 52454.

53628. BERBERIS ARISTATA DC.

"A tall-growing ornamental barberry which bears multitudes of large racemes of yellow flowers. Recommended as an ornamental park and garden shrub in the northern sections of the United States." (*F. N. Meyer.*)

Native to the temperate Himalayas, the Nilghiri Mountains, and Ceylon.

For previous introduction, see S. P. I. No. 40144.

53629. BERBERIS ATROCARPA C. Schneid.

An ornamental shrub, 3 to 5 feet tall, with leathery evergreen leaves, shining rich green above and yellowish green beneath. The shrub is native to western Szechwan and there is no other species in that section which has such jet black, almost globose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 437.*)

53630. BERBERIS CHINENSIS Poir.

"A Chinese barberry, 1 to 3 feet high, found between bowlders and rocks at altitudes of 4,000 to 6,000 feet. It becomes very showy toward the end of summer when its berries, which are produced in great abundance, assume a bright coral-red color." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 36737.

53631. BERBERIS DARWINII Hook.

An evergreen shrub from the island of Chiloe and south Chile, one of the most handsome shrubs for garden hedges. It is hardy in England and in Norway as far north as Christiania. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 74.*)

53632. BERBERIS DICTYOPHYLLA Franch.

A Chinese shrub 4 feet high, erect when young, semiarching with age. The bright grass-green leaves are intensely glaucous below. The stems are also glaucous. The small, pale-yellow flowers are followed by red berries. (Adapted from *The Gardeners' Chronicle, ser. 3, vol. 52, p. 243.*)

For previous introduction, see S. P. I. No. 49056.

53633. BERBERIS FRANCISCI-FERDINANDI C. Schneid.

A rather striking western Chinese barberry 10 feet high, with thin, bright-green leaves, panicles of pendulous yellow flowers, and scarlet oblong fruits half an inch long.

For previous introduction, see S. P. I. No. 52931.

53634. BERBERIS GAGNEPAINI C. Schneid.

A Chinese evergreen shrub 3 to 6 feet high, with leathery leaves, spiny on the margins, and delicate yellow flowers on red pedicels. The ellipsoid fruits are glaucous purple.

For previous introduction, see S. P. I. No. 40147.

53627 to 53752—Continued.

53635. BERBERIS HOOKERI Lem.
(*B. wallichiana* Hook., not DC.)

An erect ornamental spiny shrub 6 to 10 feet high, native to Nepal, with beautiful, spreading, hollylike leaves. The yellow sepals are tinged with red.

For previous introduction, see S. P. I. No. 53090.

53636. BERBERIS LYCIUM Royle.

A shrub, native to Simla and the western Himalayas at altitudes of 3,000 to 9,000 feet; with bright-green, lanceolate leaves paler below and pale-yellow flowers followed by ovoid violet berries covered with bloom. (Adapted from *Collett, Flora Simlensis, p. 22.*)

53637. BERBERIS ORTHOBOTRYS Bienert.

A shrub with somewhat corymbose flowers and oval fruits native to Sergal, Afghanistan, at altitudes of 9,000 to 11,000 feet. (Adapted from *Journal of the Linnean Society, vol. 19, p. 150.*)

For previous introduction, see S. P. I. No. 33021.

53638. BERBERIS POLYANTHA Hemsl.

A Chinese shrub, 6 to 9 feet high, with deep-yellow flowers and salmon-red fruits. Native to western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 376.*)

For previous introduction, see S. P. I. No. 47299.

53639. BERBERIS AGGREGATA PRATTII C. Schneid.

A western Chinese shrub, 6 to 10 feet high, with yellow flowers in narrow panicles and ovoid salmon-red fruits.

For previous introduction, see S. P. I. No. 44527.

53640. BERBERIS STAPFIANA C. Schneid.

A partly evergreen western Chinese shrub, 5 to 6 feet high, with spreading arching stems, pale-yellow flowers, and carmine-red fruits having a slight bloom.

For previous introduction, see S. P. I. No. 37975.

53641. BERBERIS SUBCAULIALATA C. Schneid.

An ornamental Chinese species with clustered lance-shaped leaves, glaucous beneath, and globular reddish yellow fruits.

For previous introduction, see S. P. I. No. 44529.

53642. BERBERIS THIBETICA C. Schneid.

A deciduous Chinese shrub, 3 to 4 feet tall, with purplish, glaucous branches, entire leaves whitish beneath, and yellow flowers followed by red berries. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 2, p. 920.*)

For previous introduction, see S. P. I. No. 49931.

53643. BERBERIS THUNBERGII DC.

An extremely popular garden shrub which assumes brilliant autumn colors. Native to Japan. (Adapted from *Arnold Arboretum Bulletin of Popular Information, ser. 1, No. 33.*)

For previous introduction, see S. P. I. No. 27120.

53644. BERBERIS TISCHLERI C. Schneid.

A western Chinese shrub, 6 to 10 feet high, with papery leaves, shining green above and paler beneath. The yellowish red fruits are covered with a light bloom. (Adapted from *Sargent, Plantae Wilsonianae, vol. 5, p. 355.*)

For previous introduction, see S. P. I. No. 50288.

53627 to 53752—Continued.

53645. BERBERIS UMBELLATA Wall.

A hardy, subevergreen, Himalayan shrub about 3 feet high, with narrow leaves slightly glaucous beneath and umbellike racemes of yellow flowers.

For previous introduction, see S. P. I. No. 49932.

53646. BERBERIS VEITCHII C. Schneid.

A shrub with gracefully arching branches, native to western Hupeh, China; the leathery leaves are pale green and the bronze-yellow flowers have reddish outer surfaces. The black, broadly elliptic fruits are covered with a bloom. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 438.*)

53647. BERBERIS WILSONAE Hemsl.

A beautiful, sometimes partially evergreen, Chinese shrub, 2 to 4 feet high, with abundant, roundish, coral-red berries, somewhat translucent. The leaves assume brilliant tints in autumn. (Adapted from *Curtis's Botanical Magazine, pl. 8414.*)

For previous introduction, see S. P. I. No. 40152.

53648. BERBERIS sp.

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

53649. BERBERIS sp.

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

53650 to 53665. CLEMATIS spp. Ranunculaceæ. **Clematis.**

53650. CLEMATIS AETHUSIFOLIA LATISECTA Maxim.

A free-growing deciduous climber, 5 to 6 feet high, with a great profusion of pale-yellow, bell-shaped flowers. The beautiful downy leaves are 3 to 8 inches long. Native to northern China and Manchuria. (Adapted from *Curtis's Botanical Magazine, pl. 5642.*)

53651. CLEMATIS FUSCA Turcz.

A semiherbaceous climber 8 or 9 feet high, with long-pointed leaflets and solitary, reddish brown urn-shaped flowers which are hairy on the outer surface. Native to northeastern Asia. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 277.*)

For previous introduction, see S. P. I. No. 49936.

53652. CLEMATIS GLAUCA AKEBIOIDES (Maxim.) Rehd. and Wils.

A climber, 6 to 10 feet high, with bronzy yellow flowers, very abundant in dry, hot valleys at altitudes of 7,000 to 10,000 feet in western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 342.*)

53653. CLEMATIS GRATA Wall.

A woody climber with decompound panicles of cream-colored flowers and hairy leaves sometimes smooth above. Native to the temperate and subtropical Himalayas. (Adapted from *Hooker, Flora of British India, vol. 1, p. 3.*)

53654. CLEMATIS GRATA GRANDIDENTATA Rehd. and Wils.

A climbing shrub, 9 to 30 feet high, with smooth leaves, silky hairy below, and cream-colored flowers in axillary clusters of three at the tip of leafless panicles. Native to western Hupeh, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 338.*)

53627 to 53752—Continued.

53655. CLEMATIS INTERMEDIA Carr.

A beautiful subshrubby climber, with smooth pinnate leaves; flowers deep violet within, lilac without. The four to six elliptical corolla segments are rolled at the edge and the sharp points recurved. This vigorous hardy species is a hybrid between *Clematis viticella* and the Japanese *C. lanuginosa*. (Adapted from *Revue Horticole, vol. 37, p. 339.*)

53656. CLEMATIS PSEUDOFLAMMULA Schmalh.

For previous introduction, see S. P. I. No. 53141.

53657. CLEMATIS RECTA L.

An ornamental herbaceous perennial 2 to 3 feet high, with masses of large white panicles. Native to southern Europe.

For previous introduction, see S. P. I. No. 30768.

53658. CLEMATIS SPOONERI Rehd. and Wils.

A climbing shrub, 9 to 20 feet high, with silky hairy leaves, yellowish and shining below. The beautiful, thick-textured, white flowers, 3 to 4 inches across, are solitary or in pairs and are covered with dense yellow hair on the outer surfaces. The brown hairy achenes bear feathery styles 1½ inches long. Native to rocky, sun-exposed places of western Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 334.*)

53659. CLEMATIS TANGUTICA (Maxim.) Korsh.

The handsomest yellow-flowered Clematis in cultivation, the largest flowers being about 4 inches across. The species reaches a height of 8 to 10 feet and bears gray-green leaves and solitary rich-yellow flowers, with long, slender-pointed sepals, downy outside and at the edges. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 367.*)

For previous introduction, see S. P. I. No. 52631.

53660. CLEMATIS VEITCHIANA Craib.

A Chinese woody climber with papery leaves and long loose clusters of gracefully drooping flowers.

For previous introduction, see S. P. I. No. 49938.

53661. CLEMATIS VITALBA L.

The common wild clematis of English hedges. In July it climbs up into the trees, covering them with its numerous panicles of greenish white, scented flowers. In winter its silky tufts adorn the hedgerows. (Adapted from *The Garden, vol. 53, p. 546.*)

53662. CLEMATIS VITICELLA L.

A partially woody climber growing 8 to 12 feet high and bearing solitary blue-purple or rose-colored flowers 1½ inches across. Native to southern Europe. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 285.*)

For previous introduction, see S. P. I. No. 49810.

53663. CLEMATIS sp.

Received as *Clematis serrata*, for which a place of publication has not been found.

53664. CLEMATIS sp.

Received as *Clematis thedriana*, for which a place of publication has not been found.

53665. CLEMATIS sp.

Received as *Clematis vernalis*, for which a place of publication has not been found.

53627 to 53752—Continued.

53666 to 53695. COTONEASTER spp. Malaceæ.

53666. COTONEASTER ACUTIFOLIA Turcz.

A bushy shrub, 5 to 7 feet high, native to northern and western China, with branches often pendulous. The dull-green leaves are paler and hairy beneath, and the white flowers are borne three or more in corymbs. The smooth reddish fruits, one-third of an inch in diameter, are finally black. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 405.*)

53667. COTONEASTER AFFINIS Lindl.

For previous introduction, see S. P. I. 53468.

53668. COTONEASTER AFFINIS BACILLARIS (Wall.) C. Schneid.
(*C. bacillaris* Wall.)

A very graceful shrub, 15 feet high, spreading to a larger diameter. The white flowers, one-third of an inch across, are borne in clusters 1 to 2 inches across. The small, roundish fruits are purplish brown. Native to the Himalayas at altitudes up to 10,000 feet. The strong elastic wood is used for walking sticks and spear shafts in India. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

For previous introduction, see S. P. I. No. 40162.

53669. COTONEASTER AFFINIS OBTUSA (Wall.) C. Schneid.

A Himalayan shrub 15 feet high with numerous white flowers on short, leaf-bearing branchlets. One of the prettiest of the genus. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 407.*)

53670. COTONEASTER AMOENA Wilson.

A much-branched shrub, 3 to 5 feet high, with dense-flowered clusters followed by scarlet fruits. Native to Yunnan, China. (Adapted from *Sargent, Plantae Wilsonianæ, vol. 1, p. 165.*)

For previous introduction, see S. P. I. No. 40174.

53671. COTONEASTER APICULATA Rehd. and Wils.

A deciduous shrub, 5 to 8 feet high, with shining green leaves, paler beneath, and small roundish fruits. Native to western Szechwan, China, in upland thickets at altitudes of about 10,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 156.*)

53672. COTONEASTER BULLATA Bois.

One of the best of the new Chinese shrubs, 10 to 12 feet high, with abundant brilliant-red fruits on the upper sides of long arching shoots. The rosy white flowers soon fall, but the fruits make the plant very handsome toward the end of August. It fruits freely when the plant is only a foot high. (Adapted from *Gardening Illustrated, vol. 40, p. 4.*)

For previous introduction, see S. P. I. No. 43836.

53673. COTONEASTER BUXIFOLIA Wall.

An evergreen bush, 10 to 12 feet high, with long, arching, sparsely branched stems, with dark-green leaves which are smooth above and grayish woolly beneath. The white flowers, one-third of an inch across, are followed by clusters of round red fruits. Very useful and pretty as a screen. Native to the Nilgiri Hills. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 407.*)

For previous introduction, see S. P. I. No. 33035.

53627 to 53752—Continued.

53674. COTONEASTER DIELSIANA E. Pritz.

A shrub, 3 to 6 feet high, with arching stems, pinkish flowers, and red fruits, native to thickets of western Hupeh at altitudes of 4,000 to 6,000 feet. The small leaves turn deep reddish purple in the fall. (Adapted from *Arnold Arboretum, Bulletin of Popular Information, No. 15.*)

For previous introduction, see S. P. I. No. 43990.

53675. COTONEASTER DIVARICATA Rehd. and Wils.

A shrub, 3 to 6 feet high, with gracefully reflexed branches, shining leaves paler beneath, and rose-colored flowers. The red fruits are ovoid. Native to thickets of western Hupeh, China, at altitudes of 4,000 to 6,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 157.*)

For previous introduction, see S. P. I. No. 38149.

53676. COTONEASTER FRANCHETII Bois.

An ornamental evergreen shrub 8 to 10 feet high, with gracefully arching branches, with lustrous green leaves covered with a thick whitish to pale-brown felt beneath. The white rose-tinged flowers are followed by orange-scarlet fruits covered with a grayish down. Native to Tibet and western China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

For previous introduction, see S. P. I. No. 45705.

53677. COTONEASTER FRIGIDA Wall.

A half-evergreen Himalayan shrub, 20 feet high, bearing large clusters of creamy white flowers followed by scarlet fruits. One of the most beautiful in flower and fruit, but not hardy in the north. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

For previous introduction, see S. P. I. No. 47664.

53678. COTONEASTER FRIGIDA Wall.

Variety *aurea.* A yellow-fruited variety.

53679. COTONEASTER HARROVIANA Wilson.

A handsome shrub, 4 to 6 feet high, with somewhat leathery, partially evergreen leaves, shining dark green above and densely tomentose beneath, densely many-flowered corymbs 2 inches across, and white flowers with reddish purple anthers, succeeded by red fruits. Native to Yunnan, China. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 51, pl. 3,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 173.*)

53680. COTONEASTER HEBEPHYLLA Diels.

A graceful, spreading shrub, 6 to 10 feet high, with white flowers and violet anthers, native to moist open situations at the north end of Chung Tien Plateau at altitudes of 8,500 to 9,000 feet and to the Likiang Valley at altitudes of 8,500 to 14,000 feet. The flowers are clustered 6 to 16 in corymbs. (Adapted from *Notes from the Edinburgh Royal Botanic Garden, vol. 5, p. 273.*)

53681. COTONEASTER HENRYANA (C. Schneid.) Rehd. and Wils.

A deciduous, papery leaved shrub, 6 to 12 feet high, with green roughish leaves, ashy white tomentose beneath. The flat lax corymbs, 2 to 3 inches across, are composed of white flowers with purple anthers. The ovoid fruits are red. Native to western Hupeh and eastern Szechwan, China, in woodlands at altitudes of 4,000 to 6,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 174.*)

For previous introduction, see S. P. I. No. 40167.

53627 to 53752—Continued.

53682. COTONEASTER HORIZONTALIS Decaisne.

An evergreen Chinese shrub three times as broad as it is tall. The foliage is very small, dark green, and shiny. The white or light-pink flowers are pretty, but the glory of the shrub is in its bright-red berries during the early winter months. (Adapted from *Pacific Garden, vol. 5, p. 11.*)

For previous introduction, see S. P. I. No. 43681.

53683. COTONEASTER LINDLEYI Steud.

A large shrub or small tree, with young branches downy, later bare, and dark brown. The partially evergreen leaves are dark green above and covered with a grayish felt beneath. The white flowers are produced 5 to 10 in a corymb and are succeeded by bluish black fruits. Native to the northwestern Himalayas. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 757.*)

53684. COTONEASTER LUCIDA Schlecht.

A beautiful deciduous shrub of bushy habit, 6 to 8 feet high, with hairy young wood which becomes smooth in a year. The bright-green leaves are whitish green beneath, and the rose-colored flowers are followed by black fruits. Native to Siberia and other parts of northern Asia. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 750.*)

For previous introduction, see S. P. I. No. 29967.

53685. COTONEASTER MELANOCARPA LAXIFLORA (Jacq.) C. Schneid.

A shrub with spreading branches, reaching a height of 6 feet. The dark-green leaves are grayish white tomentose beneath, and the flowers, 12 or more in elongated pendulous corymbs, are followed by black roundish fruits. Native to northern Europe and Siberia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 866.*)

53686. COTONEASTER MICROPHYLLA Wall.

A dwarf, dense, usually procumbent shrub with small shining dark-green leaves pubescent beneath. The white solitary flowers, one-third of an inch in diameter, are followed by globose bright-red fruits. Native to China and the temperate Himalayas. (Adapted from *Collett, Flora Simlensis, p. 173.*)

53687. COTONEASTER MICROPHYLLA THYMIFOLIA (Loud.) Koehne.

A very dwarf, particularly elegant high alpine form with smooth green leaves pubescent beneath and small white flowers, solitary or in twos. These and the bright-red fruits are smaller than in the species itself. This variety can be grown from cuttings. Native to Nepal, Simla, and the eastern Himalayas. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 760.*)

53688. COTONEASTER MOUPINENSIS Franch.

The common cotoneaster in the thickets and margins of woods throughout western Szechwan at altitudes of 4,000 to 7,000 feet. It is 6 to 15 feet high, with white flowers and jet-black fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 163.*)

For previous introduction, see S. P. I. No. 36739.

53689. COTONEASTER PANNOSA Franch.

A graceful, Chinese evergreen shrub 10 feet high with small grayish green leaves and round, deep-red fruits, considered one of the best winter-fruiting shrubs.

For previous introduction, see S. P. I. No. 40169.

53627 to 53752—Continued.

53690. COTONEASTER RACEMIFLORA (Desf.) Koch.

A low shrub from northern Africa and western Asia, with roundish leaves slightly hairy beneath, and short-stalked cymes of white flowers followed by red fruits.

Received as *Cotoneaster fontanesii*, for which *C. racemiflora* is the earlier name.

For previous introduction, see S. P. I. No. 44082.

53691. COTONEASTER ROTUNDIFOLIA Wall.

An ornamental Himalayan shrub, 4 to 5 feet high, clothed with dark-green, partially evergreen leaves. The small deep-scarlet berries are freely borne and are said to be less attractive to birds than those of other cotoneasters, so that the bushes retain their beauty much longer.

For previous introduction, see S. P. I. No. 47665.

53692. COTONEASTER ROTUNDIFOLIA Wall.

Received as *Cotoneaster prostrata*, for which *C. rotundifolia* is an earlier name.

53693. COTONEASTER SALICIFOLIA FLOCCOSA Rehd. and Wils.

A graceful, western Chinese shrub up to 13 feet high, which bears dense corymbs of white flowers and light-red, roundish fruits; native to altitudes of 7,500 to 9,800 feet.

For previous introduction, see S. P. I. No. 49666.

53694. COTONEASTER SALICIFOLIA RUGOSA (E. Pritz.) Rehd. and Wils.

"A very handsome Chinese shrub having long pendulous branches covered with much-wrinkled lanceolate leaves which have the under surface covered with down. The berries are small, globular, and bright scarlet. They are borne in clusters and, combined with the autumn tints of the foliage, produce a very pretty effect." (*Journal of the Royal Horticultural Society, vol. 38, p. cclii.*)

For previous introduction, see S. P. I. No. 40579.

53695. COTONEASTER SIMONSI Baker.

An ornamental Himalayan shrub 6 feet high. The bright-red berries are said to sometimes cover the shrub so thickly that it is scarcely possible to place one's finger between them.

For previous introduction, see S. P. I. No. 35128.

53696 to 53698. DEUTZIA spp. Hydrangeaceæ.

53696. DEUTZIA CORYMBOSA R. Br.

A pretty Himalayan species of late continuous flowering. It is at its best in July and August when the bush is covered with pure-white flowers. (Adapted from *Gardening Illustrated, vol. 39, p. 501.*)

For previous introduction, see S. P. I. No. 49939.

53697. DEUTZIA GLOBOSA Duthie.

This species, native to western Hupeh, China, bears dense globose panicles of medium-sized creamy white flowers with cup-shaped corollas. (Adapted from *The Gardeners' Chronicle, 3d ser., vol. 40, p. 248.*)

53698. DEUTZIA LONGIFOLIA VEITCHII (Veitch) Rehder.

This deutzia from Yunnan, China, bears its large flowers in dense, many-flowered corymbs. It is one of the handsomest of the deutzias, but has proved hardy only under protection at the Arnold Arboretum. (Adapted from *note by Alfred Rehder.*)

53627 to 53752—Continued.

53699 to 53702. EUONYMUS spp. Celastraceæ.

53699. EUONYMUS HAMILTONIANUS Wall.

A large Himalayan shrub, under favorable circumstances a moderate-sized tree, 30 to 35 feet high, with a short, straight trunk 4 to 5 feet in girth. The clusters of 15 to 30 greenish white flowers are followed by yellow capsules, the seeds of which are entirely surrounded by a scarlet aril. The fruit ripens from August onward. The leaves are brilliantly colored in fall; the wood is beautifully white, compact and close, not very hard, and is used for making spoons. The young shoots and leaves are lopped for fodder. (Adapted from *Brandis, Forest Flora of India, p. 78,* and *Arnold Arboretum Bulletin of Popular Information, No. 13, 1911.*)

53700. EUONYMUS LATIFOLIUS Mill.

A very decorative European shrub or small tree, with handsome foliage and rich rosy red pendulous fruits. The seed coat is orange colored.

53701. EUONYMUS PLANIPES Koehne.

A Japanese shrub or small tree with spreading branches; the leaves, 4 to 5 inches long, are rich red in autumn, and the red fruits burst when ripe and disclose the orange-colored seeds within.

For previous introduction, see S. P. I. No. 40179.

53702. EUONYMUS YEDOENSIS Koehne.

A deciduous Japanese shrub or small tree, growing 10 feet or more high, with pink fruits. The leaves turn a brilliant red in autumn.

For previous introduction, see S. P. I. No. 43688.

53703 to 53706. IRIS spp. Iridaceæ. Iris.

53703. IRIS BULLEYANA Dykes.

A fine western Chinese iris like *Iris clarkei,* with a hollow, unbranched stem. The narrow leaves are glossy above and glaucous beneath. The stem, 15 to 18 inches long, bears a single head of one or two flowers. The falls have a greenish yellow oblong haft, veined and dotted with purple. On the obovate blade the coloring becomes clearer and consists of broken veins and blotches of bright blue-purple on a creamy ground. The extremity is a uniform blue-purple, paler at the edges. The oblanceolate, channeled standards are pale blue-purple with deeper veins and diverge at an angle of about 60°. The keeled, dark-purple styles are held high above the falls. (Adapted from *Dykes, The Genus Iris, p. 30.*)

53704. IRIS CLARKEI Baker.

A curiously local species native to a circumscribed area in the Sikkim and Bhutan region at a height of 6,000 to 11,000 feet, in ground that is swampy half the year and frozen hard under snow during most of the remaining months. The narrow leaves, 2 feet long, droop at the top; the upper surface is polished and shiny, the under side glaucescent. The solid stem is 2 feet long, and bears one or two lateral heads. The falls are blue-purple, blotched with white, and are reflexed laterally. The upper part of the haft is marked with yellow. The reddish purple, lanceolate standards are poised almost horizontally. The styles form the highest point of the flower; they are keeled, very convex, and 1½ inches long. (Adapted from *Dykes, The Genus Iris, p. 29.*)

For previous introduction, see S. P. I. No. 49638.

53705. IRIS FORRESTII Dykes.

A most pleasing iris, like a dwarf *Iris wilsoni,* from which it differs in the less glaucous leaves, clearer yellow, unveined flowers, and upright and not spreading standards. The stems, 12 to 18 inches

53627 to 53752—Continued.

high, bear a single head of two flowers, although a lateral-flowered branch sometimes develops. The short haft bears two central lines and broken lateral veins of brown-purple on a clear-yellow ground. The oblong-ovate blade of the falls is often very long and drooping, of a clear, lemon-yellow color which becomes deeper around the end of the style branches and is there marked with brown-purple veins. The oblanceolate yellow blade of the standards narrows to a deeply channeled haft, yellow, shorter than the falls, and slightly divergent. The broad, short-keeled, deep-yellow styles, often discolored with purple, curve down on to the falls. Native to open mountain pastures on the eastern flank of the Likiang Range in northwestern Yunnan, China, at altitudes of 12,000 to 13,000 feet. (Adapted from *Dykes, The Genus Iris, p. 27.*)

53706. IRIS MELLITA Janka.

A Balkan dwarf iris, native to Thrace and northeastern Asia Minor, with thin swordlike leaves, occasionally tinged with red at the edge, and 3 to 5 inches long. The one-headed stem is from less than an inch to 5 inches high. The whole plant closely resembles *Iris pumila* except that it has that look of refinement which is characteristic of the Balkan as opposed to the Austrian and French dwarf irises. The greenish tube, 1½ to 2 inches long, is mottled with purple. The falls are shorter and broader than the standards, with the blade much reflexed and often pressed against the tube. The gray-white haft is veined with red-brown. The pale, smoky brown blade is veined with fine deep veins. About the end of the beard the texture is more velvety and the color a warm red-purple shot with electric blue. The conspicuous beard is composed of long, thickset hairs, white at the base and blue above. The standards are deeper in color than the falls and finely veined. At the base the veins give place to small dots and blotches. The narrow gray-white styles have a purple keel. (Adapted from *Dykes, The Genus Iris, p. 149.*)

53707 to 53716. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

53707. LONICERA ALPIGENA L.

A deciduous shrub, 4 to 8 feet high, native to central Europe. The yellow flowers, deeply tinged with red, are borne in pairs. The red, cherrylike fruit is half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 39.*)

For previous introduction, see S. P. I. No. 49947.

53708. LONICERA DEFLEXICALYX Batal.

A beautiful deciduous shrub native to China and Tibet, showing its yellow flowers to good advantage by producing them on the upper side of the long, feathered branches. It grows 8 feet high and has horizontal or drooping branches and purple young shoots. The dull-green, downy leaves are grayish and hairy beneath, and the fruits are orange-red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 41.*)

For previous introduction, see S. P. I. No. 40186.

53709. LONICERA DIOICA L.

A low-spreading ornamental shrub or vine with yellow flowers tinged with purple, and red berries; native to eastern North America.

53710. LONICERA LANCEOLATA Wall.

"A Himalayan species allied to *Lonicera orientalis.* The grayish green leaves, 2 to 4 inches long, are pubescent beneath, particularly on the veins. The fruits are black." (*Alfred Rehder.*)

53711. LONICERA LONGA Rehder.

An upright shrub with short branches appearing knotty on account of very short internodes and persistent bud scales. The dull-green

53627 to 53752—Continued.

leaves are grayish green and hairy veined beneath. The berries are purple. Native to Hupeh, China. (Adapted from *Rehder in Report of the Missouri Botanic Garden, vol. 14, p. 61.*)

53712. LONICERA MAACKII (Rupr.) Herd.

A bush honeysuckle, native to China and Manchuria, up to 10 feet high, with wide-spreading branches and dark-green leaves, downy on both surfaces; the pure-white flowers an inch in diameter turn yellowish with age and are produced in pairs on the upper side of the branchlets. The fruits are red.

For previous introduction, see S. P. I. No. 33435.

53713. LONICERA OBOVATA Royle.

"A Himalayan species, allied to *Lonicera tangutica*, with very small leaves, small yellowish white flowers, and bluish black fruits." (*Alfred Rehder.*)

53714. LONICERA QUINQUELOCULARIS TRANSLUCENS (Carr.) Zabel.

A sturdy bush, 10 feet high, that flowers freely, native to the Himalayas and China. The long-pointed leaves, rough on the upper surface, are grayish and downy beneath. The creamy white flowers changing to yellow are followed by translucent white fruits. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 54.*)

For previous introduction, see S. P. I. No. 40187.

53715. LONICERA RUPRECHTIANA Regel.

A Manchurian shrub 12 feet high, with dark-green leaves grayish pubescent beneath and pure-white flowers followed by red or yellow fruits.

For previous introduction, see S. P. I. No. 42317.

53716. LONICERA TRICHOSANTHA Bur. and Franch.

A robust deciduous shrub 8 feet high, native to Szechwan, China. The plant has a rounded, dense, leafy habit and a pale grayish aspect. The dull gray-green leaves are paler beneath, and the pale-yellow flowers fade to a deeper shade. The berries are red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

For previous introduction, see S. P. I. No. 43856.

53717. PERNETTYA MUCRONATA (L. f.) Gaud.

One of the finest ornamental berry-bearing shrubs, native to South America about the Straits of Magellan. It is one of the hardiest from that continent and is rarely severely injured by frost in the neighborhood of London. The shrub is evergreen, 2 to 5 feet high, and spreads freely by suckers, forming ultimately a dense, low thicket. The white, nodding flowers, one-fourth of an inch long, are produced singly in the axils of the leaves at the end of the shoots. The round berries, up to half an inch in diameter, vary in color from white to pink, lilac, crimson, purple, or almost black and remain on the branches through the winter and following spring. At Kew the berries are untouched by birds. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 127.*)

For previous introduction, see S. P. I. No. 36139.

53718 to 53726. PHILADELPHUS spp. Hydrangeaceæ. **Mock orange.**

53718. PHILADELPHUS ACUMINATUS Lange.

A shrub 10 feet high, native to Yunnan Province, China, and also Japan. The acuminate leaves have conspicuous hard-tipped teeth.

53627 to 53752—Continued.

Closely resembles *P. coronarius*, of which it is often considered a variety.

For previous introduction, see S. P. I. No. 49948.

53719. PHILADELPHUS BRACHYBOTRYS Koehne.

A shrub 10 feet high, native to Kiangsu, China, with thin, elliptic-pointed leaves and 5 to 7 flowered inflorescences up to 1½ inches long. The flowers are over half an inch in diameter, and the fruits are nearly globular. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 273.*)

53720. PHILADELPHUS INCANUS Koehne.

A late-flowering species up to 6 feet high with oval leaves dull grayish beneath and white, charmingly fragrant flowers with an odor like that of hawthorn. The flowers are produced five to nine together on racemes about 2 inches long at the end of short leafy shoots. The flowering season is from middle to late July. Native to Hupeh and Szechwan, China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 135.*)

53721. PHILADELPHUS INODORUS L.

One of the finest and most striking species of the genus, distinguished by its dark glossy green leaves and solitary, squarish unscented flowers 2 inches across. The shrub is 4 to 6 feet high, and is native to the southeastern United States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 136.*)

53722. PHILADELPHUS LATIFOLIUS Schrad.

One of the finest of the genus, a robust shrub 10 to 20 feet high, as much or more in diameter, native to the southeastern United States. The leaves are dull above and downy beneath, and the pure-white flowers nearly 2 inches wide are produced in the axils of the upper leaves of lateral twigs, usually seven or nine each. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 3, p. 137.*)

53723. PHILADELPHUS SATSUMI Siebold.

An erect Japanese shrub 6 to 8 feet high, with slightly scented white flowers about 1¼ inches across, produced in erect racemes.

53724. PHILADELPHUS SERICANTHUS Koehne.

A white-flowered shrub, 10 feet high; native to thickets of western Szechwan, China, at altitudes of 4,200 feet.

For previous introduction, see S. P. I. No. 52427.

53725. PHILADELPHUS SPECIOSISSIMUS Hort.

"A garden form, probably a hybrid of *Philadelphus grandiflorus*." (*Alfred Rehder.*)

53726. PHILADELPHUS WILSONII Koehne.

A shrub 7 to 20 feet high, native to western Szechwan and western Hupeh, China, with lax racemes 7 inches long. The white flowers are more than 1½ inches across. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 4.*)

53727 to 53730. RHODODENDRON spp. Ericaceæ. **Rhododendron.**

53727. RHODODENDRON BRACHYCARPUM D. Don.

A handsome hardy Japanese shrub with beautiful foliage and rather compact clusters of large pale-pink or pale straw-colored flowers. (Adapted from *Arnold Arboretum Bulletin of Popular Information, vol. 7, p. 27.*)

53627 to 53752—Continued.

53728. RHODODENDRON DAVIDSONIANUM Rehd. and Wils.

"A western Chinese shrub 10 feet high, with thinly coriaceous leaves glaucescent beneath and rosy pink, bell-shaped flowers 1 inch across." (*Alfred Rehder.*)

53729. RHODODENDRON DECORUM Franch.

"A western Chinese shrub with glabrous leaves glaucous beneath and broadly bell-shaped white or pink flowers 2 inches across." (*Alfred Rehder.*)

53730. RHODODENDRON RACEMOSUM Franch.

An evergreen shrub, 5 or 6 feet high, one of the most distinct and pretty of the dwarfer Chinese rhododendrons. The soft pink flowers, 1 inch across, widely bell shaped, are produced from the leaf axils of the previous year's wood. Often 6 to 12 inches of the shoot is laden with flowers. It is a charming plant for grouping in low shrubberies. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 374.*)

For previous introduction, see S. P. I. No. 52621.

53731 to 53743. ROSA spp. Rosaceæ. **Rose.**

53731. ROSA CINNAMOMEA L.
(*R. pendulina* L.)

Variety *pyrenaica.*

A graceful rose generally less than 2 feet high, said to be plentiful in the Pyrenees. The rosy red flowers, 2 to 3 inches in diameter, resemble in outline and form the dog-rose of England; the berries are also ornamental. The plant is well suited to rock gardens, but must not be allowed much root room, as it becomes too rampant. (Adapted from *The Garden, vol. 27, pp. 545, 560, and 587.*)

53732. ROSA DAVIDII Crepin.

A pink-flowered, orange-fruited rose, 3 to 18 feet high, native of western Szechwan, China, at altitudes of 4,000 to 9,000 feet. It is the species in China nearest to *Rosa macrophylla* of the western Himalayas. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 322.*)

For previous introduction, see S. P. I. No. 43886.

53733. ROSA DAVIDII ELONGATA Rehd. and Wils.

A western Chinese form with leaflets 2 to 3 inches long, fewer flowers than in the species, and fruits about an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

53734. ROSA LONGICUSPIS Bertol.
(*R. sinowilsoni* Hemsl.)

A rambling bush about 20 feet high, native to western China; with sparse, short prickles, large, dark-green leaves, and very large lax corymbs of white flowers which are up to 2 inches wide. (Adapted from *Kew Bulletin of Miscellaneous Information, 1906, p. 158.*)

For previous introduction, see S. P. I. No. 49683.

53735. ROSA MOLLIS Presl.

A compact Asiatic rose, often not more than 3 feet high, with usually pink, occasionally white, flowers and early ripening, red, pulpy fruits which are often pendulous and are very ornamental. (Adapted from *Willmott, The Genus Rosa, pl. 138.*)

For previous introduction, see S. P. I. No. 49952.

53627 to 53752—Continued.

53736. ROSA OMEIENSIS Rolfe.

A shrub 6 to 18 feet high, with solitary, white, 4-petaled (rarely 5-petaled) flowers and scarlet fruits having fleshy orange-colored stalks. Abundant in upland thickets on the higher mountain ranges of western Hupeh and Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 331.*)

For previous introduction, see S. P. I. No. 44400.

53737. ROSA OMEIENSIS Rolfe.

Variety *atrosanguinea.*

A red-flowered variety.

53738. ROSA OMEIENSIS PTERACANTHA (Franch) Rehd. and Wils.

A shrub 2 to 9 feet tall with white flowers and red fruits having usually a shorter stalk than in the type. Very common on the wind-swept mountain sides of western Szechwan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 332.*)

For previous introduction, see S. P. I. No. 48407.

53739. ROSA SERAFINII Viv.

A dwarf shrub with bright rose-colored, solitary flowers and small red fruits changing to black, native to the Mediterranean region. (Adapted from *Curtis's Botanical Magazine, pl. 7761.*)

For previous introduction, see S. P. I. No. 49953.

53740. ROSA SERTATA Rolfe.

A pretty rose 2 to 6 feet high, with small pink flowers and orange-red fruits; native to central China. (Adapted from *Sargent; Plantae Wilsonianae, vol. 2, p. 327.*)

For previous introduction, see S. P. I. No. 43912.

53741. ROSA WEBBIANA Wall.

An Himalayan rose with glaucous young shoots with large white thorns, pink flowers, and red nodding fruits. (Adapted from *Willmott, The Genus Rosa, pl. 76.*)

53742. ROSA WOODSII Lindl.

A shrub 3 feet high with leaves about an inch long and pubescent beneath, and corymbose or solitary pink, rarely white, flowers about 2 inches across. The flowering season is June to July. Native to North America from Saskatchewan to Colorado and Missouri. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2993.*)

53743. ROSA sp.

Received as *Rosa polyphylla* for which a place of publication has not been found.

53744 to 53752. VIBURNUM spp. Caprifoliaceæ.

53744. VIBURNUM COTINIFOLIUM D. Don.

A species 6 to 12 feet high, closely allied to *Viburnum lantana,* native to the Himalayas from Bhotan to Beluchistan. The young branchlets, the under surface of the leaves, and the flower stalks are clothed with a dense, gray down. The white, pink-tinged, broadly funnel-shaped flowers are produced in rounded cymes 2 to 3 inches across. The red, ultimately black, fruits are up to half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 645.*)

For previous introduction, see S. P. I. No. 33062.

53627 to 53752—Continued.

53745. VIBURNUM DILATATUM Thunb.

This profusely flowering shrub, 6 to 10 feet high, is native to Japan and China and produces pure-white flowers in cymes 3 to 5 inches across, not only at the top of the branch but from short twigs down the sides also. The bright-red fruits are one-third of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 647.*)

For previous introduction, see S. P. I. No. 45974.

53746. VIBURNUM HUPEHENSE Rehder.

A species allied to *Viburnum wrightii*, native to central China and hardy at the Arnold Arboretum. The leaves are densely pubescent beneath, and the fruits are dark red. (Adapted from *Bailey, Standard Cyclopedia, vol. 6, p. 3463.*)

For previous introduction, see S. P. I. No. 44404.

53747. VIBURNUM ICHANGENSE (Hemsl.) Rehder.

A white-flowered, red-fruited shrub with yellowish green leaves; native to China. (Adapted from *Sargent, Trees and Shrubs, vol. 2, pt. 2, p. 105.*)

For previous introduction, see S. P. I. No. 43733.

53748. VIBURNUM LOBOPHYLLUM Graebn.

A shrub which belongs to the group of red-fruited Asiatic species containing *Viburnum wrightii, V. betulifolium, V. dilatatum*, etc. The white-flowered corymbs are 2 to 4 inches wide; and the bright-red, roundish fruits are one-third of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 652.*)

For previous introduction, see S. P. I. No. 42198.

53749. VIBURNUM OVATIFOLIUM Rehder.

A species native to thickets of western Hupeh, China, at altitudes of 4,000 to 7,000 feet, with bright-red ovoid fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 113.*)

53750. VIBURNUM RHYTIDOPHYLLUM Hemsl.

One of the most distinct and striking of the newer Chinese shrubs; it is an evergreen 10 feet high, and its flower clusters, 4 to 8 inches across, are formed and partially developed in autumn. The beauty of the shrub lies in its bold, wrinkled, shining leaves and red fruits which later become shining black. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 655.*)

For previous introduction, see S. P. I. No. 42199.

53751. VIBURNUM THEIFERUM Rehder.

A white-flowered, red-fruited shrub up to 12 feet high, native to central and western China, and allied to *Viburnum phlebotrichum.* The specific name refers to the use of the leaves by the monks of Mount Omei as a kind of tea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 657.*)

53752. VIBURNUM VEITCHII C. H. Wright.

One of the most ornamental of the Lantana group, about 5 feet high, with young branches, leafstalks, and under surfaces of the leaves densely clothed with starlike down; the white flowers are in cymes 4 to 5 inches across, and the red fruits later become black. Native to central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 659.*)

For previous introduction, see S. P. I. No. 40599.

53753. SCLEROCARYA CAFFRA Sond. Anacardiaceæ.

From Mount Silinda, Southern Rhodesia, Africa. Seeds presented by Dr. W. L. Thompson. Received May 27, 1921.

"A tree not found in our forests, but common in the open forest country. It would seem probable that the fruit, improved by selection and breeding, ought to become quite valuable and attractive for the seed used as a nut, if not for the pulp, since the flavor of the kernel is pleasant, especially if slightly roasted. The shell is very hard and tough, but one can obtain the kernel without cracking it by prying off with a strong iron point the cap with which the shell is provided. If the kernel were larger and the cap could be removed more easily, it might be quite an attractive nut. As it is, the natives often crack the nuts and eat the kernels." (*Thompson.*)

For previous introduction, see S. P. I. No. 52216.

53754 to 53758.

From Quito, Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received June 8, 1921. Quoted notes by Mr. Popenoe.

53754. CARICA CHRYSOPETALA Heilborn. Papayaceæ. **Higacho.**

"(No. 610a. Quito, Ecuador. May 7, 1921.) Seeds of *higacho* from Banos, Province of Tungurahua, where it is common in gardens. It does not appear to be grown in Ambato. In the Provinces of Pichincha and Imbabura it is called *chamburo* and is fairly abundant in the larger towns, such as Quito, Otavalo, and Ibarra. In the Azuay it is called *chamburao* and in Loja *toronchi;* in the former Province it is fairly abundant, but in the latter, with the exception of the northern portion, it appears to be little known.

"This plant resembles *C. candamarcensis* in general appearance, though it can readily be distinguished by its leaves which are glabrous or nearly so, while those of *C. candamarcensis* are pubescent below. The fruits of the *higacho* are also quite distinct; they are slender oblong, truncate at the base and acute at the apex, and commonly 4 to 6 inches long. When ripe they are greenish to deep yellow; the flesh is thin, even more aromatic than that of *C. candamarcensis*, and used only when cooked in the form of a sweet conserve or dulce. The species is probably indigenous to the Ecuadorian Andes."

For an illustration of fruits of the higacho, see Plate V.

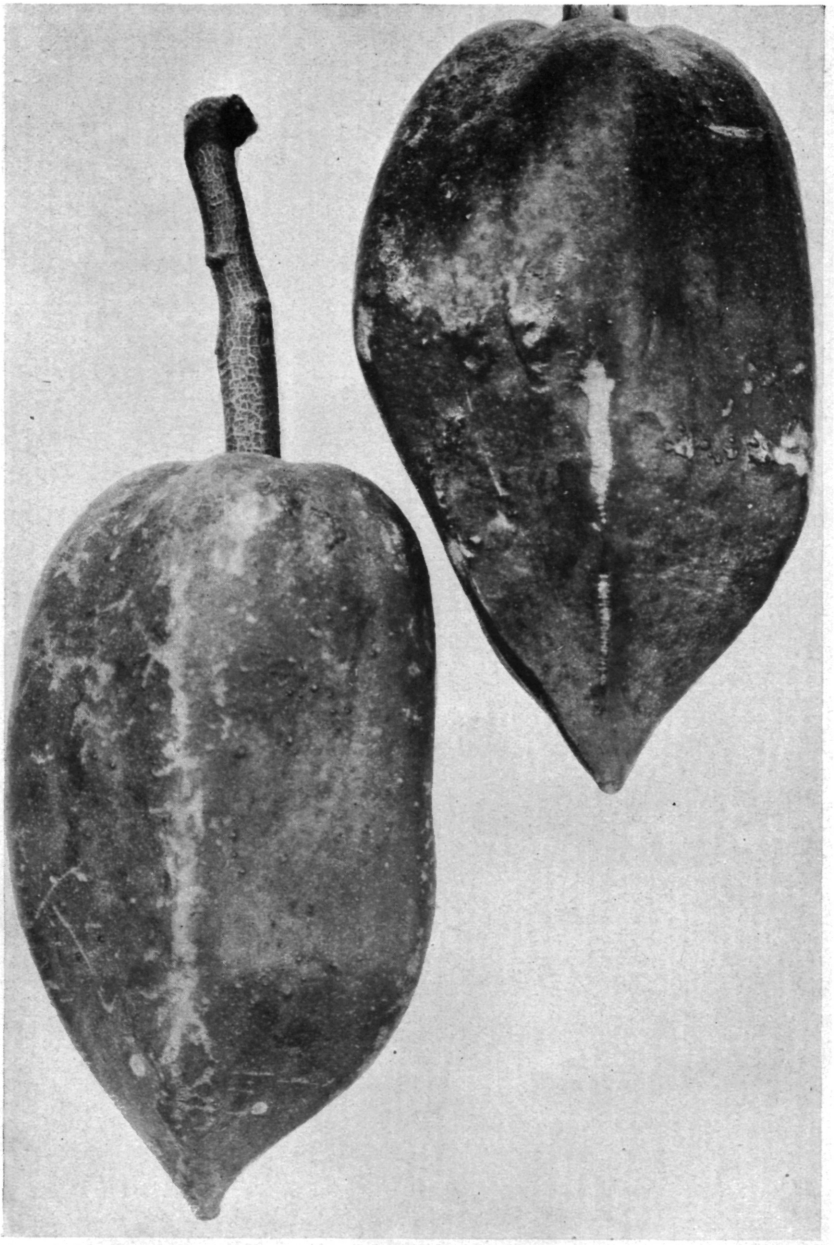
53755. CRATAEGUS STIPULOSA (H. K. B.) Steud. Malaceæ.

"(No. 604. Quito, Ecuador. May 7, 1921.) Plants of *Huagra-manzana* or *manzana silvestre*, from the Protestant cemetery in Quito. This plant, which grows wild along some of the ravines in the vicinity of Quito and is occasionally seen in cultivation, becomes a slender tree 20 to 25 feet high. It has elliptic-lanceolate, serrate leaves and produces during March, April, and May round yellow fruits about an inch in diameter. These are almost identical with *tejocotes* of Mexico and the *manzanilla* of Guatemala; the flesh is whitish, mealy, and rather dry, of pleasant flavor suggesting that of the apple. The seeds are larger and rough. During the ripening season the fruits are commonly sold in the markets of Quito.

"For trial in the United States as a stock plant for other rosaceous fruits; as a fruit-bearing species it is less valuable than some of its Central American congeners."

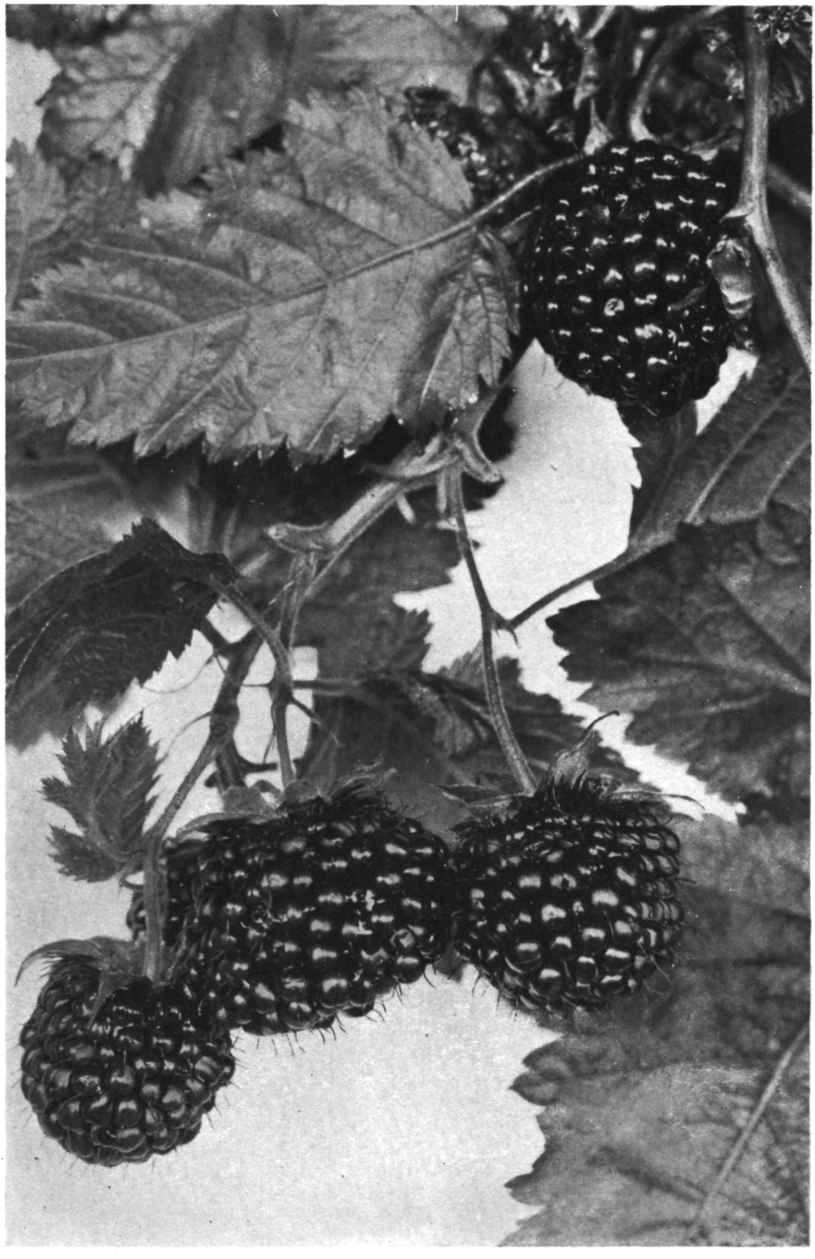
53756. ONOSERIS SALICIFOLIA H. B. K. Asteraceæ.

"(No. 605a. Loja, Ecuador, May 7, 1921.) Seeds of a half-shrubby composite which grows in the region of Loja and also in other parts of southern Ecuador at altitudes of 7,000 to 8,000 feet. It is 5 feet high and produces an abundance of lavender-blue flowers about 2 inches in diameter. It is a pretty perennial, worthy of trial in the United States as an ornamental plant."



THE HIGACHO, AN ANDEAN RELATIVE OF THE PAPAYA. (CARICA SP.; S. P. I. No. 53754.)

In the high Andes of Ecuador are found several wild species of Carica, similar in general appearance to the papaya but much more frost resistant. The Higacho is one of these. It withstands without injury temperatures as low as 20° F. above zero, and its greenish yellow fruits, about 4 inches long and highly aromatic in character, when cooked with sugar, make an excellent preserve. The species should be crossed with the papaya with a view to obtaining new forms of value for cultivation in California and Florida. (Photographed by Wilson Popenoe, Banos, Ecuador, March 11, 1921; P18484FS.)



AKALA, A GIANT HAWAIIAN RASPBERRY. (RUBUS MACRAEI A. GRAY; S. P. I. No. 53847.)

Recent investigations have brought to light several species of Rubus which promise to prove of value to plant breeders. One of the most striking of these is the Akala of Hawaii, whose fruits sometimes attain 2 inches in diameter. It is not sufficiently hardy to be cultivated in the Temperate Zone, but through crossing with northern raspberries may give rise to new forms of great value for the southern United States. (Photographed by J. F. Rock, Honolulu, Hawaii, May, 1921; 22895D–FS.)

53754 to 53758—Continued.

53757. SALVIA SQUALENS H. B. K. Menthaceæ. **Sage.**

"(No. 606a. Loja, Ecuador, May 7, 1921.) Seeds of a handsome species collected near Loja, in southern Ecuador. The plants, which grow commonly on dry and rocky slopes, produce spikes of tubular flowers varying in color from a beautiful salmon pink or coral pink to bright scarlet. Should be tested in the United States as an annual."

53758. SENECIO PIMPINELLAEFOLIUS H. B. K. Asteraceæ.

"(No. 607a. Loja, Ecuador, May 7, 1921.) Seeds of a pretty composite, collected in the mountains south of Loja, where it grows at altitudes of 6,000 to 8,000 feet. The plant is acaulescent, forming a rosette of leaves which lie close to the ground; the flowers, which are produced on stems rising 10 to 20 inches long, are a burnt-orange color and very attractive. The general character of the plant suggests the Transvaal daisy (*Gerbera jamesoni*)."

53759 and 53760. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

From Mauna Kea, Hawaii. Collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 7, 1921. Quoted notes by Mr. Rock.

53759. "Cuttings of a beautiful orange-green variety of the Hawaiian giant raspberry, from an altitude of 6,000 feet on Mauna Kea, Hawaii, May 13, 1921."

53760. "Roots of a reddish black to purple variety of the Hawaiian giant raspberry, from an altitude of 6,000 on Mauna Kea, Hawaii, May 13, 1921."

53761. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Swatow, China. Seeds presented by A. H. Page. Received June 21, 1921.

"Seeds of a brown-seeded papaya. All our other varieties have gray and black seeds." (*Page.*)

53762 to 53842.

From the city of Guatemala. Seeds presented by Sr. Ad. Tonduz, Dirección General de Agricultura. Received June 20, 1921. Quoted notes by Sr. Tonduz.

53762. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 1.* From Municipio de Jocotenango, Huehuetenango."

53763. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 2.* From Santo Tomas Chichicastenango, Quiche."

53764 to 53778. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53764. "*No. 6b.* From San Miguel, Quiche."

53765. "*No. 4.* From San Antonio S., San Marcos."

53766. "*No. 5. Frijol negro.* From Santa Catarina B., Sacatepequez."

53767. "*No. 6b.* From San Miguel, Quiche."

53768. "*No. 6a.* From San Pedro las H., Sacatepequez."

53769. "*No. 6c.* From San Pedro La Laguna, Solola."

53770. "*No. 7. Frijol negro enrededor.* From Barillas, Huehuetenango."

53771. "*No. 8a. Frijol negro enrededor nebaj.* From Quiche."

53772. "*No. 8b.* From San Sebastian, Huehuetenango."

53773. "*No. 10. Frijol negro enrededor.* From Chimaltenango."

53762 to 53842—Continued.

53774. "*No. 12. Frijol negro de suelo.* From San Andres C., Sacatepequez."

53775. "*No. 13. Frijol negro de vara.* From San Rafael, San Marcos."

53776. "*No. 14. Frijol negro de vara.* From Sipacapa, San Marcos."

53777. "*No. 17. Frijol negro matcado.* From Aguacatan."

53778. "*No. 15. Frijol negro colas enrededor.* From Patzum, Chimaltenango."

53779. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 18. Frijol chamborote negro oscuro enrededor.* From Santa Isabel, Huehuetenango."

53780. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 20. Frijol negro ishtapacal.* From Nuevo Progreso, San Marcos."

53781 to 53787. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53781. "*No. 21a. Frijol colorado.* From San Andres C., Sacatepequez."

53782. "*No. 22.* Chimaltenango, Chimaltenango."

53783. "*No. 23. Frijol negro de milpa.* From San Martin, Chimaltenango."

53784. "*No. 24. Frijol negro pequeño mata.* From Cuilapa, Santa Rosa."

53785. "*No. 25. Frijol negro pequeño.* From Japalmico, San Marcos."

53786. "*No. 26. Cuarenteno negro.* From Ciudad Vieja, Sacatepequez."

53787. "*No. 27. Frijol negro cuarenteno.* From San Pedro la Laguna, Solola."

53788. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 28. Frijol negro chamborote.* It bears prolifically. From San Juan Acatan, Huehuetenango."

53789. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

"*No. 29. Frijol negro de mata.* From Barillas, Huehuetenango."

53790. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 30. Frijol negro grande.* From Tajumulco, San Marcos."

53791 to 53795. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

53791. "*No. 31. Frijol negro.* From Vaina Morada, Chimaltenango, Chimaltenango."

53792. "*No. 32. Frijol de sarco.* From Zacualpa, Quiche."

53793. "*No. 33a. Frijol negro.* From San Martin, Chimaltenango."

53794. "*No. 33b.* From Huehuetenango."

53795. "*No. 35. Frijol de riego matcado.* From Aguacatan, Huehuetenango."

53796 to 53799. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53796. "*No. 37.* From San Pedro, Huehuetenango."

53797. "*No. 38a. Frijol amarillo anaranjado Llamado Tsiche enrededor.* From Santa Isabel, Huehuetenango."

53798. "*No. 38b. Frijol ixich ojolenam.* From San Marcos."

53799. "*No. 38c.* From Municipio de Aguacatan, Huehuetenango."

53762 to 53842—Continued.

53800. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

"*No. 40. Frijol amarillo.* From San Lucas, Sacatepequez."

53801 to 53803. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53801. "*No. 41a. Frijol amarillo.* From San Juan A., Huehuetenango."

53802. "*No. 42a.* From San Sebastian, Huehuetenango."

53803. "*No. 42b. Frijol amarillo.* From Ixtapacal, San Rafael, San Marcos."

53804 and 53805. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53804. "*No. 43. Frijol amarillo de milpa.* From San Martin, Chimaltenango."

53805. "*No. 45.* From Chimaltenango."

53806. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 46. Frijol pilique colorado.* From San Lorenzo el Cubo, Sacatepequez."

53807 and 53808. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53807. "*No. 47a. Frijol pilique colorado.* From Senacoj, Sacatepequez."

53808. "*No. 47b.* From Aguacatan, Huehuetenango."

53809 to 53812. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53809. "*No. 48. Frijol pilique colorado enredador.* From Comalapa, Chimaltenango."

53810. "*No. 49b. Frijol pilique blanco.* From Patzum, Chimaltenango."

53811. "*No. 49a.* From San Juan Acatan, Huehuetenango."

53812. "*No. 50.* From San Lorenzo, Sacatepequez."

53813. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*No. 51. Frijol tripa de gallina.* From Nuevo Progreso, San Marcos."

53814 to 53817. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53814. "*No. 52. Frijol gato enredador.* From Patzum, Chimaltenango."

53815. "*No. 53.* From San Sebastian, Huehuetenango."

53816. "*No. 54a. Frijol Kinak-Shak.* From Santiago, Sacatepequez."

53817. "*No. 54b.* From Colotenango, Huehuetenango."

53818 and 53819. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

53818. "*No. 55. Pilique morado enredador.* From Patzum, Chimaltenango."

53819. "*No. 56. Giloy pintillo.* From Santa Maria Dej, Sacatepequez."

53820 to 53823. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53820. "*No. 57. Frijol varitas.* From San Antonio A. C., Sacatepequez."

53821. "*No. 58. Frijol riñon.* From Duenas, Sacatepequez."

53822. "*No. 59. Pinto negro sotero.* From Acatenango, Chimaltenango."

53823. "*No. 60. Pintillo.* From Pastores, Sacatepequez."

53762 to 53842—Continued.

53824. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*No. 61. Frijol Escumite.* From Nuevo Progreso, San Marcos."

53825 to 53834. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53825. "*No. 62. Frijol sardo.* From San Mateo Ma, Sacatepequez."

53826. "*No. 63. Frijol pinto.* From San Lucas, Sacatepequez."

53827. "*No. 64.* From Chimaltenango."

53828. "*No. 65. Frijol retinto del suelo.* From Jutiapa."

53829. "*No. 66. Frijol pinto oscuro.* From Quezaltenango."

53830. "*No. 67. Frijol pinto enredador.* From Chiantla."

53831. "*No. 68. Frijol pinto de vara.* From Nuevo Progreso, San Marcos."

53832. "*No. 69. Pinto Lengua de vaca.* From San Martin J., Chimaltenango."

53833. "*No. 70. Frijol pinto.* From Quezaltenango."

53834. "*No. 71. Frijol pinto.* From San Mateo Ma, Sacatepequez."

53835. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"No. 72. *Frijol yurnas.* From Jutiapa."

53836. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"No. 73. *Frijol morado excapacal.* From San Antonio S., San Marcos."

53837 to 53840. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53837. "*No. 74. Frijol rosado enredador.* From Jutiapa."

53838. "*No. 75. Frijol ixcaco enredador.* From Parramos, Chimaltenango."

53839. "*No. 76. Frijol color de café.* From Quezaltenango."

53840. "*No. 77. Frijol peruano de suelo.* From Parramos, Chimaltenango."

53841. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

Mixed (spilled) brown, black, reddish, etc., beans.

53842. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

Mixed (mostly white).

53843. IPOMOEA sp. Convolvulaceæ. **Morning-glory.**

From Calcutta, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 1, 1921.

"A beautiful morning-glory cultivated in the Botanic Garden at Sibpur, Calcutta. It is a strong climber and is said to have red flowers. Collected in March, 1921." (*Rock.*)

53844. TARAKTOGENOS KURZII King. Flacourtiaceæ. **Chaulmoogra tree.**

From Burma, India. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received June 8, 1921.

"True chaulmoogra from the upper Chindwin River." (*Rock.*)

For previous introduction, see S. P. I. No. 43227.

53845. SALVADORA PERSICA L. Salvadoraceæ.

From Khartum, Sudan, Africa. Seeds presented by R. E. Massey, Government botanist. Received June 27, 1921.

A shrub or small tree easily reproduced from seed, though of slow growth, common on the shores of Lake Chad and growing in dense clumps from 3 to 10 feet high near Shibam, Hadramaut, etc. The twigs are used as a tooth cleanser by the natives of Portuguese East Africa. The wood is white and soft and weighs about 45 pounds per cubic foot. The shoots and leaves are pungent. They are eaten as salad and given as fodder to camels; the fruits, bitter, pungent, and aromatic, are used with the leaves and shoots as a relish. The root bark is acrid and vesicant. The seed contains about 45 per cent of fat, suitable for the manufacture of candles. A vegetable salt called *kegr* is obtained from the ash of this plant in northern Nigeria. The seed cake is useful as a manure; analysis shows that it contains nitrogen 4.8 per cent, potash 2.8 per cent, and phosphoric acid 1 per cent. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 427.*)

For previous introduction, see S. P. I. No. 7362.

53846. SOLANUM COMMERSONII Dunal. Solanaceæ. **Wild potato.**

From Montevideo, Uruguay. Tubers presented by Sr. Luis Guillot, Dirección General de Paseos Públicos. Received June 28, 1921.

"A Solanum with angled stems and leaves 4 to 8 inches long with two to four pairs of leaflets, the terminal one somewhat larger. The corolla is white or pale violet, pubescent on the outer surface. Native to eastern Argentina and Uruguay, usually in moist situations." (*W. F. Wight.*)

For discussion of experiments with this species in France, see Labergerie, Une Nouvelle Pomme de Terre (Solanum commersonii), Revue Horticole, vol. 78, p. 303).

For previous introduction, see S. P. I. No. 17054.

53847. RUBUS MACRAEI A. Gray. Rosaceæ. **Akala.**

From Mauna Kea, Hawaii. Cuttings collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 7, 1921.

"The Hawaiian giant raspberry, reddish black to purple variety, from an altitude of 4,500 feet, on the Shipman Ranch, Mauna Loa, Hawaii, May 13, 1921." (*Rock.*)

For introduction of roots, see S. P. I. No. 53760.

For an illustration of the fruit of this raspberry, see Plate VI.

53848. HYPHAENE THEBAICA (L.) Mart. Phœnicaceæ. **Doum palm.**

Received through the United States Department of State, June 24, 1921.

A palm 25 feet high, distributed from Upper Egypt to central Africa. The stems of old trees are sometimes forked three or four times. The yellowish brown, beautifully colored fruits are borne in long clusters of one to two hundred. In Upper Egypt the poorer classes eat the fibrous, mealy fruit husk, which tastes much like gingerbread, but is rather hard and husky. The hard tough wood is used for domestic utensils. (Adapted from *Lindley and Moore, Treasury of Botany, vol. 2, p. 612.*)

For previous introduction, see S. P. I. No. 51440.

53849. PINUS MASSONIANA Lambert. Pinaceæ. **Pine.**

From Hongkong, China. Seeds collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received June 1, 1921.

"The Hongkong pine, the most common tree of the island of Hongkong, growing well on sandy soil and much planted to check erosion. It is a rare pine and sparingly cultivated in America. Suited for northern Florida. Collected April, 1921." (*Rock.*)

For previous introduction, see S. P. I. No. 34548.

53850. LECYTHIS ZABUCAJO Aubl. Lecythidaceæ. **Sapucaia nut.**

From Port of Spain, Trinidad. Seeds presented by Eugene André. Received June 30, 1921.

A large tree attaining a height of 80 or more feet and expanding into large heads of glossy foliage. The seeds, known as sapucaia nuts, are greatly superior in flavor to the closely allied Brazil nut (*Bertholletia nobilis*) and much easier to digest. They are rather more than 2 inches long and 1 inch wide, covered with a longitudinally furrowed corky shell, and grow in large, hard, woody fruits shaped like urns which measure 6 inches across and have close-fitting lids. Native to tropical America and Africa. (Adapted from *Lindley, Treasury of Botany, p. 667.*)

53851 and 53852.

From Melbourne, Victoria, Australia. Seeds presented by F. H. Baker. Received June 29, 1921.

53851. CASSIA LAEVIGATA Willd. Cæsalpiniaceæ.

An erect glabrous shrub several feet in height. The yellow flowers, with petals from one-half to three-quarters of an inch broad, are in axillary and terminal racemes. The leathery pods are 2 to 3 inches long, cylindrical or more or less inflated when ripe. Native to Queensland and New South Wales. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 282.*)

53852. EUCALYPTUS RISDONI Hook. f. Myrtaceæ.

An ornamental glaucous-leaved tree 20 to 50 feet high, with somewhat pendulous branches, smooth flaky bark, and with buds, flowers, and fruits similar to those of *Eucalyptus amygdalina*, but slightly larger.

For previous introduction, see S. P. I. No. 51064.

53853 to 53855. FRAGARIA spp. Rosaceæ. Strawberry.

From Bedford, England. Plants presented by Laxton Bros. Received March 15, 1921. Numbered June 30, 1921.

53853. FRAGARIA sp.

Laxtonian strawberry. A vigorous midseason variety said to produce bold clusters of large fruits 2½ inches across, the center ones wedge shaped, having very firm, rich glossy crimson flesh which retains its color well. The flavor is reported excellent, and the secondary fruits are said to be very even in size, making the variety a continuous cropper not running very small, as some varieties do in the third picking.

53854. FRAGARIA sp.

Royal Sovereign. Reported as a careful reselection from the strongest and most vigorous stock of the best early varieties for forcing and outdoor use.

53855. FRAGARIA sp.

Received without description.

53856 to 53894.

From the city of Guatemala, Guatemala. Seeds presented by Sr. Ad. Tonduz, Dirección General de Agricultura. Received June 29, 1921. Quoted notes by Sr. Tonduz.

53856. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon-pea.**

"*No. 96.* From Nuevo Progreso, San Marcos."

53857. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"*No. 105.* From Asuncion Mixa, Jutiapa."

53858. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

"*No. 99.* From San Pedro La Laguna, Solola."

53856 to 53894—Continued.

53859. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

"*No. 95.* Frijol alverjón. From San Rafael, San Marcos."

53860. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

"*No. 109.* Linaza. From Santa Lucia, Sololá."

53861 and 53862. ORYZA SATIVA L. Poaceæ. **Rice.**

53861. "*No. 106a. Arroz en granza.* From Tecuaco, Chiquimulilla, Santa Rosa."

53862. "*No. 106b. Arroz en granza.* From Chiquimulilla, Santa Rosa."

53863. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

"*No. 97.* From Santa Cruz Balanaja, Chimaltenango."

53864. SESAMUM ORIENTALE L. Pedaliaceæ.

"*No. 104. Ajonjolí.* From Chiquimulilla, San Marcos."

53865. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.**
(*T. vulgare* Vill.)

"*No. 107a.* From San Miguel, Acatan."

53866. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*Frijol colorado pirrunchin.* From Jutiapa."

53867. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 78. Frijol piloy colorado.* From Ciudad Vieja, Sacatepequez."

53868. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 79. Frijol blanco ishtapacal.* From Nuevo Progreso, San Marcos."

53869 to 53872. PHASEOLUS COCCINEUS L. Fabaceæ.
Scarlet Runner bean.

53869. "*No. 80. Frijol piloy.* From Duenas, Sacatepequez."

53870. "*No. 81. Frijol piloy.* From Parramos, Chimaltenango."

53871. "*No. 82. Frijol piloy colorado.* From Pastores, Sacatepequez."

53872. "*No. 83. Frijol piloy.* From Xenacoj, Sacatepequez."

53873 to 53878. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53873. "*No. 84. Pequeño café.* From Tajumulco, San Marcos."

53874. "*No. 85a. Frijol blanco de vara.* From Santa Maria de J., Sacatepequez."

53875. "*No. 85b. Frijol blanco de vara.* From San Rafael, Marcos."

53876. "*No. 85c. Frijol blanco de suelo.* From Camalapa, Chimaltenango."

53877. "*No. 86a.* From San Pedro La Laguna, Sololá."

53878. "*No. 86b.* From San Pedro La Laguna, Sololá."

53879. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 87. Frijol blanco grande.* From San Antonio, San Marcos."

53880 to 53890. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53880. "*No. 88. Frijol blanco.* From San Mateo, Sacatepequez."

53881. "*No. 89a.* From Magdalena, Sacatepequez."

53882. "*No. 89b.* From Acatenango, Chimaltenango."

53883. "*No. 90a. Frijol blanco enrededor.* From Chimaltenango."

53884. "*No. 90b.* From Zaragoza, Chimaltenango."

53885. "*No. 90c.* From Itzapa, Chimaltenango."

53856 to 53894—Continued.

53886. "*No. 90d. Frijol blanco lacandor.* From Parramos, Chimaltenango."

53887. "*No. 91. Frijol colima.* From San Rafael, San Marcos."

53888. "*No. 92. Frijol colorado camalapa enredador.* From Chimaltenango."

53889. "*No. 93. Frijol blanco de enredo.* From La Candelaria, Barillas, Huehuetenango."

53890. "*No. 94.* From San Antonio S., San Marcos."

53891. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"*No. 103. Frijol colorado ixtapacal.* From Nuevo Progreso, San Marcos."

53892 and 53893. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

53892. "*No. 104. Frijol colorado de gancho de suelo,* Chimaltenango."

53893. "*No. 100.* From Quezaltenango."

53894. PHASEOLUS COCCINEUS L. Fabaceæ. **Scarlet Runner bean.**

"*No. 101.* From San Lorenzo, Sacatepequez."

53895. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Ibarra, Ecuador. Cuttings collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received June 24, 1921.

"(No. 619. Hacienda Carpuela. May 26, 1921. Avocado No. 54.) *Capac.* The parent tree is growing in the huerta rented by Rosa Gonzales, at the Hacienda Carpuela, at an altitude of 5,300 feet. The fruit is a good-sized Mexican avocado about 9 ounces in weight, obovoid in form, purple, and of excellent quality. The seed is relatively small, and the tree is said to be very productive. The variety is worth a trial in California, and in the cooler avocado-growing regions of Florida.

"Formal description: The parent tree is about 45 feet high, slender and erect in habit, with a trunk 18 inches thick at the base, forked 2 feet above the ground. The oval crown is moderately dense and the foliage rich green and healthy in appearance.

"The fruit is oblong pyriform to oval obovoid, weight about 9 ounces, length 4 to 4½ inches, greatest breadth about 2¾ inches; base broadly pointed, the stem inserted slightly to one side; apex rounded to slightly and obliquely flattened; surface of ripe fruit glossy purple black, with very few dots visible; skin less than 0.5 millimeter thick, relatively tough; flesh yellowish cream color, tinged green near the skin, with numerous fiber markings; flavor nutty, rich, and pleasant; quality good; seed rather small, ovate to oval, tight in the cavity with both seed coats adhering closely to the cotyledons. Ripening season mainly from November to March, but a few fruits ripen at other seasons of the year.

"Some specimens do not show any fiber discoloration in the flesh; this is perhaps a question that depends, to a certain extent, upon the degree of maturity which the fruit has reached at the time it is picked."

CORRECTION.

Inventory 64, page 45, third line from bottom, for line that reads—

51036. PLACUS BALSAMIFIER (L.) Bail. Asteraceæ.

substitute as follows:

51037. INULA ROYLEANA DC. Asteraceæ.

INDEX OF COMMON AND SCIENTIFIC NAMES.

Hellebore. See *Helleborus foetidus.*
Helleborus foetidus, 53054, 53101, 53146.
Hibiscus sp., 52856.
Higacho, *Carica chrysopetala*, 53754.
Hiptage benghalensis, 53578.
madablota. See *H. benghalensis.*
Holarrhena antidysenterica, 53579.
Holcus halepensis, 52919.
sorghum, 53055, 53056, 53558–53562.
Honeysuckle, *Lonicera* spp., 53707–53716.
Honeywort, *Ceriuthe* spp., 53039, 53093–53095, 53136.
Hordeum distichon palmella, 53102–53104.
nodosum, 53057.
secalinum. See *H. nodosum.*
spontaneum, 53147.
vulgare pallidum, 53239.
trifurcatum, 53105.
Hydnocarpus spp., 53472, 53473.
wightiana, 52859.
Hydrangea petiolaris, 52937.
Hyoscyamus muticus, 53543.
Hyphaene thebaica, 53848.

Ilex sp., 53452.
Ipomoea sp., 53843.
ficifolia, 53609.
Iris bulleyana, 53703.
clarkei, 53704.
forrestii, 53705.
mellita, 53706.

Juglans sp., 53198.
Justicia adhatoda, 53580.
Jute, nalta, *Corchorus olitorius*, 52890–52892.

Khaya nyasica, 53474.
Koeleria alpicola, 52881.

Lagerstroemia parviflora, 53581, 53582.
Lappula myosotis, 53148.
Larkspur, *Delphinium* spp., 53044, 53097–53099, 53142, 53143.
Laurocerasus ilicifolia, 52923.
Lecythis zabucajo, 53850.
Leucomeris spectabilis, 53583.
Leycesteria formosa, 52864.
Lilium neilgherrense, 52924, 52926.
nepalense, 52925.
Lily, *Lilium* spp., 52924–52926.
Linum usitatissimum, 53860.
Lonicera alpigena, 53707.
deflexicalyx, 53708.
dioica, 53709.
lanceolata, 53710.
longa, 53711.
maackii, 53712.
obovata, 53713.
quinquelocularis translucens, 53714.
ruprechtiana, 53715.
trichosantha, 53716.
Lotus sp., 53447.
uliginosus, 53446.
Love-in-a-mist. *Nigella damascena*, 53061, 53106, 53153.
Luffa aegyptiaca. See *L. cylindrica.*
cylindrica, 52952.
Lumbang. *Aleurites moluccana*, 53547.
Lupine, blue. *Lupinus angustifolius*, 53549.
yellow, *L. luteus*, 53550.
Lupinus angustifolius, 53549.
luteus, 53550.

Mabolo, *Diospyros discolor*, 53555.
Mahogany, African, *Khaya nyasica*, 53474.
Mallotus philippinensis, 53584.
Malus doumeri, 53008.
laosensis, 52900.
pumila, 53380.
sylvestris, 53381–53401.
Maximiliana gossypium, 53585.
Meadow rue, *Thalictrum* spp., 52886, 52887, 53073–53076, 53110–53112, 53162–53173.
Medicago sativa, 53448.
Melica ciliata, 53149.
nutans, 52882, 53150.
Melilotus alba, 52916, 53621.
Milium effusum, 53058.
Millet, pearl. *Pennisetum glaucum*, 53063, 53623.
ragi, *Eleusine coracana*, 53622.
Mock orange, *Philadelphus* spp., 53718–53726.
Monkshood. *Aconitum* spp., 52870, 53081–53083, 53122, 53123.
Morning-glory, *Ipomoea* spp., 53609, 53843.
Musa sp., 53119.
Myosotis arvensis, 53059, 53151.
palustris. See *M. scorpioides.*
scorpioides, 53060.
stricta, 53152.
Myrica rubra, 53453.

Naranjilla, *Solanum quitoense*, 52866.
Nathusia swietenioides, 53586.
Nigella damascena, 53061, 53106, 53153.
Nonnea rosea, 52883, 53062, 53107, 53154.

Oat, *Avena* spp., 53130–53133, 53624.
Ochroma lagopus, 53262, 53490.
Onion, *Allium cepa*, 52913.
Onoseris salicifolia, 53178, 53756.
Orache, *Atriplex hortensis*, 52893.
Ornithopus sativus, 53551.
Oryza sativa, 53861, 53862.
Osteomeles obtusifolia, 53485.

Pai ts'ai, *Brassica pekinensis*, 52910.
Palangi, *Brassica rugosa*, 53542.
Palm, *Caryota* sp., 53120.
doum, *Hyphaene thebaica*, 53848.
macauba, *Acrocomia sclerocarpa*, 53487.
rattan, *Calamus* sp., 52902.
Trachycarpus martianus, 53471.