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 JULY 1 TO SEPTEMBER 30, 1921.

(No. 68; Nos. 53896 to 54425.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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INTRODUCTORY STATEMENT.

Almost every one of the plants described in this inventory opens up a vista of romance to any person who is interested in plants.

We have read these descriptions now for 23 years, and each new inventory brings as we read it new thrills. We want to grow almost every plant and be on hand at its first performance, when it begins to loom up as something of more value to America than a mere curiosity.

If the inventory is read hastily by anyone the effect produced is bewildering, but if the reader will rivet his attention on those plants which particularly strike his fancy he will desire to experiment with some of them. Out of these desires comes the usefulness of these plants to the country. It is beyond the range of human possibility for any one person to test thoroughly very many of these new plants, but if each of our thousands of experimenters makes a home for a few the aggregate of information which will accumulate will be very great indeed.

In singling out for special mention certain of the plants described in this inventory, it should be understood that the writer is merely pointing to those which, from his experience with new foreign plants, strike his fancy and seem to offer more to the experimenter than do others. Among those not mentioned, just as likely as not, are the prize packages of the collection.

The fact that the cost of procuring certain plants is great naturally enhances their value in one's mind. Among those first described here, therefore, as worthy of mention are those collected by our agricultural explorer, Wilson Popenoe, in the back country of Ecuador, more particularly the Chota Valley. Of all the regions visited by him during his years of exploration in Central America and South America, none perhaps has afforded more actual discomfort and danger than this Chota Valley of Ecuador, with its primitive civilization and its malaria-carrying mosquitoes. It is gratifying, therefore, to be able to state that he collected there plant material which to his experienced judgment looks unusually promising. He found a new center of avocado seedlings, which he believes may prove of unusual importance to those who want hardier forms that are as large as fanciers demand. His Tamayo variety

(No. 54270), an 18-ounce avocado with all the earmarks of a hybrid between the hardy Mexican and the true West Indian races, with all that this may mean in the way of increased vigor and hardiness and better fruiting habits, can not fail to attract the notice of those engaged in building up this new industry, avocado production. It is true, others of the collection (Nos. 54270 to 54278) made in this valley may ultimately surpass it in flavor.

A new blackberry (No. 54279); a large-fruited wild blackberry (No. 54280); a wild Andean currant with orange-yellow fruits on racemes 2 inches long, which may make possible a race of currants for the Southern States (No. 53994); as well as the white blackberry (No. 53955), which Mr. Popenoe considers one of the most promising species of Rubus yet collected in South America, should all be given the careful attention which they deserve.

The wild potato (No. 54060) from an altitude of 11,500 feet in the mountains of Ecuador will perhaps be a disappointment to the pathologists, inasmuch as it appears to be attacked by the potato blight, much as the cultivated varieties are, but it may at least help to settle the origin of this disease.

Dr. W. A. Orton's studies of those vegetables which can be eaten by persons affected by diabetes have already attracted wide attention in medical circles, and our search for foreign species which may add to his already large collection has brought in 13 East Indian species (Nos. 53896 to 53908) through the kindness of Mr. Lane, of the Botanic Garden in Calcutta, India. These include potherbs and cucurbits which it is to be hoped may help Doctor Orton to diversify the restricted menu of sufferers from this ailment.

For those who have an experimental corner in their vegetable gardens there are in this inventory several interesting things. The acorn (*Dioscorea latifolia*, No. 53925.), which bears its good-sized tubers in the axils of the leaves; the Southern Rhodesian *Coleus rotundifolius* (No. 54321), tubers of which Mr. Thompson described as an excellent substitute for the white potato; and a remarkable collection (Nos. 54411 to 54424) of the rare type of Japanese vegetables belonging to the mustard family, sent by Doctor Onda, of the Imperial Horticultural Experiment Station at Okitsu, are among the most interesting.

Forage-crop specialists will want to test the drought resistance of Doctor Proschowsky's strain of creeping white clover (*Trifolium repens*, No. 53912) which along the flat meadowlands bordering the River Var is cut five times a year for its hay, and of Pole Evans's two South African grasses (Nos. 53956 and 53957), which form a highly relished part of the forage eaten by the game animals of that great wild stock region; or perhaps they will desire to take the advice of Doctor Trabut and try to hybridize *Trifolium panormitanum* (No. 54032) with *T. alexandrinum*, the great berseem clover of the Nile Valley, which has all but succeeded in America and has made such a success in Italy and Algeria; or to test in the Southern States the native wild grasses (*Aristida* spp., Nos. 54396 to 54399) of Angola, which Mr. Gossweiler, of Loanda, has sent.

Mr. Buck, of the College of Agriculture and Forestry, of Nanking, China, has secured for us seeds in quantity of the forest tree *Catalpa bungei* (No. 53989), to whose excellent qualities Frank N. Meyer

called attention when he sent in the first seeds. Its soft light wood, which is easily split, becomes durable when dry, and is used for furniture and building purposes and for wood carving by the Chinese, has evident adaptation to American conditions, as is proved by the trees which have grown from the seed Mr. Meyer sent, making this species worthy of serious study by foresters.

A large species of timber bamboo which flowers regularly and grows to be 60 feet tall can fail to interest us only if it refuses to grow in our Southern States. We are indebted to Mr. Hole, the forest botanist of Dehra Dun, India, for the seeds of this interesting species, *Dendrocalamus longispathus* (No. 54045).

The attention of cerealists should be called to the remarkable collection of Indo China rice selections (*Oryza sativa*, Nos. 54282 to 54296) which Mr. Carle, of the Genetic Laboratory of Saigon, has sent; among them are four (Nos. 54289 to 54292) of the so-called floating rices, having a different flavor from ordinary rice, which are flooded every year from July to November by the Mekong River and root freely from their upper nodes; also to the soft-shelled variety of Job's-tears (*Coix lacryma-jobi ma-yuen*, No. 54310), which, according to Señor Hernandez, Director of Agriculture of the Philippine Islands, is becoming a valuable crop for tropical agriculturists.

Of new fruit-bearing trees and shrubs the gai yuen tao (*Prunus glandulosa*, No. 54028), of China, has proved itself of value as a dooryard shrub as far north as Rochester, N. Y., where it has fruited repeatedly for Mr. Dunbar, to whom we are indebted for a quantity of seeds; it is attractive when in bloom and its enormous crop of brilliant-red refreshing fruits are the delight of little children. Florida mango growers will be eager for more details about the Pachmarhi mango (*Mangifera indica*, No. 54041), seedlings of which Mr. Bembower reports are considered resistant to frost in Pagara, India. The seedless white sapote (*Casimiroa* sp., No. 54046), which Milo Baker sends from Los Angeles, Calif., and the Costa Rican variety *C. edulis* (No. 54051) with fruits weighing 1½ pounds, secured by Mr. Wercklé, will add two new varieties to the collection of this interesting new subtropical fruit which we are getting together in southern Florida.

For the plant breeders who are interested in creating forms of apples, pears, barberries, or roses, we have assembled, through the courtesy of Professor Sargent, of the Arnold Arboretum, and Mr. Dunbar, assistant superintendent of the Rochester Parks, collections (Nos. 54061 to 54265) of very unusual value. These include a large number of wild species gathered by many years of effort and should find their places in the collections of the universities in the Northern States, where these plants form such important industries.

To those who have found how excellent are some of the new fruits originated by H. R. Wright, of Avondale, New Zealand, the new aphis-resistant apple stocks and other new prune and apple varieties (Nos. 54385 to 54395) will appeal.

To lovers of ornamental plants the gift of Hon. Vicary Gibbs, *Lonicera syringantha* (No. 54058), with its large daphnelike blooms, which have the fragrance of hyacinths, can not fail to appeal, and

it may be a satisfaction to that veteran plant lover of England to feel that he has given to the dooryards of this country so lovely a shrub.

Pole Evans has sent some bulbs of the little South African gladiolus, which has bulbs the size of a pea (*G. alatus*, No. 54304) and ought to be interesting to the breeders of gladioli.

Though the seed failed to grow and it may be another year before we get more of it, we can not refrain from calling the attention of all tropical botanic gardens to the gorgeous ornamental plant, whose meter-long scarlet sprays, composed of the enlarged sepals of the inconspicuous flowers, splashed the landscape with scarlet near the Rio Sucio on Gatun Lake last summer when P. H. Dorsett and the writer were visiting the jungles of the Canal Zone. It is difficult to pardon the botanist Klotzsch for attaching to so gorgeous a plant the almost unpronounceable name of *Warszewiczia coccinea* (No. 54297).

Although the opinion of the chemists seems to preclude the probability that *Stevia rebaudiana* (No. 53918), which at one time alarmed the sugar planters by its reputed sweetness, will ever become a commercial crop, the introduction and trial in our country of so interesting a composite is surely warranted.

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 T. 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., December 12, 1922.

INVENTORY.[1]

53896 to 53908.

From Sibpur, near Calcutta, India. Seeds presented by G. G. Lane, curator, Royal Botanic Garden, through Lieut. Col. A. T. Gage, director, Botanical Survey of India. Received July 7, 1921.

The following vegetables, requested for experimental work on food for diabetics, are used for food in India according to Watt, Dictionary of the Economic Products of India, from which the notes that follow are adapted.

53896. AMARANTHUS GANGETICUS L. Amaranthaceæ. **Amaranth.**

A small annual, common in Bengal and Assam and now extensively cultivated in many parts of the world as a green vegetable. The leaves and tender stalks are made into a curry by all classes of natives. The young stems are sometimes used as a substitute for asparagus on the English table. (*Vol. 1, p. 212.*)

For previous introduction, see S. P. I. No. 34457.

53897. AMARANTHUS PANICULATUS L. Amaranthaceæ. **Amaranth.**

A heavily fruiting, short-season crop, one of the most important sources of food to the hill tribes of India. Although, no doubt, the young tops are to a certain extent eaten as a vegetable, the small seed is the product for which it is cultivated. (*Vol. 1, p. 211.*)

For previous introduction, see S. P. I. No. 44178.

53898. CHENOPODIUM ALBUM L. Chenopodiaceæ.

A plant common throughout the tropic and temperate Himalayas, ascending to 12 000 feet from Kashmir to Sikkim and to 14,000 feet in Tibet; it is general in the plains of India. This plant is cultivated by the hill tribes on the higher western Himalayas, and the wild plant is also regularly collected and eaten as a potherb and green vegetable. The seed of the cultivated plant is the principal product, but the leaves and twigs are also eaten as a spinach. It is entirely a rain crop, and attains a height of 6 feet. The leaves are rich in mineral matter, particularly potash salts. They likewise contain a considerable quantity of albuminoids and other compounds of nitrogen. The seeds are said to be superior to buckwheat. (*Vol. 2, p. 265.*)

For previous introduction, see S. P. I. No. 51214.

53899 to 53901. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

53899. *Sweet melon.* An herbaceous climber, said to be native to northwestern India, Baluchistan, and west tropical Africa; extensively cultivated for its fruit in the sandy basins of rivers. The fruit is round, green or yellowish, the skin covered with a network of raised brown lines. The fruit is eaten uncooked in a variety of

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

53896 to 53908—Continued.

ways. The pulp is usually sweetish and pleasant and is eaten by Europeans as well as by natives. A sweet edible oil is obtained from the seeds, and the seeds and fruit pulp are used medicinally. (*Vol. 2, p. 627.*)

53900. Var. *utilissima*. A form cultivated in Bengal, the Northwest Provinces, and the Punjab during the hot weather and the rains. The fruit varies from short oval or cylindric to elongate, 2 to 5 feet long, and is either straight or curved like some varieties of cucumber. It varies in color from dark green to nearly white, usually changing to a bright-orange color when ripe. When young it is much eaten by Europeans in the Northwest Provinces in lieu of cucumbers, being in season long before that vegetable, but not so highly flavored. When little more than half grown they are pickled; when ripe they have much the flavor of the melon, and will keep for several months if carefully gathered and hung up. They are also eaten raw and are much used in curries. A sweet edible oil is obtained from the nutritious seeds, which are also used medicinally. (*Vol. 2, p. 631.*)

53901. Received as *Cucumis momordica*.

53902. LUFFA ACUTANGULA (L.) Roxb. Cucurbitaceæ. **Gourd.**

A climber, native to northwest India, Sikkim, Assam, and eastern Bengal. The fruit is highly esteemed by natives and is eaten in curries or dressed with clarified butter. When half grown it is one of the best indigenous Indian vegetables, peeled, boiled, and dressed with butter, pepper, and salt. When fully developed it is about a foot long, but if allowed to grow longer than 4 inches it rapidly deteriorates in quality. The fruits, seeds, and leaves are used medicinally, and the dried fibrous rind is used as a brush for sizing paper. (*Vol. 5, p. 94.*)

For previous introduction, see S. P. I. No. 51230.

53903. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ. **Gourd.**
(*L. aegyptiaca* Mill.)

A native of India, cultivated or naturalized in most hot countries of the world. In India it is common everywhere and is often cultivated, especially on the plains. The fruit, which is smaller than that of *L. acutangula*, is edible and is similarly used in curries, etc., by the natives. An oil is obtained from the seeds; the seeds are used medicinally; and the dry fruit, which is filled with an interwoven network of fiber, is used as a flesh brush in Turkish baths. (*Vol. 5, p. 96.*)

For previous introduction, see S. P. I. No. 49163.

53904. MIRABILIS JALAPA L. Nyctaginaceæ.

A yellow, purple, or magenta flowered plant cultivated or spontaneous over the greater part of India, being equally plentiful in the hotter valleys of the northwest Himalayas, from the plains up to 7,000 feet, and in the far east in Bengal, Manipur, and Burma. The plant is often so prevalent near village sites as to exclude all other vegetation. The leaves are said to be largely used as a vegetable at Ooson in the Salem District. The powdered root and seeds are used in cosmetics, and the root and leaves are used medicinally. (*Vol. 5, p. 253.*)

For previous introduction, see S. P. I. No. 47589.

53905. OCIMUM TENUIFLORUM L. Menthaceæ.
(*O. sanctum* L.)

A somewhat shrubby herbaceous plant found throughout India, Burma, and Ceylon and distributed in the Malay Archipelago, Australia, western Asia, and Arabia; it is cultivated occasionally as a potherb by Europeans, for which purpose it is very useful. The leaves, seeds, and flowers are used in native medicine. (*Vol. 5, p. 444.*)

53896 to 53908—Continued.

53906. RUMEX MARITIMUS L. Polygonaceæ.

An annual common in marshes in Assam, Bengal, and the plains of northern India. In the Punjab Himalayas it is found in similar localities up to 12,000 feet. It is distributed to Europe, Asia, North Africa, and North and South America. The plant has cooling properties and is often eaten by natives as a potherb especially in the warm weather. The leaves are used medicinally. (*Vol. 6, pt. 1, p. 591.*)

53907. RUMEX VESICARIUS L. Polygonaceæ.

An annual 6 to 12 inches high, native to the western Punjab, the Salt Range, and the Transindus Hills and cultivated throughout India as a vegetable; it is eaten either raw or cooked. It is usually grown in patches near a well and may be procured almost all the year round. The entire plant is used medicinally. (*Vol. 6, pt. 1, p. 592.*)

53908. TRICHOSANTHES ANGUINA L. Cucurbitaceæ.

An annual creeper which probably was originally wild in India or the Indian Archipelago. It is cultivated throughout India as a rainy season crop for its long cucumberlike fruits, which are cooked and eaten as a vegetable, either boiled or in curries. When young it is prettily striped with white and green; when ripe it varies in length from 1 to 3 feet and is of a brilliant orange color. If gathered when very young, less than 4 inches in length, and cut into thin strips, it may be cooked in the same way as French beans and forms a very fair substitute for that vegetable. (*Vol. 6, pt. 4, p. 81.*)

For previous introduction, see S. P. I. No. 51824.

53909. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ. Bamboo.

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received July 29, 1921.

The common bamboo of the eastern Himalayas with large stems 3 to 6 inches in diameter, rather hollow and not always straight, but used for every variety of purpose. This bamboo grows gregariously on hillsides up to 3,000 feet, and the stems are 40 to 60 feet high. They often grow low and tangled instead of straight; the bamboo may be recognized by this characteristic and by the very thick shoots which grow out at the nodes. The young shoots are eaten. (Adapted from *Gamble, A Manual of Indian Timbers, p. 430.*)

A forest growth of this edible bamboo is shown in Plate I.

For previous introduction see S. P. I. No. 48266.

53910 to 53912.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky, Jardin d'Acclimatation. Received July 19, 1921. Quoted notes by Doctor Proschowsky.

53910. CENTAUREA CANARIENSIS Willd. Asteraceæ.

"A rather large bush which is very drought resistant. When covered with its large purple flowers it is rather ornamental."

Native to the island of Teneriffe, Canary Islands.

53911. CENTAUREA RAGUSINA L. Asteraceæ.

"An exceedingly ornamental bushy Dalmatian plant with yellow flower heads and white silky-tomentose foliage, sometimes nearly 6½ feet across, which grows on almost perpendicular rocks and on walls of masonry where it is planted or naturalized, since it is not wild here."

For previous introduction, see S. P. I. No. 48027.

53910 to 53912—Continued.

53912. TRIFOLIUM REPENS L. Fabaceæ. White clover.

"On the very few flat meadowlands along the lowest part of the little river Var the herbaceous growth is cut five times yearly, green fodder being very much in demand in this exceedingly dry climate, so I could not find any ripe seeds on the plants which are found here and there on these little meadows. But with my two sons I started on an excursion and found a few scattered plants on somewhat drier ground, though apparently it does not exist on the sunburnt hillsides. We managed to gather a few seeds more or less ripe. Perhaps you may find, after all, that the plant growing here may be more drought resistant than the ordinary clovers. We have had no rain of any importance since September."

53913 and 53914. TRIFOLIUM spp. Fabaceæ.

From Melbourne, Victoria. Seeds purchased from F. H. Brunning. Received August 2, 1921.

53913. TRIFOLIUM FRAGIFERUM L. Strawberry clover.

"*Tarwei* variety." (*Brunning.*)

"A creeping perennial clover of possible value as a forage and lawn plant in the cooler and intermountain regions of the United States." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 29263.

53914. TRIFOLIUM SUBTERRANEUM L. Subterranean clover.

"One of the most nutritious plants known to agriculture, indigenous to Britain, found growing on dry, sandy, gravelly soil. The stems grow over each other to a depth of 6 or 7 inches, the lower ones being as healthy as those above." (*Brunning.*)

For previous introduction, see S. P. I. No. 52335.

53915 to 53917.

From Guatemala, Guatemala. Seeds presented by Sr. Ad. Tonduz, Dirección General de Agricultura. Received June 29, 1921. Numbered July, 1921. Quoted notes by Sr. Tonduz.

53915 and 53916. TRITICUM AESTIVUM L. Poaceæ. Common wheat. (*T. vulgare* Vill.)

53915. "*No. 107b.* From San Miguel Acatan, Huehuetenango."

53916. "*No. 108. Trigo sipac.* From Patzum, Chimaltenango."

53917. PISUM SATIVUM L. Fabaceæ. Garden pea.

"*No. 98.* From San Pedro las Huertas, Sacatepequez."

53918. STEVIA REBAUDIANA Bertoni. Asteraceæ.

From Buenos Aires, Argentina. Plants presented by the director of the Botanic Gardens, Asuncion, Paraguay, through D. S. Bullock, agricultural trade commissioner, United States Department of Agriculture, American Embassy, Buenos Aires. Received July 25, 1921.

"This plant has been the subject of at least two rather detailed researches, as follows: Rasenack, P., Über die Süss-stoffe des Eupatorium rebaudianum und des Süssholzes, in Arbeiten aus dem Kaiserlichen Gesundheitsamte, 28 (1908), 420–443, and Dieterich, Karl, Über die Bestandteile der Paraguay-Süss-stoffpflanze Eupatorium rebaudianum, Kaâ-Heé, und ihre pharmazeutische Verwertbarkeit, in Pharmazeutische Zentralhalle, 50 (1909), 435–440; 458–462.

"The latter reported the presence of two glucosides, rebaudin and eupatorin, whereas Rasenack found only one, which he terms only eupatoriumsüss-stoff. Both investigators were interested in this material as a possible substitute

THE EDIBLE BAMBOO OF THE EASTERN HIMALAYAS. (DENDROCALAMUS HAMILTONII NEES AND ARN., S. P. I. No. 53909.)

Like several other bamboos the young shoots of this species are a delicious vegetable. They suggest gigantic asparagus tips, but are more firm and crisp in texture. For its valuable timber, as well as for its edible shoots, the species is worthy of trial in the southern United States, where the Asiatic bamboos promise to become of economic importance. (Photographed by J. F. Rock, Berjan Forest Reserve, Assam, February, 1921; P22721FS.)

ONE OF THE HANDSOMEST FLOWERING TREES OF THE TROPICS. (SPATHODEA CAMPANULATA BEAUV., S. P. I. No. 53983.)

The Torrid Zone is famous for its flowering trees, some of which are gorgeous in the extreme. Like the royal poinciana, the amherstia, and the browneas, *Spathodea campanulata* bears flaming-red flowers of striking beauty. It succeeds in southern Florida and is highly esteemed in Hawaii. (Photographed by Wilson Popenoe, Cocoanut Grove, Fla., April 15, 1916; P16718FS.)

for licorice, but determined that the active principles were not closely allied to glycyrrhizin. Dieterich reports that the glucosides are present in very small quantities, that their isolation is rather expensive and attended by considerable difficulty, and that the crude preparation comparable to licorice extract is with difficulty soluble and has a very bitter aftertaste. He states also that the plant is a very small one which occurs only in the mountainous regions of Paraguay. For these reasons he is very skeptical as to its potential commercial value, although both he and Rasenack suggest the advisability of cultivation experiments outside of South America." (*E. E. Stanford.*)

For previous introduction, see S. P. I. No. 47515.

53919. DATURA SUAVEOLENS Humb. and Bonpl. Solanaceæ.

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received August 6, 1921.

"A plant native to Minas Geraes and Sao Paulo, Brazil, common in the Antilles, and much cultivated in the Tropics and in conservatories for its very large nodding white flowers. Distinguished from *Datura arborea* and *D. ruizii* by its inflated 5-toothed calyx and its long slender fusiform fruit." (*W. E. Safford.*)

A handsome plant 15 to 20 feet high, with smooth elliptic leaves, downy beneath; sometimes 300 of the very large pure-white sweet-scented pendent flowers are open at once. (Adapted from *Gardeners' Chronicle, 3d scr., vol. 2, p. 593.*)

53920 and 53921.

From Chester, England. Seeds purchased from James Hunter. Received August 5, 1921.

53920. ANTHYLLIS VULNERARIA L. Fabaceæ. **Kidney vetch.**

A perennial plant found wild over a large part of Europe. It grows naturally along roadsides, wherever the soil is dry and thin and the subsoil calcareous. It was first introduced into cultivation by a German peasant about 40 years ago. (Adapted from *Division of Agrostology Circular 6, p. 7.*)

For previous introduction, see S. P. I. No. 7721.

53921. SANGUISORBA MINOR Scop. Rosaceæ. **Burnet.**
(*Poterium sanguisorba* L.)

The "salad burnet," an exceedingly hardy and long-lived perennial native to France, up to 2 feet high; the young leaves, resembling the cucumber in flavor, are used as a salad. (Adapted from *Robinson, The Vegetable Garden, p. 116.*)

For previous introduction, see S. P. I. No. 29800.

53922. COCOS NUCIFERA L. Phœnicaceæ. **Coconut palm.**

From Buitenzorg, Java. Seeds presented by Dr. W. M. Docters van Leeuwen, director, Botanic Garden. Received August 11, 1921.

Probably the same as S. P. I. No. 52854, but we have as yet no information which permits us to identify it unquestionably with that number.

53923. POLYALTHIA LONGIFOLIA (Sonner.) Benth. and Hook. Annonaceæ.

From Honolulu, Hawaii. Plants presented by Dr. H. L. Lyon, in charge, department of botany and forestry, experiment station of the Hawaiian Sugar Planters' Association. Received August 11, 1921.

"An excellent street tree which would grow well in Florida and even farther north, as it occurs as far north as Assam." (*J. F. Rock.*)

53924. DIOSCOREA ESCULENTA (Lour.) Burkill. Dioscoreaceæ. **Lesser yam.**

From Barbados, British West Indies. Tubers presented by J. R. Bovell, Director of Agriculture. Received August 1, 1921.

"This *Buck* yam has a delicious flavor, and persons growing yams would be well advised to try to obtain a few tubers when the next planting season comes around." (*Report of Department of Agriculture, Barbados, 1919–20.*)

"This is a white-fleshed yam of excellent quality. The skin is smooth and thin but tough; the variety should be a good shipper. The tubers are cylindrical in shape and rather small." (*R. A. Young.*)

53925. DIOSCOREA LATIFOLIA Benth. Dioscoreaceæ. **Acom.**

From Buenos Aires, Argentina. Tubers presented by D. S. Bullock, agricultural trade commissioner, United States Department of Agriculture, American Embassy. Received July 28, 1921.

"*Papa de aire en parral* (climbing air potato)." (*Bullock.*)

"A yam which produces its crop of edible tubers along the vine, in the axils of the leaves instead of under ground. According to I. H. Burkill, it is of African origin and is called *acom*. Mr. Burkill states that it is very closely allied to *D. bulbifera*. The vine is round stemmed and the leaves cordate. The variety is not a very strong grower. The tubers are angular, brownish gray in color, thin but tough skinned, and in form resemble the liver of fowl, whence arises the name 'turkey-liver yam' by which the variety is known in some parts of Brazil. The tubers weigh from a fraction of an ounce to as much as a pound each, depending upon age and the conditions of growth; they keep exceedingly well. The quality of the tubers is fair when they are properly prepared for the table. The cooked tubers are rather firm but mealy. Boiled in the skin the yellowish flesh is of unpleasantly strong flavor, but when the tubers are pared, cut into pieces, and boiled, the objectionable quality is removed. The boiled yam is also very good when slightly fried." (*R. A. Young.*)

53926 and 53927.

From Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the Department of Agriculture. Received August, 1920, and numbered July, 1921. Quoted notes by Doctor Shantz.

53926. CROTALARIA sp. Fabaceæ.

"(No. 1186. Kisumu, Nyanza, Kenia, British East Africa. July 11, 1920.) A Crotalaria with small clustered pods."

53927. CROTALARIA sp. Fabaceæ.

"(No. 1187. Kisumu, Nyanza, Kenia, British East Africa. July 11, 1920. A Crotalaria with large bladder pods and seeds one-eighth to one-fourth of an inch across."

53928. LEPTOSPERMUM SCOPARIUM NICHOLLII (Darr.-Smith) Turrill. Myrtaceæ.

From Richmond, Victoria. Seeds presented by F. H. Baker. Received August 13, 1921.

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

For previous introduction, see S. P. I. No. 48168.

53929. COUEPIA sp. Rosaceæ.

From San Jose, Costa Rica. Seeds presented by Mrs. A. L. Zeledón. Received July 20, 1921.

Small South American tree bearing clusters of numerous white or cream-colored flowers. The fruits of a number of species are eaten. (Adapted from *Lindley, A Treasury of Botany, vol. 1, p. 341.*)

53930 to 53939. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Harbin, Manchuria, China. Seeds procured by Douglas Jenkins, American consul. Received July 22, 1921.

"A collection of soy beans from the Grace-American International Corporation." (*Jenkins.*)

For experiment by the Office of Forage-Crop Investigations.

53930. *No. 1.*
53931. *No. 2.*
53932. *No. 3.*
53933. *No. 4.*
53934. *No. 5.*
53935. *No. 6.*
53936. *No. 7.*
53937. *No. 8.*
53938. *No. 9.*
53939. *No. 10.*

53940. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From San Bernardo, Chile. Seeds presented by Sr. Salvador Izquierdo. Received July 22, 1921.

"Seeds of the better varieties cultivated in Santa Ines. I have not observed any diseases in these varieties and they are very hardy and productive." (*Izquierdo.*)

53941 to 53943. CAPSICUM ANNUUM L. Solanaceæ.
Red pepper.

From Valencia, Spain. Seeds purchased through John R. Putnam, American consul. Received July 28, 1921. Quoted notes, except as otherwise noted, by Don Rafael Janini, agronomical engineer, Province of Valencia.

53941. "*Morron.* The variety almost universally employed for the best grades of canned peppers." (*Putnam.*)

"A rather coarse, small-bearing variety, greatly liked for export on account of the pleasing appearance of its large, long, fleshy sweet fruits, which are suitable for preserving and roasting."

53942. "*Largo.* A variety also used in certain cases for canning." (*Putnam.*)

"A red, sweet variety."

53943. "*Pimiento de Bola.* A large sweet variety." (*Putnam.*)

"A fine, sweet variety, greatly liked for preserving."

53944 to 53946.

From Kulara, North Queensland, Australia. Seeds presented by J. A. Hamilton. Received July 28, 1921.

53944. CANNA EDULIS Ker. Cannaceæ. **Edible canna.**

"A handsome red-flowered canna, 8 to 9 feet high, cultivated in Australia for its rootstocks, which yield the Queensland arrowroot of commerce and are edible and palatable when properly cooked. When boiled for 30 minutes and then mashed they are said to be a good substitute for the potato. The species is also said to outyield the potato two to one. The tops have been used as forage." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 46821.

53944 to 53946—Continued.

53945. RUBUS sp. Rosaceæ. Raspberry.

"A wild ever-bearing raspberry which has an inferior but pleasant flavor." (*Hamilton.*)

53946. ZINZIBER sp. Zinziberaceæ. **Ginger.**

"A wild ginger which likes well-drained gravelly soil with plenty of humus and partial shade." (*Hamilton.*)

53947 and 53948. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. (*Setaria italica* Beauv.) **Millet.**

From Tokyo, Japan. Seeds purchased from Dr. T. Watase, The Tokyo Plant, Seed & Implement Co. Received July 28, 1921.

"The most important species of the genus Chaetochloa. It is called millet or, to distinguish it from other kinds of millet, foxtail millet. Millet is an erect annual, 2 to 4 feet tall, with a dense bristly yellow or purple head." (*A. S. Hitchcock.*)

53947. "*Kunitomi Urachi.*" (*Watase.*)

53948. "*Tamagawa ō nagaho. Mochi.*" (*Watase.*)

53949 and 53950. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Coimbatore, Madras, India. Cuttings presented by T. S. Venkatraman, acting government sugar-cane expert, Agricultural College. Received July 29, 1921.

"Disease-free material of varieties now growing in India, that mature there in 10 months, according to Mr. Padhye, an Indian student at the Louisiana State University, who is very enthusiastic about these canes and thought that they would be valuable here." (*W. G. Taggart, Louisiana Sugar Station.*)

53949. *Manjav.* 53950. *Striped Mauritius.*

53951 to 53954. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Buenos Aires, Argentina. Seeds presented by Sr. Tomás Amadeo, director general, Ministro de Agricultura de la Nació. Received July 30, 1921. Quoted notes by Sr. Amadeo.

Seeds of cultivated tomatoes for testing for resistance to leaf-spot and other diseases.

53951. "From the School of Agriculture of Mendoza."

53952. "*Tomate de Genova,* cultivated in the School of Agriculture of Casilda."

53953. "From the experimental plantation of Pureta de Diaz (Salta)."

53954. "From the School of Agriculture of Cordoba."

53955. CITRUS sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Numbered July, 1921.

"Looks like a lemon, about 2½ inches through and 3 inches long." (*W. T. Swingle.*)

53956 and 53957.

From Pretoria, Union of South Africa. Seeds presented by Dr. I. B. Pole Evans, Division of Botany. Received July 21, 1921.

53956 and 53957—Continued.

53956. PANICUM MAXIMUM Jacq. Poaceæ. **Guinea grass.**

"*Buffels grass.* An indigenous grass received from northwestern Transvaal which is highly relished by game and domestic animals." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 50081.

53957. UROCHLOA BRACHYURA Stapf. Poaceæ. **Grass.**

"A native of northeastern Transvaal, where the seed was collected. This grass is always the one most sought after by wild game and domestic animals." (*C. V. Piper.*)

53958 to 53977.

From Tokyo, Japan. Seeds presented by Dr. M. Okada, through Dr. A. Hrdlicka, United States National Museum. Received August 5, 1921.

53958. ALLIUM FISTULOSUM L. Liliaceæ. **Welsh onion.**

Negi.

53959. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

Aka tojisha (red variety).

53960. BRASSICA JUNCEA (L.) Cass. Brassicaceæ. **Chinese mustard.**

Takana.

53961. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

Shiro kekkyusai.

53962. BRASSICA sp. Brassicaceæ. **Mustard.**

Santosai (Shantung ts'ai).

53963. BRASSICA sp. Brassicaceæ. **Mustard.**

Aka kabura (red turnip).

53964. BRASSICA sp. Brassicaceæ. **Mustard.**

Midzuna (water rape).

53965. BRASSICA sp. Brassicaceæ. **Mustard.**

Okabura (large turnip).

53966. BRASSICA sp. Brassicaceæ. **Mustard.**

Shogoin kabu (turnip).

53967. CHRYSANTHEMUM CORONARIUM L. Asteraceæ.

Kikuma.

53968. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

Sanmaime fushinashi kiuri.

53969. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

Sandomame.

53970. PISUM ARVENSE L. Fabaceæ. **Field pea.**

Saya endo.

53971 to 53973. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

53971. Early nonblooming all-season radish.

53972. *Natsu daikon* (summer radish).

53973. *Nerima onagamariyiri daikon.*

53974. BRASSICA sp. Brassicaceæ. **Mustard.**

Aka daikon (red radish).

53958 to 53977—Continued.

53975 and 53976. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

53975. *Shogoin daikon.* 53976. *Miyashige daikon.*

53977. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

Sandowara naganasu.

53978. ORYZA SATIVA L. Poaceæ. **Rice.**

From Chefoo, Shantung, China. Seeds presented by A. Sugden, through Lester Maynard, American consul. Received August 5, 1921.

"Glutinous rice which I got about 60 miles inland, which is said to be specially good of its kind." (*Sugden.*)

53979. TRITICUM AESTIVUM L. Poaceæ. **Common wheat.**

(*T. vulgare* Vill.)

From Chefoo, Shantung, China. Presented by A. Sugden. Received August 6, 1921.

"Shantung is a braid-producing place. The braid is made chiefly from wheat straw, and I am sending you a sample of the straw and some seeds of the wheat from which the straw is produced." (*Sugden.*)

53980. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Buitenzorg, Java. Tubers presented by Dr. W. M. Docters van Leeuwen, director, Botanic Garden. Received August 8, 1921.

"The variety *Talus Ketan* is softer and esteemed more highly than the ordinary form of taro." (*Dr. J. J. Smith, acting director.*)

"A taro having petioles of an even pale green; blade shaded with lighter and darker green, without petiolar spot. The plant produces slender rhizomes which run on the surface of the ground." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 21263.

53981 and 53982.

From Foochow, Fukien, China. Seeds presented by C. R. Kellogg, Fukien Christian University. Received August 11, 1921.

53981. MEDICAGO LUPULINA L. Fabaceæ.

Yellow trefoil, a native of Europe and Asia, is often called *black medic* from the fact that its seed pods when ripe are black.

In addition to supplying the soil with humus and available nitrogen for the use of succeeding crops, the green plants form an excellent cover for the otherwise bare ground during the winter, thus retarding the gullying action and erosion of the winter rains. When turned under for soil improvement, a marked effect can usually be noted in the yields of the succeeding crops. Yellow trefoil is better adapted for pasturage than for hay, owing to its tendency to lodge, even when grown in a comparatively thick stand. All kinds of stock do well on yellow-trefoil pasture, since it furnishes very nutritious grazing. (Adapted from *note by J. M. Westgate and H. S. Coe.*)

For previous introduction, see S. P. I. No. 31395.

53982. MYRICA RUBRA Sieb. and Zucc. Myricaceæ. **Yang mae.**

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

For previous introduction, see S. P. I. No. 48000.

53983. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, in charge, Agricultural Experiment Station. Received August 13, 1921.

The tropical African *fountain* or *tulip tree*, which is of medium size but occasionally reaches a height of 70 or 80 feet, bears dark-green pinnate leaves and at the ends of the branches large bright orange-red flowers with golden yellow margins. The ground beneath the trees is often thickly covered with the exceedingly striking and handsome flowers. The unopened flowers contain a quantity of water, which gives it the name *fountain tree* in India where it is cultivated as an ornamental shade tree. The whitish fluffy seeds fill a boat-shaped capsule which is 10 to 12 inches long. (Adapted from *Rock, Ornamental Trees of Hawaii, p. 193.*)

For previous introduction, see S. P. I. No. 42373.

A cluster of flowers from this tree is shown in Plate II.

53984. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Uitenhage, Cape Province, Union of South Africa. Seeds presented by Hugh Magennis, Doorn Koms Farm, through Fred. J. Pritchard, United States Department of Agriculture. Received August 16, 1921.

Introduced for experimental purposes.

"The wild tomato found growing in the region of Uitenhage, received from Hugh Magennis." (*Pritchard.*)

"Resistant to diseases at Uitenhage; red in color, small, round, about 1 inch in diameter; bears in clusters of 5 to 7; very fruitful, but more seed than flesh; fond of moist situations, rapid growing." (*Magennis.*)

53985. TRIFOLIUM GLOMERATUM L. Fabaceæ. **Cluster clover.**

From Melbourne, Victoria, Australia. Seeds presented by Law, Somner & Co. Received August 16, 1921.

"This clover is useful only because it grows fairly well in sour soils, low in phosphate content, when these soils first come into cultivation and before the other clovers have established themselves." (*W. J. Spafford, Superintendent of Experimental Work.*)

For previous introduction, see S. P. I. No. 53007.

53986. PHLEUM PRATENSE L. Poaceæ. **Timothy.**

From Helsingfors, Finland. Seeds presented by A. F. Tigerstedt. Received August 17, 1921.

"The timothy seed used in my estate since time immemorial, the same kind that is used everywhere else here in southern Finland." (*Tigerstedt.*)

53987. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Aizu-Wakamatu, Japan. Seeds presented by Rev. Christopher Noss. Received August 17, 1921.

"One of the largest seeded soy beans that has yet come into the department. Very similar to the *yachi* variety from Japan." (*W. J. Morse.*)

For previous introduction, see S. P. I. No. 49834.

53988. CLITORIA TERNATEA L. Fabaceæ.

From Brooksville, Fla. Seeds sent in from the Plant Introduction Garden, Brooksville, Fla. Received August 19, 1921.

"A double-flowered form of this interesting semitropical vine. The pea-shaped flowers are produced in the axils of the leaves and are of a beautiful deep-blue color. It is one of the most attractive of the smaller flowering vines." (*Peter Bisset.*)

For previous introduction, see S. P. I. No. 51924.

53989. CATALPA BUNGEI Meyer. Bignoniaceæ.

From Nanking, Kiangsu, China. Seeds presented by J. L. Buck, acting dean, College of Agriculture and Forestry, University of Nanking. Received August 17, 1921.

"Seeds collected in the first Kiangsu Provincial Forest Station, Ming Tomb, Nanking. A tree with white pink-dotted flowers which are edible when cooked. The bark and leaves are used in medicine. The soft, light wood is easily split when newly cut, but durable when thoroughly dried; it is used mostly for building purposes and for making furniture, carts, coffins, window sashes, and for carving. It would probably be valuable for fence posts." (*Buck.*)

53990 to 53995.

From Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received August 15, 1921. Quoted notes by Mr. Popenoe.

53990. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

"(No. 641. Milagro, near Guayaquil, Ecuador. July 20, 1921.) *Milagro* pineapple. Plants from the Hacienda Valdez, near Milagro, about 35 kilometers from Guayaquil.

"The pineapples of Guayaquil have long been famous in tropical America for their superior quality. They are cultivated commercially in the vicinity of Milagro, whence they are brought to the port in large quantities. A few are sent down the coast to Peru. As far as I can see, the variety is either *Smooth Cayenne* or very close to it; on the chance that it is not identical I am sending these suckers, which should be tested in Hawaii and Porto Rico.

"The plant is vigorous, with smooth leaves reaching up to 3 feet in length. The fruits, which sometimes weigh as much as 8 or 10 pounds but more commonly do not exceed 4 pounds, are oblong to oblong-oval in form, slightly narrower toward the apex than at the base. When ripe they are green on the surface; the flesh is white, very abundantly juicy, of tender, melting texture, and of delicately aromatic, sweet, very agreeable flavor. This is an excellent pineapple for use as a dessert fruit. I am inclined to think that it may prove to have slightly better shipping qualities than the strain of *Smooth Cayenne* which has been grown in Florida."

53991. FUCHSIA sp. Onagraceæ.

"(No. 637a. From La Rinconada, Ecuador. June 10, 1921.) Seeds of *Zarcillejo*. A half-climbing wild shrub from the mountains of Carchi Province, where it grows at altitudes of 10,000 to 12,000 feet. It bears handsome scarlet flowers about 2 inches long and should be sufficiently hardy for cultivation in California."

53992. SALVIA SAGITTATA Ruiz and Pav. Menthaceæ. **Sage.**

"(No. 636a. Road between Cayambe and Ibarra, Ecuador. May 20, 1921.) Seeds of a handsome blue-flowered salvia from the road in the mountains between Cayambe and Ibarra in northern Ecuador, where it grows abundantly at altitudes of 8,000 to 9,000 feet. The plant is slender and reaches 3 feet in height; the deep-blue flowers, about 1½ inches long, are produced in considerable numbers and make the species worthy of a trial in the United States."

53993. SOLANUM BREVIFOLIUM Humb. and Bonpl. Solanaceæ.

"(No. 639a. From La Rinconada, Ecuador. June 5, 1921.) Seeds of a slender, attractive climbing plant from the high páramo near the Hacienda La Rinconada, in the Province of Carchi, where it grows at altitudes of 10,000 to 12,000 feet. Its leaves are small and abundantly produced; the flowers are white, star shaped, half an inch broad, and are followed by roundish, deep orange-colored fruits up to an inch long. The slender stems send out adventitious roots, which enable them to cling with security to tree trunks and large rocks. The species may be useful in California and Florida to cover walls and fences. It is a

53990 to 53995—Continued.

perennial, and while not a large grower, will probably reach a height of 10 feet at least. Since it grows upon the high páramo, it should withstand at least several degrees of frost."

53994. RIBES PUNCTATUM Ruiz and Pav. Grossulariaceæ. **Currant.**

"(No. 638a. Hacienda La Rinconada, Ecuador. June 5, 1921.) Seeds of the wild Andean currant from the Province of Carchi. Altitude about 11,500 feet.

"A shrub reaching a height of 6 feet, with broadly ovate, subcrenate leaves truncate at the base, serrate and sometimes slightly lobed, and about an inch long. The round orange-yellow fruits, rarely more than a quarter of an inch in diameter, are borne on axillary racemes about 2 inches long. They are subacid and not very agreeable in flavor and little used by the inhabitants of the region in which they grow.

"In general appearance, both of plant and fruit, this species is strikingly suggestive of our cultivated currants. It will be of interest in the United States because of its relationship with the latter, and it may perhaps be used in producing a good variety of currant suitable for regions where our present cultivated sorts will not succeed."

A fruiting branch of this Andean currant is shown in Plate III.

53995. RUBUS ADENOTRICHOS Schlecht. Rosaceæ. **Blackberry.**

"(No. 640a. Hacienda La Rinconada, Ecuador. June 10, 1921.) *Mora blanca* (white blackberry), from the Province of Carchi, at an altitude of about 10,500 feet. This species of Rubus is low growing and half shrubby in habit, sending up canes to a height of 6 or 8 feet. The stems are light green and covered with short stiff hairs; the leaves are composed of 5 ovate-acuminate to oblong-acuminate, finely serrate, glabrate leaflets 3 to 4 inches long. The white flowers, about an inch broad, are borne in many-flowered panicles up to a foot long. The fruits are abundantly produced; they are oblong to oval, up to three-quarters of an inch long, and cream white when ripe. The drupelets are small and numerous and closely set together; the seeds are small and give little trouble when the fruit is eaten. The flavor of this excellent berry is sweet and pleasant; the species, in fact, is one of the most interesting and promising of all those which have been collected in South America up to the present time. It should be given a careful trial in the southern and western portions of the United States."

53996. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. **Yampi.**

From Porto Rico. Tuber presented by J. A. McCutcheon, Federal Horticultural Board, New York City, who obtained it from the Bean Trading Co. Received September 3, 1921.

"This is apparently a purple-skinned strain of the Jamaica yampi. The single tuber received was about 7 inches long by 3 inches in greatest diameter, and nearly 1½ pounds in weight. The flesh is rather moist when cooked, of good flavor, fine grained, and perfectly white." (*R. A. Young.*)

53997 to 54016. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Passoeroean, Java. Seeds presented by Dr. Ph. van Harreveld, director, Sugar Experiment Station. Received August 6, 1921. Quoted notes by Doctor van Harreveld.

"*POJ* is 'Proefstation, Oost Java' (Experiment Station, East Java), where all the seedlings mentioned originated."

53997 to 54003. "These crossings, types, and their seedlings are tolerant to the mosaic disease."

53997. "*No. 1376 POJ* (crossing of *Chunnee* seedlings) = *213 POJ* × *369 POJ* = (*Black Cheribon* × *Chunnee*) × (*Black Borneo* × *Chunnee*) made at the station in 1906."

53997 to 54016—Continued.

53998. "*No. 1507 POJ* (crossing of *Chunnee* seedlings)=*213 POJ*×*369 POJ*=(*Black Cheribon*×*Chunnee*)×(*Black Borneo*×*Chunnee*) made at the station in 1907."

53999. "*No. 2631 POJ* (direct *Chunnee* seedling)=*Kocsoemo*×*Chunnee*, made at the station in 1914."

54000. "*No. 1410 POJ* (direct *Chunnee* seedling)=*Black Cheribon*×*Chunnee*, made at the station in 1907."

54001. "*No. 920 POJ* (direct *Chunnee* seedling)=*Black Cheribon*×*Chunnee*, made at the station in 1905."

54002. "*Chunnee*, British India, imported in 1895."

54003. "*Zwinga*, Florida, imported in 1918."

54004. "*No. 2690 POJ* (cross between *Kassoer*,[2] and *Chunnee* seedlings)=*2366*×*2011*=(*100*×*Kassoer*)×(*213 POJ*×*369 POJ*), obtained in 1916."

54005. "*No. 2655 POJ* (diluted *Kassoer* seedlings)=*2221 POJ*×*EK 28*=(*Cheribon*×*Kassoer*)×*EK 28*. These seedlings are to a slight degree attacked by the yellow-stripe disease, but are of vigorous growth and are planted with good results in the factory fields."

54006. "*Yontanzan*, Formosa, imported in 1915. The adult canes and also the seedlings are tolerant to the mosaic disease."

54007 to 54009. "(Direct crossing with *Kassoer* type) *Black Cheribon* × *Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

54007. "*No. 2182 POJ.*"

54008. "*No. 2206 POJ.*"

54009. "*No. 2210 POJ.*"

54010. "*No. 1499 POJ* (crossing of *Chunnee* seedlings)=*385 POJ*×*181 POJ*=(*100 POJ*×*Chunnee*)×(*Black Cheribon*×*Chunnee*) made at the station in 1907. The adult canes and also the seedlings are tolerant to the mosaic disease."

54011. "*No. 1984 POJ* (crossing of *Chunnee* seedlings)=*213 POJ* ×*369 POJ*=(*Black Cheribon*×*Chunnee*)×(*Black Borneo*×*Chunnee*). Made at the station in 1909. The adult canes and also the seedlings are tolerant to the mosaic disease."

54012 and 54013. (Direct crossing with the *Kassoer* type) *100 POJ* ×*Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

54012. "*No. 2336 POJ.*"

54013. "*No. 2366 POJ.*"

54014. "*No. 2688 POJ* (crossing between *Kassoer* and *Chunnee* seedlings)=*2366*×*2011*=(*100*×*Kassoer*)×(*213 POJ*×*369 POJ*), obtained in 1916. This type shows immunity to the yellow-stripe disease, but is too slender for cane culture."

54015. "*No. 2367 POJ* (direct crossing with *Kassoer* type)=*100 POJ*×*Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

54016. "*No. 2233 POJ* (direct crossing with the *Kassoer* type)=*Black Cheribon*×*Kassoer*, obtained in 1911. Resistant to the yellow-stripe disease, but too slender for cane culture."

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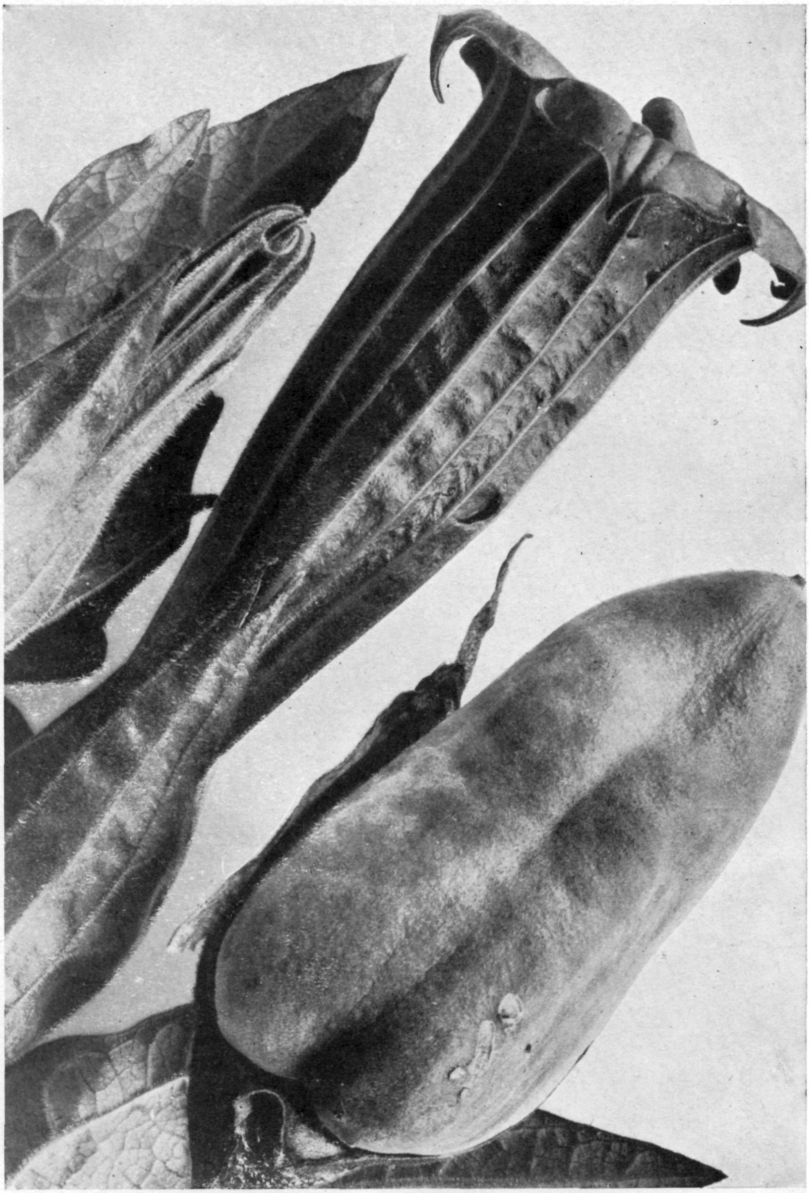
[2] "*Kassoer* is a cane found by Doctor Kruger in a wild state on Mount Tjerimai in Java. This type is a spontaneous crossing of the wild *Saccharum spontaneum*; *S. officinarum* seedlings, obtained at our station by crossing the two botanical species, are of the same particular habit. All the types obtained are immune against the yellow-stripe disease. All seedlings got from *S. officinarum* are tolerant to the yellow-stripe disease."

A FRUITING BRANCH OF THE ANDEAN CURRANT. (RIBES PUNCTATUM RUIZ AND PAV., S. P. I. No. 53994.)

This wild currant from the high Andes of Ecuador is not of great economic value, but when crossed with the cultivated currants of northern countries it may yield new forms whose climatic requirements will be different from those of present-day horticultural varieties. The Andean currant bears golden-yellow fruits in great abundance and grows in cool regions subject to heavy rainfall. (Photographed by Wilson Popenoe, Hacienda La Rinconada, Ecuador, June 8, 1921; P18600FS.)



THE HUANTUC, A FAVORITE ORNAMENTAL PLANT OF THE QUICHUA INDIANS. (DATURA ROSEI SAFFORD, S. P. I. NO. 54049.)

Since prehistoric days the aboriginal inhabitants of the Andean region have cultivated the Huantuc about their diminutive homes. The flower, which was a great favorite with the Incas, varies in color from rich yellow to deep red, and it sometimes reaches 8 inches in length. The plant grows to 15 or 18 feet in height and blooms profusely during most of the year. It can be cultivated in subtropical regions such as California and Florida. (Photographed by Wilson Popenoe, Hacienda La Rinconada, Ecuador, June 9, 1921; P18603FS.)

54017. ATTALEA COHUNE Mart. Phœnicaceæ. **Cohune palm.**

From Stann Creek, British Honduras. Seeds presented by J. M. Sutton, Washington, D. C., who obtained them from Maxwell Riddle, American Palm Products Co., Ravenna, Ohio. Received August 11, 1921.

The fruit of this palm contains a kernel which yields about 40 per cent of an oil that is said to be superior to coconut oil. The cohune grows in the region between southern Mexico and Colombia and attains its best development in British Honduras, Guatemala, and the Honduras Republic. In the latter country the soil of the forests is rich, marly, and of excellent quality. The trees grow about 5 yards apart and the fruits form enormous bunches which sometimes weigh as much as 165 pounds. The average yield of one tree is 1,000 nuts per annum, though some specimens will produce twice as many. By means of ether rather more than 40 per cent of oil can be extracted from the kernel; the cake contains 2.5 per cent of nitrogen and can be used as cattle food. Cohune oil saponifies easily and furnishes an odorless soap which may prove to be useful in the manufacture of fine soap. When freed from fiber the fruit is 2 to 2½ inches long and about 1½ inches across. The shell is very hard and is about one-fourth of an inch thick, while the kernel is the size of a large nutmeg. Houses are thatched with the leaves of this palm; the leafstalks are woven with osiers and cord into fences and mats; the pith of the central stem can be used instead of cork for mounting insects; cord and hammocks are made from the fibers of the young leaves. The sap makes a refreshing drink. (Adapted from *La Hacienda, vol. 11, pp. 376–379.*)

54018 to 54027. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Passoeroean, Java. Cuttings presented by Dr. Ph. van Harreveld, director, Sugar Experiment Station. Received August 24, 1921. Quoted notes by Doctor van Harreveld.

"Free from yellow-stripe disease and sereh disease."

54018. "*No. 36 POJ.*"
54019. "*No. 100 POJ.*"
54020. "*No. 139 POJ.*"
54021. "*No. 213 POJ.*"
54022. "*No. 228 POJ.*"
54023. "*No. 862 POJ.*"
54024. "*No. 979 POJ.*"
54025. "*No. 1228 POJ.*"
54026. "*No. 2379 POJ.*"
54027. "*Kassoer.*"

54028. PRUNUS GLANDULOSA Thunb. Amygdalaceæ. **Plum.**

From Rochester, N. Y. Seeds presented by John Dunbar, assistant superintendent, Department of Parks. Received August 26, 1921.

"A spreading shrub with many slender twigs, growing to a height of 3 to 5 feet; it flowers early in spring with a multitude of small rosy white flowers, which are followed by an abundance of small fruits of purple-black color and of fresh sour taste. These tiny cherries make excellent preserves. Chinese name, *gai yuen tao* (dwarf diminutive peach)." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 46003.

54029 to 54031. TRITICUM AESTIVUM L. Poaceæ. (*T. vulgare* Vill.) **Common [wheat.**

From Buenos Aires, Argentina. Seeds presented by Sr. Carlos D. Girola, Director Honorario del Museo Agrícola de la Sociedad Rural. Received August 30, 1921. Quoted notes by Sr. Girola.

54029. "*Universal* (*Triticum sativum* L. var. *aristatum* subvar. *universal* Gir.), from Baigorrita in the Province of Buenos Aires."

54030. "*Barleta*, from Médanos in the Province of Buenos Aires."

54031. "*Favorito* (*Triticum sativum* L. var. *muticum* subvar. *favorito* Gir.), from Baigorrita in the Province of Buenos Aires."

54032. TRIFOLIUM PANORMITANUM Presl. Fabaceæ.

Sicilian clover.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received July 14, 1921.

"A fine winter forage plant of our humid prairies; it will be interesting to carry on crosses with *Trifolium alexandrinum* or berseem. This Trifolium is a relative of berseem and resembles it very much. I believe it to be a plant capable of domestication by selection and cultivation." (*Trabut.*)

For previous introduction, see S. P. I. No. 47597.

54033. ORMOSIA HOSIEI Hemsl. and Wils. Fabaceæ.

From Chungking, Szechwan, China. Seeds presented by P. R. Josselyn, American consul. Received August 12, 1921.

"The seeds were secured through the kindness of friends in Chengtu." (*Josselyn.*)

"For high-grade cabinetwork, picture frames, and the very best furniture the timber most highly esteemed in Szechwan is the '*hung-tou mu*,' derived from *Ormosia hosiei*, a tree allied to the Sophora. In the spring *O. hosiei* produces large panicles of white and pink pea-shaped flowers, and at all seasons of the year it is a striking tree. The wood is heavier than water, of a rich-red color, and beautifully marked. It is the most high priced of all local timbers and is now very scarce. In north-central Szechwan it is still fairly common, but on the Chengtu plain it is found only in temple grounds or over shrines. The native name signifies 'red-bean tree' the seeds being red and contained in beanlike pods." (*Wilson, A Naturalist in Western China, vol. 2, p. 21.*)

54034. PASSIFLORA MACROCARPA Masters. Passifloraceæ.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Estación Experimental Agronómica. Received September 1, 1921.

A Brazilian plant with a habit of growth almost like that of *Passiflora quadrangularis*, from which it differs in its rounded leaves, 5 to 6 inches long, heart-shaped at the base and short acuminate at the tip, stipules up to 2 inches long, and leafy bracts 1½ inches wide and an inch long. The short, fleshy flower tube bears violet petals.

The broad, even, dark-violet coronal filaments are red spotted, the large 3-lobed stigma is yellowish, and the styles white. The fruit is 8 to 9 inches long and 5 to 6 inches in diameter, the largest fruit of all Passifloras. (Adapted from *Martius, Flora Brasiliensis, vol. 13, pt. 1, p. 597.*)

54035. PASSIFLORA LIGULARIS Juss. Passifloraceæ.

From Guayaquil, Ecuador. Seed collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 2, 1921.

"A species of Passiflora cultivated in the highlands of Guatemala, up to altitudes of 5,000 feet or more. The fruit is the size of a hen's egg, orange-yellow when fully ripe, with a thick brittle shell inclosing a large number of small thin seeds surrounded by white gelatinous pulp. The flavor is delicate, aromatic, almost perfumed; certainly more delicate and agreeable than most of the other Passifloras which produce edible fruits." (*Wilson Popenoe.*)

54036 and 54037. CASSIA spp. Cæsalpiniaceæ.

From Bogota, Colombia. Seeds presented by Hermano Apollinaire-Marie, Institute de la Salle. Received September 1, 1921.

54036. CASSIA TOMENTOSA L. f.

"A beautiful ornamental tree of our savannas. It will grow in any region where *Eucalyptus globulus* thrives." (*Apollinaire-Marie.*)

54036 and 54037—Continued.

A shrub or small tree, 10 to 12 feet high, with oval-oblong leaves white tomentose beneath, and deep-yellow flowers.

For previous introduction, see S. P. I. No. 48595.

54037. CASSIA sp.

"A plant of very graceful habit, which will thrive well in regions suited to the cultivation of Eucalyptus." (*Apollinaire-Marie.*)

54038. IPOMOEA FICIFOLIA Lindl. Convolvulaceæ. **Morning-glory.**

From Buenos Aires, Argentina. Seeds presented by Sr. Benito Carrasco, director, Jardin Botanico. Received September 7, 1921.

"A climber bearing abundant clusters of large, handsome mauve-pink funnel-shaped flowers which hang in festoons from the trees and shrubs of Natal and Brazil. It is cultivated in Europe." (*Wood, Natal Plants, vol. 6, pl. 525.*)

For previous introduction, see S. P. I. No. 53609.

54039 and 54040. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. **Oil palm.**

From Belgian Congo. Seeds presented by R. Kinds, director, First Section, Eighth Division, Ministère des Colonies. Received September 7, 1921.

54039. "Var. *Bundi* which is a round fruit with a very large kernel, very hard shell, and not very thick sarcocarp." (*Kinds.*)

For previous introduction, see S. P. I. No. 51021.

54040. "Var. *N'Sombo* with elongated fruit, medium kernel, and a sarcocarp very thick and very rich in oil. It is the best variety of the lower Congo and one of those most sought after for plantations." (*Kinds.*)

For previous introduction, see S. P. I. No. 51016.

54041. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Pachmarhi, Central Provinces, India. Seeds presented by the superintendent, Government Gardens, through William Bembower, Allahabad Agricultural Institute, Allahabad. Received September 16, 1921.

"Seeds of *Pachmarhi*, frost-resistant variety." (*Bembower.*)

"The Bombay mango grafts were seriously affected by frost each year when grown at Pagara. The 'khuds' and ravines of the Pachmarhi Hills are full of wild mangos, and it has now been found that if the Bombay varieties are grafted on the wild *Pachmarhi* seedlings, the resulting trees, without deteriorating in quality, are quite frost resistant, a fact which is worth noting by many growers in the Central Provinces who are troubled by the annual destruction caused by frost." (*Agricultural and Cooperative Gazette, Nagpur, vol. 9, p. 15.*)

54042. HIPPEASTRUM RUTILUM (Edwards) Herb. Amaryllidaceæ.

From Berlin, Germany. Bulbs presented by Wilhelm Sturz. Received July 5, 1921.

"A good window plant, flowering easily every year in living rooms, often with two scapes of four or more light vermilion-colored flowers each. There are about 50 bulbs of hazelnut size (the mother plant had about 100). These bulbs are extremely self-willed and ought not to be coaxed by great warmth; they start when they choose. Sometimes a bulb of pea size will work up through 3 inches of heavy soil, and again 120 to 130 fair-sized bulbs, like those I send, will remain dormant for one or two years under the mother plant. Thus it happened that they have been inadvertently scattered all over a place, coming up everywhere to the surprise of the gardener." (*Sturz.*)

54043. CARISSA CARANDAS L. Apocynaceæ. **Karanda.**

From Poona, Bombay, India. Seeds presented by William Burns, economic botanist to the Government of Bombay. Received July 9, 1921.

A large spiny evergreen shrub with light-gray scaly bark, elliptic leathery shining leaves 1½ to 3 inches long, and clusters of white funnel-shaped flowers half an inch long. The ellipsoid purplish black edible fruits, which are eaten out of hand and are also made into an excellent jelly for tarts, are largely sold in the native markets in the Konkan, Deccan, and in Kanara, India. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 124.*)

For previous introduction, see S. P. I. No. 51005.

54044. THEMEDA TRIANDRA *Forsk.* Poaceæ. **Kangaroo grass.**
(*T. forskallii* Hack.)

From Hobart, Tasmania. Seeds presented by F. R. Evans, Director of Agriculture, Agricultural and Stock Department. Received July 27, 1921.

One of the most useful fodder grasses of the veldt as well as one of the commonest. It is a good hay grass and relished by stock, but should be cut before the seed heads turn brown. In the condition in which it is usually cut for hay in March it has but little feeding value. (Adapted from *Kew Bulletin of Miscellaneous Information, 1911, p. 159.*)

54045. DENDROCALAMUS LONGISPATHUS Kurz. Poaceæ. **Bamboo.**

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist, Forest Research Institute and College. Received July 29, 1921.

A tufted bamboo which flowers frequently, with culms 60 feet high, glaucous or nearly white when young, the internodes 18 to 30 inches long, 3 to 5 inches in diameter, and with walls one-third of an inch thick. The stem sheaths are densely clothed with dark stinging hairs. The oblong to linear-lanceolate leaves are rough and almost white beneath, and the panicles are large and leafy. Native to Silhet, Chittagong, Arracan, and Burma. (Adapted from *Brandis, Indian Trees, p. 677,* and *Hooker, Flora of British India, vol. 7, p. 407.*)

54046. CASIMIROA sp. Rutaceæ. **White sapote.**

From Los Angeles, Calif. Cuttings presented by Milo Baker. Received July 16, 1921.

"Budwood from a tree grown from a cutting received from Central America some years ago and budded into a white-sapote tree. The fruit is practically seedless and about the size of a small apple; the entire fruit is edible and very rich. The tree seems to be a vigorous grower and a prolific fruiter." (*Baker.*)

54047. DIOSPYROS LYCOPERSICON Carr. Diospyraceæ.

From Paris, France. Seeds presented by Dr. D. Bois, Paris Museum of Natural History. Received July 13, 1921.

"The species name, *lycopersicon*, refers to the appearance of the fruits, which exactly resemble those of the common tomato (*Solanum lycopersicon*). It is a remarkable species, not only very ornamental but also valuable for the excellent quality of the fruits, which are the largest and most beautiful known to us. It is originally from Japan, whence, it appears, scions were brought by a physician who sent them to his friend, M. Geny, then director of the Jardin de Nice, who grafted them in his garden at Saint Roch." (*Revue Horticole, vol. 50, p. 470.*)

We believe that this is merely a form of *Diospyros kaki*, but it needs to be grown before a definite decision can be made.

54048. DIOSCOREA BATATAS Decaisne. Dioscoreaceæ. **Yam.**

From Hereford, England. Tubers presented by Dr. H. E. Durham, "Dunelm." Received July 23, 1921.

Chappellier. The tubers are club shaped, tapering to a finger size at the upper part, and when grown in the open are generally about 9 to 10 inches long and weigh 12 to 14 ounces when fully grown. Occasionally twin tubers develop on a single plant, but they are then of medium size. This yam may be multiplied either by means of cuttings of the tuber or by means of bulbils. The size of the eventual tuber seems to depend a good deal on the size of the piece from which the plant was grown. By far the most important mode of multiplication is by bulbils. (Adapted from *The Hardy Yams*, by *Dr. H. E. Durham*, in *The Gardeners' Chronicle, 3d ser., vol. 69, p. 18.*)

"The stem of the vine is roundish; the leaf blade is heart-shaped, smooth, upper surface shining, with reddish purple at base of blade." (*R. A. Young.*)

54049. DATURA ROSEI Safford. Solanaceæ.

From Ibarra, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 21, 1921.

"(No. 625a. Hacienda La Rinconada, Ecuador. June 13, 1921.) *Huantuc.* A yellow-flowered form of the common arborescent Datura which is cultivated about the huts of the Indians all through the Ecuadorian highlands. The plant sometimes grows to 15 or 18 feet; its tubular flowers are about 6 inches long, 2 inches broad at the mouth, and of a rich deep-yellow color. The plant is worthy of trial as an ornamental in protected situations throughout southern California and in southern Florida." (*Popenoe.*)

A cluster of the tubular flowers and a fruit of this arborescent Datura are shown in Plate IV.

54050 to 54053.

From San Jose, Costa Rica. Seeds presented by Carlos Wercklé. Received July 16, 1921. Quoted notes by Mr. Wercklé except as otherwise stated.

54050. COUEPIA FLOCCOSA Fritsch. Rosaceæ.

"*Olosapo, sapotilla de olor.*"

A stout-branched, hoary Guatemalan plant with elliptic to obtuse leaves 1 to 4 inches long, cobwebby above when young, and white tomentose beneath. The small flowers in short reddish tomentose panicles are followed by villose fruits. (Adapted from *Fritsch, Beitrage zur Kenntniss der Chrysobalanaceen, II.* In *Annalen des K. K. Naturhistorischen Hofmuseums, vol. 5, p. 12.*)

54051. CASIMIROA EDULIS La Llave. Rutaceæ. **White sapote.**

"The largest variety that I know; the fruit is very good and weighs from 1 to 1½ pounds."

"A medium-sized erect or spreading tree, having palmately compound leaves, small inconspicuous flowers, and yellowish green fruits the size of an orange. The fruits have a thin membranous skin, yellowish flesh of soft melting texture and sweet or slightly bitter flavor, and one to five large oval or elliptic seeds.

"In its native region the white sapote is a fruit of the highlands. Throughout Mexico and Guatemala it is found at altitudes of 2,000 to 3,000 feet, and occasionally as high as 9,000 feet. It is not grown in regions subject to heavy rainfall." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 47565.

54052. RHEEDIA EDULIS (Seem.) Planch. and Triana. Clusiaceæ.

"A handsome pyramidal tree 20 to 25 feet high with deep-green glossy oblong-lanceolate leaves 4 to 6 inches long. The elliptic bright orange-yellow fruits 2 inches long and 1½ inches in diameter have thick terebinthinous skin which separates easily from the snowy white, juicy, melting pulp. The flavor is acid unless the fruit is almost overripe, and strongly resembles that of *Lansium domesticum.* The one to three seeds are about an inch long and adhere closely to the pulp; when cut

54050 to 54053—Continued.

a yellow gamboge oozes out of them. Natives are very fond of this fruit, but the Americans in Brazil do not care for it. It is said to make a superior *doce*, or preserve." (*P. H. Dorsett.*)

For previous introduction, see S. P. I. No. 37384.

54053. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"A native wild bean of the *lunatus* type."

54054 to 54057. DIOSCOREA spp. Dioscoreaceæ.

From Port of Spain, Trinidad. Tubers presented by C. Connell, Montrose, Arima, Trinidad, through F. W. Urich, entomologist, Department of Agriculture, St. Clair Experiment Station. Received July 19, 1921. Quoted notes by Mr. Urich except as otherwise noted.

54054. DIOSCOREA LATIFOLIA Benth. **Acom.**

"*St. Vincent.* The yam bears external tubers on the vine. Cook like the ordinary potato, and in planting treat in the same way as the potato."

"A yam which bears medium-sized, angular edible aerial tubers having yellowish flesh of fair quality. The vine is round stemmed and the leaf is cordate with a broad sinus and abruptly long-acuminate. I. H. Burkill, of the Singapore Botanic Garden, states that this species is native to Africa, where it is called *acom*. The variety is apparently identical with the *caissara*, or 'turkey-liver' yam, of Brazil, the 'Carib potato' of Nicaragua, and the 'climbing air-potato' of Argentina." (*R. A. Young.*)

54055. DIOSCOREA ESCULENTA (Lour.) Burkill. **Lesser yam.**

"*Chinese.*"

"A yam with small, somewhat cylindrical tubers with a smooth tough skin and white flesh of excellent quality. The vine is round stemmed and bears a few short spines. The leaf is cordate with a narrow sinus." (*R. A. Young.*)

54056. DIOSCOREA TRIFIDA L. **Yampi.**

"*Couche Couche.* Grows well in sandy soil."

"Var. *Trinidad yampi*, or *cush-cush*. A small-tubered yam with pink skin and flesh which is usually white and somewhat sweet. The quality is very good. The stem of the vine is two winged, and the leaf is three lobed." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 45992.

54057. DIOSCOREA ALATA L. **Greater yam.**

"*Coconut.*"

"A white-fleshed yam of fair size and good quality." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 49825.

54058. LONICERA SYRINGANTHA Maxim. Caprifoliaceæ. **Honeysuckle.**

From Elstree, Herts, England. Seeds presented by Hon. Vicary Gibbs. Received July 26, 1921.

"Possibly the most beautiful of the bush honeysuckles; a low spreading bush from 2 to 4 feet high, with bluish green leaves and large pink Daphnelike blossoms one-fourth of an inch across of firm waxy texture and a fragrance strongly reminiscent of *Daphne cneorum*, also of hyacinths, but more powerful and delicious." (*The Garden, vol. 85, p. 225.*)

54059. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Lumbatan, Lanao, Mindanao, Philippine Islands. Tubers presented by G. O. Risinger, supervising teacher, Camp Keithley, through P. J. Wester, director, Lanao Experiment Station, Lanao, Bataan. Received July 7, 1921.

"Our smallest Irish potatoes, grown at the Lumbatan Agricultural School, Lanao, at an altitude of 2,500 feet." (*Risinger.*)

54060. SOLANUM sp. Solanaceæ. **Potato.**

From Ibarra, Ecuador. Tubers collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 21, 1921.

"(No. 620. Hacienda La Rinconada, in the Province of Carchi. June 9, 1921.) A true wild potato, growing at an altitude of 11,500 feet. It grows abundantly in certain places, preferring the protection of shrubby vegetation along ravines on the páramo. The tubers are rarely more than an inch long by half an inch in thickness, and they are whitish brown 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." (*Popenoe.*)

54061 to 54163.

From Arnold Arboretum, Jamaica Plain, Mass. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction, for use in breeding experiments by experts of the Department of Agriculture. Numbered September, 1921. Quoted notes by Mr. Skeels.

54061 to 54074. BERBERIS spp. Berberidaceæ. **Barberry.**

54061. BERBERIS AGGREGATA C. Schneid.

"(Arboretum No. 6861; Wilson No. 1050.) A Chinese shrub 3 to 5 feet high, which has yellowish brown spines, small oblong leaves, yellow flowers in dense racemes, and salmon-red fruits."

For previous introduction, see S. P. I. No. 43817.

54062. BERBERIS AMURENSIS Rupr.

"This northern Chinese and Manchurian shrub, often 8 feet high, has gray branches, slightly reticulated oblong leaves 1 to 3 inches long, and racemes of 8 to 12 ovoid scarlet berries."

For previous introduction, see S. P. I. No. 49052.

54063. BERBERIS AMURENSIS JAPONICA (Regel) Rehder.

"A stout compact shrub native to Japan, with leaves obovate and more leathery than in *B. amurensis.* The scarlet berries have a slight bloom."

For previous introduction, see S. P. I. No. 49053.

54064. BERBERIS BRACHYPODA Maxim.

"(Arboretum No. 7175; Wilson No. 554a.) A shrub from western China 4 to 7 feet high, with ovate serrate leaves, long slender panicles of yellow flowers, and scarlet fruits often half an inch in diameter."

For previous introduction, see S. P. I. No. 43818.

54065. BERBERIS DICTYOPHYLLA Franch.

"A native of Yunnan, China, this barberry is a medium-sized shrub, often broader than high, with small ovate leaves in clusters, pale-yellow flowers, and ovoid red fruits."

For previous introduction, see S. P. I. No. 49056.

54061 to 54163—Continued.

54066. BERBERIS DIELSIANA Fedde.

"(Purdom No. 605a.) A spreading, loosely branched Chinese shrub often 10 feet high, with elliptic leaves that are whitish beneath. The beauty of the red fruits is accentuated by the bronzy color of the leaves in the fall."

For previous introduction, see S. P. I. No. 49057.

54067. BERBERIS GILGIANA Fedde.

"(Arboretum No. 7283; Purdom No. 589.) A native of central China, this ashy barked shrub has somewhat coriaceous lanceolate leaves and dense racemes of yellow flowers."

For previous introduction, see S. P. I. No. 49058.

54068. BERBERIS HENRYANA C. Schneid.

"A Chinese shrub resembling the common barberry, *B. vulgaris*, but having purplish or brown branches. It is about 8 feet high with membranous elliptical leaves pale beneath, and racemes of 10 to 20 yellow flowers followed by red fruits."

For previous introduction, see S. P. I. No. 49059.

54069. BERBERIS KOREANA Palibin.

"A Korean shrub often 6 feet high, with obovate leaves 2 to 3 inches long, dense lax racemes of yellow flowers, and round scarlet fruits."

For previous introduction, see S. P. I. No. 49061.

54070. BERBERIS LUCIDA Schrad.

"This shrub of unknown origin has lustrous dark-green oblong leaves and spreading red-berried racemes about 2 inches long."

For previous introduction, see S. P. I. No. 49062.

54071. BERBERIS SEROTINA Lange.

"A shrub of unknown origin with oblanceolate, entire light-green leaves and short dense racemes of yellow flowers and purplish fruits."

For previous introduction, see S. P. I. No. 49064.

54072. BERBERIS SIEBOLDII Miquel.

"A Japanese shrub about 3 feet high, with reddish brown branches and obovate leaves, 1 to 2 inches long, which turn deep red in the fall. The yellow flowers in small racemes are followed by bright-red fruits one-fourth of an inch long."

For previous introduction, see S. P. I. No. 13353.

54073. BERBERIS THUNBERGII MAXIMOWICZII Regel.

"A Japanese barberry which is larger than the ordinary form and has more arching branches, while the leaves are green beneath. It has the same autumn color of the leaves as the common form and larger flowers and fruits."

For previous introduction, see S. P. I. No. 49065.

54074. BERBERIS VERNAE C. Schneid.

"(Arboretum No. 7176; Wilson No. 4022.)"

A low Chinese shrub native to Kansu Province, about 4 feet high, with spatulate leaves in small fascicles and small yellow flowers followed by red globose fruits one-fourth of an inch in diameter. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 372.*)

54061 to 54163—Continued.

54075. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

"(Arboretum No. 6100–2; Wilson No. 466.) A western Chinese shrub 6 feet high, with slender arching branches, firm oval leaves yellowish gray beneath, and pinkish flowers in small clusters followed by red fruits one-fourth of an inch in diameter."

For previous introduction, see S. P. I. No. 43990.

54076. COTONEASTER FOVEOLATA Rehd. and Wils. Malaceæ.

"(Arboretum No. 6589; Wilson No. 156.) A shrub from Hupeh Province, China, often 10 feet high, with spreading branches. The elliptical leaves are 2 to 3 inches long and turn bright scarlet in autumn. The small clusters of pink flowers are followed by black subglobose fruits about one-third of an inch in diameter."

For previous introduction, see S. P. I. No. 45728.

54077 to 54081. CRATAEGUS spp. Malaceæ. **Hawthorn.**

54077. CRATAEGUS ARKANSANA Sarg.

"(Arboretum No. 4177.)"

A tree native to Arkansas, 20 feet high, with oblong-ovate leaves which turn bright yellow in the fall. The white flowers, 1 inch across, are borne in many-flowered corymbs, and the bright-crimson fruits persist on the branches late in the season. (Adapted from *Sargent, Trees of North America, p. 425.*)

54078. × CRATAEGUS LAVALLEI Herincq.

"(Arboretum No. 2769.) A tree of garden origin with pure-white flowers an inch across, pink stamens, and red fruits an inch in diameter, well displayed by the rich brown leaves in autumn."

For previous introduction, see S. P. I. No. 49071.

54079. CRATAEGUS DAWSONIANA Sarg.

"(Arboretum No. 4428.) A small tree native to Illinois, with yellow-green ovate leaves and orange-red, yellow-fleshed, obovate fruits borne on long slender pedicels."

For previous introductions, see S. P. I. No. 49072.

54080. CRATAEGUS NITIDA (Engelm.) Sarg.

"(Arboretum No. 4123.) An Illinois tree often 30 feet tall, with coarsely serrate lanceolate leaves, white flowers with yellow stamens, and drooping clusters of red fruits on slender stems."

For previous introduction, see S. P. I. No. 49073.

54081. CRATAEGUS PRUNIFOLIA (Marsh.) Baumg.

"(Arboretum No. 4116–5.) A shrub or small tree with obovate serrate leaves, corymbs of white flowers with pink stamens, and red fruits. It is probably of garden origin."

54082 to 54094. MALUS spp. Malaceæ. **Crab apple.**

54082. × MALUS ARNOLDIANA Rehder.

"A hybrid of *M. floribunda* which originated in the Arboretum. The large pink flowers on long stems and the yellow fruits make this tree attractive all through the season."

For previous introduction, see S. P. I. No. 46698.

54083. MALUS BACCATA JACKII Rehder.

"(Arboretum No. 7348.)"

A handsome tree native to Korea, with pure-white flowers 1½ inches across, large dark-green leaves glaucescent beneath, and dark-red fruits nearly an inch thick. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 291.*)

54061 to 54163—Continued.

54084. MALUS IOENSIS (Wood) Britton.

"(Arboretum No. 4683.) This wild crab apple, native to the Mississippi Valley, is a tree often 30 feet high, with ovate serrate leaves 3 to 4 inches long which turn yellow in the fall. The rose-colored flowers, 1 to 2 inches across, are borne in small clusters and are followed by fragrant greenish yellow fruits sometimes 2 inches in diameter."

54085. MALUS MICROMALUS Makino.

"(Arboretum No. 3202–3.) A small tree possibly of hybrid origin, with erect branches forming a pyramidal head. It bears a profusion of bright-red flowers and holds its small fruits well into the winter."

For previous introduction, see S. P. I. No. 49082.

54086. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder.

"A small tree native to China, with obovate leaves, pink or pinkish white flowers, and yellow edible apples often 2 inches in diameter."

For previous introduction, see S. P. I. No. 49083.

54087. × MALUS ROBUSTA Rehder.

"Seeds from several trees of this interesting hybrid between *M. baccata* and *M. prunifolia*. The flowers and fruits are quite ornamental, but the greatest value lies in the fact that Mr. Judd, the expert propagator at the Arboretum, considers this the best stock on which to graft other kinds of apples."

54088. MALUS SARGENTII Rehder.

"(Arboretum No. 4681.) A low, freely branching shrub, native to Japan, with ovate sharply serrate leaves, small clusters of pure-white flowers and dark-red fruits, which are produced very freely."

For previous introduction, see S. P. I. No. 48084.

54089. × MALUS SCHEIDECKERI Spaeth.

"(Arboretum No. 3510.) A garden hybrid one of whose parents is probably *M. floribunda;* this forms a small tree bearing semi-double pink flowers and red fruits nearly an inch in diameter."

For previous introduction, see S. P. I. No. 27126.

54090. MALUS SIEBOLDII ARBORESCENS Rehder.

"(Arboretum No. 1703.) A Japanese tree with longer leaves than the type and bearing nearly white flowers."

For previous introduction, see S. P. I. No. 49088.

54091. MALUS THEIFERA Rehder.

"(Arboretum No. 7241; Wilson No. 451.) This small stiff-branched tree, native to China, bears fragrant white flowers and globose yellow fruits with red cheeks."

For previous introduction, see S. P. I. No. 45681.

54092. MALUS TRANSITORIA TORINGOIDES Rehder.

"(Arboretum No. 7186.) A tree 16 to 26 feet high native to western Szechwan, China, at altitudes of 9,000 to 12,000 feet, with felted twigs. The leaves 2 inches long are more entire, and the scarlet and yellow fruits are larger, than in *M. transitoria*."

For previous introduction, see S. P. I. No. 46701.

54093 and 54094. MALUS ZUMI (Mats.) Rehder.

"(Arboretum No. 5002.) A low round-headed tree native to Japan, with oblong yellowish green leaves, and bearing a profusion of pinkish flowers and red fruits."

For previous introduction, see S. P. I. No. 43705.

54061 to 54163—Continued.

54093. "A large-fruited form."

54094. "A small-fruited form."

54095 to 54103. PYRUS spp. Malaceæ. **Pear.**

54095. PYRUS BETULAEFOLIA Bunge.

"(Arboretum No. 1699.) A tree 20 feet high, native to northern China, with round-ovate serrate leaves, crowded clusters of small flowers, and globose fruits about the size of peas."

For previous introduction, see S. P. I. No. 51883.

54096. PYRUS CALLERYANA Decaisne.

"(Arboretum No. 7203.) This Chinese tree, often 30 feet high, has crenate leaves and small flowers and fruits, the latter being globular but contracted at the base into a long slender stalk."

For previous introduction, see S. P. I. No. 49862.

54097. PYRUS CALLERYANA GRACILIFLORA Rehder.

"(Arboretum No. 1078.) A form of Callery's pear which has looser and more slender flower clusters and pink anthers instead of the purple ones of the type."

For previous introduction, see S. P. I. No. 49098.

54098. PYRUS CALLERYANA TOMENTELLA Rehder.

"(Arboretum No. 1079; Wilson No. 556.) A form differing from the type in having dense white tomentum on the young growth."

For previous introduction, see S. P. I. No. 49099.

54099. × PYRUS MICHAUXII Bosc.

"(Arboretum No. 445–1.) A natural hybrid between *P. amygdaliformis* and *P. nivalis*, native to Asia Minor. The shining leaves are ovate-oblong, and the small clusters of white flowers are followed by turbinate greenish yellow fruits."

For previous introduction, see S. P. I. No. 44049.

54100. PYRUS NIVALIS Jacq.

"(Arboretum No. 3293.) This Asia Minor pear is a tree with the young shoots thickly covered with white wool. The ovate entire leaves are 3 inches long, and the conspicuous clusters of white flowers, 1 to 2 inches across, produce yellowish green fruits often 2 inches in diameter."

For previous introduction, see S. P. I. No. 51884.

54101. PYRUS PHAEOCARPA GLOBOSA Rehder.

"(Arboretum No. 1715.) A medium-sized Chinese tree with lustrous deep-green ovate leaves and unusually large white flowers. The fruits differ from those of the type in being globose instead of pear shaped."

For previous introduction, see S. P. I. No. 44045.

54102. PYRUS SALICIFOLIA Pall.

"Var. *pendula*. (Arboretum No. 169.) A pendulous form of the willow-leaved pear, native to Asia Minor, with shiny lanceolate leaves about 4 inches long, pure-white flowers in dense clusters, and small pear-shaped fruits."

For previous introduction, see S. P. I. No. 44053.

54061 to 54163—Continued.

54103. PYRUS SERRULATA Rehder.

"(Arboretum No. 7273.) A Chinese tree, often 25 feet high, with ovate serrulate leaves, small white flowers, and brown ovoid fruits about half an inch long."

For previous introduction, see S. P. I. No. 49100.

54104 to 54163. ROSA spp. Rosaceæ. **Rose.**

54104. ROSA ABIETINA Grenier.

"A Swiss rose which forms a compact shrub 5 to 7 feet high, with 5 to 9 leaflets and clusters of 6 to 8 small rosy flowers."

For previous introduction, see S. P. I. No. 43706.

54105. ROSA ACICULARIS Lindl.

"A low, densely prickly shrub native to northern America, Europe, and Asia. It bears 3 to 7 leaflets and solitary deep-rose flowers followed by pear-shaped fruits."

54106. ROSA ACICULARIS ENGELMANNII (S. Wats.) Crep.
(*R. engelmannii* S. Wats.)

"Engelmann's rose, differing from the type in the distinctly doubly serrate glandular leaflets and the oblong fruits."

54107. ROSA ALBA L.

"A shrub often 6 feet high, with slightly double fragrant flowers and scarlet fruits. Probably of hybrid origin."

For previous introduction, see S. P. I. No. 49102.

54108. ROSA ALBERTI Regel.

"A slender-branched Turkestan rose with 5 to 9 leaflets and white flowers 1 to 2 inches broad."

For previous introduction, see S. P. I. No. 49103.

54109. ROSA AMBLYOTIS Meyer.

"A stout-branched shrub with purple stems, native to Siberia. The leaflets are usually seven, the pink flowers are solitary, and the fruits are about half an inch long."

For previous introduction, see S. P. I. No. 43878.

54110. ROSA ARVENSIS Huds.

"An English rose with creeping stems, seven ovate serrate leaflets, small clusters of white odorless flowers with yellow stamens, and small red fruits."

For previous introduction, see S. P. I. No. 49104.

54111. ROSA BAICALENSIS Turcz.

"A little-known Asiatic rose closely related to *R. acicularis* but kept distinct at the Arboretum."

For previous introduction, see S. P. I. No. 43708.

54112. ROSA BLANDA Ait.

"An erect shrub sometimes 6 feet high, native throughout the northern part of the United States. The large, sweet-scented, single rich-pink flowers are our earliest wild roses to bloom."

For previous introduction, see S. P. I. No. 49106.

54113. ROSA CALIFORNICA Cham. and Schlecht.

"A tall shrub often 8 feet high, native to northwestern America, with stout hooked prickles, five to nine broadly elliptic leaflets, pink flowers an inch across in dense corymbs, and ovoid fruits with a prominent neck."

54061 to 54163—Continued.

54114 to 54117. ROSA CANINA L. Dog-rose.

54114. "Var. *andegavensis*. A form with doubly serrate leaflets and glandular peduncles."

54115. "Var. *subinermis*. An almost thornless form."

54116. "Var. *uralensis*. A form from the Ural Mountains."

54117. Received as *R. bakeri*, which is now referred to *R. canina*.

54118. ROSA CAUDATA Baker.

"(Arboretum No. 7160; Wilson No. 306.) A tall shrub native to western China, with seven to nine oblong leaflets, red flowers 2 inches across, and oblong fruits."

For previous introduction, see S. P. I. No. 43883.

54119. ROSA CHINENSIS MANETTI Dipp.

"An upright shrub with three to seven shining leaflets and deep-pink, usually semidouble flowers. Often used as a stock."

For previous introduction, see S. P. I. No. 43711.

54120. ROSA CINNAMOMEA L.
(*R. pendulina* L.)

"An unarmed shrub, native to Europe, with seven to nine ovate leaflets, solitary pink flowers, and nodding ovate scarlet fruits."

For previous introduction, see S. P. I. No. 43712.

54121. ROSA CORIIFOLIA Fries.

"A European shrub 5 feet high, with pubescent leaflets and short-stemmed pink flowers. Received as *R. monticola*, which is now referred to *R. coriifolia*.

For previous introduction, see S. P. I. No. 49110.

54122. ROSA CUSPIDATA Bieb.

A shrub 2 to 3 feet high, native to Asia Minor, with doubly serrate leaflets, white flowers in clusters of 5 to 10, and globose bluish black fruits. (Adapted from *Bieberstein, Flora Taurico-Caucasia, vol. 1, p. 396.*)

54123. ROSA DAMASCENA Mill. Damask rose.

"A low shrub with numerous stout hooked prickles, five to seven ovate-oblong leaflets, and double red, pink, or white flowers in corymbose clusters."

For previous introduction, see S. P. I. No. 32950.

54124. ROSA DAVURICA Pall.

"A Manchurian shrub closely related to the cinnamon rose (*R. majalis*), with straight slender prickles, smaller doubly serrate leaflets, purple flowers, and ovate scarlet fruits."

For previous introduction, see S. P. I. No. 43887.

54125. ROSA DESEGLISEI Boreau.

A low spreading shrub with white prickles, native to central France, bearing usually five ovate, dentate, pale-green velvety leaflets, and small pink flowers singly or in pairs. (Adapted from *Boreau, Flore du Centre de la France, p. 224.*)

54126. ROSA DUMETORUM Thuill.

"A European shrub with recurved branches and stout hooked prickles. The five to seven orbicular leaflets are simply serrate and pubescent, the single pink flowers are in few-flowered clusters, and the ovoid orange-red fruits are nearly an inch long."

For previous introduction, see S. P. I. No. 49111.

54061 to 54163—Continued.

54127. ROSA FENDLERI Crep.

"A low shrub native to western North America, with straight spines, five to seven oblong-ovate, pubescent dark-green leaflets, small pink flowers, and globose fruits."

For previous introduction, see S. P. I. No. 32952.

54128. ROSA FEROX Bieb.

"This dwarf bush 1 to 2 feet high, native to Asia Minor, has five to seven coarsely serrate leaflets, white flowers in small clusters, and red globose fruits."

For previous introduction, see S. P. I. No. 43714.

54129. ROSA FOLIOLOSA Nutt.

"A low shrub native to the southwestern part of the United States, with seven to nine linear-oblong leaflets, usually solitary pink flowers, and globose fruits."

54130. ROSA GALLICA L.

"Var. *grandiflora*. A large-flowered form of this common European rose, which has three to five leathery ovate leaflets, crimson flowers 2 to 3 inches across, and turbinate brick-red fruits."

For previous introduction, see S. P. I. No. 34481.

54131. ROSA GALLICA OFFICINALIS Thory.
(*R. provincialis* Mill.)

"The Province rose is a double form of the common *R. gallica*."

54132. ROSA GAYIANA Wallr.

"A shrub native to Europe and closely allied to *R. villosa*. The leaflets are oblong-ovate, the thorns are straight, and the pink flowers are solitary."

For previous introduction, see S. P. I. No. 49112.

54133. ROSA GYMNOCARPA Nutt.

"A tall shrub sometimes 10 feet high, native to the west coast of North America. The five to nine glabrous leaflets are broadly oblong, the small solitary flowers are pale pink, and the small globose fruits are orange-red."

For previous introduction, see S. P. I. No. 25578.

54134. ROSA HELIOPHILA ALBA Rehder.

"The white-flowered form of *R. heliophila*, which is a shrub 2 feet high native to the prairies west of the Missouri River. The green stems are very prickly, the 7 to 11 simply serrate leaflets are obovate and pubescent beneath, the small pink flowers are borne in clusters and are followed by red globose fruits."

54135. ROSA JACKII Rehder.

"A procumbent shrub native to Korea, with 7 to 9 elliptical glabrous leaflets, corymbs of white flowers nearly 2 inches across, and small red ovoid fruits."

For previous introduction, see S. P. I. No. 43898.

54136. ROSA JUNDZILLI Besser.

"A central European shrub sometimes 9 feet high, with straight spines, five to seven large glabrous leaflets, small clusters of large pink flowers, and subglobose bright-red fruits."

For previous introduction, see S. P. I. No. 43717.

54137. ROSA MAJALIS Herrmann. **Cinnamon rose.**
(*R. cinnamomea* L. 1759, not 1753.)

"The well-known cinnamon rose, native to Europe, with three to seven oblong leaflets, purple flowers, and scarlet fruits."

54061 to 54163—Continued.

54138. ROSA MICRANTHA J. E. Smith.

"A shrub resembling the dog-rose and native to central Europe. The leaflets are pubescent beneath; the small pink flowers are borne in clusters, and the ovoid fruits are bright red."

For previous introduction, see S. P. I. No. 49043.

54139. ROSA MONTANA Chaix.

"Another ally of *R. canina*, with strong spines, broader leaflets tinged with red, and pale-pink flowers."

For previous introduction, see S. P. I. No. 49114.

54140. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils.

"The wild, single-flowered form of *R. multiflora*, native to China, with pink flowers instead of white as in the type."

For previous introduction, see S. P. I. No. 49115.

54141. ROSA NUTKANA Presl.

"This stout shrub native to Alaska and southward to Oregon, has five to seven broadly elliptical, double-serrate glabrous leaflets, usually solitary pink flowers nearly 3 inches across, and red globose fruits."

For previous introduction, see S. P. I. No. 49116.

54142. ROSA OXYODON Boiss.

"A Caucasian shrub with five to seven ovate leaflets and solitary pink flowers."

For previous introduction, see S. P. I. No. 49117.

54143. ROSA PALMERI Rydb.

A low shrub native to Missouri and Texas, with slender reflexed prickles, five to nine dark-green lanceolate leaflets pubescent beneath, pink flowers solitary or in small clusters, and globose glandular hispid fruits half an inch in diameter. (Adapted from *North American Flora, vol. 22, p. 502.*)

54144. ROSA PALUSTRIS Marsh.

"The common wild rose on moist land in the eastern part of the United States. The stems are often 8 feet high, with seven narrowly oblong leaflets pubescent beneath, corymbs of pink flowers, and depressed-globose hispid red fruits."

For previous introduction, see S. P. I. No. 49044.

54145. ROSA PISOCARPA A. Gray.

"A slender-stemmed shrub native to the northwest coast of America, with straight or ascending prickles, five to seven oblong leaflets, small pink flowers in dense corymbs, and globose fruits."

For previous introduction, see S. P. I. No. 30262.

54146. ROSA POUZINI Tratt.

"A southern European shrub 7 feet tall, with five to nine serrate leaflets and small pale-pink to white flowers."

For previous introduction, see S. P. I. No. 43906.

54147. ROSA RUBIGINOSA L. **Sweetbrier.**

"Var. *Carnosa*. A flesh-colored form of the sweetbrier which usually has bright-pink flowers."

54148. ROSA RUGOSA CHAMISSONIANA Meyer.

"A form of the Japanese rose with almost no bristles and with smaller, narrower, and less rugose leaflets."

54061 to 54163—Continued.

54149. ROSA RUGOSA KAMCHATICA (Vent.) Regel.

"A Kamchatcan form of the Japanese rose, with more slender and less bristly stems, thinner leaves, and smaller flowers and fruits."

For previous introduction, see S. P. I. No. 30260.

54150. ROSA SERTATA Rolfe.

"A low shrub, native to western China, with glaucous stems 5 feet high armed with straight slender prickles, 7 to 11 narrowly oblong leaflets, solitary purple flowers 2 to 3 inches across, and deep-red obovoid fruits."

For previous introduction, see S. P. I. No. 43912.

54151. ROSA SPINOSISSIMA L. **Scotch rose.**

"This low shrub native to Europe and Asia, has 5 to 11 oblong-ovate leaflets, pink, white, or yellowish flowers, and black fruits."

For previous introduction, see S. P. I. No. 43913.

54152. ROSA SPINOSISSIMA ALTAICA (Willd.) Rehder.

"This form of the Scotch rose is a native of the Altai region and is a more vigorous shrub than the type with large white flowers on smooth pedicels."

54153. ROSA SPINOSISSIMA HISPIDA (Sims) Koehne.

"A Siberian form with simply serrate leaflets and sulphur-yellow flowers 3 inches across."

For previous introduction, see S. P. I. No. 43914.

54154. ROSA STELLATA Wooton.

An upright shrub 2 feet high, native to New Mexico, with densely stellate pubescent young stems, three to five cuneate-obovate pubescent leaflets, solitary deep rose-purple flowers 2 to 3 inches across, and reddish brown prickly fruits. (Adapted from *Bulletin Torrey Botanical Club, vol. 25, p. 152.*)

54155. ROSA TUSCHETICA Boiss.

A low shrub native to the Caucasus region, with small firm ovate leaflets and solitary pink flowers. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 673.*)

54156. ROSA VILLOSA L.

"A densely branched shrub 6 feet high, native to Europe, with nearly straight spines, five to seven ovate grayish green leaflets, pink flowers in small clusters, and ovoid scarlet fruits."

For previous introduction, see S. P. I. No. 43726.

54157. ROSA VILLOSA L.

Received as *R. pomifera*, which is now referred to *R. villosa*.

54158. ROSA WOODSII Lindl.

"A slender bristly stemmed shrub 3 feet high, native to Colorado and Missouri, with five to nine obovate-oblong leaflets pubescent beneath, and small clusters of light-pink flowers 2 inches across, followed by globose fruits."

54159 to 54163. ROSA spp.

"Received under names probably of horticultural origin, for which places of publication have not yet been found."

54061 to 54163—Continued.

54159. ROSA sp.

Received as *R. chyraica.*

54160. ROSA sp.

Received as *R. coraiensis.*

54161. ROSA sp.

Received as *R. kurdestana.*

54162. ROSA sp.

Received as *R. obtusiloba.*

54163. ROSA sp.

Received as *R. urens.*

54164 to 54265.

From Highland Park, Rochester, N. Y. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction, to be used in stock experiments by experts of the Department of Agriculture. Numbered September, 1921. Quoted notes by Mr. Skeels, except as stated.

54164. CRATAEGUS COCCINIOIDES Ashe. Malaceæ. **Hawthorn.**

A tree 20 feet high native to Missouri, with broadly ovate serrate leaves, compact cymes of white flowers nearly an inch across, with pink stamens and dark-crimson fruits. (Adapted from *Sargent, Trees of North America, p. 458.*)

54165 to 54265. ROSA spp. Rosaceæ. **Rose.**

54165. ROSA ACICULARIS Lindl.

For previous introduction, see S. P. I. No. 54105.

54166. ROSA ACICULARIS BOURGEAUIANA Crep.
(*R. sayi* Schwein.)

"A low shrub native to Ontario and westward to Colorado, with three to seven narrowly oblong leaflets, differing from the type in having larger deep-rose flowers nearly 3 inches across and globose fruits."

54167. ROSA ACICULARIS ENGELMANNII (S. Wats.) Crep.
(*R. engelmannii* S. Wats.)

For previous introduction, see S. P. I. No. 54106.

54168. ROSA ACICULARIS GMELINI (Bunge) C. Schneid.
(*R. carelica* Fries.)

A form native to northern Europe and Asia, differing from the type in having five to seven leaflets on the flowering branches, smooth but glandular peduncles, and long pear-shaped shining fruits. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 582.*)

54169. ROSA ACICULARIS NIPPONENSIS (Crep.) Koehne.

"A Japanese form with smaller leaflets on bristly petioles and with glandular-hispid branchlets and pedicels."

54170. ROSA ALBA L.

For previous introduction, see S. P. I. No. 54107.

54171. ROSA ALBERTI Regel.

Chenault No. 5630.

For previous introduction, see S. P. I. No. 54108.

54172. ROSA AMBLYOTIS Meyer.

For previous introduction, see S. P. I. No. 54109.

54173. ROSA ARVENSIS Huds.

For previous introduction, see S. P. I. No. 54110.

54164 to 54265—Continued.

54174. ROSA BALTICA Roth.

Chenault No. 3492.

A European shrub closely related to *R. canina* from which it differs in having purple stems with straight prickles and oblong-ovate, simply serrate leaflets. (Adapted from *Roth, Novae Species Plantarum, p. 234.*)

54175. ROSA BELGRADENSIS Pancic.

Chenault No. 5862. "This southern European rose, closely related to *R. rubiginosa*, is a medium-sized shrub with glandular-pubescent leaflets and clusters of pink flowers nearly 2 inches across."

For previous introduction, see S. P. I. No. 49105.

54176. ROSA BELLA Rehd. and Wils.

"A Chinese shrub often 8 feet in height, with seven to nine leaflets, solitary pink flowers 2 inches across, and ovoid scarlet fruits."

For previous introduction, see S. P. I. No. 43881.

54177. ROSA BLANDA Ait.

For previous introduction, see S. P. I. No. 54112.

54178. ROSA BLANDA Ait.

"Var. *alba*. A white-flowered form, of nursery origin."

54179. Rosa BORBONICA Morren. **Bourbon rose.**

Var. *Mme. Ernest Calvert.*

54180. ROSA CALIFORNICA Cham. and Schlecht.

For previous introduction, see S. P. I. No. 54113.

54181 to 54183. ROSA CANINA L. **Dog-rose.**

54181. Var. *subinermis.*

For previous introduction, see S. P. I. No. 54115.

54182. Received as *Rosa montivaga*, which is now referred to the dog-rose (*R. canina*).

54183. Received as *Rosa scabrata*, which is also now referred to *R. canina.*

54184 and 54185. ROSA CAROLINA L.

54184. A form of the Carolina rose from Campbell Mountain, Essex County, N. Y.

54185. Var. *Jack Siskow.*

For previous introduction, see S. P. I. No. 49109.

54186. ROSA CAUDATA Baker.

For previous introduction, see S. P. I. No. 54118.

54187. × ROSA CHABERTI Desportes.

"One of the many hybrids between *R. gallica* and *R. canina.*"

54188. ROSA CHINENSIS × NOISETTIANA.

Var. *Hebe's lip.*

54189. ROSA CINNAMOMEA L.
(*R. pendulina* L.)

For previous introduction, see S. P. I. No. 54120.

54190. ROSA CINNAMOMEA MALYI (Kerner) Skeels.
(*R. malyi* Kerner.)

"This Dalmatian rose, with bright-red flowers and leaflets similar to those of the Scotch rose, is possibly a hybrid between *Rosa cinnamomea* and *R. spinosissima.*"

For previous introduction, see S. P. I. No. 33199.

54164 to 54265—Continued.

54191. ROSA CUSPIDATA Bieb.

For previous introduction, see S. P. I. No. 54122.

54192. ROSA DAMASCENA Mill. **Damask rose.**

For previous introduction, see S. P. I. No. 54123.

54193. ROSA DAVURICA Pall.

For previous introduction, see S. P. I. No. 54124.

54194. ROSA DESEGLISEI Boreau.

For previous introduction, see S. P. I. No. 54125.

54195. ROSA FEDTSCHENKOANA Regel.

"A shrub native to Turkestan, with seven to nine oblong leaflets, clusters of one to four white flowers 2 inches across, and pear-shaped red fruits."

For previous introduction, see S. P. I. No. 43890.

54196. ROSA FENDLERI Crep.

For previous introduction, see S. P. I. No. 54127.

54197. ROSA FEROX Bieb.

For previous introduction, see S. P. I. No. 54128.

54198. ROSA FERRUGINEA Vill.

"An erect shrub native to the Alps and Pyrenees, with stems 5 to 7 feet high and covered with a purple bloom. The five to seven purplish leaflets and the clusters of deep-red flowers, followed by the red fruits, make this a decidedly ornamental species."

Received as *Rosa rubrifolia ferruginea*, but *R. ferruginea* is now generally given specific rank.

For previous introduction, see S. P. I. No. 43587.

54199. ROSA GALLICA L.

For previous introduction, see S. P. I. No. 54130.

54200. ROSA GALLICA L.

Var. *macrantha.*

54201. ROSA GALLICA × CANINA.

"One of the hybrids between *Rosa gallica* and the dog-rose (*R. canina*). A strong-growing, freely fruiting shrub, valuable as a stock."

54202 to 54204. ROSA GALLICA × (?).

"Compact shrubs well loaded with large fruits and seemingly suited for stock purposes."

54202. *Apothecary's* rose. 54204. Var. *Crested Province.*

54203. Var. *Beranger.*

54205 to 54207. ROSA GLAUCA Vill.

54205. "(Chenault No. 5348.) A European shrub closely related to *Rosa canina* but having broadly ovate, bluish green leaflets and purplish flowers."

54206. Received as *Rosa complicata*, which is now referred to *R. glauca.*

54207. Received as *Rosa gallica reuteri*, but *R. reuteri* is now considered to be a form of *R. glauca.*

54208. ROSA GLUTINOSA Sibth. and Smith.

"A dwarf compact bush native to southeastern Europe, with five to seven orbicular leaflets, small pinkish white, solitary flowers, and globose bright-red fruits."

For previous introduction, see S. P. I. No. 49951.

54164 to 54265—Continued.

54209. ROSA HELIOPHILA Greene.

"A shrub 2 feet high, native to the prairies west of the Missouri River. The green stems are prickly, the 7 to 11 simply serrate leaflets are obovate and pubescent beneath, the small pink flowers are borne in clusters and are followed by red globose fruits."

54210. × ROSA HIBERNICA J. E. Smith.

"A hybrid between *R. canina* and *R. spinosissima*, with glaucous green foliage and small pink flowers."

For previous introduction, see S. P. I. No. 43716.

54211. × ROSA INVOLUTA J. E. Smith.
(*R. sabini* Woods.)

This Irish hybrid between *R. spinosissima* and *R. tomentosa* has five to seven oval leaflets densely pubescent beneath, usually solitary small pink flowers, and bright-red globose fruits. (Adapted from *Willmott, The Genus Rosa, p. 281.*)

54212. ROSA JACKII Rehder.

For previous introduction, see S. P. I. No. 54135.

54213. ROSA JUNDZILLI Besser.

For previous introduction, see S. P. I. No. 54136.

54214. × ROSA MACRANTHA Desportes.

Var. *superius.*

A hybrid between *R. canina* and *R. gallica*, this rose from southern France has arching green stems, five to seven subcoriaceous oblong leaflets, small clusters of large pink flowers, and red globose fruits. (Adapted from *Willmott, The Genus Rosa, p. 403.*)

54215. ROSA MAJALIS Herrmann. **Cinnamon rose.**
(*R. cinnamomea* L. 1759, not 1753.)

For previous introduction, see S. P. I. No. 54137.

54216. ROSA MANCA Greene.

A dwarf shrub seldom over one foot high, native to the mountains of Colorado, with usually seven obovate thin leaflets less than an inch in length, small solitary pink flowers, and globose fruits. (Adapted from *Greene, Pittonia, vol. 4, p. 11.*)

54217. ROSA MICRANTHA J. E. Smith.

For previous introduction, see S. P. I. No. 54138.

54218. ROSA MONTANA Chaix.

For previous introduction, see S. P. I. No. 54139.

54219. ROSA MOSCHATA NASTARANA Christ.
(*R. pissarti* Carr.)

A Persian form of the musk rose with five to seven smaller ovate leaflets, small clusters of large pure-white flowers and smooth globose red fruits. (Adapted from *Willmott, The Genus Rosa, p. 39.*)

54220. ROSA MULTIBRACTEATA Hemsl. and Wils.

"A western Chinese shrub 6 feet high with pairs of straight prickles, seven to nine broadly ovate leaflets, small clusters of pink flowers, and ovoid orange-red fruits."

For previous introduction, see S. P. I. No. 43902.

54221. ROSA MULTIFLORA Thunb.

(Chenault No. 5540.) "This well-known Japanese rose is a strong climbing shrub with nine obovate leaflets and large clusters of small white flowers."

For previous introduction, see S. P. I. No. 40626.

54164 to 54265—Continued.

54222. ROSA MULTIFLORA × CHINENSIS.
(*R. polyantha* Hort.)

"Received as *Rosa polyantha*, which is a trade name for many varieties originating as hybrids between the China rose and *R. multiflora*."

54223. ROSA OMISSA Desegl.

A shrub 3 to 5 feet high, native to Europe, with five to seven ovate-elliptical leaflets, pink flowers, and large smooth obovoid red fruits. (Adapted from *Billot'a, vol. 1, p. 47.*)

54224 and 54225. ROSA OXYODON Boiss.

54224. For previous introduction, see S. P. I. No. 54142.

54225. (Chenault No. 5880.) Var. *caucasica.*

54226. ROSA PALUSTRIS Marsh.

Var. *nuttalliana.* "A horticultural form with flowers larger than in the type and appearing later in the season."

For previous introduction, see S. P. I. No. 49044.

54227. ROSA PISOCARPA A. Gray.

For previous introduction, see S. P. I. No. 54145.

54228. ROSA RUBRIFOLIA Vill.

A southern European shrub 6 feet high, with the whole plant glaucous and tinged with red. The five to seven oblong leaflets are simply toothed, the bright-red flowers are in small clusters, and the small globose fruits are red and pulpy. (Adapted from *Willmott, The Genus Rosa, p. 399.*)

54229. ROSA RUGOSA KAMCHATICA (Vent.) Regel.

For previous introduction, see S. P. I. No. 54149.

54230. ROSA RUGOSA × FERRUGINEA.

(Chenault No. 5383.) "A hybrid between the Japanese rose and *Rosa ferruginea* of Central Europe."

54231. ROSA SATURATA Baker.

(Arnold Arboretum No. 7169; Wilson No. 316.) "A central Chinese shrub often 8 feet high, nearly free from prickles, with seven ovate-lanceolate pale leaflets 2 to 3 inches long. The solitary dark-red flowers with purple stamens are followed by ovoid coral-red fruits nearly an inch long."

For previous introduction, see S. P. I. No. 49120.

54232. ROSA SETIPODA Hemsl. and Wils.

"This tall shrub often 10 feet high, native to central China, has pairs of wide-based straight prickles, seven to nine elliptical leaflets, loose corymbs of pale-pink flowers 2 inches across, and oblong-ovoid deep-red fruits an inch long."

For previous introduction, see S. P. I. No. 37978.

54233 to 54235. ROSA SPINOSISSIMA L. **Scotch rose**

54233. For previous introduction, see S. P. I. No. 54151.

54234. Var. *Jupiter*, a horticultural variety.

54235. Var. *penicillata.*

54236. ROSA SPINOSISSIMA ALTAICA (Willd.) Rehder.

Var. *maxima.*

For previous introduction, see S. P. I. No. 54152.

54164 to 54265—Continued.

54237. ROSA SPINOSISSIMA HISPIDA (Sims) Koehne.

For previous introduction, see S. P. I. No. 54153.

54238. ROSA SPINOSISSIMA LUTEOLA Andrews.
(*R. ochroleuca* Swartz.)

(Chenault No. 5760.) "A Scotch form differing from the type in having usually seven leaflets and pale-yellow flowers 2 inches across."

54239. ROSA SPINOSISSIMA × (?).

Var. *Lady Bailey.*

54240. ROSA SWEGINZOWII Koehne.

(Purdom No. 802.) "A western Chinese climber often 16 feet high, with usually nine ovate-oblong leaflets, small clusters of pink flowers, and oblong fruits an inch long."

For previous introduction, see S. P. I. No. 43915.

54241. ROSA TURKESTANICA Regel.

"A tall shrub native to Turkestan, with few prickles and bearing bright-red ovoid fruits an inch long."

For previous introduction, see S. P. I. No. 49122.

54242. ROSA VENOSA Swartz.

A Swedish shrub closely related to *Rosa canina*, from which it differs in the strongly veined, doubly serrate leaflets which are glabrous and glaucous beneath. (Adapted from *Sprengel, Systema Vegetabilium, vol. 2, p. 554.*)

54243 and 54244. ROSA VILLOSA L.

54243. Var. *arduenae.*

54244. Received as *Rosa pomifera*, which is now referred to *R. villosa.*

For previous introduction, see S. P. I. No. 54156.

54245. ROSA WEBBIANA Wall.

"An erect shrub native to the Himalayas of Turkestan, with five to nine very small orbicular glabrous leaflets, large solitary pink flowers, and ovoid bright-red fruits."

For previous introduction, see S. P. I. No. 49954.

54246. ROSA WICHURAIANA × (?).

Var. *Goldfinch.*

54247. ROSA WILLMOTTIAE Hemsl.

"A western Chinese rose forming a densely branched shrub often 10 feet high, with seven obovate leaflets, solitary rose-purple flowers, and bright orange-red globose fruits."

For previous introduction, see S. P. I. No. 32697.

54248. ROSA WOODSII Lindl.

For previous introduction, see S. P. I. No. 54158.

54249. ROSA XANTHINA Lindl.

Forma *normalis* Rehd. and Wils. "The single-flowered form of the Chinese yellow rose which had been described by Lindley in 1830 from a Chinese drawing and was not otherwise known until its discovery by Frank N. Meyer in 1907. The shrub is upright, often 10 feet high, with 7 to 11 elliptical, dentate leaflets, and solitary short-stalked yellow flowers about 2 inches across."

For previous introduction, see S. P. I. No. 21620.

54164 to 54265—Continued.

54250 to 54265. ROSA spp.

"Several roses received under names for which places of publication have not yet been found."

54250. "(Chenault No. 5351); labeled *R. chyraica.*"

54251. "(Chenault No. 5866); labeled *R. kurdistena.*"

54252. "Labeled *R. nivea villosa.*"

54253. "(Chenault No. 5357); labeled *R. praecox.*"

54254. "(Chenault No. 5353); labeled *R. urens.*"

54255. "(Chenault No. 5524); labeled *R. cinnamonica,* but the seeds do not agree with seeds of either *R. cinnamomea* L. 1753 (*R. pendulina*) or with *R. majalis* Herrm. (*R. cinnamomea* L. 1759)."

54256. "(Chenault No. 5905); also labeled *R. cinnamonica.*"

54257. "(Purdom No. 837.)"

54258. "(Purdom No. 841.)"

54259. "(Chenault No. 5372.)"

54260. "(Chenault No. 5905); small fruit."

54261. "Var. *Catherine Seyton.*"

54262. "Var. *Shakespeare.*"

54263. "The stock on which *R. turkestanica* had been grafted."

54264. "The stock on which *R. villosa* var. *arduenae* had been grafted."

54265. "An undetermined rose from Olney, Ill."

54266 and 54267. MALUS spp. Malaceæ. Crab apple.

From Geneva, N. Y. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction, for stock experiments by experts of the Department of Agriculture. Numbered September, 1921. Quoted notes by Mr. Skeels.

54266. MALUS BACCATA (L.) Moench.
(*Pyrus baccata* L.)

"Seeds of S. P. I. No. 24366 growing in the orchard at the Geneva experiment station. This number was sent originally from the Arnold Arboretum by Mr. Dawson, who recommended it as a good-keeping crab apple."

54267. MALUS sp.

"Seeds of S. P. I. No. 21065 growing in the Geneva experiment-station orchard. It was originally collected by Frank N. Meyer at Kirwin, Manchuria."

54268. MALUS CORONARIA (L.) Mill. Malaceæ. Crab apple.
(*Pyrus coronaria* L.)

From Takoma Park, Md. Seeds collected by H. C. Skeels, of the Office of Foreign Seed and Plant Introduction. Numbered September, 1921.

"Fruits collected under trees growing in my yard. These trees were grown by Dr. D. N. Shoemaker from seeds collected under wild trees near Arlington Experimental Farm, Va. The pink blossoms are to me the most beautiful and the most fragrant of our American flowers." (*Skeels.*)

54269 to 54281.

From Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the Department of Agriculture. Received July 21, 1921. Quoted notes by Mr. Popenoe.

54269 to 54281—Continued.

54269. BERBERIS QUINDUENSIS H. B. K. Berberidaceæ. **Barberry.**

"(No. 622. Hacienda La Esperanza, near El Angel, Province of Carchi. June 13, 1921.) *Espino.* Plants collected at an alt.tude of about 11,500 feet. This is one of the handsomest of the wild barberries which 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 orange-yellow flowers, which are produced in racemes about 3 inches long, are half an inch broad. They are followed by small clusters of oval blue-black fruits. The species is worthy of a trial as an ornamental."

54270 to 54278. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

54270. "(Nos. 612 and 626. Hacienda San Vicente, Ibarra, Ecuador. May 28 and June 15, 1921.) Budwood of avocado No. 47, *Tamayo.*"

For previous introduction and description, see S. P. I. No. 53182.

54271. "(Nos. 614 and 628. Ibarra, Ecuador. May 27 and June 15, 1921.) Budwood of avocado No. 49, *Egas.*"

For previous introduction and description, see S. P. I. No. 53183.

54272. "(Nos. 615 and 629. Ibarra, Ecuador. May 28 and June 15, 1921.) Budwood of avocado No. 50, *Chota.*"

For previous introduction and description, see S. P. I. No. 53184.

54273. "(Nos. 616 and 630. Ibarra, Ecuador. May 27 and June 17, 1921.) Budwood of avocado No. 51, *Carchi.*"

For previous introduction and description, see S. P. I. No. 53185.

54274. "(No. 631. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 52, *Irumina.* The parent tree stands in a huerta at the Hacienda Irumina, only a few hundred feet from the house, at an altitude of 6,200 feet. This variety, which appears to be of the Mexican type, though the fruit is rather thick skinned for one of that race, is notable for the excellent quality of its deep-yellow flesh. The fruit is long and slender, not of very convenient form; it weighs about 10 ounces and has a medium-sized seed. While it may not prove to be an avocado of great commercial value, it is certainly worthy of a trial in California and Florida.

"Formal description: The parent tree is about 50 feet high, erect in habit, with a spread of about 30 feet. It is probably 20 years old if not more. The trunk is 18 inches thick at the base, forked at 10 feet, and gives off lateral branches at 18 feet. It is said to bear good crops. The leaves when crushed are faintly anise scented.

"The fruit is pyriform to very slender pyriform, necked; weight about 10 ounces, length 5 to 6 inches, greatest breadth 2½ to 2¾ inches; base tapering, often curved to one side; stem inserted centrally, apex rounded to broadly pointed; surface light green, with numerous greenish yellow dots; skin scarcely 0.5 millimeters thick, rather firm and tough; flesh cream-yellow, pale green close to the skin, with very few fiber markings, the flavor very rich, nutty, and pleasant; quality excellent; seed conical, rather slender, medium sized, loose or tight in the cavity. Main ripening season at Irumina probably from December to March.

"The season at which it will ripen in the United States can not be ascertained without a trial in California and Florida."

54275. "(No. 632. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 53, *Imbabura.* The parent tree stands in the huerta at the Hacienda Irumina, only a few hundred feet from the house and about 50 feet from tree No. 52, at an altitude of 6,200 feet. This is a Mexican avocado of medium size (for that race), of good quality, and in every way a desirable fruit, so far as can be ascertained by a brief study of the variety. It will require a test

54269 to 54281—Continued.

in the United States, however, to determine whether or not it has characteristics which make it of commercial value.

"Formal description: The parent tree is about 45 feet high, with a spread of 60 feet, and is at least 50 years old. The trunk is 3 feet thick at the base, forked at 10 feet above the ground. The crown is rather open, and some of the main limbs extend almost horizontally. The foliage when crushed is distinctly anise scented.

"The fruit is oblong-obovoid; weight 6 to 7 ounces, length about 4 inches, greatest breadth about 2½ inches; base bluntly pointed, with the stem inserted to one side; apex rounded to broadly pointed; surface pale olive-green, blushed with maroon-purple, and with very numerous large whitish green dots; skin not quite 0.5 millimeter thick, firm and leathery in texture; flesh rich cream-yellow, greenish close to the skin, with few fiber markings, the flavor very rich, nutty, and pleasant; quality excellent; seed oblong-conic, tight to slightly loose in the cavity. Ripening season at Irumina mainly from December to March.

"This fruit when grown under good cultivation in the United States will probably weigh from 8 to 10 ounces. The season at which it will ripen in that country can be ascertained only by a trial."

54276. "(No. 633. Ibarra, Ecuador. June 16, 1921.) Cuttings of 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 worthy of 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 in color and healthy in appearance.

"The fruit is oblong-pyriform to oval-obovoid in form; 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."

54277. "(No. 634. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 55, *Inca*. The parent tree is growing in one of the huertas at the Hacienda San Vicente, a few hundred yards north of the house, at an altitude of 6,100 feet. This is one of the most promising avocados obtained in the Chota Valley, if not the most promising of all. It is an unusually large fruit for one of the Mexican race, and at the same time has a very small seed, and flesh of excellent quality. It is worthy of a careful trial in the avocado-growing regions of the United States.

"Formal description: The parent tree is about 50 feet high and of erect round-topped form, with an open well-branched crown. The trunk is about 2 feet thick at the base and gives off several large limbs about 10 feet above the ground. There is a faint aniselike odor to the crushed leaves. So far as can be

54269 to 54281—Continued.

ascertained by an examination of the tree it is of the Mexican race; there is a possibility, however, that it may be a hybrid between this race and the West Indian.

"The fruit is pyriform-obovoid to oblong-obovoid; weight 10 to 15 ounces; length 4¼ to 5 inches; greatest breadth 3 to 3½ inches; base broadly pointed, the stem inserted obliquely; apex slightly and obliquely flattened; surface smooth, pale yellow-green, with numerous large cream-colored dots; skin thin, less than 0.5 millimeter; flesh yellowish cream color, pale green very close to the skin, with very few and inconspicuous fiber markings, and of smooth oily texture, the flavor rich, not watery, very agreeable, with pronounced nutty character; quality excellent; seed round-conic, relatively small, tight in the cavity or nearly so, the seed coats sometimes separating over a portion of the seed, cotyledons slightly rough.

"The season of this variety, as of others in the Chota Valley, is difficult to determine accurately. The main crop probably ripens from September to December, but there are a few fruits available at nearly all times of the year."

54278. "(No. 635. Ibarra, Ecuador. June 16, 1921.) Cuttings of avocado No. 56, *Huira*. The parent tree is growing in one of the huertas at the Hacienda Carpuela, at an altitude of 5,300 feet. This is a Mexican variety of good size and quality. While not as promising as some of the other varieties in the Chota collection, it is well worthy of a trial in California and in the cooler portions of the avocado-growing region of Florida. It should prove to be fairly hardy.

"Formal description: The parent tree is about 40 feet high, erect and shapely in form, and apparently a vigorous grower. The foliage when crushed is distinctly anise scented. The trunk is about 15 inches thick at the base and branches at 8 feet above the ground.

"The fruit is obovate in form; weight about 8 ounces, length nearly 3 inches; base pointed, with the stem inserted obliquely; apex thin, as is characteristic of the Mexican race; flesh cream-yellow, tinged green near the skin, with a few fiber markings; flavor unusually rich and nutty; quality excellent; seed broadly obovoid-conic, rather large, tight in the cavity, with both seed coats closely surrounding the nearly smooth cotyledons. Season at Carpuela not definitely known; the main crop probably matures between October and January, but there are a few ripe fruits available at other times of the year. It is impossible to predict with accuracy the season at which this, as well as the other varieties from the Chota Valley, will ripen their fruits in the United States; the matter can be determined only by trial."

54279 and 54280. RUBUS ADENOTRICHOS Schlecht. Rosaceæ.
Blackberry.

54279. "(No. 623. Ibarra, Ecuador. June 13, 1921.) Plants of *Mora común*. From the Hacienda La Rinconada, in the Province of Carchi, at an altitude of about 11,000 feet. This is a very vigorous Rubus, forming large clumps up to 15 or 18 feet high. Its stout canes are thickly clothed with short, stiff, bright maroon-colored hairs, while its leaves are formed of five ovate-acuminate to oblong-acuminate, finely serrate leaflets 3 to 4 inches long. The white flowers are produced in large loose panicles sometimes more than a foot in length and are followed by an abundance of oval deep-purple fruits about three-quarters of an inch long. The drupelets are numerous and crowded closely together; the seeds are moderately large, but not very troublesome in the mouth. The flavor is practically the same as that of the cultivated blackberry of the North, and the quality is good. Because of its productiveness as well as this latter feature, the species is worthy of a trial in the southern and western United States."

54269 to 54281—Continued.

54280. "(No. 624. Ibarra, Ecuador. June 13, 1921.) A slightly different variety."

For previous introduction, see S. P. I. No. 53995.

54281. VACCINIUM FLORIBUNDUM H. B. K. Vacciniaceæ. **Mortiño.**

"(No. 621. Ibarra, Ecuador. June 13, 1921.) Plants of *mortiño* from Hacienda La Rinconada, Province of Carchi, Ecuador, at an altitude of about 11,500 feet. A very abundant indigenous plant throughout the Ecuadorian highlands at altitudes between 10,000 and 12,000 feet. It is not cultivated. The fruit is sometimes brought into the markets of Andean villages. In some parts of the country its ripening season, March to August, is the occasion for picnics in the campo, the inhabitants of the towns and villages betaking themselves to the páramos, where this plant grows abundantly, to gather and eat the fruit.

"The *mortiño* is a slender, handsome shrub about 6 feet high (often lower than this), with very small elliptic to ovate-acute, finely serrate leaves crowded on the stems, and small bell-shaped deep-pink flowers produced in great abundance. The fruit is roundish, up to about one-third of an inch in diameter, deep glaucous blue, juicy, subacid and pleasant to the taste, and containing several very small seeds. It greatly resembles some of the blueberries of the United States and could probably be developed by cultivation into a much more valuable fruit than it is to-day."

54282 to 54296. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saigon, Cochin China, French Indo China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921. Notes adapted from Bulletin Agricole, de l'Institut Scientifique de Saigon, vol. 2.

54282. *Bông-chanh.* An excellent variety of the Gocong type with a growing period of 202 to 234 days, and a yield (February 17 to 25) of 1,726 to 2,667 kilograms per hectare (1,539 to 2,375 pounds per acre). Originated at Dinhthoi (Cantho). (*P. 42.*)

54283. *Bông-dua.* A good variety of the Gocong type, yielding in 183 to 235 days (February 17 to 25) 1,664 to 3,600 kilograms per hectare (1,484 to 3,211 pounds per acre). From Saigon. (*P. 42.*)

54284. *Bông-sen.* A fine variety of the Gocong type originated in the neighborhood of Cantho with a growing period of 162 to 215 days, and a yield of 2,360 to 3,850 kilograms per hectare (2,105 to 3,434 pounds per acre). (*P. 42.*)

54285. *Cadung Baria.*

54286. *Cadung Gocong.* A fine grain of the Gocong type from the Seed Selection Laboratory, with a growing period of 152 days, maturity January 30, and a yield of 1,652 kilograms per hectare (1,470 pounds per acre). (*P. 43.*)

54287. *Huêky.* A variety of American production, with a round dense grain of the Gocong type, maturing in 166 to 230 days from date of sowing. The yield varies from 1,200 to 3,851 kilograms per hectare (1,070 to 3,040 pounds per acre).

The plant grows vigorously to a height of 1.4 to 1.6 meters (5 feet) and fruits abundantly. This nonshattering variety has proved resistant to disease and drought which greatly reduced the yield of other varieties. The head is 23 to 25 centimeters (9 to 10 inches) long, and the shelled grains are large, regular, and white. It has been given superior ranking over Spanish rice. (*Pp. 43 and 75.*)

54288. *Lu-phung-tien.* A variety of the Gocong type sent out from Saigon, with a growing period of 180 to 208 days, maturity January 18 to February 15, and yields of 2,321 to 2,967 kilograms per hectare (2,070 to 2,646 pounds per acre). (*P. 42.*)

54282 to 54296—Continued.

54289 to 54292. These four numbers represent a series of forms of so-called floating rices, rice with a different flavor from that of ordinary rice. For the first two months floating rice grows like ordinary rice, but later floods of the Mekong River, which start in July, gradually submerge all of the plant except the leaf tips. The water recedes after November, the stalks bend down, and when the lower part touches the ground the nodes take root.

The stalk of floating rice is thicker than that of ordinary rice and is from 2.5 to 5 meters (8 to 16 feet) long. Only the tips of the stalks are leafy. The growing period is 8 to 9 months, from April or May to December or January. No care is given the crop after the sowing. (*P. 46.*)

54289. *Nam-vian*, or *ba sao*. A recent introduction from Cambodia, with stalks 12 feet long and thick heads, up to a foot long. (*P. 49.*)

54290. *Nàng-dùm*. A recent introduction from Cambodia. Of the floating rice group, this is the only variety which yields white fine rice; it requires only a medium supply of water. The grain falls easily from the short head. (*P. 48.*)

54291. *Nàng-gông-trang*. A variety of the Gocong type, sent out from Saigon, with medium-sized grain yielding (1917, December 11, to 1918, February 26) 2,337 to 2,967 kilograms per hectare (2,080 to 2,747 pounds per acre). (*P. 42.*)

54292. *Nàng-rùm*. A variety from Saigon with a normal growing period of 120 days, maturity from December 20 to January 5 and a normal yield of 1,500 to 2,167 kilograms per hectare (1,338 to 1,932 pounds per acre). (*P. 41.*)

54293. *Ramay*. A large round grain of the type Gocong, which much resembles *Huêky*. Maturity requires 166 to 228 days; the yield is from 1,083 to 3,677 kilograms per hectare (966 to 3,281 pounds per acre). Cultivated at Cantho, Saigon. (*P. 43.*)

54294. *Rá-muoi*. A fine variety with a large round seed, of the Gocong type, with a growing period of 195 to 220 days and a yield (February 20, 21) of 1,684 to 3,722 kilograms per hectare (1,502 to 3,321 pounds per acre). Originated at Dinhthoi (Cantho). (*P. 42.*)

54295. *Sào-ong*. This fine variety of the Gocong type originated in the neighborhood of the station of Cantho, has a growing period of 188 to 199 days, ripens January 25, and yields 2,474 to 3,466 kilograms per hectare (2,207 to 3,092 pounds per acre). (*P. 42.*)

54296. *Song-lon*. The oldest known variety, extensively distributed from Cambodia. The large thick grains are in heads 7 to 9 inches long. (*P. 48.*)

54297. WARSZEWICZIA COCCINEA (Vahl) Klotzsch. Rubiaceæ.

From Panama. Cuttings collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received September 16, 1921.

"This is a remarkable ornamental tree. Mr. Dorsett and I first saw it on the banks of Gatun Lake at Rio Sucio. At a distance its racemes, over 2 feet long, with their brilliant scarlet enlarged sepals produced a startling splash of color against the dark-green foliage. The color is as vividly scarlet as the autumn colors of the sour gum, the sorrel tree, or some species of Japanese maple. The colored 'leaves' are in reality enlarged sepals. Only one flower in each cluster of flowers on the raceme has an enlarged sepal. Though the flowers themselves are not over a quarter of an inch in diameter, the enlarged sepals are often 2½ inches long. The fact that this tree blooms in summer, the wet season, whereas most of the showy flowering trees of the Tropics bloom in the dry season, would seem to make this an unusually valuable ornamental tree for tropical regions. It is certainly worthy of a place in every collection of tropical trees." (*Fairchild.*)

54298. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ. **Nikau palm.**

From Birkenhead, Auckland, New Zealand. Seeds presented by C. L. Wragge. Received September 28, 1921.

An extremely elegant palm native to New Zealand, where the young inflorescence is eaten. The palm is of peculiar interest as being one of the most southern, occurring as far as latitude 38° 22′ S., whereas 38° S. is the limit of palms in Australia and South America, and 30° S. in Africa. The trunk 6 to 12 feet high bears pinnate leaves 4 to 6 feet long and a much-branched densely flowered spadix 18 to 24 inches long. The pale pinkish flowers are very numerous. (Adapted from *Curtis's Botanical Magazine, pl. 5139.*)

For previous introduction, see S. P. I. No. 47878.

54299 to 54302. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**

From Santiago, Chile. Scions presented by Sr. Salvador Izquierdo. Received September 30, 1921. Quoted notes by Wilson Popenoe, except as otherwise stated.

"Four varieties of apples which I have selected during recent years, and which I consider very interesting. They are entirely resistant to the attacks of the woolly aphis (Schizoneura)." (*Izquierdo.*)

"Chilean apples are probably inferior to our own, in so far as dessert quality is concerned. Most of them are small fruits, with rather mealy flesh of sweet and not very sprightly flavor. They are interesting to us because of their resistance to the woolly aphis, the worst pest of Chilean orchards. The main purpose in introducing them is for trial as aphis-resistant stock plants on which to graft our best commercial sorts."

54299. "*Admirable de Otoño* (*Autumn Beauty*). Described by Sr. Izquierdo as a large excellent autumn fruit. The tree is very productive."

54300. "*Huidobro.* Also known as *Araucana* and *Araucana Huidobro.* This is said to have originated from an Italian seed. The tree is described as very vigorous and productive; the fruit is medium to large, yellow, of firm texture, sweet, aromatic, and juicy. Its ripening season is late autumn (April to May in Chile), and the fruits can be kept in good condition without cold storage until the following October or sometimes November. Its shipping qualities are excellent.

"This variety can not be strongly recommended as a dessert apple and is not introduced as such; immunity from the attacks of the woolly aphis is the quality which gives it interest and makes it valuable in Chile and perhaps elsewhere. Sr. Izquierdo has found that plants of this variety grafted on seedling apple roots will be attacked by the aphis only from the roots upward to the union of stock and scion, not a single insect ever passing on to the scion to carry on his nefarious activities.

"Because of this characteristic, it is possible that *Huidobro* may have value in the United States as a stock plant on which to graft other and better varieties of the apple."

54301. "*Productiva* (productive). A large fruit striped with red, ripening in April and May in central Chile."

54302. "*Citroncile.* A small sweet yellow apple, said to be an excellent keeper."

54303. CRINODENDRON PATAGUA Molina. Elæocarpaceæ. **Patagua.** (*Tricuspidaria dependens* Ruiz and Pav.)

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Garden. Received September 30, 1921.

A small, compact, rather spreading evergreen tree, 20 to 30 feet high, with elliptic leaves up to 2½ inches long and white axillary flowers nearly an inch long, borne on long curved stalks. The wood is very white and is much used

for carpentry and even for cabinetmaking; the bark is employed in tanning; and silkworms relish the leaves. Native to moist situations in central Chile, where it ascends to nearly 4,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information, 1907, p. 13,* and *Curtis's Botanical Magazine, pl. 8115.*)

54304. GLADIOLUS ALATUS L. Iridaceæ.

From Pretoria, Transvaal, South Africa. Seeds presented by I. B. Pole Evans, chief, Division of Botany. Received September 26, 1921.

A very interesting little South African plant with flowers of a delightful fragrance not unlike that of the sweetbrier; the three upper petals are bright orange-scarlet, the three lower ones are yellowish tipped with orange-scarlet. The bulbs are not larger than ordinary peas and can not remain long out of ground. (Adapted from *Allen, Bulbs and Tuberous-Rooted Plants, p. 105.*)

For previous introduction, see S. P. I. No. 44722.

54305. PAULLINIA CUPANA Kunth. Sapindaceæ.

From Para Valley, Para, Brazil. Seeds presented by A. Law Vege, through J. A. McCutchin, Federal Horticultural Board. Received September 16, 1921.

"The seed requires three months to germinate and should be planted in clay soil mixed with sand, half and half. They are very delicate, being killed in two days when exposed to dryness. About 74 per cent of seeds, preserved in water for two weeks, germinated, although fermentation had set in. The plant is naturally a vine, though in commercial plantings in Brazil it is trained as a bush. It requires shade while young. The plant has the highest percentage of caffein of any plant known." (*Voge.*)

From this species is obtained guarana, which is used not only as a remedy for intestinal trouble but also as a very powerful stimulant that enables one to endure almost superhuman fatigue. Guarana is a black paste, extracted from the seeds of the grapelike fruits found growing along the upper Tapajoz, and in the valley of the Orinoco in Venezuela.

In November the fruits mature; the moist soft seeds are carefully removed and spread in the sun to dry. A few hours are sufficient to give them a flinty brittleness. The kernels are then reduced to powder; and, with the addition of a little water or by exposure to the damp air of the swamps, a thick paste is obtained, which is molded into cylinders about an inch in diameter and 6 inches long. The dry cylinder assumes an almost mineral hardness. This is the guarana of commerce. When powdered it ferments rapidly and its medicinal properties come into play.

The Indians also utilize the roots and leaves of the Paullinia for the making of inferior grades of guarana. Even the blossoms are burned and the ashes yield still another variety known as "guarana putira," or "guarana flor." The Indians and whites who use guarana file a small portion from the cylinder, dissolve it in water, and drink it. The whites generally add sugar to neutralize the bitter taste of caffein. The chief medicinal value of guarana is its salutary action on the intestinal secretions when taken in small and not too frequent doses. Repeated doses result in a general breakdown of the nervous system.

Analysis of 100 grams of guarana.

	Grams.
Caffein	5.388
Essential oil	2.950
Resin	7.800
Coloring matter	1.570
Saponin	.060
Guarana-tannic acid	5.902
Pyro-guarana acid	2.750
Starch	9.350
Glucose	.777
Pectic acid, malic acid, dextrin, etc	7.470
Vegetable fiber	49.125
Water	7.650

The young shoots are planted about 20 feet apart, and in the course of 10 years the plant occupies an area of from 10 to 15 square feet. The plants bear fruit in the third or fourth year and will yield from 6 to 8 pounds of seeds, about the size and color of a grain of corn, annually for 35 to 40 years. Plants raised from seed do not bear fruit until the fifth year and live but a few years. (Adapted from *Bulletin of the Pan American Union, vol. 51, p. 268.*)

54306. CLUSIA GRANDIFLORA Splitg. Clusiaceæ.

From Cambridge, England. Cuttings presented by F. G. Preston, superintendent, Botanic Garden. Received September 30, 1921.

A very beautiful plant up to 11 feet high with handsome large white rose-tinted flowers, each from 7 to 8 inches in diameter. The flowers are fleshy with a delicate white fringe around the center of a deep-yellow, discoid, gummy mass of staminodes. Three flowers are usually borne at the end of a shoot, the central one opening first and hiding the two side buds which open later. This native of Guiana has large handsome leathery leaves, up to 18 inches long and over 7 inches wide; they are borne in clusters towards the end of the twigs. The plant is not in any way susceptible to insect pests. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 67, p. 315.*)

54307 and 54308.

From Honolulu, Hawaii. Plants collected by J. F. Rock, Agricultural Explorer of the Department of Agriculture. Received August 26, 1921.

54307. COLA NITIDA (Vent.) Schott and Endl. Sterculiaceæ.
(*Sterculia nitida* Vent.)

A tree 20 to 30 feet high, native to Upper Guinea, Africa, closely related to the common cola nut, from which it differs in the broader, shorter stalked leaves, and flowers nearly double the size. These trees furnish the cola nuts so much esteemed by the natives for their bitter flavor, and which are said to enhance the taste of whatever is eaten with them. The numerous seeds are in leathery or woody pods. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 221.*)

54308. QUERCUS JAVANICA (Blume) Drake. Fagaceæ.
(*Castanopsis javanica* A. DC.)

A large evergreen tree with very leathery leaves which are shining above, more or less rufous pubescent beneath, and 3 to 10 inches long. The globose tomentose involucres, up to 2 inches in diameter with spines sometimes two-thirds of an inch long, inclose 1 to 4 nuts. Native to Lower Burma and the Malay Peninsula. (Adapted from *Hooker, Flora of British India, vol. 5, p. 620.*)

54309. DIOSCOREA ESCULENTA (Lour.) Burkill. Dioscoreaceæ.

Lesser yam.

From Suva, Fiji Islands. Tubers presented by C. H. Knowles, Director of Agriculture. Received September 17, 1921.

This small yam, the *kawai*, is certainly worth the attention of anyone who has facilities for cultivating a small area of food plants. Being indigenous to Fiji, the natives have long recognized its value as a food, and it is cultivated in most if not all of the Fiji Islands. It is cultivated in parts of India and Burma. In the latter it is said to be found wild.

The stem of this creeper is round and full of prickles. It is propagated by planting the small tubers or roots, which, like the old ones, are oblong, of a brownish color outside and a pure white within. When cooked, the skin falls off like the bark of a birch tree. The root is very farinaceous, and when well cooked looks like a fine mealy potato, although of superior whiteness. The taste recalls to mind that of the arracacha of South America. There is a slight degree of sweetness about it which is very agreeable to the palate.

The *kawai* can be grown in districts too wet for the finer varieties of the yam, and it is not attacked by the leaf fungus *Glocosporium postis* which attacks yams, particularly the better varieties, and is very severe in wet years. Good land is necessary for a good crop, and it must be well drained.

No insect pests or fungous diseases were found to damage the plant during 1916 to 1919.

The *kawai* can be either boiled or roasted, and, as with the potato, it is best not to remove the skin before cooking. A thorough cleaning is the only preparation necessary. (Adapted from *Agricultural Circular, Fiji, vol. 1, p. 86.*)

54310. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**

From Manila, Philippine Islands. Seeds presented by Sr. Adn. Hernandez, director, Bureau of Agriculture. Received September 23, 1921.

"A newly domesticated variety grown in Occidental Negros Province, Philippine Islands, where no disease is reported." (*Arsenio Goco, plant inspector.*)

"Our experiments have shown this to be a promising cereal for the Tropics." (*Hernandez.*)

For previous introduction, see S. P. I. No. 49798.

54311. DENDROCALAMUS LONGISPATHUS Kurz. Poaceæ. **Bamboo.**

From Dehra Dun, United Provinces, India. Seeds presented by R. S. Hole, forest botanist. Received September 7, 1921.

A large handsome species with tufted glaucous-green culms up to 60 feet high, the upper branches bearing smooth lanceolate yellow-ribbed leaves the under surface of which is rough and glaucescent or sometimes almost white. The internodes are up to 2 feet long with walls 5 inches thick. The species comes nearest *Dendrocalamus hamiltonii* but is easily recognized by its long fragile papery culm sheaths densely hairy on the back, and by the large panicles of small flower heads and blunt spikelets. One of its local Burmese names is "wa-ya" (stinging bamboo), for the hairs on the sheath are especially irritating. Although native to eastern Bengal and Burma, chiefly along streams, it has been cultivated in Calcutta, Malabar, etc., but the culms are not very strong, and as a building material it is generally inferior to many other kinds. (Adapted from *Annals of the Royal Botanic Garden, Calcutta, vol. 7, p. 89.*)

54312 to 54318.

From Jujuy, Argentina. Collected by D. S. Bullock, agricultural trade adviser, Bureau of Markets and Crop Estimates, United States Department of Agriculture. Received September 24, 1921.

54312 to 54315. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

"Tubers bought at Market Place, Jujuy, Argentina, August 1, 1921." (*D. S. Bullock.*)

54312. No. 1. **54314.** No. 3.

54313. No. 2. **54315.** No. 4.

54316. OXALIS TUBEROSA Molina. Oxalidaceæ. **Oca.**

"Seeds of *papa oca* bought at Market Place, Jujuy, Argentina. Said to grow at an altitude of 9,000 feet." (*D. S. Bullock.*)

54317 and 54318. ZEA MAYS L. Poaceæ. **Corn.**

Seeds introduced for experimental purposes.

54317. No. 1. **54318.** No. 2.

54319. HYDNOCARPUS WIGHTIANA Blume. Flacourtiaceæ.

From Sibpur, near Calcutta, India. Seeds presented by Lieut. Col. A. T. Gage, director, Royal Botanic Garden. Received September 30, 1921.

"A tree common on the western Peninsula from the Konkan along the coast ranges of India, 40 to 50 feet high, with smooth ovate to lanceolate leaves, and globose fruits the size of a small apple. The numerous yellowish seeds have oily albumen. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 57.*)

"At present the oil from the seeds is used in Calcutta (School of Tropical Medicine) in the treatment of leprosy." (*J. F. Rock.*)

For previous introduction, see S. P. I. No. 52859.

54320. RUBUS sp. Rosaceæ.

From San Salvador, Salvador. Seeds collected by P. H. Dorsett, plant introducer, Department of Agriculture. Received September 30, 1921.

"Seeds secured in the market, San Salvador, September 6, 1921. Cylindric fruits 1½ inches long, 1 inch in diameter, deep maroon in color, with plenty of wine-red juice. Flavor acid but quite pleasant." (*Dorsett.*)

54321. COLEUS ROTUNDIFOLIUS (Poir.) Cheval. and Perr. Men- (*C. tuberosus* A. Rich.) [thaceæ.

From Mount Silinda, Southern Rhodesia. Tubers presented by W. L. Thompson. Received September 13, 1921.

"Tubers which serve as food for the natives of this district, and of which we often partake. The native name is *zwidata.* The tubers may be described as a substitute for Irish potatoes. We find that they are fine prepared in the same way as creamed potatoes. They are not very mealy but could scarcely be called watery. If they could be induced to grow to a larger size, with increase rather than decrease of other good qualities, I think they might be quite a useful plant. I think they are quite prolific yielders. They require quite a long season to mature, and I presume that, if these reach you in condition to grow, it would be necessary to start them in a greenhouse. The tubers send out sprouts much as do sweet potatoes." (*Thompson.*)

For previous introduction, see S. P. I. No. 51768.

54322 to 54325.

From Alipur, Bengal, India. Seeds presented by the Agricultural and Horticultural Society of India, through E. N. Reasoner, Oneco, Fla. Received September 28, 1921.

54322. CASSIA ALATA L. Cæsalpiniaceæ.

A coarse erect branched shrub 5 to 10 feet high, with stout green branches and pinnate leaves up to 2 feet long. The yellow flowers, 1½ inches wide, are in racemes 4 to 20 inches long. The valves of the straight spreading pods have a papery wing running from end to end. The active principle of the seeds is chrysophanic acid. Every portion of the plant is used medicinally. The plant is native to tropical America but is now cultivated all over the Tropics. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 83.*)

For previous introduction, see S. P. I. No. 49989.

54323. DIOCLEA LASIOCARPA Mart. Fabaceæ.

A shrubby plant twining over tall trees, with sparsely pubescent trifoliolate leaves, the somewhat-pointed leaflets 2 to 5 inches long. The purple-violet flowers, with fringed keel and papery deciduous bractlets, are on peduncles 1 to 1½ feet long. Native to tropical American forests. (Adapted from *Martius, Flora Brasiliensis, vol. 15, pt. 1, p. 166.*)

54324. OCHNA SQUARROSA L. Ochnaceæ.

A shrub or small tree with smooth shining leaves 2 to 5 inches long and fragrant yellow flowers an inch long, clustered on the old wood or on short leafless branchlets. The compound drupaceous fruits are black. Native to the East Indies and Burma. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 196.*)

54322 to 54325—Continued.

54325. PETREA VOLUBILIS L. Verbenaceæ.

"A woody climber of exquisite beauty when in full flower. The heliotrope violet-centered blossoms are borne in loose pendent sprays which hang gracefully from the slender arching branches. These, combined with the rigid green leaves, suggest almost an artificial blossom. Native to tropical South America and some of the West Indies." (*H. F. Macmillan.*)

54326. AVENA SATIVA L. Poaceæ. Oats.

From Edinburgh, Scotland. Seeds presented by George Sinclair, manager, Earl of Roseberry's Dalmeny farms. Received September 30, 1921.

"*Scotch Newmarket* oats which by breeding have been increased to a yield of 100 bushels per acre and a weight of 56 pounds per bushel." (*Lou D. Sweet, Denver, Colo.*)

54327 to 54329. NAGEIA spp. Taxaceæ. Yellowwood.

(*Podocarpus* spp.)

From Pretoria, Union of South Africa. Seeds presented by E. Percy Phillips, division of botany. Received September 29, 1921.

"I am sending seeds of species of South African yellowwoods which may interest you. As the genus is now under revision at Kew, the Herbarium numbers of the forestry department should be kept, as they will be quoted in the monograph when published." (*Phillips.*)

54327. NAGEIA sp.
Herbarium No. 3467.

54328. NAGEIA sp.
Herbarium No. 3466.

54329. NAGEIA sp.
Herbarium No. 3392.

54330. CARICA PAPAYA L. Papayaceæ. Papaya.

From Canal Zone. Seeds collected by Dr. David Fairchild, Agricultural Explorer in Charge of the Office of Foreign Seed and Plant Introduction. Received September 16, 1921.

"An oblong-fruited form of exquisite flavor. Grown in the plantations of the Government at Bracho Mindi and served in the hotels of the Panama Railway Co." (*Fairchild.*)

54331. CENTAUREA RAGUSINA L. Asteraceæ.

From Chemin des Grottes St. Helene, Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received September 26, 1921.

"A strikingly ornamental long-lived plant. I have two nearly 30 years old, growing on a perpendicular wall. Very few good seeds are produced and germination seems difficult; any stagnant moisture should be avoided. It is best to mix the seeds with soil, spread the mixture out in a fissure of a rock and keep slightly moist." (*Proschowsky.*)

For previous introduction, see S. P. I. No. 48027.

54332. OCHROMA LAGOPUS Swartz. Bombacaceæ. Balsa.

From Camaguey, Cuba. Seeds presented by Dr. R. L. Luaces, director, Granja Escuela. Received September 23, 1921.

"Seeds from this spring's crop. The seeds are very small and embedded in the lint, which is a silk cotton that does not absorb water, and for this reason it is used for life belts. The wood of the tree is stronger and much lighter than basswood and is being used in aeroplane construction. I believe it will grow well in southern Florida, around Brownsville, Tex., and in parts of California." (*Luaces.*)

For previous introduction, see S. P. I. No. 53490.

54333 to 54335. ANDROPOGON spp. Poaceæ. **Beard-grass.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola, which may be useful for forage." (*Longworth.*)

54333. ANDROPOGON FASTIGIATUS Swartz.

A slender erect smooth annual with flat narrow leaves. The freely branching culms bear broad racemes with conspicuous sterile spikelets and geniculate awns about 1½ inches long. Native to dry open ground from southern Mexico and the West Indies to Brazil. (Adapted from *Contributions from the National Herbarium, vol. 18, p. 279.*)

54334. ANDROPOGON GAYANUS Kunth.

A tall perennial with numerous flowering branches, rather stout racemes of reddish or brownish spikelets, and awns about an inch long bent in the middle. Native to Senegal. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 9, pt. 2, p. 261.*)

54335. ANDROPOGON sp.

Received as *Andropogon annulatus.*

54336 to 54341. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921. Notes adapted from *Bulletin Agricole, de l'Institut Scientifique de Saigon, vol. 2.*

54336. *Cadung.* A variety of the Gocong type, a fine grain maturing January 30, after a growing period of 152 days. Yield 1,652 kilograms per hectare (1,475 pounds per acre). (*P. 43.*)

54337. *Cadung-da.* Sown on June 14, flowered December 25, harvested March 7, after about 266 days of growth. Yield 1,080 kilograms per hectare (900 pounds per acre). (*P. 41.*)

54338. *Cadung Vinhlong.* A variety of the Gocong type. Maturity is February 17 to 25, after a growing season of 183 to 235 days from the date of sowing. The yield is 1,664 to 3,600 kilograms per hectare (1,485 to 3,213 pounds per acre). (*P. 42.*)

54339. *Tam. vuóc.* Of the Gocong type. The growing period is 164 to 179 days, and the yield 1,117 to 1,304 kilograms per hectare (997 to 1,165 pounds per acre). (*P. 42.*)

54340. *Tau chén.* **54341.** *Tra bac.*

54342 and 54343. ECHINOCHLOA PYRAMIDALIS (Lam.) Hitchc. and Chase. Poaceæ. **Grass.**
(*Panicum pyramidale* Lam.)

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola, which may be useful for forage." (*Longworth.*)

A smooth, sparingly branched, somewhat fleshy annual 7 feet tall, with elongate leaves and a long tapering panicle, the relatively slender branches ascending or slightly drooping. (Adapted from *Contributions from the National Herbarium, vol. 18, p. 345.*)

For previous introduction, see S. P. I. No. 51941.

54342. "An aquatic form 3 meters (10 feet) in height." (*Gossweiler.*)

54343. "A rhizomatous aquatic or semiaquatic form, up to 4 meters (13 feet) in height." (*Gossweiler.*)

54344. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921.

Luá chua chan.

54345. ECHINOCHLOA HAPLOCLADA Stapf. Poaceæ. **Grass.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

A tufted perennial up to 8 feet high, native to Nile land and Mozambique. The linear leaves are 6 inches to over a foot long, and the dense erect linear to linear-oblong panicles are 4 to 9 inches long. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 9, p. 613.*)

54346 and 54347. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921.

54346. *Nango.* A fine variety with somewhat elongated grain, of the Gocong type. After a growing period of 159 days it matures about January 8, with a yield of 1,496 kilograms per hectare (1,335 pounds per acre). (Adapted from *Bulletin Agricole de l'Institut Scientifique de Saigon, vol. 2, p. 43.*)

54347. *Nangngoc.* A variety with a normal growing period of 119 to 151 days usually 122 days. The normal yield is 2,000 kilograms per hectare (1,785 pounds per acre). (Adapted from *Bulletin Agricole de l'Institut Scientifique de Saigon, vol. 2, p. 41.*)

54348. ORYZA SATIVA L. Poaceæ. **Rice.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Rootstock tufted, culms numerous, up to 2 meters (7 feet) high. Found with *Echinochloa stagnina* and *E. pyramidalis* in swamps which contain stagnant water up to the time of maturity of the rice. Native to the swampy margins of River Longa, Quissama, Cuanza Sul, Angola. Matures towards July." (*Gossweiler.*)

54349. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saigon, Cochin China. Seeds presented by M. E. Carle, director, Laboratoire de Genetique, Institut Scientifique de l'Indochine. Received September 13, 1921.

Ra xanh. A variety originated at Dinhthoi, Cantho, very productive, but with a small short grain. The yield is from 1,769 to 3,859 kilos per hectare (1,579 to 3,444 pounds per acre) with a growing period of 202 to 218 days. Ripens February 19 to 21. (Adapted from *Bulletin Agricole de l'Institut Scientifique de Saigon, vol. 2, p. 41.*)

54350 to 54352. PANICUM spp. Poaceæ. **Panic grass.**

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola, which may be useful for forage." (*Longworth.*)

54350. PANICUM MAXIMUM Forsk.

"A robust perennial 6 feet or more tall, with short rootstocks growing in immense leafy clumps. The open panicles about a foot long bear numerous smooth, rather small oblong spikelets. Native to Guadeloupe." (*Agnes Chase.*)

For previous introduction, see S. P. I. No. 53956.

54350 to 54352—Continued.

54351. PANICUM MUTICUM Forsk.

"An annual or perennial, semiaquatic grass 1.5 meters (5 feet) in height. Native to Egypt and Arabia." (*Gossweiler.*)

54352. PANICUM sp.

"An erect annual up to 2.5 meters (8 feet) in height." (*Gossweiller.*)

Received as *Panicum synnertonii*, but the seeds received are not this species.

54353 to 54384.

From Chengtu, Szechwan, China. Seeds presented by P. M. Bayne, through J. Burtt Davy, Cambridge, England. Received September 19, 1921.

The only notes received with this shipment were the native names of the various seeds in Chinese characters. These were translated by Dr. T. Tanaka, of the Office of Crop Physiology and Breeding Investigations.

54353. AKEBIA LOBATA AUSTRALIS Diels. Lardizabalaceæ.

"(No. 20.) Eight-month *kua*."

54354. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"(No. 60.) Thick-skinned vegetable."

54355. BRASSICA JUNCEA (L.) Cass. Brassicaceæ. **Chinese mustard.**

"(No. 58.) Blue (green) vegetable."

54356. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 59.) Large *Pai ts'ai*."

54357. BRASSICA sp. Brassicaceæ.

"(No. 50.) Water lily, flower white (some special name; can not be white-flowered water lily from etymology)."

54358. BRASSICA sp. Brassicaceæ.

"(No. 52.) Pink oil vegetable seed."

54359. BRASSICA sp. Brassicaceæ.

"(No. 61.) Large-headed vegetable."

54360. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

"(No. 21.) Earth *kua* fruit."

54361. CANNABIS SATIVA L. Moraceæ. **Hemp.**

"(No. 95.) *Hua ma tsu.* Fire hempseed."

54362. CROTALARIA sp. Fabaceæ.

"(No. 91.) Noisy-bell herb."

54363. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"(No. 88.) Pink valley seed."

54364. FAGOPYRUM VULGARE Hill. Polygonaceæ. **Buckwheat.**

"(No. 63.) *Ch'iao tsu.*"

54365. HELIANTHUS ANNUUS L. Asteraceæ. **Sunflower.**

"(No. 22.) Sun-pointing *ki* (very common name for sunflower)."

54366. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 100.) Greasy fruit."

54353 to 54384—Continued.

54367. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*P. ocymoides* L.)

"(No. 87.) *Su ma.*"

54368. PERISTROPHE TINCTORIA Nees. Acanthaceæ.

"(No. 92.) *Chih chia hua.*"

54369. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adsuki bean.**

"(No. 41.) *Hung tou* or pink *tou.*"

54370. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"(No. 42.) *Lu tou* or green *tou.*"

54371 and 54372. PHASEOLUS CALCARATUS Roxb. Fabaceæ. **Rice bean.**

54371. "(No. 32.) Pink Pa-mountain *tou.*"

54372. "(No. 33.) Yellow Pa-mountain *tou.*"

54373. ROHDEA JAPONICA Roth. Convallariaceæ.

"(No. 93.) Myriad-years blue (very common name.)"

54374 to 54379. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

54374. "(No. 34.) Large yellow *tou.*"

54375. "(No. 35.) Large black *tou.*"

54376. "(No. 36.) Parm-skin large *tou* (large tou is soy bean)."

54377. "(No. 37.) Blue (green) skin large *tou.*"

54378. "(No. 39.) Small black *tou.*"

54379. "(No. 40.) Small yellow *tou.*"

54380. SPINACIA OLERACEA L. Chenopodiaceæ. **Spinach.**

"(No. 72.) *I"o ts'ai.*"

54381. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. **Yard-Long bean.**

"(No. 26.) Linear berry *tou.*"

54382. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"(No. 25.) White dewberry *tou.*"

54383 and 54384. ZEA MAYS L. Poaceæ. **Corn.**

54383. "(No. 82.) Horse-teeth jewel *mai* (barley, wheat, etc., called *mai*)."

54384."(No. 83.) Yellow jewel *mai.*"

54385 to 54395.

From Avondale, Auckland, New Zealand. Seedlings presented by H. R. Wright. Received September 17, 1921. Quoted notes by Mr. Wright.

54385. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

"No. 7. Root grafts, second-generation seedling from *Irish Peach.* This seedling is aphis resistant and has a perfect affinity for the Chinese crab, *Pyrus prunifolia.* I am using it for double working, for all those that will not do direct on prunifolia."

For previous introduction, see S. P. I. No. 31519.

54385 to 54395—Continued.

54386. MALUS PUMILA Mill. Malaceæ. **Paradise apple.**

"No. 8. Root grafts, aphis-resistant *Paradise*, used as a dwarfing stock."

For previous introduction, see S. P I. No. 42638.

54387 to 54392. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

54387. "No. 1. *Bordeaux Reinette.* New blight-proof apple, resembling *Cox's Orange* in color and shape, with a rich aromatic flavor; fruit a good keeper, making an ideal apple for home or export; heavy cropper."

54388. "No. 3. Root grafts, *Delicious* × *Cox's Orange* cross, nearly aphis resistant; a beautiful apple; an early and heavy cropper of superb quality."

54389. "No. 6. Root grafts, *Imm's Seedling.* A large culinary apple, one of the very best for that purpose; good cropper, and aphis resistant. A most promising stock; of upright growth, with very large foliage and a splendid root system."

54390. "No. 2. *Keancy's Winter;* has proved aphis resistant with me."

54391. "No. 3. Plants on own roots, grown from root cuttings of *Ribston Pippin* × *Northern Spy*, cross not yet named; aphis resistant. A superb keeper with a delicious flavor."

54392. "No. 4. A sport from the *Ribston-Spy* cross, differing only in its most peculiar color; aphis resistant. Flavor and keeping qualities superb."

54393. PRUNUS DOMESTICA L. Amygdalaceæ. **Prune.**

"No. 9. A very large black prune, early ripening, before *Petite d'Agen;* should be valuable."

54394. PRUNUS SALICINA × CERASIFERA. Amygdalaceæ. **Hybrid plum.**

"No. 11. An enormous cropper and good shipper; splendid for jam and bottling; a valuable commercial fruit, should be planted largely."

54395. PRUNUS SALICINA × CERASIFERA. Amygdalaceæ. **Hybrid plum.**

"No. 10. *Wright's Hybrid Cherry* plum × *Wright's Early Jap*, cross like cherry plum (*Prunus cerasifera*) in appearance, but larger; good alike for jam, bottling, and dessert. The tree is very upright in growth and should make a good hedge."

54396 to 54399. ARISTIDA spp. Poaceæ. **Grass.**

From Loanda, Angola Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mision, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola found in the arid coast region and might be useful for forage in arid conditions in the United States." (*Longworth.*)

54396. ARISTIDA ADSCENSIONIS L.

"A tufted weedy annual 6 to 12 inches tall, with dense narrow panicles; the awns of the crowded spikelets are horizontally spreading." (*Agnes Chase.*)

For previous introduction, see S. P. I. No. 15334.

54397. ARISTIDA HORDEACEA Kunth.

"An annual about a foot tall, bent at the lower joints, with bushy barleylike heads about 3 or 4 inches long." (*Agnes Chase.*)

54396 to 54399—Continued.

54398. ARISTIDA PAPPOSA Trin. and Rupr.

A grayish species native to Nubia and Senegal, with smooth culms a foot or more long. The narrow rolled leaves are 3 to 6 inches long, the narrow oblong panicles 4 to 5 inches long with erect somewhat appressed branches. The awns are feathery above the middle. (Adapted from *Steudel, Synopsis Plantarum Graminearum, p. 144.*)

54399. ARISTIDA sp.

Received as *Aristida rhiniochloa* (?).

54400 to 54406.

From Loanda, Angola, Africa. Seeds presented by J. Gossweiler, through H. A. Longworth, agricultural missionary, Angola Mission, Malanzhe, Angola. Received September 16, 1921.

"Grasses of Angola which may be useful for forage."

54400. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ. **Bermuda grass.** (*Cynodon dactylon* Pers.)

"Found in the arid coast region and might be useful for arid conditions in the United States." (*Longworth.*)

For previous introduction, see S. P. I. No. 51335.

54401. STREPTOLOPHUS SAGITTIFOLIUS Hughes. Poaceæ.

"A tropical African annual much branched from the base. A rare grass." (*Gossweiler.*)

"Freely branching, decumbent, the blades conspicuously sagitttate on slender petioles spreading from the sheaths; inflorescence of rather long-stalked burs." (*Agnes Chase.*)

54402. ENTEROPOGON MELICOIDES (Kœnig) Nees. Poaceæ.

"Found in the arid coast region and might be useful for arid conditions in the United States." (*Longworth.*)

"A tall slender perennial with narrow leaves and a one-sided spike of crowded awned spikelets." (*Agnes Chase.*)

54403. ERAGROSTIS CHAPELLIERI (Kunth) Nees. Poaceæ.

"A wiry perennial 2 to 3 feet tall, with narrow leaves and russet-colored narrow panicles 2 to 6 inches long. Native to Madagascar." (*Agnes Chase.*)

54404. ERAGROSTIS FASCICULARIS Trin. Poaceæ.

A densely tufted species with strong roots, native to the Guinea Coast. The culms bear distant clusters of straight branches. The smooth leaves are narrow and rolled, and the panicles are narrow and dense. (Adapted from *Steudel, Synopsis Plantarum Graminearum, p. 270.*)

54405. NAZIA ALIENA (Spreng.) Scribn. Poaceæ.

"Found in the arid coast region and might be useful for arid conditions in the United States." (*Longworth.*)

"A low annual with rather short, broad, conspicuously ciliate leaves and spikes 1 to 4 inches long of minute burs, the bur falling entire." (*Agnes Chase.*)

54406. VETIVERIA NIGRITANA (Benth.) Stapf. Poaceæ.

"A robust perennial growing in clumps, with elongate panicles of slender whorled branches with prickly spikelets toward the ends. Differs from the common species in having delicate awns." (*Agnes Chase.*)

54407 to 54409.

From Chengtu, Szechwan, China. Seeds presented by P. M. Bayne, through J. Burtt Davy, Cambridge, England. Received September 19, 1921.

The only notes received with these seeds were the native names in Chinese characters. These were translated by Dr. T. Tanaka, of the Office of Crop Physiology and Breeding Investigations.

54407. AMARANTHUS PANICULATUS L. Amaranthaceæ.

No. 86. "Savage's chestnut."

54408. CUCURBITA sp. Cucurbitaceæ.

No. 12. "Winter *kua*."

54409. IPOMOEA REPTANS (L.) Poir. Convolvulaceæ. (*I. aquatica* Forsk.)

No. 49. "*Yung* vegetable."

54410. ZEA MAYS L. Poaceæ. Corn.

From Supe, Peru. Seeds presented by Thomas W. Voetter, American consul. Received September 16, 1921.

"In December, 1919, I obtained an ear of corn at Supe, Peru. Part of this was planted at Antofagasta, Chile, and gave very satisfactory results. The plant grew very tall, and on some of the stalks four ears appeared. The ears were long and the grains tender, juicy, and sweet.

"Some of the grains from the original ear were sent to Fort Wayne, Ind., and planted there in 1920, but no ears formed there before the coming of frost. It is evident that this variety needs a long growing season and might do very well and prove very satisfactory in some southern State." (*Thomas W. Voetter.*)

54411 to 54424. BRASSICA spp. Brassicaceæ.

From Okitsu, Shizuokaken, Japan. Seeds presented by Dr. T. Onda, director, Imperial Horticultural Experiment Station, through T. Ito, chief, Plant Industry Division, Imperial University of Agriculture and Commerce, Tokyo. Received September 30, 1921.

New and rare types of salad plants and green vegetables, etc. Notes adapted from Inouma, Japanese Mustards; translated by T. Tanaka, of the Office of Crop Physiology and Breeding Investigations.

54411. *Hatakena* (farm vegetable), from Kyoto Province, much resembles *aburana*, the common oil vegetable, but is paler. It is commonly used as a kind of salad. The yellow flowers are three-quarters of an inch across and bear four light-green honey glands. The radical leaves resemble those of daikon (*Raphanus sativus*). The many-seeded pods are 4½ inches long.

54412. *Hinona* (vegetable of Hino), from Shigaken. A plant produced in the village of Hino, Omi Province, with leaves like *aburana* and a little longer, the larger veins showing reddish purple. The root, 5 to 7 inches in circumference and 7 to 8 inches long, is a beautiful purplish red. The yellow petals are rounder than those of *aburana*.

54413 to 54415. A variety with sparingly incised leaves and white stalk called *Mibuna* from the name of the village where it originated, in the vicinity of Kyoto. The leaves are soft and of good flavor and are highly esteemed.

54413. *Mibuna* (common).

54414. *Mibuna, okute* (late).

54415. *Mibuna, wase* (early).

54411 to 54424—Continued.

54416 to 54419. *Midzuna* (water vegetable). A variety with several hundred tufted leaves growing from one root; several flower stalks grow up between the leaves. In general character the plant resembles *aburana* except that the deeply incised serrate leaves are more slender and the small slender pods are round instead of flat. This variety is commonly planted in Mino Province and is called *senenzi* (thousand fibers) in the city of Kyoto.

54416. *Midzuna, nakate* (midseason).

54417 and 54418. *Midzuna, okute.* A large coarse variety of *midzuna* which is planted in autumn. The leaves are deeply incised but not so slender as those of the common *midzuna.* It tastes slightly bitter like *midzuna* but is without the disagreeable odor of *takana.*

54417. *Midzuna, okute* (late).

54418. *Midzuma, okute dai* (late and large).

54419. *Midzuna, wase* (early).

54420. *Suigukina.* A variety extensively cultivated at Kamo Village, Yamashiro Province, and mostly used to make "aemono" (mixed salad). The plant is similar to *aburana* except that the radical leaves somewhat resemble those of *midzuna* and the stem leaves have much deeper incisions. The yellow flowers are 1¼ inches across.

54421 to 54424. *Takana.*

54421. *Takana* (common). A plant 3 to 4 feet high, with large stiff blunt-tipped leaves. In spring the stems and leaves are picked and eaten, therefore the name *kakina* (picked vegetable) or *takana.* It has a pungent taste and when boiled has a bad odor. The flowering season follows the ordinary *karashina.*

54422. *Takana, katsnona* (especially delicious one). For description, see S. P. I. No. 54421.

54423. *Takana, murasaki* (purple variety). Similar in general appearance to *takana* (common) but with incised sharply serrate leaves of a purplish color. The taste is less pungent than that of *takana.*

54424. *Takana, shiro* (white). For description, see S. P. I. No. 54421.

54425. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Mongalla, Anglo-Egyptian Sudan. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received December 9, 1920. Numbered September, 1921.

"(No. 1488. Mongalla, Anglo-Egyptian Sudan. August 8, 1920.) Dark hull, not awned." (*Shantz.*)

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