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Issued September 15, 1917.

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

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1914.

(No. 39; Nos. 37647 to 38665.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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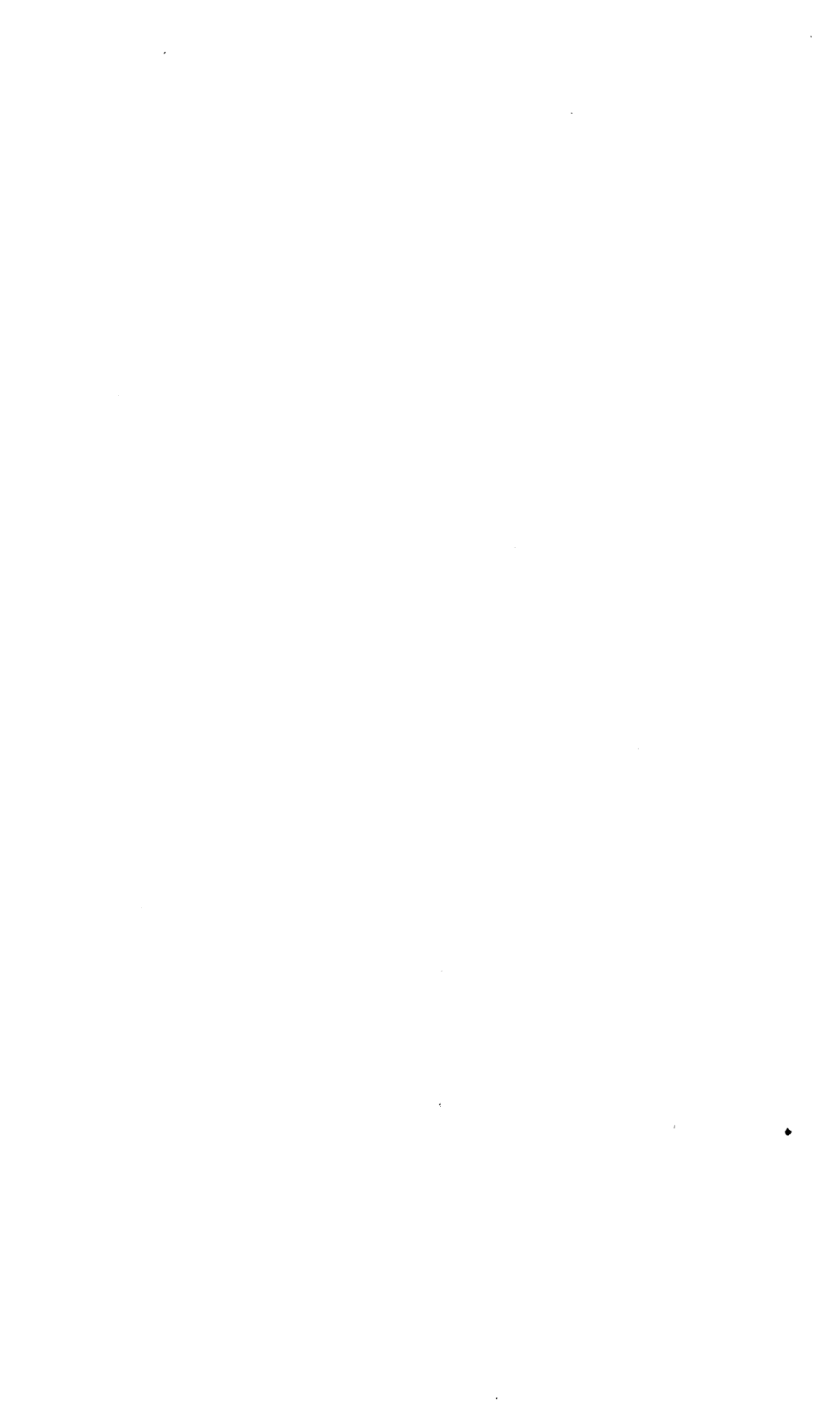
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1914 (NO. 39; NOS. 37647 TO 38665).

INTRODUCTORY STATEMENT.

This inventory, which covers the quarter closing just before the outbreak of the European war, is the largest and contains the most variedly interesting plant material which has come in during any quarter since the Office of Foreign Seed and Plant Introduction was organized in 1898. It describes or lists 1,019 introductions, which is an average of more than 13 for each official working day, and a perusal of the notes will give a good idea of the world-wide operations of this office. It might be interesting to point out that a large amount of the material which is brought in is secured by the operations of an exchange system. During the year, for example, 537 shipments of seeds or plants were sent to official and special private experimenters abroad. The office is becoming, in fact, an international office of seed and plant exchange, which, in many instances, has been of as much value to foreign agriculturists as to the American farmer.

To look over such catalogues as this—of a thousand different plants—is, even to experiment-station men, so much of an undertaking that with the first inventory, published in 1898, the custom was established of mentioning in an introductory statement the more apparently promising and interesting introductions described. There are so many which deserve special mention in this one that the writer has attempted a rough classification of them.

CEREALS.

From the large number of cereals which have come in for trial or have been gathered for the monographic studies of experimenters with these crops, there might be mentioned the introduction of the

NOTE.—This bulletin is a record of new or little-known seeds or plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

two principal rice varieties of Tarragona, Spain (Nos. 37696 and 37697); a collection of South African wheats (Nos. 38618 to 38631), including the best Boer sorts adapted to the poor, unmanured lands of that region; 11 varieties of wheat (Nos. 38343 to 38353) which have been developed by the wheat breeders of the Department of Agriculture of New South Wales and are considered worthy of trial in our own Southwest; a selected Danish 2-rowed barley (No. 37706) and a 6-rowed variety (No. 37707), showing peculiar resistance to smut and leaf-spot, and a yellow spring oat of good quality (No. 37708), the results of selections carried on by breeders of the Royal Danish Agricultural Society of Copenhagen; the dwarf Black Grushevsk sorghum (No. 37733) from the farm of the Grand Duke Nicholas in the Ekaterinoslav Province of Russia, which is distinguished by early maturity, even in very cold summers, and is the best yielder of 20 sorts tested there; and a variety of maize (No. 38544) which is grown by the Panetes Indians of the upper Gy Parana (Machabo) River of Brazil, secured by Mr. Leo Miller, of the Roosevelt expedition, the first white man to visit the tribe.

FORAGE CROPS.

Of forage crops the most remarkable included in this inventory is that reported by Mr. J. B. Thompson, of the island of Guam, *Merremia hederacea* (Burm.) Hallier (No. 38647), a creeping plant of the morning-glory family, which appears to be more palatable to stock than any of the other forage plants on the island and is capable of being used continuously as pasturage. The Brazilian expedition of the office, composed of Messrs. Dorsett, Shamel, and Popenoe, during its stay in southern Brazil secured seeds or plants of 59 wild or cultivated forage grasses (Nos. 37983 to 38041). These will probably be of special interest to southern agriculturists. The Apitrèfle, or bee clover (No. 37937), a variety of red clover so named because the honeybees are able to collect nectar from its much shortened, more open flowers, sent by Prof. G. Martinet, of Lausanne, Switzerland, will interest bee men as well as agriculturists. Two annual species of clover from Budapest, *Trifolium angulatum* Waldst. and Kit. and *T. parviflorum* Ehrh. (Nos. 37681 and 37682), which remain dwarf in dry years, serving as pasturage, but grow high enough for hay on wet spots or in wet years, may possibly fit in with American requirements; and a wild type of Kentish white clover (No. 38579), which experiments at Armstrong College, Cockle Park, England, have shown is better than Dutch clover, may prove suitable for acclimatization here. Mr. Meyer found several hardy varieties of Chinese sugar cane (Nos. 38257 and 38332) at Chengchow and Kaifeng, in Honan Province,

which might be grown above the natural cane belt in the South and be useful for fodder, if not for sirup production. Whether or not an Italian rye-grass (No. 37709) of especially early-maturing habit, selected from single plants by the Royal Agricultural Society of Denmark, a meadow fescue (No. 37710) very resistant to the rust (Puccinia), and the orchard-grass variety "Olsgaard" (No. 37711), all from Copenhagen, will thrive in this country, where climatic conditions are so different, is a question to be determined by trial. With the exception of the Algaroba of Hawaii (Prosopis), forage trees seem to have made little progress in agriculture in the United States, and it is consequently a question whether the Jua tree of the caatinga land around Joazeiro, Brazil (No. 37923), a species of jujube, the leaves and the fruits of which are eaten by stock, will make a place for itself in this country.

NUT-BEARING TREES.

Two nut-bearing trees, the galo, *Anacolsa luzoniensis* Merrill (No. 38395), a Philippine species from the mountains of Cavite, with a kernel having the flavor of corn, and the k'uei li tzü (No. 37799), a superior large-fruited form of the blight-resistant Chinese chestnut, *Castanea mollissima* Blume, which Mr. Meyer found south of Sianfu, Shensi, are described in this inventory.

TIMBER, SHELTER-BELT, AND SHADE TREES.

Of trees for timber, windbreak, or shade purposes the following will be of interest: The true *Catalpa bungei* C. A. Meyer, first introduced in 1905 from Peking by Prof. Sargent, of the Arnold Arboretum, coming in through Mr. Meyer from Shansi (No. 38254), where, as he reports, it grows 100 feet in height and 10 to 15 feet in circumference, being planted by the Chinese for its strong, light, durable wood, which somewhat resembles black walnut in appearance, and another introduction of *Catalpa bungei* (No. 38419) from the Caucasus, where presumably it has been introduced from China; a quick-growing form of white poplar, *Populus tomentosa* Carr. (No. 38255), much planted by the Chinese for its timber; Fortune's Paulownia (No. 38184), which is used in China on sandy land as a soil binder and windbreak and produces very light wood; a 60-foot Himalayan birch, *Betula utilis* D. Don (No. 38287), which, though not hardy in Great Britain, may thrive in this country, where we have more sunlight; an English elm, *Ulmus hollandica vegeta* (No. 38492), of very vigorous, rapid growth, attaining 100 feet in height, a hybrid between *Ulmus glabra* Miller and *U. scabra* Miller, an old specimen of which may be seen at Mr. Walter Hunniwell's

noted place at Wellesley, Mass.; molave, *Vitex parviflora* A. Juss. (No. 37705), the forest tree producing one of the best high-grade building timbers in the Philippines; and the sycamore tree of the Bible, *Ficus sycomorus* L. (No. 37729), a long-lived tree much esteemed for its shade, which the Arabs beat to induce it to bear its inferior figs.

FIBER PLANTS.

Two fiber plants were brought from Brazil by the expedition sent there in October, 1913: The caroá, *Neoglaziovia variegata* (Arruda) Mez, from Joazeiro (No. 37794), a species of Bromeliaceæ growing wild in the caatinga lands along the Sao Francisco River and used by the natives for hammock ropes, and the piassava palm, *Attalea funifera* Martius (No. 37868), from Bahia, from the fiber of which most excellent brooms and brushes are made, while from the hard nuts buttons are manufactured.

VEGETABLES.

Of new vegetables there are a number of unusually interesting species. Mr. Wester sends from Manila a new variety of roselle (No. 37698) which matures 20 days earlier than the Victor variety and may be useful as a jelly producer farther north than the Victor can be grown; he directs attention also to a cucumber (No. 37700) introduced into the Philippines from Seharunpur, which has shown resistance to insect attacks and is proving to be one of the best sorts of cucumbers for trial in the Tropics; E. Webb & Sons, of Wordsley, England, have sent in No. 37807, which purports to be a hybrid between thousand-headed kale and kohlrabi, a vegetable with a thickened stem growing 5 feet high, which is suitable for forage during the winter; Mr. Meyer has secured plants of the Chinese ginger (No. 38180), the candied rhizomes of which are shipped from China to America in great quantities; five varieties (Nos. 38356 to 38360) of the very best starch, table, and feeding potatoes of Polish origin, bred by the Polish plant breeder, Henry Dotowski, have been secured; from New Zealand has been brought in the New Era potato (No. 37947), which, according to J. G. Harris, of Raetihi, has not been affected by potato blight, whereas other varieties on either side of it have been blackened. What resembles closely the yampee yam of Jamaica, *Dioscorea alata* L. (No. 37943), seems to have secured a foothold at Avon Park, Fla., and is doing as well there, according to Mr. J. De Hoff, as the sweet potato. It deserves serious study. From the region about Coban, Guatemala, Mr. O. F. Cook, during his expedition there in 1914, sent seeds of the remarkable pacaya salad palm, *Chamaedorea* sp. (Nos. 38403 and 38404),

which produces from four to six large, fleshy, edible inflorescences, beginning with the third or fourth year. These inflorescences, or pacayas, are about the size of ears of sweet corn and when cooked make a delicate salad. It is believed that the species will grow in southern Florida.

FRUITS.

A remarkable number of new fruits and interesting varieties of our staple fruits are represented. Mr. Meyer has added to the list of those already introduced 24 new varieties of oriental persimmon, among these being 11 from Tongjapu (Nos. 37648 to 37658), including an especially valuable variety for drying purposes, which is used to make a dried-fruit product comparable to the dried fig; an improved variety of the *Diospyros lotus* L. (No. 37811) used for stocks in the orchards established on the loess table-lands, where they are subjected to an unusual amount of drought and alkali; five new forms of persimmon from Shensi Province (Nos. 37661 to 37665); the salt-bag persimmon and the honey-pot persimmon (Nos. 37672 and 37678), the latter no larger than a cherry, a prolific bearer, and very showy when loaded with fruit; five varieties from Shantung (Nos. 37948 to 37952), one of which is eaten pickled in brine. A staminate variety (No. 38482) has been found in Bermuda by Mr. Peter Bisset, which ought to be valuable as a pollinizer.

The importance of finding a blight-proof pear has induced Mr. Meyer to continue his search for a better flavored melting Chinese pear, and he has sent in from Shensi, Honan, and Shantung 15 varieties of more or less promise for breeding purposes (Nos. 38240 to 38242, 38262 to 38271, 38277, and 38278); and Rev. Hugh W. White has sent the Tangshan pear (No. 37982), the only pear he has seen that does not have a woody taste, but is sweet and juicy.

An ancient apricot variety (No. 37744), from the Dakhleh Oasis of Egypt, sent in by Prof. S. C. Mason during his expedition to Egypt and the Sudan in search of date varieties, may prove of value in our own desert region, since it is able to withstand an annual temperature of 75° and monthly means as high as 90° F.

The growing importance of the Chinese jujube as a fruit for the Middle West is emphasized by the receipt from Mr. Meyer of 14 large-fruited varieties (Nos. 38243 to 38247, 38249 to 38253, and 38258 to 38261), some with fruits as large as or larger than ordinary hens' eggs, being more like small pears. They can be eaten fresh, stewed with rice, baked, preserved with honey, sugar, etc., and Mr. Meyer reports in the neighborhood of Paihsiangchen an increasing area, which already amounts to several thousand acres, almost entirely given over to jujube culture.

A red-fleshed, large-fruited variety of Chinese haw (No. 38176), which can be kept for several months, was secured by Mr. Meyer. The famous Fei peach (No. 38178), imported once before by Mr. Meyer, but which died in transit, is now growing at our gardens from additional material which he obtained. It is considered the best peach in China and, because of its large size, lateness (middle of October), good shipping qualities, and aromatic flavor, may be a valuable addition to American commercial varieties.

Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, as a result of their expedition to Rio de Janeiro and Bahia, Brazil, sent in scions from 24 specially studied trees of the Bahia navel orange, selected because of their superior bearing capacity, uniformity of fruit, sweetness, general vigor, lack of spines, and a tendency to bear throughout the year. They also sent in the Selecta orange of Rio de Janeiro (Nos. 37796 and 37840 to 37842), a variety which has been under culture there for more than a hundred years and is now, because of its sprightly flavor, more extensively cultivated there than the navel orange, notwithstanding the fact that it contains seeds; the pear orange (Nos. 37797 and 37843), which bears in the off season of the Selecta pear-shaped fruits of good quality; the bitter orange, laranja da terra (No. 37775), and the seedy sweet orange, laranja da china (No. 37776), both of which are used as stocks for the navel orange in southern Brazil; and the lime orange (No. 37784), a variety highly esteemed for ades, having a flavor intermediate between that of an orange and a lime. Mr. Harry Boyle, who secured the Nakon Chaisri seedless Siamese pummelo (No. 37724), making a special trip to Bangkok from the Philippines, reports that it is not always seedless in Siam. The alamoen from Surinam (No. 37804), fruits of which were sent in by Mr. James Birch Rorer, of Trinidad, is a superior and very distinct variety of grapefruit with peculiarly juicy, tender flesh which does not squirt when one thrusts a spoon into it. The seedless pummelo (No. 37780) secured by the Brazilian expedition may also be of value.

Such citrus relatives as the desert kumquat, *Eremocitrus glauca* (Lindl.) Swingle (No. 37712), and *Atalantia monophylla* DC., from India and Ceylon (No. 38511), may be of great value in breeding new types of citrus trees.

Of more strictly subtropical fruits, the following are new to the United States: A wild, remarkably sweet fruit allied to the longan, *Euphoria cinerea* Radlk. (No. 38374), from Cavite Province, in the Philippines; four varieties (Nos. 38478 to 38481) of a Guatemalan fruit from Coban called the injerto, *Achradelypha viridis*, similar to but hardier and better than the sapote; the pitaya (No. 38601), a pleasant-flavored, deep-purple fruit produced by an epiphytic *Cereus*;

a rare species of *Anacardium* (No. 38209) from Cuba, related to the cashew, which might prove a good stock for that fruit; the fruta de condessa (No. 38171), an indigenous annonaceous fruit, *Rollinia deliciosa* Safford, from Rio de Janeiro; the guabiroba, *Campomanesia fenzliana* (Berg) Glaziou (No. 37834), a Brazilian myrtaceous fruit resembling the guava, but stronger flavored and highly esteemed for jellies; three new *Eugenias* with edible fruits, suited to culture in Florida (Nos. 37830 to 37832); the bright yellow-fruited *Rheedia brasiliensis* (Mart.) Planch. and Triana (No. 37802) from Rio de Janeiro, strongly resembling in taste the famous mangosteen; the imbu, *Spondias tuberosa* Arruda (Nos. 37861 to 37865), from Januaria, one of the most popular fruits of the interior of Brazil.

The most important addition to subtropical fruits, however, is doubtless that made by the Guatemala expedition under the charge of Mr. O. F. Cook, in the shape of 24 varieties of hard-shelled avocados (Nos. 38477, 38549 to 38564, 38578, 38581, 38583, 38587, and 38638 to 38640) collected in the region of Coban, Antigua, and the city of Guatemala, some of them at an altitude of 5,000 feet. As these ripen late, in the winter and spring, and are of good quality, some of them should be of special value in assisting the development of that remarkable new fruit industry which is rapidly getting on its feet in southern California and southern Florida.

MISCELLANEOUS PLANTS OF INTEREST.

The discovery of a new oil plant seems to have been made in the Ngart, *Plukenetia conophora* Muell. Arg. (No. 38644), a creeping plant from Kamerun, which is cultivated in the cornfields there and bears nuts the size of walnuts which contain 53.8 per cent of an oil similar to linseed oil, which is used for cooking and also as a drying oil. From the leaves of the carnauba wax palm, *Copernicia cerifera* Martius (No. 37866), a wax is secured that was formerly used for phonograph records. Their fruits are said to be an excellent hog feed, and a grove of palms for hog pasturage seems not to be an impossibility.

The Chia, a species of *Salvia* (No. 38048), from the swollen seeds of which, according to Purpus, the Mexicans make a refreshing drink which was used by the ancient Aztecs, should interest amateurs in the South, as well as the ava plant, *Piper methysticum* Forster (No. 38291), from which the South Sea Island kava is made. The true gum-arabic acacia, *Acacia verek* Guill. and Per. (No. 38524), from Khartum, may be capable of acclimatization in our southwestern desert region.

EDITORIAL NOTE.

Chinese place and plant names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 11, 1916.

INVENTORY.

37647 to 37678.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 2, 1914. Cuttings of the following, except as noted; quoted notes by Mr. Meyer unless otherwise indicated.

37647. SYRINGA SP. Oleaceæ.

Lilac.

“(No. 1107. From Sianfu, Shensi, China. January 30, 1914.) A lilac of slender growth, the flowers of which are said to be of a peculiar deep shade of blue. Though the individual panicles are small, they are produced in such profusion as to make a striking impression. Obtained, like the cuttings listed under the preceding number, from the garden of the English Baptist Mission Hospital at Sianfu.”

37648 to 37658. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From the village of Tongjapu [Tungchiaothen], near Fuping, Shensi, China. February 3, 1914.

37648. “(No. 1109.) A Chinese dry-meated variety of persimmon, of medium large size and round-oblong shape; color, dark orange-red; contains seeds as a rule. This variety is a good keeper and is also one of the best sorts for drying purposes. Chinese name *Ta kou tzü niu hsin shih tzü*, meaning ‘big-hooked oxheart persimmon.’ To obtain a superior quality of dried persimmons, the following method is used with this variety: In early October sound fruits are picked, which, although ripe, must still be hard. Care should be taken to have the peduncle with a piece of twig attached to each fruit. The fruits are peeled by means of a small, special knife, an average worker peeling 2,000 persimmons a day, though an expert brings it up to 3,000. The peeled fruits are tied, by means of their peduncles, to loosely twisted but strong strings, which hang in pairs vertically from horizontal beams put up especially for this work. From 200 to 300 fruits are tied to each string, the work of tying being started by putting a couple of fruits at the bottom first, so as to keep the strings taut, after which the work progresses from top to bottom. The fruits are now left hanging for about 20 days in a warm, sunny situation, where, if possible, the wind can also blow, but where there is freedom from dust. The persimmons should be squeezed and manipulated by hand every four or five days to assist them in drying uniformly and to prevent them from becoming hard in spots. After they have dried thus for about three weeks, they are taken down, strings and all, and a cool place is selected, where they are all put into a big heap and covered with matting. They are now allowed to sweat for 10 days, during which process a dry, white, powdery sugar forms on the surface of the fruits. When sufficiently cured they are hung up again for a couple of

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

days, preferably in the wind, to let them dry. Meantime the peelings have been carefully dried in the sun and kept in airy baskets. The fruits are now taken from the strings and put into baskets and jars with the dried peelings between and over them, and they are now ready for the consumer.

"Another method of drying, which is often practiced with the smaller varieties, is to run a knife point in a spiral or horizontal way through the skin of the fruits, then to put them in the sun on coarse matting. After they have been drying for several weeks they are thrown into a pile and covered with matting or sack-ing, allowing them to sweat. When through with this process they are ready for the market. Persimmons treated in this way are, as a rule, of a quality much inferior to those that have been given more care, but on the other hand they sell so cheaply that even coolies and beggars regale themselves on them.

"These dried persimmons are a most wholesome and pleasant food, comparing very favorably with dried figs, and often even preferable to them, being of less cloying sweetness and not possessing the multitude of objectionable small seeds. There are large sections in the United States, especially in the Southwest, where no doubt the dried-persimmon industry could be successfully established, and, with up-to-date methods of drying and curing, a much cleaner and probably superior article could be obtained than the product seen in China, and the nation would be richer by a new and wholesome food product. Besides these dried persimmons, the Chinese manufacture sugar, spirits, and vinegar from different varieties."

37649. "(No. 1110.) A Chinese variety of persimmon, said to be large, of flat shape with circular incisions, of orange color; seedless, having in some fruits furrows on the top. The fruits do not keep well, and they resist drying. Chinese name *Shêng ti shih tzü*, meaning 'measure-box persimmon.' This variety seems to be like the Tamopan."
37650. "(No. 1111.) A Chinese variety of persimmon, said to be large, of square, flat shape; of reddish color; partly seedless. A good keeper. Local name *Mu shih tzü*, meaning 'wood persimmon.'"
37651. "(No. 1112.) A Chinese variety of persimmon, said to be of small to medium size, of red color, with blotches here and there on the skin, seedless, and of very fine flavor. Local name *Chi hsin hung shih tzü*, meaning 'chicken-heart red persimmon.'"
37652. "(No. 1113.) A Chinese variety of persimmon, said to be of small to medium size, of rounded form, color red, partly seedless; can not be kept long, fresh or dried. Local name *Shan ko tan shih tzü*, meaning 'mountlike persimmon.'"
37653. "(No. 1114.) A Chinese variety of persimmon, said to be small, of round-oblong shape, red, seedless. Good only when fresh. Local name *Chi chien hung shih tzü*, meaning 'tongue-point red persimmon.'"
37654. "(No. 1115.) A Chinese variety of persimmon, said to be small, of round-oblong shape, color orange-red, partly seedless;

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

can not be dried or kept long. Local name *Mao chien shih tzü*, meaning 'hairy point persimmon.'

37655. "(No. 1116.) A Chinese variety of persimmon, said to be medium large, of flattened, square shape, with four vertical furrows, of orange-red color, partly seedless; can not be dried or kept long. A rare variety. Local name *Pan shih tzü*, meaning 'flat persimmon.'

37656. "(No. 1117.) A Chinese variety of persimmon, said to be small, of round-oblong shape, with furrows running vertically; color yellowish red; partly seedless; can not be dried or kept long. Local name *Shui shih tzü*, meaning 'water persimmon.'

37657. "(No. 1118.) A Chinese variety of persimmon, said to be small, of round-oblong form, color bright red, seedless; can be kept fresh for a long time. Local name *Huo kuan shih tzü*, meaning 'fire-pot persimmon.' This variety and other small sorts are sometimes put into jars with fresh water for a couple of weeks, after which treatment they have acquired quite a different taste, losing much of their sweetness and often being just a little tart."

For an illustration of the fruit of the fire-pot persimmon, see Plate I.

37658. "(No. 1119.) A Chinese variety of persimmon, said to be small, of yellowish color, having many seeds. Thought to be a hybrid between *Diospyros kaki* and *D. lotus*. Local name *Ssü pu hsiang shih tzü*, meaning 'different persimmon.'

37659. ZIZIPHUS JUJUBA Miller. Rhamnaceæ.
(*Ziziphus sativa* Gaertn.)

Jujube.

"(No. 1123. From village of Shiyapu, Shensi, China. February 4, 1914.) A variety of jujube having large fruits of barrel shape, of a beautiful light-brown color. Can be eaten fresh or put up in weak brandy; a really fine-looking jujube. Chinese name *Ma lien tsao* (Ma lien jujube), referring to the supposed fact that this jujube resembles the flower bud of a terrestrial orchid, with brownish flowers (*Cymbidium* sp.)."

37660. THUJA ORIENTALIS L. Pinaceæ.

Arbor vitæ.

"(No. 1127. From near Chaoyi, Shensi, China. February 7, 1914.) A globular form of the oriental arbor vitæ, of very dense growth. Valuable as an appropriate tree for cemeteries and for places of dignity. *Thuja orientalis* is one of the most beloved trees of North China and is much planted in temple courts and on burial grounds. It withstands an astonishing amount of drought, neglect, and alkali, and it may be of special value to certain sections of the United States."

37661 to 37665. DIOSPYROS KAKI L. f. Diospyraceæ.

Persimmon.

From the village of Yukotsun, near Puchowfu, Shansi, China. February 8, 1914.

37661. "(No. 1129.) A Chinese variety of persimmon, said to be large, of flat, square shape; of reddish color; partly seedless. Excellent for drying purposes. Is of such good quality when dried that formerly a shipment was made every winter to the imperial court at Peking. Sells locally at 1 mace of silver per catty (7 cents gold for 1½ pounds). Local name *Ch'ing shih tzü*,

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

meaning 'green persimmon.' It is curious to note that the Chinese say that the higher one can go into the mountains and the nearer to the limit of successful culture, the better flavored the persimmon fruit becomes and the more bountiful the crops, even though the trees are not so large as on the plains and are not as long lived. In this way the persimmon seems to resemble the peach remarkably closely."

37662. "(No. 1130.) A Chinese variety of persimmon, said to be large, of round-oblong shape, color reddish, partly seedless. Supplies a superior product when dried; can also be kept fresh for a long time. Local name *Niu hsin ta shih tzü*, meaning 'oxheart big persimmon.'"

37663. "(No. 1131.) A Chinese variety of persimmon, said to be of medium size, barrel shaped, and of yellow color; contains seeds; a good keeper, but not suitable for drying. Local name *Lou hu shih tzü*, meaning 'basket-jar persimmon.'"

37664. "(No. 1132.) A Chinese variety of persimmon, of small to medium size, of flattened round shape with top regularly sunken, and of orange color; partly seedless; can be kept fresh throughout the winter when stored in a cool place. Does not dry well. Chinese name *Ching mien shih tzü*, meaning 'mirror-face persimmon.' The Chinese around Puchowfu cultivate several hundred acres of this variety, solely for the purpose of distilling a brandy from the fruits, which possesses a slightly bitter flavor. With western methods, no doubt a superior sort of spirits could be made from the persimmon, or even perhaps an alcohol, fit for household uses."

37665. "(No. 1133.) A Chinese variety of persimmon, said to be small, of round shape, color reddish; partly seedless; can be dried and also kept fresh for a long time. Local name *P'ing shih tzü*, meaning 'flat persimmon.'"

37666 and 37667. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

From the village of Kenyangtchun, near Puchowfu, Shansi, China. February 10, 1914.

37666. "(No. 1134.) A Chinese variety of persimmon, said to be very large and heavy, of flat shape, slightly furrowed; color reddish; seedless; of fine quality either fresh or dried. Local name *Ch'ing shih tzü*, meaning 'green persimmon.' This may turn out to be the same as No. 1129 [S. P. I. No. 37661]."

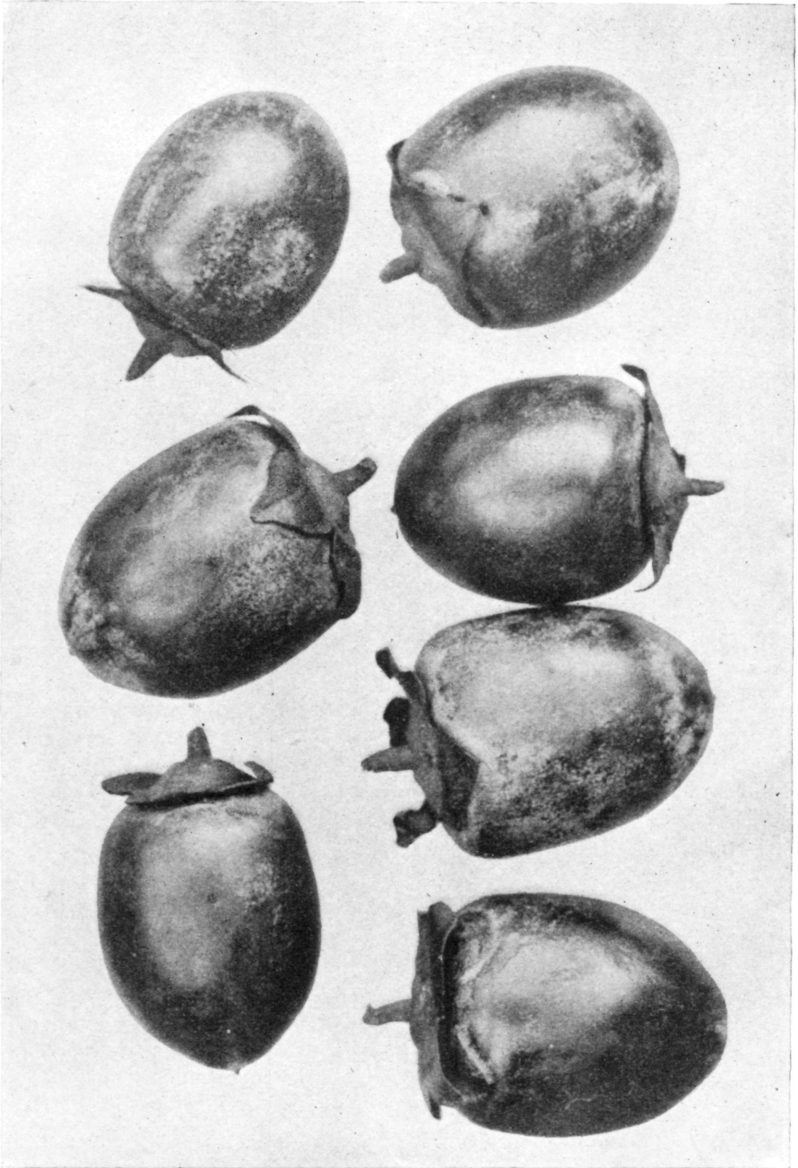
37667. "(No. 1135.) A Chinese variety of persimmon, said to be large, of round shape, with the tops well rounded off; color reddish; contains seeds; can be dried well, supplying a good product. Local name *K'uei shih tzü*, meaning 'crown persimmon.'"

37668. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. Jujube.
(*Ziziphus sativa* Gaertn.)

"(No. 1139. From near Puchowfu, Shansi, China. February 10, 1914.) A variety of jujube bearing large fruits of round-oblong form, color dark mahogany brown. Good for drying, as well as for eating fresh. Chinese name *Ta tsao*, meaning 'big jujube.'"

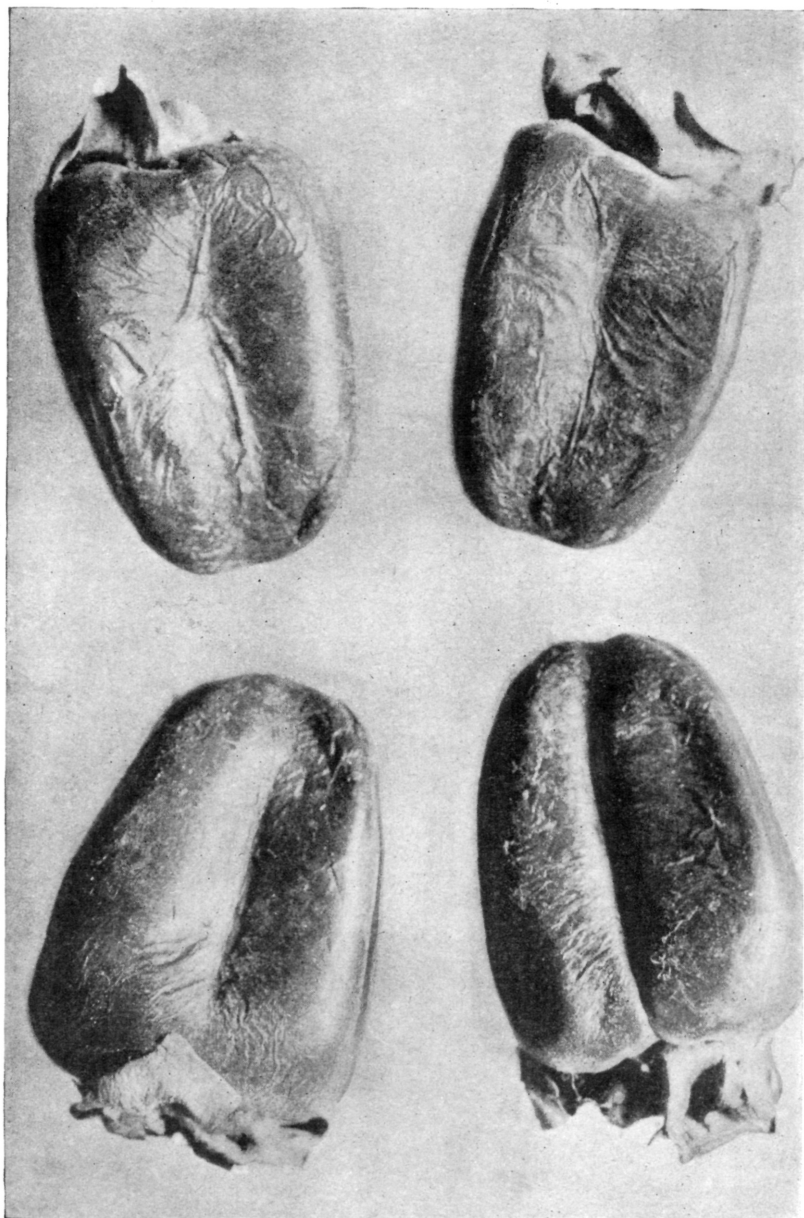
37669 and 37670. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

From the village of Wangyuko, Shansi, China. February 15, 1914.



THE "FIRE-POT" PERSIMMON (*DIOSPYROS KAKI* L. F.), S. P. I. NO. 37657.

A very small variety of persimmon of dark reddish color, resembling an intermediate form between a Persian date and a plum. Locally called *Huo kuan shih tzu*, meaning "fire-pot" persimmon. The fruits can be kept fresh almost throughout the entire winter, but the Chinese also eat them slightly fermented by keeping them in water for a few weeks and pouring off the water every few days. Their flavor reminds one of beer, and travelers relish them decidedly. (Photographed at P'aihsiangchen, Shansi, China, by Frank N. Meyer, February 14, 1914; natural size; P13044FS.)



THE "SALT-BAG" PERSIMMON (*DIOSPYROS KAKI* L. F.), S. P. I. NO. 37672.

A very unusual form of oriental persimmon, being square, elongated and tapering, and having four vertical furrows. Of pale, orange-yellow color; seedless; calyx very large and strongly persistent. Can be kept fresh for several months. On account of its attractive and striking form and color this variety may become a great favorite with the American public. Chinese name *Yen pu tai shih tzü*, meaning "salt-bag" persimmon. (Photographed at Mienchih, Honan, China, by Frank N. Meyer, February 22, 1914; natural size; P13046FS.)

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

37669. "(No. 1153.) A Chinese variety of persimmon, said to be of small to medium size, of oblong tapering form, with longitudinal furrows; of orange-red color; contains seeds; good only when fresh. Local name *Niu nai shih tzü*, meaning 'cow's-nipple persimmon.'"

37670. "(No. 1154.) A Chinese variety of persimmon, said to be much like the preceding, but of somewhat different shape. Bears the same name."

37671. *ULMUS* sp. Ulmaceæ.

Elm.

"(No. 1156. From the village of Maochingchen, Shansi, China. February 16, 1914.) A species of elm, occurring in dry loess cliffs and in decomposed slate rocks. In general, of a shrubby nature, but, when not disturbed, growing to a medium-sized tree. The young branches are often provided with broad corky wings, making them appear much thicker than they really are. Of value possibly as a park tree, especially for the drier parts of the United States."

Cuttings and roots.

37672 to 37678. *DIOSPYROS KAKI* L. f. Diospyraceæ. **Persimmon.**

From near Mienchih, Honan, China. February 21, 1914.

37672. "(No. 1157.) A Chinese variety of persimmon, of remarkable form, being of square, oblong shape, tapering toward the apex and having hairy, vertical furrows; of medium size; color, pale orange-yellow; calyx very large; seedless. Can be kept fresh for several months. A really beautiful persimmon, which will probably become very popular with the American people. Local name *Yen pu tai shih tzü*, meaning 'salt-bag persimmon.'"

For an illustration of the fruit of the salt-bag persimmon, see Plate II.

37673. "(No. 1158.) A Chinese variety of persimmon, said to be large, of round, flat shape and of red color; partly seedless; can be dried and also kept fresh for a long time. A superior variety. Local name *Yü kuei lun shih tzü*, meaning 'globular persimmon.'"

37674. "(No. 1159.) A Chinese variety of persimmon, said to be very large; of round shape, with top running into a point; of red color; partly seedless; can be dried or kept fresh for a long time. Local name *Ta ou hsin shih tzü*, meaning 'big pointed-heart persimmon.'"

37675. "(No. 1160.) A variety of Chinese persimmon, said to be medium large; of round shape, although very flat; color, red; partly seedless; good only when fresh. Local name *P'ai p'ai shih tzü*, meaning 'pounded persimmon.'"

37676. "(No. 1161.) A variety of Chinese persimmon, said to be large, of square, flat shape, and having two furrows on top, in the form of a Maltese cross; color, red; seedless; can be kept fresh for a long time, but resists drying. Local name *Chia hsien hung shih tzü*, meaning 'pick-fresh red persimmon.'"

37677. "(No. 1162.) A Chinese variety of persimmon, said to be of medium size and of oblong, tapering form, with pointed top; color, yellow; seedless. For fresh use only. Local name *Pa yüeh huang shih tzü*, meaning 'eighth-moon yellow persimmon,'"

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

37678. "(No. 1163.) A Chinese variety of persimmon, the fruits of which are said to be of the size of large cherries, quite round; of beautiful red color; very sweet, but full of seeds. The trees grow tall and are prolific bearers and very showy when loaded with ripe fruits. Local name *Mi kuan shih tzü*, meaning 'honey-pot persimmon.'"

37679 and 37680.

From Sianfu, Shansi, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., March 18, 1914.

37679. PHYLLOSTACHYS sp. Poaceæ. Bamboo.

"(No. 1075. January 13, 1914.) A bamboo growing to 15 to 20 feet in height, having green stems which have but a small air channel in them. Foliage more or less in bunches and quite dense. Of value as an ornamental garden plant for the mild-wintered sections of the United States. Especially valuable as a windbreak. Chinese name *Tung po chu*, meaning 'the bamboo of Tungpo.'" (Meyer.)

Plant.

37680. PRUNUS TOMENTOSA Thunberg. Amygdalaceæ. Bush cherry.

"(No. 1080. January 13, 1914.) A variety of bush cherry said to bear small white fruits, rare locally. To obtain the best results, the Chinese bud and graft this bush cherry on *Amygdalus davidiana*, usually low in the ground, but often also budded high as 'standard' trees. Chinese name *Pai ying t'ao*, meaning 'white cherry.'" (Meyer.)

37681 and 37682. TRIFOLIUM spp. Fabaceæ. Clover.

From Hungary. Presented by Mr. E. Brown, Botanist in Charge of the Seed Laboratory, Bureau of Plant Industry. Received April 15, 1914.

Dr. A. Degen, of the Royal Hungarian Seed-Testing Station at Budapest, Hungary, says of these clovers:

"These species really form a valuable constituent of our pastures and meadows. *Trifolium angulatum* and *T. parviflorum* grow in our lowland plains almost always in company on alkaline heavy clay soils. They are both annual plants, and only in wet years or on wet spots attain a height which allows an abundant hay crop. Under other circumstances they remain dwarf and yield only a short but very valuable hay, and are therefore principally useful as pasturage. They are both very early plants, their chief period of development being from the middle of April to the middle of June.

"These clovers have a cultural value only on alkaline, somewhat humid soils, and are not suitable for others or for culture under different climatic conditions."

37681. TRIFOLIUM ANGULATUM Waldst. and Kit. Fabaceæ.

37682. TRIFOLIUM PARVIFLORUM Ehrh. Fabaceæ.

37683. MALUS SYLVESTRIS Miller. Malaceæ. Apple.

(*Pyrus malus* L.)

From Saloniki Greece. Presented by Rev. P. H. House, president, Thessalonica Agricultural and Industrial Institute. Received April 24, 1914.

"Tetovo apple.

37683—Continued.

"Tetovo is the Bulgarian name of the town of which Kalkundeleu is the Turkish name; *Tetovsky* is the adjective, meaning 'from Tetovo.'" (*P. H. House, letter dated June 5, 1914.*)

37684. 'SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

From Peking, China. Received at the State Department in a pouch from Peking, China. Received March 20, 1914.

"This variety is probably the kind asked for in your letter under the name of the 'white-eyed' soy bean. It is known as 'the large white eyebrow bean' among the Chinese where it is grown." (*Source unidentified.*)

37685. CANARIUM OVATUM Engler. Balsameaceæ. Pili nuts.

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received March 31, 1914.

"The pili is a forest tree producing an excellent table nut." (*Barrett.*)

37686 to 37691.

From Tiflis, Caucasus. Presented by the director, Botanic Gardens. Received March 30, 1914.

37686 to 38688. PRUNUS spp. Amygdalaceæ.

37686. PRUNUS MICROCARPA Meyer. Cherry.

See S. P. I. No. 27303 for previous introduction and description.

37687. PRUNUS PROSTRATA Labill. Bush cherry.

See S. P. I. Nos. 28945, 30564, and 37642 for previous introductions and description.

37688. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider.

See S. P. I. No. 37463 for previous introduction and description.

37689. PYRUS NIVALIS ELAEAGRIFOLIA (Pall.) Schneider.

"This wild olive-leaved *Pyrus*, which is a native of Asia Minor, is a distinct bush or small tree greatly valued for ornamental purposes. The flowers of this beautiful *Pyrus*, which are white and small, make their appearance in May. The fruit is small, globose in shape, crowned with a very prominent calyx. The leaves are lanceolate, oblong lanceolate, or linear lanceolate, and covered with a whitish, silky pubescence." (*Nicholson, Dictionary of Gardening.*)

37690 and 37691. FRAGARIA spp. Rosaceæ. Strawberry.

Introduced for the work of the Office of Pomological and Horticultural Investigations in plant breeding.

37690. FRAGARIA VESCA L.

This common species of *Fragaria*, which is commonly known as the "wildwood strawberry," is very widely dispersed over the temperate and colder parts of the Northern Hemisphere, extending northward to Lapland and Iceland, southward to the mountains of Java, ascending the Himalayas to 13,000 feet and the Scottish highlands to 7,000 feet. The fruit of this species is borne above the leaves. Sometimes they are as much as 12 inches above the ground. This *Fragaria* is a stout, tufted plant, dark green in color and less vil-

37686 to 37691—Continued.

lous than either *F. canadensis* or *F. virginiana*. (Adapted from Mueller, *Select Extra-Tropical Plants* and Britton and Brown, *Flora of the Northern States and Canada*.)

37691. FRAGARIA VIRIDIS Duchesne.
(*Fragaria collina* Ehrh.)

"This *Fragaria*, though not identical with *F. vesca*, resembles it very closely and may be regarded as a mere variety of that European species. Under the name of 'hill strawberry' it occurs in various parts of Europe and is cultivated to some extent in Norway as far north as latitude 67° 56'. The fruit of this species has a somewhat musky odor." (Mueller, *Select Extra-Tropical Plants*.)

37692 to 37695. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

From Waimea, island of Kauai, Hawaii. Collected August 16, 1913, by Mr. R. A. Young, of the Bureau of Plant Industry. Tubers of the following; quoted notes by Mr. Young.

37692. "*Kumu*. A rare variety of the Hawaiian taro, having brilliant red petioles. The name *Kumu* is said to have been given because of the similarity of color to that of the Hawaiian fish of the same name. The variety is unimportant commercially. There are others of this class, varying from this one in certain details."

37693. "*Apuwai ulaula*. A commercial variety of the Hawaiian taro, the leaf blades of which curl upward, forming a cuplike receptacle which holds water. The name *Apuwai* signifies this character of the leaf."

37694. "*Lau loa*. Leaf blade long, petiolar spot purple; laminar sinus closed about one-fourth of distance; petiole dark green below, shaded with maroon, shading into solid dark maroon above the sinus, except on the outer side, where it becomes light green; petiolar sinus wings margined with red."

37695. "*Maka opio*. A commercial variety grown on the island of Kauai. Leaf characters similar to the preceding [S. P. I. No. 37694]."

37696 and 37697. ORYZA SATIVA L. Poaceæ.

Rice.

From Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received March 25, 1914.

"The principal region where rice is grown on an extensive scale in this consular district is in the Province of Tarragona, on the right bank of the Ebro River, and in the tract commonly known as 'Amposta.' The total production in the district named amounted to 29,750 long tons during the year 1913, cultivated over an area of 8,500 hectares (21,004 acres), giving an average production of 3½ tons per hectare (2.47 acres). In the Province of Gerona and in the Balearic Islands rice is also cultivated, but not in quantities of commercial importance. Here the production in 1913 was 8.43 and 7.59 tons, respectively.

"The Province of Valencia is the most important rice-growing center in Spain, the average annual crop amounting to some 200,000 long tons. Rice as a popular food enters into the diet of the people to such an extent that the

37696 and 37697—Continued.

home production is not sufficient to meet the demands, and regular imports are made, varying in accordance with the crop obtained.

"The two principal varieties of rice cultivated on the banks of the Ebro River, in this particular consular district, are commonly known as Benlloch and Bomba; the latter variety is also grown in the Balearic Islands.

"Rice sowing in this district takes place about the end of March and the beginning of April. The harvesting season begins in the latter part of August and continues into early September, under normal weather conditions. A considerable portion of the labor is done by peasants from Valencia, who go to the Tarragona rice fields during the sowing and harvesting seasons.

"An authority states that the cost of planting, preparing the land, transportation to warehouse, drying, rent of land, thrashing, wages, and incidental expenses, aggregate \$123.10 for an acre producing 50 hectoliters (141.88 bushels) of unshelled rice, which is sold at \$2.70 per hectoliter (2.83 bushels), making a gross profit of \$135 and a net earning of \$11.90 for each 50 hectoliters of rice obtained. For sown rice, which is the method principally resorted to in Spain on account of larger profits, the outlays would approximate \$90.90, and the yield would come to 44 hectoliters (124.86 bushels) of unshelled rice. In the latter instance the net profits would, therefore, amount to \$27.90." (*Report, February 18, 1914.*)

37696. "Bomba."

"The ruling wholesale prices, which are subject to considerable fluctuation, run at present as follows: Shelled, \$11.20 to \$13.70 per 100 kilograms; unshelled, \$6.50 to \$7.20 per 100 kilograms."

37697. "Benlloch."

"The ruling wholesale prices, which are subject to considerable fluctuation, run at present as follows: Shelled, \$6.85 to \$7.75 per 100 kilograms (220 pounds); unshelled, \$4.70 per 100 kilograms."

37698 to 37705.

From Lamac, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamac Experiment Station. Received March 31, 1914. Quoted notes by Mr. Wester, except as otherwise indicated.

37698. HIBISCUS SABDARIFFA L. Malvaceæ.**Roselle.**

"*Temprano* roselle. A variety that has originated at this station as a sport from *Victor*. The *Temprano* is less vigorous than its progenitor, but has the merit of being 20 days earlier, and if it retains this characteristic in the United States, it should become of considerable value."

37699. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. Winged bean.
(*Psophocarpus tetragonolobus* DC.)

"*Seguidilla*. Climbing beans with 4-winged pods, which, used as string beans when they are tender, are of excellent quality. They should be of great value in Porto Rico and Panama, but the soil is too poor in Florida. I tried them for two seasons in Miami, Fla., but they were not a success. The seed should be planted in April or May. The plant does best in rich, rather moist, but well-drained land."

37700. CUCUMIS SATIVUS L. Cucurbitaceæ.**Cucumber.**

"*India* cucumber. A cucumber especially adapted to the Tropics, introduced from India.

37698 to 37705—Continued. (Quoted notes by Mr. P. J. Wester.)

"Size large, 22 to 30 cm. long, averaging 26 cm. in circumference; average weight, 850 grams; form oblong, cross section more or less triangulate; color brown, the surface cracking as the cucumber attains maturity, exposing the flesh and giving it the appearance of being reticulated; surface fairly smooth; flesh perhaps somewhat less tender than the standard cucumbers of the Temperate Zone, nevertheless very good; seed abundant.

"The seed of this variety was presented to the Bureau of Agriculture by Mr. A. C. Hartless, superintendent of the Seharunpur Botanical Garden, United Provinces, India, in 1911, and was sown at the end of the rainy season the same year at the Lamao Experiment Station. From the seed saved, another sowing was made in January, 1913, together with a large number of imported varieties of cucurbits of all classes. In this trial the *India* showed itself hardier and superior to all the cucurbits planted in the resistance to insect pests, which practically destroyed the rest, notwithstanding frequent applications of arsenical sprays. The variety is of vigorous growth and a satisfactory yielder and is unquestionably one of the best varieties adapted to local conditions, everything taken into consideration, that has been introduced into the Philippines. A large area has lately been planted to *India* at the Lamao Experiment Station, with a view to producing seeds for general distribution throughout the Philippines another year. *India* is the original home of the cucumber, and the variety under consideration seems to be an improvement upon the aboriginal form that is especially adapted to tropical conditions. According to Mr. Hartless this cucumber is grown throughout India as a climber, during the rainy season. Notwithstanding its extensive cultivation in India it is a curious fact that this distinct cucumber variety has never received a variety name. Coincident to its wide dissemination throughout the Philippines it has therefore been considered expedient to christen the variety in order to distinguish it from other varieties, and it has been named *India*, in honor of the ancestral home of the cucumber." (*Wester, Philippine Agricultural Review, February, 1914.*)

37701 and 37702. DIOSCOREA spp. Dioscoreaceæ.

Yam.

37701. DIOSCOREA PENTAPHYLLA L.

"*Lima-Lima*. An edible yam, though inferior in quality to *Dioscorea alata* and *D. fasciculata*. It should prove a very interesting climbing ornamental in the Tropics and in the subtropical regions of the United States."

37702. DIOSCOREA ACULEATA L.

"*Tugue*. This species occurs in many varieties, from a culinary point of view. These are some of the very best, mealy, with a trace of sugar. From my experience with yams in Miami, Fla., I do not believe that the *Tugue* will succeed there, but it should do very well in Porto Rico and Panama."

37703. SINDORA SUPA Merrill. Cæsalpiniaceæ.

"A tree reaching a height of 25 m. and a diameter of 140 cm. with equally pinnate leaves, coriaceous glabrous leaflets, and densely pubescent calyx lobes which have a few straight or curved spines on the upper half. Branch and branchlets glabrous. Leaves with a glabrous rachis, 6 to 7 cm. long; stipules foliaceous, 1 cm. long, acute, the base rounded

37698 to 37705—Continued. (Quoted notes by Mr. P. J. Wester.)

or auriculate, glabrous or nearly so; leaflets 2 or mostly 3 jugate, the lower pair somewhat smaller than those above, oblong ovate, 5 to 8 cm. long, 2.5 to 4 cm. wide, very coriaceous, entirely glabrous or with few scattered hairs on the under surface, especially on the midrib, the apex rounded, the base acute; nerves numerous, close, faint; petiolules 4 mm. long, acute, pubescent; pedicels 2 mm. long, each with two lanceolate acute pubescent bracteoles 4 mm. long. Calyx tube short, the lobes four, thick, 1 cm. long, densely pubescent within with appressed yellowish hairs, outside densely cinereous puberulous and in the upper half with a few straight or curved pubescent spines about 3 mm. long. Petal one, as long as the calyx lobes, densely appressed pubescent on the margins below. Staminal sheath and filaments hairy. Ovary hirsute. Pod broadly ovate, flattened, rounded at the base, the apical beak very small or nearly obsolete. Valves dehiscent, woody, uniformly armed on the outside with strong straight spines 5 mm. long and more or less densely ferruginous pubescent, becoming quite glabrous in age. Seeds usually four, ovate, hard, black, with an arillate funicle.

"A species related to and previously identified with *Sindora wallichii* Benth. (*S. wallichiana* Benth.), of the Malayan Peninsula, differing from that species in its glabrous leaves and larger pods. Dr. Prain, director of the Royal Botanic Gardens, Kew, has examined some of the material cited above and informs me that this species is not identical with Bentham's *S. wallichiana*. I have accordingly described the Philippine plant as a distinct species, using for the specific name the Tagalog name *supa*, by which this important timber tree is universally known in the Philippines. The timber of this tree is hard and of a yellowish or reddish color, being used in naval and general constructions, and is frequently substituted for the more valuable *ipil* wood (*Intsia bijuga* O. Ktze). From 1900 to 1904 *supa* ranked fourteenth in amount received in the local lumber markets, with a total of 177,189 feet board measure, its average price for sawed lumber being \$81.50, United States currency, per 1,000 feet b. m. In addition to being a valuable timber tree, *supa* also yields considerable quantities of a straw-colored or light-yellow, somewhat fragrant oil, which burns with a clear flame. From a report submitted to the Chief of the Forestry Bureau by Mr. Kobbe, forester, the following extracts are taken: 'This oil (*supa*) is secured from the trunk of the living [tree] and not from the fruit or dead wood. The tree is usually hacked with bolo cuts as high as a man can reach, and the oil runs down the channels so formed into some vessel so placed as to catch the product. The oil seems to be a product of the entire woody portion of the tree and does not flow from any particular portion, such as the sapwood only. If an auger hole be bored into the heart of a living tree, as much as 10 liters of oil is frequently obtained from the one hole. When the trees are slashed for gathering the oil, the first that exudes is set on fire, the heat causing a great increase in the flow of oil.' The oil is not widely used. There is a demand for it for the manufacture of paint, especially for use on ships, varnish for sailboats, etc., and as an illuminating oil. Tagalog, *supa*, in Baler; also *manapo*." (*E. D. Merrill, Philippine Journal of Science, vol. 1, suppl., p. 198, 1906.*)

37704. *ORMOSIA CALAVENSIS* Azaola. Fabaceæ.

Bahai.

"A timber tree of more or less value in the Philippines."

37698 to 37705—Continued. (Quoted notes by Mr. P. J. Wester.)

"*Bahai* is a medium-sized tree found very scattered in the dipterocarp forest. The wood is red, but is little known on the markets." (*H. N. Whitford, Forests of the Philippines, vol. 2, p. 43, 1911.*)

37705. VITEX PARVIFLORA A. JUSS. Verbenaceæ. **Molave.**

"A timber tree of more or less value in the Philippines."

"*Molave* is a tree that in exceptional cases will reach a height of 35 to 38 meters and a diameter up to 200 centimeters, with a bole 16 to 20 m. Usually, however, it is below 30 m. and may form in severe conditions a scraggly tree with a bole 2 m. or less in length. The bole is usually crooked, fluted, and buttressed. It has an open wide-spreading crown. It is found throughout the [Philippine] Islands, especially on the low coastal hills, usually on limestone, but may occur on volcanic rocks. It is intolerant of shade, and partially or wholly deciduous during the dry season. The bark is 8 to 10 mm. in thickness, yellowish brown to gray in color, velvety to the touch, sometimes shedding in small thin flakes; otherwise smooth. The inner bark is light yellow, with darker yellow rings when freshly cut, but rapidly turning brown on exposure. The leaves are opposite, usually trifoliately compound; the leaflets are smooth and vary in size from 5 to 15 cm. long and 2.5 to 7 cm. wide. The sapwood is creamy white; the heartwood a pale yellow, often turning to dull brown on exposure. It has a fine, usually cross grain, with short and brittle fibers, making it easy to work. It is hard and heavy. It turns greenish yellow when treated with an alkali, and has a bitter taste and a slight odor. It stains water a greenish yellow color. *Molave* is one of the best high-grade construction timbers in the islands and is a good substitute for teak. It resists well the action of fungi, teredo, and white ants. The following is an enumeration of its uses: House construction (posts, doors, interior finish, flooring, joists, siding, sills), shipbuilding (knees, cutwater, sternposts), wagon making (axles, wheels, rims, spokes), bridges, cabinetmaking, carabao yokes, cogwheels, docks, salt-water piles, pillars, plows, rice mortars, railroad ties, sugar mills, paving blocks, furniture, balusters and other turned work, hemp presses, sculpture, wooden tools, plane stocks, and tool handles. Practically all the Provinces in the Philippines contain *molave*, though in many it is no longer in commercial quantities." (*H. N. Whitford, Forests of the Philippines, p. 97, 1911.*)

37706 to 37711.

From Copenhagen, Denmark. Presented by the Royal Danish Agricultural Society. Received April 2, 1914. Quoted notes furnished by the society.

37706 and 37707. HORDEUM spp. Poaceæ. **Barley.**

37706. HORDEUM DISTICHON NUTANS Schubl.

"No. 3. *Prentice* barley of Tystofte; 2-ranked barley. Originally from a single plant of the primitive species from England, and grown by Mr. N. P. Nielsen at the Tystofte Experiment Station. The most widely known species of barley in Denmark. A little late. The blade does not grow very long. Good quality of grain. Resists well attacks of *Helminthosporium gramineum* and smut (*Ustilago*). Gives a large crop. Should be sown early and relatively thin. Thrives especially well in good soil."

37706 to 37711—Continued.

37707. HORDEUM VULGARE L.

"No. 4. Tystofte cruciferous barley (*Tystofte korsbyg*); common barley with six ranks (square). Originally from a single plant grown by Mr. N. P. Nielsen at the Tystofte Experiment Station. Late, essentially with large grains. Resists well *Helminthosporium gramineum* and smut (*Ustilago*). Gives a large harvest of grain and straw. Should be sown early. Thrives especially well in good soil."

37708. AVENA SATIVA L. Poaceæ.

Oat.

"No. 6. Yellow Naesgaard oats (*Gul Naesgaard Havre*); spring oats. Originally from a single plant of *Beseler* oats grown by Mr. H. A. B. Vestergaard at the Abed Experiment Station. The chaff is yellow; hence the name. Weight of grain and volume very high. Straw stiff and large quantities obtained. The land should be strongly fertilized and seed should be sown early."

37709. LOLIUM MULTIFLORUM Lamarck. Poaceæ. Italian rye-grass.

"No. 11. Italian rye-grass; Tystofte No. 152. A subvariety grown by Mr. N. P. Nielsen at the Tystofte Experiment Station from a single plant. Of very early maturity, with ample and leafy stalk growth. Thrives especially well on nonpermanent pasture land. Gives large and sure harvests not only at the first mowing, but also in the second growth."

37710. FESTUCA ELATIO L. Poaceæ.

Meadow fescue.

"No. 12. Meadow fescue; subvariety No. 9 of L'Union des Sociétés Coopératives de Consommation de Danemark, and grown by Mr. Karl A. Jorgensen, Lyngby, from a single plant. A little late, very resistant to rust (*Puccinia*). Gives large and sure harvests, especially on the first mowing. Thrives only in pasture land, which should remain more than one year in grass."

37711. DACTYLIS GLOMERATA L. Poaceæ.

Orchard grass.

"No. 13. Orchard grass; subvariety *Olsgaard*. Grown by Mr. Rasmussen, *Olsgaard*. Resembles in appearance and its early-maturing qualities the American orchard grass. Gives large harvests. Thrives only in pasture land, which should remain more than one year in grass."

37712. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ.

(*Atalantia glauca* Benth.)

Desert kumquat.

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, Brisbane Botanic Gardens. Received January 22, 1914.

"From the experiment station at Dulacca. The people in the district are using quantities of them for drinks." (*Jean White*.)

"A shrub or small tree bearing edible fruits and occurring in Queensland and New South Wales, Australia, in subtropical regions subject to severe cold and extreme drought. The leaves of the plant are small (1 to 1½ by one-eighth to one-fourth inch), emarginate, and show marked drought-resistant adaptations. The fruits of this species are used by the settlers in Australia for jam and pickles and ade is made from the juice. The Australian desert kumquat is the hardiest evergreen citrus fruit known, besides being the only one showing pronounced drought-resisting adaptations; it bears in the wild state edible fruits with a pleasant acid juice and a mild-flavored peel. These characteristics make this plant very promising for use in breeding new types of hardy drought-resistant citrus fruits." (*W. T. Swingle. In Bailey, Standard Cyclo-pedia of Horticulture.*)

37713. ASPARAGUS TENUIFOLIUS Lam. Convallariaceæ.**Asparagus.**

From Chene, Geneva, Switzerland. Presented by Mr. Henry Correvon.
Received April 6, 1914.

See S. P. I. No. 33147 for previous introduction.

"An herbaceous perennial from southern Europe; like *A. officinalis*, with very slender, numerous cladodes and large, bright red berries." (J. B. Norton. In *Bailey, Standard Cyclopaedia of Horticulture.*)

37714 to 37717. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Dardanelles, Turkey. Presented by Mr. F. R. J. Calvert, Thymbra Farm. Received April 4, 1914.

"The season for planting these beans is from the beginning of April to the middle of May." (Calvert.)

"It is a viscose, pubescent, much-branched, annual herb, generally not exceeding 60 cms. in height. The stem is more or less woody and ribbed, and the leaves are compound, pinnate, and stalked, with a varying number of leaflets, not generally exceeding 16. The flowers are papilionaceous, white or purplish in color, solitary, and with geniculate stalks. The fruit is an oblong, turgid, 2-seeded pod 2 to 2.5 cms. long and about half as broad, and the seed is generally somewhat symmetrically wrinkled. No varieties are distinguished by growers, but seed merchants distinguish two forms, viz. the *Nitaya* and the *Dakar*, these two merely constituting a single variety, superior samples being reckoned as *Nitaya* and those inferior in quality as *Dakar*. When the crop is to be eaten fresh, the harvesting is done about four months after planting, while the seed is yet tender and before the seed coat begins to harden and become tough. Grown for grain, the crop is harvested about five and one-half or six months after sowing." (Foaden and Fletcher, *Textbook of Egyptian Agriculture.*)

The four numbers were received separately, but without any notes as to their differences. In appearance there are no evident differences.

37718. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

From Wakamatsu, Iwashire, Japan. Presented by Rev. Christopher Noss, M. D. Cuttings received April 9, 1914.

"Gosho."

37719 to 37721.

From Kashgar, Chinese Turkestan. Presented by Mr. George Macartney, British consul general. Received April 4, 1914.

37719 and 37720. LINUM USITATISSIMUM L. Linaceæ. Flax.

37719. From Kashgar. **37720.** From Tashmalik.

37721. CANNABIS SATIVA L. Moraceæ. Hemp.

"Kashgar hempseed."

The hempseed was requested as the variety from which hashish or bhang is made. See Watt, *Commercial Products of India*, for a full account of the preparation and use of this narcotic.

37722. CANAVALI sp. Fabaceæ. Babricou bean.

From Bridgetown, Barbados, British West Indies. Presented by Mr. John R. Bovell, Department of Agriculture. Received March 15, 1914.

37723. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Algeria, Algiers. Presented by Dr. L. Trabut, Government botanist.
Received April 9, 1914.

"Sorghum gathered at the mouth of Oued Zhouh. Gathered from the fields where I observed the *Mezera* or sorghum hybrid of *Sorghum halepense* (*Sorghum annuum*, Trabut's Flora of Algeria). It is probable that you will obtain this form from the seeds. I would have gathered seed of *Mezera*, but these seeds drop when they are ripe like *Sorghum halepense*." (*Trabut.*)

When grown this proved to be the ordinary sorghum, with no trace of the expected hybrid, and it has been discarded as a variety of little or no value.

37724. CITRUS GRANDIS (L.) Osbeck. Rutaceæ.**Pummelo.***(Citrus decumana Murr.)*

From Siam. Presented by Mr. Harry Boyle, assistant horticulturist, Bureau of Agriculture, Philippine Islands. Received December, 1913.

"On September 13 the writer proceeded to the Nakon Chaisri district, where the finest pummelo orchards are located. The largest of these was owned by a Chinese planter and contained about 20 hectares, three-fourths of which was planted with pummelos of the 'seed' variety, while some 25 per cent of the area contained 'seedless' trees. The orchard is divided into plats some 7 meters wide by 60 to 90 meters long, separated by trenches some 3 to 4 meters wide by 2½ meters deep. The pummelo trees are planted in single rows on these plats. All trees are propagated by marcottage, or the 'don' method. The writer was able to demonstrate the modern methods of budding, and through the assistance of Koon Pisit explained each step so that, were it not for the deeply inoculated custom in vogue there, the planter would now be able to propagate his trees much more rapidly and economically. The soil of this orchard contains about 60 per cent clay.

"The first fruits examined in the 'seedless' section proved to be full of seeds. Upon inquiry as to the reason for this it was stated that the seedlessness was due to the salt deposited from the brackish water which backs up into the river during the dry season; the planter also said that a coconut shell of salt was placed in the hole at the time of transplanting the tree, and that another shellful was given the tree each year." (*H. H. Boyle, in Philippine Agricultural Review, February, 1914.*)

37725. CYAMOPSIS TETRAGONOLOBIA (L.) Taub. Fabaceæ. Guar.*(Cyamopsis psoralcoides DC.)*

From Bombay, India. Procured from Messrs. Ralli Bros., through the American consul at Bombay. Received April 7, 1914.

"A robust annual pulse cultivated in many parts of India from the Himalayas to the Western Peninsula and never found truly wild in any part of India. Mollison mentions three forms met with in Kaira and Baroda territory, viz, (1) *pardeshi*, sown sparsely among kharif (autumn) cereals; (2) *sotia guvar*, growing 8 to 10 feet high and sown extensively in Gujarat. It is raised as a shade plant to ginger, and the leaves are left on the ground as a green manure; in the garden lands of Surat it is grown with cucumbers, being planted in May and irrigated until the rains. The pods are used as a vegetable and served like French beans; (3) *deshi*, the common form with violet seeds, sown as an ordinary dry crop and extensively used as cattle fodder. Duthie and Fuller mention a form known as *deoband kawāra*, which is often culti-

37725—Continued.

vated in the United Provinces as a hedge or shade plant. They observe also that when the plant is cultivated as a vegetable it is grown on highly manured land near villages, but when raised for cattle fodder is cultivated on light, sandy soils. It is sown at the commencement of the rains and cut in October. The average yield of dry pulse is about 10 maunds to the acre. *Guar* is specially suitable as a green manure or green fodder crop, owing to the amount of nitrogen it contains and its comparative freedom (when young) from fiber. Church gives the nutrient ratio of the dry beans as 1:1.7, and the nutrient value 79. In certain districts, such as Meerut, where this plant is regularly and largely grown as cattle food, the breed of animals met with is remarkably fine—a high testimony to the care taken of them." (*Watt, Commercial Products of India.*)

37726 to 37728.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received March 31, 1914.

37726. *MIMUSOPS ELENGI* L. Sapotaceæ.

Munamal.

See S. P. I. Nos. 5029 and 30957 for previous introductions.

"A large, evergreen tree, with fleshy leaves, glossy, oval, with nervation slightly emphasized; calyx of six sepals in two series; corolla rotate, with linear appendages; stamens six; 6-celled superior ovary; berry with a single seed by abortion. The wood is good for cabinet-making, joinery, and turning. The fruit, which is shaped like an olive, is eaten, but its flavor is not very agreeable. The odorous flowers, which possess astringent and tonic properties, serve for the preparation of a perfume; the red, woody, fibrous bark is astringent and is used as a febrifuge and a tonic; a decoction is used as a gargle for salivation. The fruits and seeds furnish an oil for burning. The root is astringent." (*Lancessan, Les Plantes Utiles des Colonies Françaises.*)

37727. *STERCULIA* sp. Sterculiaceæ.

37728. *BYRSONIMA CRASSIFOLIA* (L.) H. B. K. Malpighiaceæ. **Nance.**

"A shrub or small tree, flattened and forming in certain parts of the torrid and temperate regions, but especially in the torrid regions along the Pacific, characteristic groups called *nancitales* (from its common name *nance*). The leaves are thick, oval, entire, and smooth. The yellow flowers form short spikes; the fruits are small yellow berries and give off a peculiar odor, rather unpleasant, which is the reason, according to Gagini, that the Spanish call the tree *merdiera*. The fruits are used to make a sort of beverage." (*Pittier, Les Plantas Usuales de Costa Rica.*)

37729. *FICUS SYCOMORUS* L. Moraceæ.

Sycamore fig.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, at the request of Prof. S. C. Mason, of the Bureau of Plant Industry. Received April 11, 1914.

"Sycamore fig."

"This is the sycamore tree of Scripture. It is a very large tree, growing abundantly in Egypt, Syria, and the East; it produces red figs about the size of an egg, but almost insipid; the Egyptians eat them with great relish; for drying they are of no value, being then tasteless, unpleasant, and full of seeds.

37729—Continued.

The fig of this species is an article of great consumption in those countries; wine and vinegar are made from the fermented fruits; the wood has been employed from great antiquity in making mummy cases." (*Hogg, Vegetable Kingdom.*)

Cuttings.

37730. CLITORIA LAURIFOLIA Poir. Fabaceæ.

(*Clitoria cajanifolia* Benth.)

From Buitenzorg, Java. Presented by the Experimental Garden of the Department of Agriculture. Received April 11, 1914.

A pink-flowered shrub growing to a height of 4 or 5 feet and propagated by cuttings. Native of Malay Archipelago and introduced throughout the Tropics.

37731 and 37732. ORYZA SATIVA L. Poaceæ. **Rice.**

From Sophia, Bulgaria. Presented by Mr. Alaricus Delmard, Palais de Sophia. Received April 11, 1914.

"Red and white varieties. The red is for rich soils and the white for poor soils. The results also depend on the quantity and quality of the water of irrigation; for example, near Philippopolis some very poor land produces excellent rice, for the reason that the river which irrigates that land comes from the beech forests and sheep pastures, and the water is rich in decayed vegetable and animal matter, the sheep grazing on the mountain moors, where the swampy ground is full of little streams supplying the river. The red rice is the one that gives a far greater yield. I can not obtain the true name of these two varieties, but they are the only two cultivated here especially for Turkish markets. Cleaned specimens are sent to show just the amount of cleaning given to produce the just medium between color when cooked and retaining the best flavor." (*Delmard.*)

37731. Red.

37732. White.

37733 and 37734. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Kharkof, Russia. Presented by Mr. J. V. Emelianoff, acting director, Agricultural Experiment Station. Received April 9, 1914.

37733. "*Black Grushevsk* has been originated in Ekaterinoslav Province (Grushevsky Farm of the Grand Duke Nicholas)." (*Emelianoff.*)

"On the whole, about 20 varieties were cultivated during the experimental period, the best results, from the seed point of view, being obtained with the Black Dwarf Grushevsk sorghum, which in 1910 produced 3,602 pounds per acre, and in 1911, 2,803 pounds per acre. This kind of sorghum is distinguished by its maturing sufficiently early even in very cold summers. The presence of side branches increases the yield in the case of dry seasons, but in very wet years they have a contrary effect." (*Bulletin Agricultural Intelligence and Plant Diseases, vol. 3, No. 6, p. 1307-1308, 1912.*)

37734. "*Early Iantar.* This variety was received from your country and this name is nothing else but a translation into Russian of your name 'early cane.'" (*Emelianoff.*)

"In dry seasons or on drier plots the early varieties, such as *Early Iantar*, came to the fore. In order to insure abundant forage crops

37733 and 37734—Continued.

throughout the summer two varieties of sorghum should be sown, a very early kind, *Iantar*, which can be first cut at the beginning of July, and a rather late kind which yields well, such as *Orange Kansas*, which can be cut for the first time at the end of July." (*Bulletin Agricultural Intelligence and Plant Diseases*, vol. 3, No. 6, p. 1308, 1912.)

37735. PELARGONIUM RADULA (Cav.) L'Heritier. Geraniaceæ.**Rose geranium.**

From Algeria. Presented by A. Mermier Boyer, Chabet el Aneur. Received April 15, 1914.

"The rose geranium, a plant with an exquisite odor, grown and distilled in France, Spain, Algiers, and the island of Reunion, deserves some consideration with regard to cultivation, inasmuch as the oil distilled from the plant is of such a nature as to make it almost indispensable in the perfumery industry. Unlike that of lavender, the odor of the rose geranium resides in the leaves, the flowers being almost odorless. Experiments in a preliminary way are now being carried on to determine the quality of the oil capable of being distilled from this plant. As in the case of the rose and lavender, the most suitable location can be learned only by a system of tests in localities with different climatic and soil conditions." (*Rabak, Frank, The Production of Volatile Oils and Perfumery Plants in the United States*, U. S. Dept. of Agr., Bur. of Plant Ind. Bull. 195, p. 41-42, 1910.)

It is for the experiments above mentioned that these cuttings were introduced.

37736. PELARGONIUM ODORATISSIMUM (L.) Solander. Geraniaceæ.**Rose geranium.**

From Erfurt, Germany. Procured from Haage & Schmidt. Plants received April 14, 1914.

37737 to 37740. ORYZA SATIVA L. Poaceæ.**Rice.****37737 and 37738.**

From Batum, Russia. Presented by Mr. Leslie A. Davis, American consul. Received March 30, 1914. Quoted notes by Mr. Davis.

37737. "Swamp rice. This is a better variety than the mountain rice, and was formerly cultivated here to some extent, but its culture is now prohibited in the Province of Batum as one of the measures being taken to eradicate malaria from this district. I understand that this variety is now cultivated on the other side of the Turkish frontier and in the Lenkoran district on the Caspian Sea."

37738. "Mountain rice. This variety is inferior to the swamp rice, but it is the only variety now cultivated here."

37739 and 37740.

From Marseille, France. Presented by Mr. Alphonse Gaulin, American consul general. Received March 26, 1914. Quoted notes by Mr. Gaulin.

"Rice is cultivated in France only in the departments of Bouches du Rhone, Gard, and Aude. The total area devoted to this crop, which was about 3,000 acres 10 years ago, has been steadily decreasing in recent

37737 to 37740—Continued. (Quoted notes by Mr. A. Gaulin.)

years, and is now less than 1,400 acres, distributed as follows: Bouches du Rhone, 1,025 acres; Gard, about 300 acres; Aude, 25 acres. In the Bouches du Rhone the industry is limited to the Camargue region, a vast marshy plain of alluvial formation comprising the delta of the Rhone and consisting mainly of rough pasture lands. The only commercial varieties of rice grown in the country are the *Ranghino* and the *Bertone*, which were imported from Italy. The crops for 1912 and 1913 were estimated at 1,260 and 940 metric tons, respectively, of 'risone' or undecorticated grain. According to M. E. de Laroque, Director of the Agricultural Service of the Bouches du Rhone Department, the yield of 'risone' in the Camargue during the last two years was as follows: 1912, 924 metric tons; 1913, 747 metric tons. M. de Laroque states that the cultural methods employed are rather primitive, and unquestionably inferior to the methods in vogue in Italy, and particularly in Spain. These methods are described in a pamphlet entitled 'La Culture du Riz en Italie et en Camargue,' by M. de Laroque. The annual imports of rice at Marseille average over 60,000 metric tons, of which the greater part is taken up by local mills. These imports come chiefly from Indo China, British India, Japan, Java, and Egypt. Rice exports from Marseille average about 2,000 metric tons, consisting mainly of whole rice, flour and semolina, and screenings, the French African colonies and possessions being the principal countries of destination. According to present indications this trade can be at best only of occasional interest to American shippers, so far as this district is concerned. A list of the principal Marseille importers and rice millers may be had from the Bureau of Foreign and Domestic Commerce at Washington."

37739. "The *Ranghino* represented about four-fifths of the crop in 1912 and 1913. The weight of the straw is about double that of the grain. The price averaged 22 francs (\$4.246) per 100 kilos (220 pounds) in 1912, and ranged from 18 to 21 francs (\$3.47 to \$4.05) in 1913. In this district rice is sown at the end of April or the beginning of May. This variety is harvested in September and October."

37740. "*Bertone* is sown at the end of April or the beginning of May and harvested in August or September."

37741 and 37742.

From Brussels, Belgium. Presented by Mr. H. Meyer, acting director, Ministry of the Colonies. Received April 6, 1914.

37741. *CROTON ANGOLENSIS* Muell. Arg. Euphorbiaceæ.

"A euphorbiaceous plant from the Belgian Kongo. The native name is *Saku*, so called by the Nasku, meaning 'lumbago.' A large forest tree. Its aromatic and spicy bark is macerated in palm wine and then used in rubbing for pains. Its wood is of good quality and is used for building and for timber." (*Meyer.*)

37742. *PANDANUS BUTAYEI* Wildem. Pandanaceæ.

"One of the *Pandanaceæ* from the Belgian Kongo. The native name in Kanga is *Kenge*, meaning 'to tie, to bind, to twist,' alluding to the different uses of the leaves. Beautiful ornamental plant growing along rivers. The leaves serve for making solid and flexible mats, which bear the name *Mfumbu* and more rarely that of *Matea*." (*Meyer.*)

37743. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

From Johannesburg, Transvaal, South Africa. Presented by Mr. J. Burt Davy, Transvaal Maize Breeding Station, Burttholm, Vereeniging, South Africa. Received April 11, 1914.

"*Dinawa* (Sesutu name) grown by the Transvaal Basuto among the maize, for food." (*Davy*.)

37744. PRUNUS ARMENIACA L. Amygdalaceæ. Apricot.

From the oasis of Dakhleh, Egypt. Presented by Sheik Abu Bakr, of Rashida village, to Prof. S. C. Mason, of the Bureau of Plant Industry, at the time of his visit there. Received April 12, 1914.

"Dakhleh apricot. Seedling apricots growing in the irrigated gardens of the oasis of Dakhleh, western Egypt. The fruits vary greatly in size and quality, but some are of decided excellence. Quantities of them are dried with the pits in them and used stewed as a dessert during the winter months. These fruits are believed to have been grown in the oasis since the Roman occupation, nearly 2,000 years ago, and are interesting to American plant breeders on account of their resistance to desert conditions of heat. The mean annual temperature of the oasis of Dakhleh is above 75° F., some monthly means being close to 90° F." (*Mason*.)

37745. COCOS ROMANZOFFIANA Cham. Phœnicaceæ. Palm.

From Rio de Janeiro, Brazil. Presented by Dr. John C. Willis, botanic garden. Received April 13, 1914.

See S. P. I. No. 34757 for previous introduction.

"Stems 30 to 40 feet high, somewhat fusiform above; leaves about half as long as the caudex, the withered ones deflexed, pendent, the upper ones spreading, often arching; segments conduplicate at the base, ensiform; spadix about 6 feet long, at first inclosed in a stout, pendulous spathe which appears among the lowest leaves. In southern Brazil, near the sea, according to recent characterizations, it comprises a wide variety of forms. Probably the *Cocos flexuosa* planted in this country is not *Cocos flexuosa* of Martius, but of Hort., a hardy form of *romanzoffiana*, which, according to the late Barbosa-Rodrigues, is a polymorphic species including, besides this *flexuosa* type, all our garden forms known as *C. plumosa* Hook., *C. coronata* Hort. (not Mart.), *C. botryophora* Hort., *C. datil* Griseb. and Drude, and *C. australis* Mart." (*N. Taylor*. In *Bailey, Standard Cyclopedia of Horticulture*.)

37746 and 37747. OPUNTIA spp. Cactaceæ. Prickly-pear.

From Barbados, British West Indies. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Cuttings of the following; quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37746. "(No. 73.) Cochineal cactus, as it is called by the negroes.

Found growing near a small hut between Bridgetown and Hometown, about 2 miles back from the coast. The plant was treelike in form, about 12 feet in height, and covered with small fruits of a peculiar shade of cochineal red. Pads almost spineless."

37747. "(No. 74.) A low-growing, very spiny *Opuntia*, called by the negroes *fatiron prickles*, found along the roadside between Bridgetown

37746 and 37747—Con. (Quoted note by Mr. Dorsett and others.)

and Hometown, about 2 miles from the coast. It had been recently planted in this location for a permanent fence between the road and a farmyard. The plants were young and probably did not show their habit of growth very well. Pads covered with very abundant, long, light-yellow spines."

37748 to 37798.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Scions (except as noted) of the following; quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37748 to 37793. CITRUS spp. Rutaceae.

37748 to 37751. CITRUS SINENSIS (L.) Osbeck. Navel orange.

From the grove of Dr. Fortunato da Silva, at Cabulla, Bahia.

37748. "Select tree No. 1. A tree about 12 years old, 16 feet in height, 16 feet in spread, with a trunk 20 inches in circumference near the ground. It is headed 2 feet above the ground and in habit of growth is spreading and drooping. The foliage is very dense, dark green in color; no spines. The June crop is 241 fruits and the December crop 65 fruits. One fruit has an abnormal shape, namely, a sunken section. A typical fruit weighs 400 grams, is $11\frac{1}{2}$ inches in circumference, $3\frac{1}{4}$ inches in diameter. The skin is one-eighth of an inch thick, the core being one-half of an inch in diameter. In form the fruit is spherical, flattened at the blossom end; button flush with surface, blossom flush with surface. When ripe the skin is yellowish green, flesh rich golden, surface smooth. Rag tender, juice very abundant, one fruit containing 150 c. c. Flavor sweet, quality good. Seeds, none. Navel three-eighths of an inch in diameter, opening three-sixteenths of an inch in diameter. This tree and select trees Nos. 2 and 3 in the same orchard are growing in the vicinity of a stable and probably receive more than the ordinary amount of manure. They were selected on the basis of large production of a fine quality of fruit. The trees are of very thrifty appearance, with an abundance of dark-green, healthy foliage. Few scale or other insect pests, fungus diseases, or plant parasites were found on these trees, indicating an apparent resistance to these enemies of the orange tree in this section, where no treatment for scale or plant parasites is ordinarily given."

37749. "Select tree No. 2. A tree 15 feet in height, 16 feet in spread, of erect habit of growth. It is about 12 years old, with a trunk $17\frac{3}{8}$ inches in circumference near the ground. It is headed 28 inches above the ground and the foliage is dense, deep green in color; no spines. The June crop is 113 fruits and the December crop 107. There are no apparent variations among the fruits, a typical one of which weighs 440 grams, is $12\frac{1}{4}$ inches in circumference, and in diameter is $3\frac{1}{8}$ inches. The skin is three-sixteenths of an inch in thickness, and the core is nine-sixteenths of an inch in diameter. In form the

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

fruit is rather elongated, the button flush with the surface, as well as the blossom. When ripe, the skin is light green in color and the flesh light golden yellow. The surface is smooth. Rag tender, juice fairly abundant, one specimen containing 150 c. c. The flavor is sweet, rather insipid. Quality good in comparison with other navel oranges grown in this region. Seeds, none. Navel diameter seven-sixteenths of an inch; navel opening three-sixteenths of an inch."

37750. "Select tree No. 3. A 12-year-old tree, 16 feet in height, 18 feet in spread, drooping and spreading in form, with a trunk circumference of 20 inches. The foliage is dense, dark green in color; no spines. No variations appear among the 130 fruits of the June crop and the 55 fruits of the December crop. A typical fruit weighs 480 grams, is $12\frac{1}{2}$ inches in circumference, 4 inches in diameter, with a skin three-sixteenths of an inch in thickness. The core diameter is half an inch. Button and blossom flush with skin. When ripe, the skin is yellowish green, the flesh being deep golden yellow. The surface is smooth in texture. Rag tender, flesh very juicy, one specimen containing 170 c. c. Flavor is subacid; quality good. Navel diameter is five-sixteenths of an inch, navel opening being three-sixteenths of an inch. There are on this tree many blossoms just opening, fruits just set, and small fruits, as well as those mentioned in the June and December crops, indicating a tendency to bear throughout the year."

37751. "Select tree No. 4. A 25-year-old tree, 20 feet in height, 28 feet in spread, erect in habit; head almost 4 feet above the ground, with a trunk 32 inches in circumference. The foliage is sparse, deep green in color; spines long and sharp. There are 270 fruits in the June crop and 12 in the December crop. Selected because of the erect habit of the tree and on account of the fact that it is reported that the fruits frequently contain seeds."

37752. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

From the grove of Col. Frederico da Costa, Matatu, Bahia.

"Tree 2-8-2. A tree about 8 years old, 14 feet in height, 15 feet in spread, erect in habit, headed 11 inches above the ground, the trunk being $20\frac{1}{2}$ inches in circumference. Foliage dense; very dark green in color; no spines. In the June crop there are 156 fruits; in December, 33 fruits. The principal variations appear in flattened fruits and large, protruding navels, although the navel is normally very small."

37753 to 37759.

From the grove of Dr. Fortunato da Silva, Cabulla, Bahia.

37753. CITRUS NOBILIS DELICIOSA (Tenore) Swingle.

Tangerine.

"Select tree No. 5. A tree about 25 years old, 12 feet in height, 22 feet in spread; head 2 feet above the ground, spreading in form with a trunk 30 inches in circumference. Foliage dense,

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

very light green in color; no spines. The June crop is 350 fruits and the December crop 54 fruits, among which no variations appear. A typical fruit weighs 180 grams, is $9\frac{3}{8}$ inches in circumference, 3 inches in diameter, with a skin one-eighth of an inch thick and a core five-eighths of an inch in diameter. The shape is flattened, the button end raised, the blossom end slightly depressed. When ripe, the skin is yellowish green, the flesh being pinkish in color. The surface is smooth, with oil glands deeply sunken. The rag is tender, the flesh very juicy, a single fruit containing 65 c. c. of juice. The flavor is pronounced and the quality good. There are from 20 to 23 seeds in a fruit."

37754 to 37759. CITRUS SINENSIS (L.) Osbeck.

Navel orange.

37754. "Tree 1-1-3. An old tree, 16 feet in height, 16 feet in spread, head 20 inches above the ground, spreading in form, with a trunk $21\frac{1}{4}$ inches in circumference. The foliage is open, deep green in color; thorns confined to one branch. There are no apparent variations among the 185 fruits of the June crop and 35 of the December crop. A typical fruit weighs 560 grams and is 13 inches in circumference; diameter $4\frac{1}{4}$ inches, with a skin one-eighth of an inch in thickness and a core three-fourths of an inch in diameter. Form of fruit, elongated, flattened at the blossom end. Button and blossom flush with surface. When ripe, the skin is yellowish green in color, the flesh being golden. The surface is smooth. The rag is very coarse and the flesh dry, a single fruit containing only 150 c. c. of juice. The navel is 1 inch in diameter, the opening being three-fourths of an inch wide."

37755. "Tree 1-1-2, renewed tree top about 2 years old. A tree probably 25 years old, 16 feet in height, 20 feet in spread. Head $1\frac{1}{2}$ feet above the ground, spreading in form, the trunk being $23\frac{3}{8}$ inches in circumference. The foliage is open, deep green in color; no spines. There are about 10 fruits in the June crop and 20 in the December crop, among which no variations are apparent. A single typical fruit weighs 480 grams, is $12\frac{5}{8}$ inches in circumference and 4 inches in diameter. The skin is one-eighth of an inch thick; a core rather open, seven-eighths of an inch in diameter. The shape is spherical, somewhat flattened at both ends, the button slightly sunken, blossom flush with the surface. When ripe the color is yellowish, rather better than the average, the flesh golden yellow. The rag is coarse, and a single fruit contains 150 c. c. of juice. The flavor is sweet, the quality fair. In diameter the navel is five-eighths of an inch and the opening is three-sixteenths of an inch."

37756. "Tree 1-4-6. Tree 25 years old, 14 feet in height, 14 feet in spread, erect in habit, head $1\frac{1}{2}$ feet above the ground, with a trunk 23 inches in circumference. The

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

foliage is very open, deep green in color; no spines. The June crop is 191 fruits and the December crop 15 fruits, among which there are no apparent variations."

37757. "Tree 1-5-2. A tree about 25 years old, 13 feet in height, 13 feet in spread, headed 10 inches above the ground; spreading in form, with a trunk 27 inches in circumference. The foliage is dense, deep green in color; no spines. There are 145 fruits in the June crop and 14 in the December crop. The most noticeable variation among them is the tendency to elliptical form, which is shown by a few fruits."

37758. "Tree 1-6-3. A tree about 25 years old, 18 feet in height, 12½ feet in spread, very erect in form, headed 1 foot above the ground, with a trunk 32 inches in circumference. Foliage open, deep green in color; no thorns. The June crop is 125 fruits; the December, 30 fruits. One orange-colored fruit is evidently off season. There are no other noticeable variations. The navel is small."

37759. "Tree 1-6-7. A tree about 25 years old, 16 feet in height, 16 feet in spread, erect in growth; head 14 inches above the ground, with a trunk 33 inches in circumference. The foliage sparse, deep green in color; no spines. In the June crop there are 355 fruits and in the December crop 11 fruits, among which there are no apparent variations. The navel is uniformly small."

37760 to 37773.

From the grove of Col. Frederico da Costa, Matatu, Bahia.

37760 to 37770. CITRUS SINENSIS (L.) Osbeck. Navel orange.

37760. "Tree 1-8-6. A tree about 15 years old, 18 feet in height, 20 feet in spread, headed 11 inches above the ground; spreading in habit, with a trunk 23¼ inches in circumference. The foliage is dense, dark green in color; no spines. In the June crop there are 171 fruits and in the December crop 8 fruits, among which no variations are apparent. The navel is very small. This is a very old tree, having the largest trunk of any citrus tree observed in this orchard. Extreme fruitfulness is combined with the tendency to bear fruits all the year round, as there are flowers in all stages of development on this tree. No mottle-leaf was observed, and it seems possible that this tree may be resistant to chlorosis."

37761. "Tree 1-8-1. A tree about 15 years old, 16 feet in height, 18 feet in spread, drooping in habit, headed about 13 inches above the ground, with a trunk 22¾ inches in circumference. The foliage is very dense, deep green in color; no spines. In the June crop there are 110 fruits and in the December crop 16 fruits, among which no variations are visible. The navel is small to medium in size."

37762. "Tree 1-8-5. A tree about 15 years old, 18 feet in height, 20 feet in spread, headed 1½ feet from the ground;

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

spreading in habit, with a trunk 29 inches in circumference. Foliage dense, dark green in color; no spines. There are 145 fruits in the June crop and 50 in the December crop, the most notable variation being an occasional striped fruit. The navels vary in size from small to medium; a fine, healthy tree producing fruits of large size."

37763. "Tree 1-7-6. A tree about 15 years old, 18 feet in height, 20 feet in spread, erect in habit, headed 20 inches above the ground, with a trunk 2 feet in circumference. The foliage is dense, dark green in color; no spines. In the June crop there are 196 fruits and in the December crop 13 fruits. The principal variation is a protruding navel, though the size is normally small to medium. A fine, healthy tree."

37764. "Tree 2-5-1. A tree about 8 years old, 13 feet in height, 16 feet in spread, headed 11½ inches above the ground; spreading in habit, with a trunk 20¾ inches in circumference. The foliage is dense, dark green in color; no spines. There are 85 fruits in the June crop and 250 in the December crop. On one limb there are 8 wrinkled fruits of the Australian type. The navel is normally very small. Remarkable for the large number of fruits produced in the December crop."

37765. "Tree 2-6-1. Tree about 8 years old, 13 feet in height, 15 feet in spread, drooping in habit, headed 1½ feet above the ground. Trunk 18¼ inches in circumference. The foliage is dense, dark green in color; no spines. There are 44 fruits in the June crop and 327 in the December crop, all being very uniform in type. The navel is uniformly small. This tree is remarkable for the large number of fruits in the December crop."

37766. "Tree 2-11-1. A tree about 8 years old, 11 feet in height, 13 feet in spread, headed 16 inches above the ground, spreading in habit, circumference of trunk 16¾ inches. Foliage very dense, dark green; a few small spines. In the June crop there are 50 fruits and in the December crop 59. The principal variations noted are a few large navels and the abnormal shape of the fruit. The navel is normally medium sized. Selected for its apparent tendency to produce fruit throughout the year."

37767. "Tree 2-8-4. A tree about 8 years old, 13 feet in height, 18 feet in spread, headed 10 inches above the ground, spreading in habit, trunk 20½ inches in circumference. Foliage very dense, dark green in color; a few small spines. In the June crop there are 262 fruits and 21 in the December crop, among which there are a few with very large navels, although the navel is normally medium sized. This tree was selected for its large production of June fruits."

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

37768. "Tree 2-9-5. A tree about 8 years old, 15 feet in height, 15 feet in spread, erect and open in habit, headed 16 inches above the ground, with a trunk $21\frac{1}{2}$ inches in circumference. The foliage is dense on the outside of the tree, dark green in color; no spines. In the June crop there are 210 fruits and in the December crop 35. The shape of the fruit varies considerably. There are some large navels, although the navel is normally very small. Selected because of its rather peculiar, upright, open habit of growth and small leaves. It is distinct in type from the typical navel orange tree in Bahia."

37769. "Tree 2-10-2. A tree about 8 years old, 14 feet in height, 16 feet in spread, headed about 15 inches above the ground, spreading in habit, with a trunk $19\frac{1}{4}$ inches in circumference. Its foliage is very dense, dark green in color; no spines. In the June crop there are 297 fruits and 20 in the December crop, among which there are no apparent variations. The navel is uniformly very small. Selected because of the preponderance of June fruits."

37770. "Tree 2-10-1. A tree about 8 years old, 14 feet in height, 15 feet in spread, of drooping habit, headed 17 inches above the ground, with a trunk 18 inches in circumference. The foliage is very dense, dark green; no spines. There are 98 fruits in the June crop and 97 in the December crop. The fruit variations are very noticeable on this tree, the principal ones being cylindrical and flattened shapes, the fruit wrinkled, very large and protruding navels, and very large navel openings. The navel varies from very small to very large. A typical specimen from this tree weighs 340 grams, is $11\frac{7}{8}$ inches in circumference, $3\frac{3}{4}$ inches in diameter, the skin is one-sixteenth of an inch thick, and the core is one-half inch in diameter. The shape is most commonly flattened, the button flush with the surface, the blossom sunken. The color is yellowish green, with the flesh deep golden yellow. The surface is very smooth. The rag is coarse and the flesh fairly juicy, a typical specimen containing 130 c. c. of juice. The flavor is subacid and the quality good. This variety is unusually thin skinned."

37771. CITRUS NOBILIS DELICIOSA (Tenore) Swingle.

Tangerine.

"Tree 2-6-2. Tree about 11 feet in height, 12 feet in spread, headed $17\frac{1}{2}$ inches above the ground, spreading in habit, the trunk being 18 inches in circumference. The foliage is very dense, light green in color; many large spines. There are no fruits in the June crop, but 565 in the December crop, among which two were found with small navels. Typical fruit weighs about 120 grams, is $8\frac{3}{4}$ inches in circumference, $2\frac{3}{4}$ inches in diameter, and skin one-eighth of an inch thick, and the core five-eighths of an inch in diameter. The shape is flattened, button flush with surface, blossom slightly sunken. The surface is yellowish green in color, the flesh pinkish. The rag is tender,

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

and a typical fruit contains 50 c. c. of juice. The flavor is sweet and the quality fair. There are about 19 seeds to the fruit."

37772 and 37773. CITRUS LIMETTA Risso. Sweet lime.

37772. "Tree 1-2-5. This fruit, known in Portuguese as *lima doce*, is about the size of a lemon, a typical fruit being $2\frac{1}{4}$ inches in diameter. The skin is pale green in color externally and slightly less than one-fourth of an inch in thickness. The core is closed and small, the juice sweet and cloying in flavor. This is a fruit that is highly esteemed by the Bahians. Its flavor is similar to that of the lime, but with less acidity. The seeds number 12. The tree is very productive."

37773. "Tree 1-1-7. See previous number [S. P. I. 37772] for description."

37774 to 37777.

From the grove of Col. Demetrio Luiz de Souza, Cruz de Cosme, Bahia.

37774. CITRUS SINENSIS (L.) Osbeck. Navel orange.

"Tree 1-6-1. A tree about 25 years old, 18 feet in height, 21 feet in spread, headed $1\frac{1}{2}$ feet above the ground, spreading habit, trunk 27 inches in circumference. Foliage dense, dark green in color; no spines. There are 237 fruits in the June crop and 49 in the December crop, no variations among them being apparent. The navel is medium sized. The fruits on this tree were some of the finest we observed during our stay in Bahia."

37775. CITRUS AURANTIUM L. Bitter orange.

"Tree 1-1-1. The bitter or Seville orange, known in Portuguese as *laranja da terra*. This is the citrus generally used in Bahia as a stock for the navel orange, as well as for other varieties of citrus fruits. The tree from which these buds were taken is about 15 years old, 14 feet in height, 13 feet in spread, erect in habit, headed 15 inches above the ground, with a trunk $23\frac{1}{2}$ inches in circumference. The foliage is dense, deep green; thorns very large and strong. There are 106 fruits in the June crop and 46 in the December crop, among which no variations were noticed. Typical fruit of *laranja da terra* weighs about 180 grams and is $9\frac{1}{2}$ inches in circumference, 3 inches in diameter, with a skin one fourth of an inch thick and a core three fourths of an inch in diameter. The shape is oblate, with the button and blossom flush with the surface. The skin is dull orange in color and the flesh pale orange. The texture of the surface is rough. The rag is tender, juice abundant, a single fruit containing 60 c. c. The flavor is bitter and rather acid. The quality is poor for eating out of hand, the fruit being used principally for making marmalade. Obtained for trial as a stock plant for citrus fruits in this country and also for marmalade or cooking purposes."

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

37776. CITRUS SINENSIS (L.) Osbeck. Orange.

"*Laranja da china*. Tree 1-2-1. This is a seedy, sweet orange, inferior in quality to the navel orange and grown principally as a stock plant for the latter. In parts of the interior of Brazil, however, it is commonly grown for its fruit, the navel orange being little known in many of these regions. It is of fair size, usually pale green in color when ripe, with tough rag, many seeds; juice abundant and of subacid flavor. In Bahia it is not commonly used for stock, *laranja da terra* being used for this purpose, but in the interior, where the latter is little known, it is more largely utilized. This variety ripens in Bahia after the June crop of navels is gone, hence it brings a good price on the market."

37777. CITRUS SINENSIS (L.) Osbeck. Orange.

"A seedy orange, said to be identical in character with *laranja selecta* as grown at Bahia, and taken from a tree said by Col. Demetrio Luiz de Souza to have been grown from a bud taken from a navel-orange tree. The tree is 6 years of age, 12 feet in height, 12 feet in spread, head a little less than 2 feet above the ground, spreading in form, with a trunk 15½ inches in circumference. The foliage is dense, dark green in color; a few very small thorns. There are 31 fruits in the June crop and 39 in the December, no variations being apparent among them. The fruit is about 3 inches in diameter, with skin one-fourth of an inch thick and core about half an inch in diameter. The rag is tender and the juice very abundant. The fruit shows no sign of a navel and contains about eight perfectly developed seeds. This tree is of special interest because of the possibility of its having arisen as a bud sport or as a reversion of the navel orange to the parent *laranja selecta* type."

37778. CITRUS GRANDIS (L.) Osbeck. Pummelo.
(*Citrus decumana* Murr.)

From the ranch of Dr. Miguel de Teive e Argollo, Roma, Bahia.

"A very large pummelo with flesh of rich pink color. A good specimen weighs 2,000 grams and is 23½ inches in circumference, with a diameter of 7½ inches. The skin is 1 inch thick and the core 1½ inches in diameter. The form of fruit is oblate, with a smooth, fine skin, light green in color. The rag is coarse, the flesh rather dry, the flavor sweet and agreeable. One fruit contained 102 seeds. This pummelo is not widely known in Brazil. The tree is low and spreading in form, and the fruits are produced in clusters like the grapefruit grown in the United States. It seems to have possibilities as a salad fruit, particularly because of its attractive color as well as its good flavor."

37779 to 37782.

From the grove of Dr. Miguel de Teive e Argollo, Roma, Bahia.

37779. CITRUS BERGAMIA Risso. Bergamot orange.

"Tree said by Dr. Argollo to be the Bergamot orange. A typical fruit weighs about 620 grams, is 14½ inches in circumference, 4½ inches in diameter, with skin five-eighths of an inch thick and core a half inch in diameter. The shape is somewhat

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

pyriform, the fruit being elongated at the base and flattened at the apex. The smooth surface is yellowish in color. The rag is coarse, the flesh not very juicy, one fruit containing about 110 c. c. of juice. The flavor is sweet, with a slight bitter twang. Quality can be considered only fair. The specimen examined contained 7 seeds."

37780. CITRUS GRANDIS (L.) Osbeck. **Pummelo.**
(*Citrus decumana* Murr.)

"A seedless variety, not widely grown in Bahia, and found by us only in this one garden. Averages about 1½ pounds in weight, has a rather thick skin and abundant juice. The flavor is that of typical grapefruits grown in the United States. Its origin is unknown."

37781. CITRUS MEDICA L. **Citron.**

"A fruit about 1,000 grams in weight, 14¾ inches in circumference, 4¾ inches in diameter, with a skin 1¼ inches thick, and a core 1 inch in diameter. The surface is rough and pale green in color. The flesh contains but little juice and is pale straw color with coarse rag. The flesh is utilized for the manufacture of a preserve."

37782. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"*Laranja selecta*. Cuttings from a tree on Dr. Argollo's place. This orange has been introduced from Rio de Janeiro under S. P. I. No. 37840, which see for description."

37783. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

From the grove of Col. Julio Barretto, Cabulla, Bahia.

"A tree said to be more than 40 years old, 20 feet in height, 21 feet in spread, erect in habit, headed 1 foot 5 inches above the ground, with a trunk 38¾ inches in circumference. The foliage is sparse, dark green; no spines. There are in the June crop 398 fruits and in the December crop 264 fruits. Little variation is noticeable among them, excepting the size of navels, which varies from small to medium. A typical fruit weighs 420 grams, is 11¾ inches in circumference, 4¾ inches in diameter, with a core three-fourths of an inch in diameter. The shape is elongated, the button and blossom flush with the surface. The color is yellowish green and the flesh golden yellow. The surface is smooth. The rag is tender and the flesh very juicy, one fruit containing 140 c. c. of juice. The flavor is sub-acid, the quality being very good. The navel is seven-sixteenths of an inch in diameter and the opening one-eighth of an inch. This tree is remarkable for productiveness. The fruit is of especially fine quality. It is budded on *laranja da terra* stock. (See S. P. I. Nos. 37791 and 37792)."

37784 to 37786. CITRUS SP. **Lime orange.**

From the grove of Col. João de Teive e Argollo, Agua Comprida, Bahia.

37784. "These trees are about 20 years of age, 20 feet in height, 20 feet in spread, headed about 4 feet above the ground, and with trunks 25 inches in circumference. Erect and open habit of growth. Foliage sparse, light green in

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

color; few spines; tree productive. A typical fruit weighs 350 grams, is 11 inches in circumference, 3½ inches in diameter, the skin is one-fourth of an inch thick and core 1½ inches in diameter. The form is oval to nearly spherical; color yellowish green when ripe. The surface is smooth, the flesh golden yellow in color. The rag is tender and the juice is abundant, a single specimen containing 125 c. c. of juice. The flavor is a mixture of that of the orange and lime, sweet and pleasant. The seeds are 2 to 8 in number. Col. Argollo says that this variety comes true from the seed. It is common in the markets of Rio de Janeiro during February and March, and is evidently highly esteemed by the Brazilians because of its pleasant, refreshing flavor. It is used extensively for making an orangeade which the Brazilians esteem more highly than that made from other citrus fruits."

37785 and 37786. See S. P. I. No. 37784 for description.

37787. CITRUS LIMETTA RISSO.**Sweet lime.**

From the grove of Dr. Fortunato da Silva, Cabulla, Bahia.

"This fruit, known in Portuguese as *lima doce*, is about the size of a lemon, a typical fruit being 2¼ inches in diameter. The skin is pale green in color, externally, and slightly less than one-fourth of an inch in thickness. The core is closed and small; the juice sweet and cloying in flavor. This is a fruit that is highly esteemed by the Bahians. Its flavor is similar to that of the lime, but with less acidity. The seeds number 12. The tree is very productive."

37788 and 37789.

From the grove of Col. Frederico da Costa, Matatu, Bahia.

37788. CITRUS SINENSIS (L.) Osbeck.**Navel orange.**

"A tree about 15 years old, 16 feet in height, 21 feet in spread, headed about 15 inches above ground, spreading in form, with a trunk 31 inches in circumference. The foliage is very dense, dark green; no spines. In the June crop there are 113 fruits, in the December crop 24, no prominent variations being apparent among them. A typical fruit is about 440 grams in weight, 12½ inches in circumference, 4 inches in diameter, the skin is one-eighth of an inch in thickness, and the core is three-fourths of an inch in diameter. The shape is elongated, the button end slightly sunken, the blossom end slightly raised. The surface is light golden in color. The rag is very tender, and the juice is abundant, one fruit containing 150 c. c. of juice. The navel is 1 inch in diameter and the navel opening is one-fourth of an inch wide."

37789. CITRUS LIMETTA RISSO. Rutaceæ.**Sweet lime.**

For description of the sweet lime, see S. P. I. No. 37787.

37790. MANGIFERA INDICA L. Anacardiaceæ.**Rose mango.**

From Roma, Bahia. See S. P. I. No. 37846 for description.

37791 and 37792. CITRUS SINENSIS (L.) Osbeck. Rutaceæ.**Navel orange.**

From the grove of Col. Julio Barretto, Cabulla, Bahia.

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

37791. "A tree believed to be about 40 years old, but with a top much younger than this, perhaps 8 years old, as the tree has been renewed by cutting it back to the old stump. Its height is about 10 feet, its spread 12 feet, its habit drooping, its trunk $29\frac{3}{4}$ inches in circumference, and it is headed 14 inches above the ground. The foliage is dense, dark green; no thorns. In the June crop there are 139 fruits and in the December crop 35, the principal variations being in the size of the navel, which is from very small to medium."

37792. "A tree said to be more than 40 years old, about 20 feet in height, and 27 feet in spread, erect in habit, headed more than 4 feet above the ground, with a trunk $37\frac{1}{2}$ inches in circumference. The foliage is sparse, dark green; no spines. In the June crop there are 234 fruits and in the December crop 139, among them being many which are flattened or wrinkled. Navels vary from medium to large in size, some of them being very large and protruding. This and S. P. I. No. 37791 are from a grove that is said to be one of the very oldest existing in Bahia. The Bahia navel orange is believed to have originated near it. Many of the trees in this grove are said to be about 40 or more years of age, but have had their tops renewed several times by cutting back to the trunk, a custom common in Bahian orchards. The orchardists generally believe that these renewed tops produce better fruit than the original tree. It appears to us that this may be due to the fact that as the trees grow older and decline in vigor and productiveness, the fruit naturally becomes smaller and poorer. By renewal its size and quality are considerably increased, equal perhaps to the fruits borne by a young tree. This 45-year-old orchard is said to be one of the most productive and profitable in Bahia."

37793. CITRUS sp. Rutaceæ.

Lime orange.

From the grove of Col. João de Teive e Argollo, Agua Comprida, Bahia. Lime orange, called in Portuguese *laranja lima*. See S. P. I. No. 37784 for description.

37794. NEOGLAZIOVIA VARIEGATA (Arruda) Mez. Bromeliaceæ. Caroá.
(*Billbergia variegata* Schultz.)

From Joazeiro, Brazil. Presented by Dr. Leo Zehntner, Director of the Horto Florestal, Joazeiro, Bahia.

"This plant is found in the caatingas or dry lands of the interior of Bahia State, particularly around Joazeiro. It grows to a height of 4 or 5 feet, and is conspicuous among the other plants on the caatinga because of its variegated leaves, which are deep green blotched with white. The natives harvest the wild plants, extract the fiber, and make of it ropes, baskets, hammocks, etc. One of the commonest articles made of caroá fiber is a small rope about one-fourth of an inch in diameter and 6 feet in length, which is sold in the Joazeiro markets at 100 reis (about 3 cents) and is used to string up hammocks.

"Statistics concerning the extent of the caroá industry are lacking. The plant should be worthy of a trial in the southwestern United States,

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

however, to determine its value and the feasibility of economically extracting the fiber."

Plants.

37795. CITRUS BERGAMIA RISSO. Rutaceæ. **Bergamot orange.**

From Roma, Bahia. See S. P. I. No. 37779 for description.

37796. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

From the grove of Senhor João Elias Esteres, Nictheroy, Rio de Janeiro.

"Cuttings of *laranja selecta* from a variety which is a favorite in Rio de Janeiro, its cultivation being much more extensive than that of the Bahia navel orange. It is hard to understand why this should be, when one considers that the navel is seedless while *Selecta* contains numerous seeds. It seems to be the popular opinion, however, that *Selecta* is a better flavored orange than the navel grown in this section. *Selecta* is believed to be the parent of the Bahia' navel, and there is good evidence to substantiate this belief. It is an orange of good size, about as large as a good California Washington Navel, but slightly flattened or oblate in form. The flesh is tender and juicy and of a delicious sprightly flavor, rather a contrast in this respect to the Bahia navel, which is usually lacking in acidity."

37797. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

From Maxambomba, Brazil.

"Cuttings of *laranja da pera* from Maxambomba, about 30 kilometers from Rio de Janeiro, on the Central Railway. This variety is called the pear orange, presumably because of its slightly elongated form. It is a smaller fruit than the *Selecta*, being more nearly comparable to the *Mediterranean Sweet*, grown in California. These cuttings are from the grove of José Maria Corres, one of the best in the region around Maxambomba. The trees are very prolific fruiters and ripen their crop about Christmas time, at almost the opposite season of the year from *Selecta*, which ripens from March or April until September. It is one of the chief commercial varieties of the region, and while rather seedy, there is an abundance of juice and little rag. The flavor is very sweet and not so refreshing as *Selecta*."

37798. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

"From the nursery of Eickhoff, Carneiro Leão & Co., Rio de Janeiro. Cuttings of *laranja da pera*. See S. P. I. No. 37797 for a description of this variety."

37799 to 37801.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 2, 1914. Quoted notes by Mr. Meyer.

37799 and 37800. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

From the village of Yatzeko, south of Sianfu, Shensi, China. January 20, 1914.

37799. "(No. 2006a.) A large-fruited variety of Chinese chestnut, which locally is propagated by top grafting. The trees are of low-branching habits and prefer a well-drained, decomposed

37799 to 37801—Continued. (Quoted notes by Mr. F. N. Meyer.)

rock soil, possibly at the foot of mountains. They seem to be quite resistant to the bark disease but may perhaps not be quite hardy north of Washington, D. C. Chinese name *K'uei li tzü*, meaning 'superior chestnut.'

37800. "(No. 2007a.) The ordinary form of local chestnut, having rather small nuts; the trees are low branching and do not grow tall; the leaves persist on the trees till spring. Chinese name *Yin li tzü*, meaning 'silver chestnut.' Propagated from seed only. See remarks under Nos. 2005a and 2006a [S. P. I. Nos. 37548 and 37799]."

37801. DIOSPYROS LOTUS L. Diospyracæ. Persimmon.

"(No. 2008a. Mountains near Nantochu, south of Sianfu, Shensi, China. January 21, 1914.) The wild form of cultivated Japanese and Chinese persimmon, collected at an altitude of over 2,000 feet above sea level. Chinese name *Yeh shih tzü*."

See No. 1096 [S. P. I. No. 37540] for additional information.

37802. RHEEDIA BRASILIENSIS (Mart.) Planch. and Triana. Clusiaceæ. Bakopary.

From Rio de Janeiro, Brazil. Presented by Dr. J. C. Willis, director of the Jardim Botânico. Received April 13, 1914.

"A beautiful pyramidal tree of the family Guttiferæ, known in the State of Rio de Janeiro, Brazil, where it is indigenous, under the name of *bakopary*. As the name indicates, the fruit greatly resembles the *bakury* (*Platonia insignis*—*Aristoclesia esculenta*); it is somewhat smaller in size than the latter, and while not considered so delicious, is highly esteemed by the natives, particularly when prepared in the form of a *doce* or jam, when, as one authority says, it is 'a nectar.' In general form the fruit is ovate, rather sharp at the apex. In length it varies from 1¼ to 1½ inches, in width from 1 to 1¼ inches. The stem is 1½ to 2 inches in length, rather stout. When fully ripe the color is light orange yellow tinged with green. The tough, pliable skin, about one-eighth of an inch thick, surrounds the soft, translucent, snowy white pulp in which the two oblong elliptical seeds are embedded. In flavor the pulp is subacid, sprightly, strikingly similar to that of the mangosteen, though perhaps not quite so delicate.

"Deserves a trial in the warmest sections of the United States, not only for its own merits as a fruit but in connection with the mangosteen experiments. As a stock for the mangosteen it might prove of value." (*Wilson Popenoe*.)

For an illustration of the leaves and fruit of the bakopary, see Plate III. Plants.

37803 to 37805. CITRUS spp. Rutacæ.

Presented by Mr. James Birch Rorer, mycologist, Board of Agriculture, Port of Spain, Trinidad, through Mrs. S. T. Rorer. Received April 21, 1914.

37803. CITRUS AURANTIFOLIA (Christm.) Swingle. Lime.

From the island of Tobago, British West Indies, Cuttings.

37803 to 37805—Continued.

37804. CITRUS GRANDIS (L.) Osbeck.
(*Citrus decumana* Murr.)

Alamoen.

From Surinam.

"*Alamoen*. During the past three years I have made several trips to Surinam and have found there a fruit which they call *alamoen*, and which seems to me to be far superior to the grapefruit in flavor. So far as I can learn it is a native of that part of the world; trees are growing everywhere there and thousands of fruit rotting every year. Trees come true to seed, I have been told by various planters in Surinam." (*Rorer*.)

37805. CITRUS LIMETTA Risso.

Sweet lime.

From the island of Tobago, British West Indies.

37806. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ.

(*Hibiscus esculentus* L.)

Okra.

From Rashîda, Dakhleh Oasis, Western Egypt. Presented by Sheik Abu Bakr, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received April 22, 1914.

37807. BRASSICA OLERACEA CAULO-RAPA × VIRIDIS. Brassicaceæ.

Marrow kale.

From Wordsley, Stourbridge, England. Procured from E. Webb & Sons. Received April 20, 1914.

"This is a cross between thousand-headed kale and kohlrabi. Produces a thickened stem of a marrowy nature, and grows about 5 feet high. During the autumn the leaves should be cut and given to cattle. Later on, before severe frost sets in, gather the stems and store, safe from frost, for food supplies through the winter. The culture is similar to thousand-headed kale." (*Webb & Sons*.)

37808. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ.

(*Atalantia glauca* Benth.)

Desert kumquat.

From Sydney, New South Wales, Australia. Presented by Mr. J. H. Maiden, director, Botanic Garden. Received April 22, 1914.

"Fresh fruits of the native lime from Collarenebri, in the northwest of this State." (*Maiden*.)

37809 to 37812.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Quoted notes by Mr. Meyer.

37809. PONCIRUS TRIFOLIATA (L.) Raf. Rutaceæ. Trifoliate orange.
(*Citrus trifoliata* L.)

From Sianfu, Shensi, China. Received April 2, 1914.

"(No. 2009a. January 26, 1914.) The well-known hardy trifoliate orange, quite common on the Sianfu plain on Chinese burial grounds. Sparingly used as a hedge plant, especially around old temple gardens. The plant is much used by Chinese gardeners in pot culture upon which to graft various citrus fruits and keep them dwarfed. Locally the fruits

37809 to 37812—Continued. (Quoted notes by Mr. F. N. Meyer.)

are used as fuel after having been roughly crushed and partly dried. The wood occasionally is employed in carpentering work and for tool handles and carrying poles, but it is not much thought of. The plant seems to be able to stand a great amount of drought and some alkali also, and it might prove to be of great value as a hedge plant for sections of the semiarid United States where the winters are not too severe. The fruits of this orange are often quite large and elongated near the peduncle. May possibly be a different and perhaps hardier variety than the ordinary Japanese form. Chinese name *Ch'ou ch'eng tzü*."

37810. ULMUS PARVIFOLIA Jacq. Ulmaceæ.**Elm.**

From the village of Nantotchu, south of Sianfu, Shensi. Received April 14, 1914.

"(No. 2010a. January 21, 1914.) A small-leaved species of elm, growing in favorable localities into a tall tree with a heavy trunk; on dry, exposed loess cliffs, however, it remains in the nature of a tall shrub. The bark is scaly and thrown off in small patches, making the trunk and limbs quite smooth; the trees flower in late summer and the ripe fruits, together with the dead, brown foliage, are retained in sheltered spots until springtime. This elm is very drought resistant and stands a fair amount of alkali. It is much planted by the Chinese for its lumber, which is durable and tenacious and in special demand by cart builders. Of value for the mild-wintered semiarid sections of the United States as a useful lumber tree and as an ornamental tree for parks and along roads. Chinese name *Kuang kuang yü shu*, meaning 'lustrous' or 'shiny elm tree.'

37811 and 37812. DIOSPYROS LOTUS L. Diospyraceæ.**Persimmon.**

37811. From Fuping, Shensi. Received April 14, 1914.

"(No. 2011a. February 3, 1914.) An improved variety of the ordinary *lotus* persimmon of North China, used extensively by the Chinese as a stock for their cultivated *kaki* varieties. To obtain the best results, the practice of patch budding in late spring should be followed, and the Chinese as a rule set two or three buds on the same stock, so as to make sure. This *lotus* persimmon occurs naturally in dry loess ravines, along steep edges of loess tablelands, and on pebbly and rocky inclines. It seems to be able to withstand a truly amazing amount of drought and also a fair percentage of alkali, but the trees do not thrive on low places or on lands which are not properly drained. The use of this *lotus* persimmon as a stock in America may possibly make persimmon culture successful, even in regions with a summer rainfall of 10 to 12 inches only. Local name *Juan tsao tzü*, meaning 'soft jujube.'

37812. From Ishih, Shansi. Received April 4, 1914.

"(No. 2012a. February 12, 1914.) The ordinary form of the wild *lotus* persimmon, the fruits of which are a sweetmeat for children. For further information see preceding number. Local name *Juan tsao tzü*."

37813 to 37818.

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received April 11, 1914. Quoted notes by Mr. Goding, except as otherwise indicated.

37813 to 37818—Contd. (Quoted notes by Mr. F. W. Goding.)

37813. *ACHRADELPHA MAMMOSA* (L.) Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn. f.)

"*Mamey colorado*. A fruit about the size of a teacup, resembling a potato in general appearance, the skin being rough, dark greenish brown, mottled with sordid yellow. The edible portion is red, soft, sweet, with a peculiar but pleasant flavor, in the center of which is a shuttle-shaped seed about 2 inches long, of a chestnut-brown color and always apparently split along one side; within the hard, thin, shining shell is a white kernel. These fruits are produced by large trees common throughout the warm coastal region of Ecuador, whence they are brought, in quantities, by the natives to the Guayaquil markets. In Mexico are to be found fruits bearing similar names, but widely differing otherwise."

37814. *MAMMEA AMERICANA* L. Clusiaceæ. **Mam mee.**

"*Mamey cartajina*, also called *mata serrano*, in general appearance resembles the *colorado*. The edible part, however, is rather hard like that of the squash, in which are to be found two large, rough nuts flattened on one side, but otherwise rounded, the flat surfaces lying together, inside being the kernel. The hard exterior of the nut is grated by the natives and used to kill fleas; when applied to infested dogs the parasites leave the animal at once. This fruit is used locally only for making an excellent jam. These fruits are produced by large trees common throughout the warm coastal region of Ecuador, whence they are brought, in quantities, by the natives to the Guayaquil markets. In Mexico are to be found fruits bearing similar names, but widely differing otherwise."

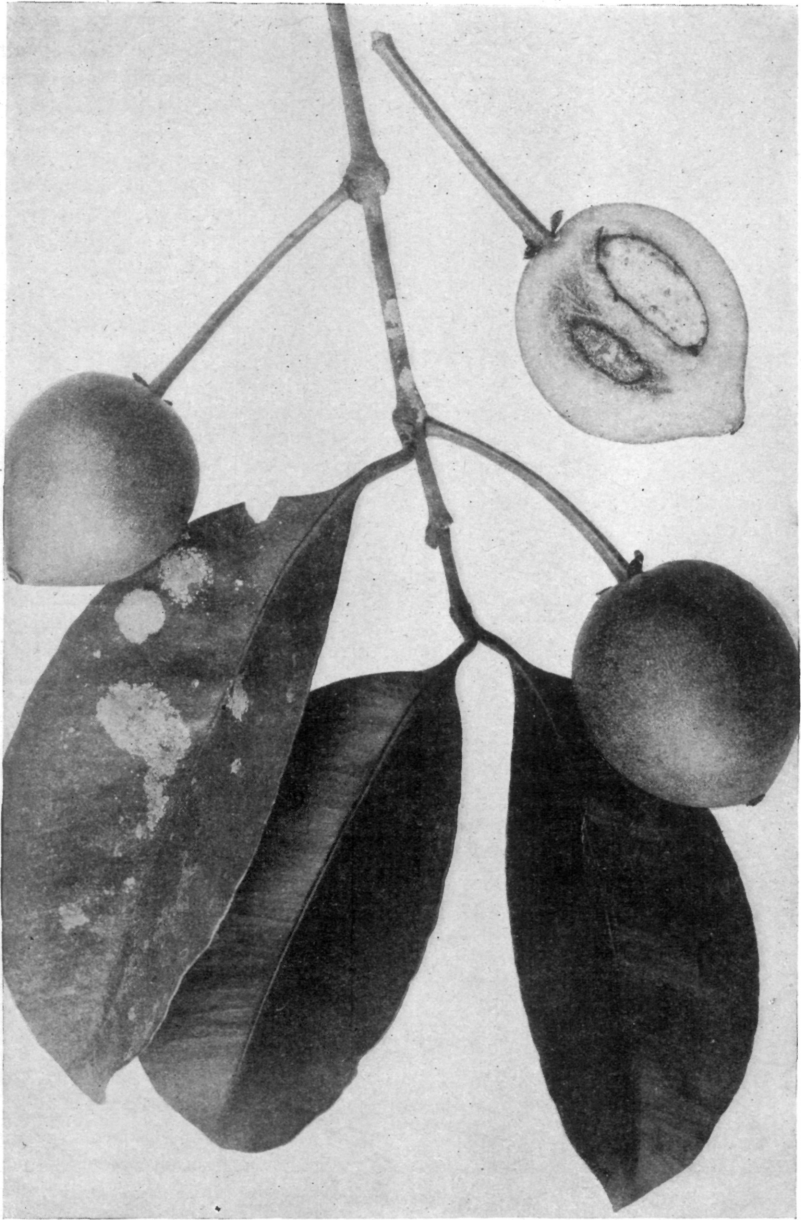
37815. (Undetermined.)

"*Zapote*. This fruit outwardly resembles a round summer squash, the smooth skin being pale greenish, hard, and thick. The inside is deep orange yellow, stringy, not unlike the interior of a mango in appearance and taste, and incloses four or five long, more or less three-cornered nuts with leathery skin to which the stringy pulp firmly adheres, within being the kernel. These fruits are produced by large trees common throughout the warm coastal region of Ecuador, whence they are brought by the natives, in large quantities, to the Guayaquil markets. In Mexico are to be found fruits bearing similar names, but widely differing otherwise."

37816. *TRIPHASIA TRIFOLIA* (Burm. f.) P. Wilson. Rutaceæ.
(*Triphasia aurantiola* Lour.)

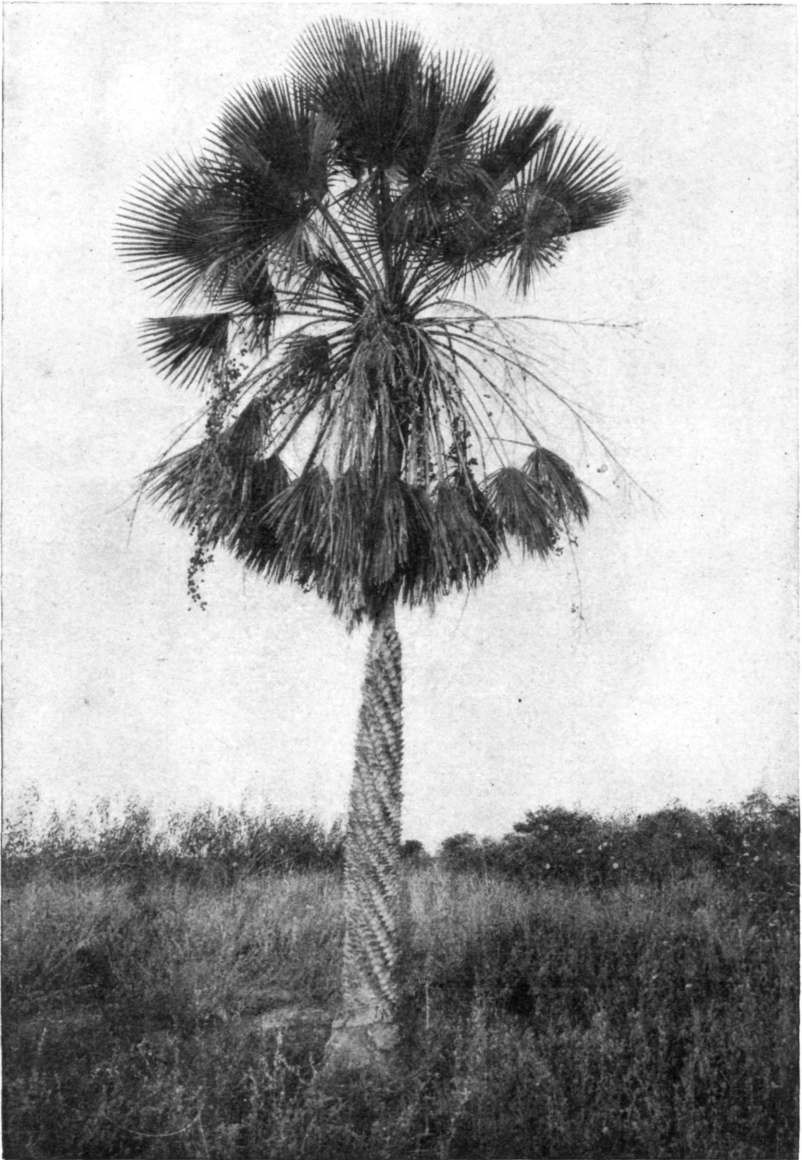
"*Limoncillo*. Grows on a bushy shrub about 6 feet high, with several stems. It is used in making jams and other preserves."

"This is a spiny shrub, having leaves composed of three egg-shaped leaflets, notched at the top; its flowers are white and sweet scented and usually grow singly in the leaf axils, producing 1 to 3 celled berries, containing a single seed surrounded with pulp in each cell. They have a trilobed calyx, as many petals, six distinct stamens, and an ovary elevated on a short stalk and ending in a longish thick style which ultimately falls away. It is a native of southern China, but it is now naturalized in many parts of the East Indies, and is also cultivated in the West Indies. Its fruits are about as large as hazelnuts and have a red skin. When ripe they have an agreeable sweet taste, but if gathered



THE BAKOPARY (*RHEEDIA BRASILIENSIS* (MART.) PLANCH. AND TRIANA), S. P. I.
No. 37802.

The bakopary, native of the State of Rio de Janeiro, Brazil, and occasionally planted in gardens, is a handsome ornamental tree and produces bright-yellow fruits with translucent, white flesh. The flavor is subacid, delicate, and spicy, strongly suggestive of the mangosteen, to which it is related and for which it may prove a good stock. (Photographed at Rio de Janeiro by Messrs. Dorsett, Shamel, and Popenoe, January 2, 1914; natural size; P15415FS.)



THE CARNAUBA PALM (*COPERNICIA CERIFERA* MARTIUS), S. P. I. No. 37866.

An interesting and valuable Brazilian fan palm found in abundance in the valley of the Rio Sao Francisco, both scattered and in comparatively large groves. The trees attain a diameter of 12 inches or more and a height of 20 to 30 feet. The trunks are used for fence posts and in house construction. The nuts are highly prized for hog feed. Candles made from the wax exuding from the leaves, which is much harder than tallow or paraffin, are dark yellowish brown in color and burn with a clear, yellow, fairly brilliant flame. The wax industry, which was formerly prosperous in this region, is not now very remunerative, owing primarily, it is said, to the fact that extensive landowners have prohibited the cutting of the leaves. (Photographed at Sento Se, Brazil, by Messrs. Dorsett and Popenoe, February 20, 1914; P14910FS.)

37813 to 37818—Contd. (Quoted notes by Mr. F. W. Goding.)

green they have a strong flavor of turpentine, and the pulp is very sticky. They are sometimes preserved whole in sirup and occasionally sent to this country from Manila as lime berries." (*Lindley, Treasury of Botany, vol. 2, p. 1173.*)

37817. *PUNICA GRANATUM* L. Punicaceæ. **Pomegranate.**

"*Granada.* The tree attains a height of 10 to 15 feet, and a diameter of 2 to 3 inches. The fruit is used for the table and for flavoring."

37818. *ANNONA SQUAMOSA* L. Annonaceæ. **Sweetsop.**

"This fruit also grows on a tree some 12 to 15 feet high. The fruit is delicious for table use, much more so than the *cherimoya.*"

37819. *MAURITIA VINIFERA* Martius. Phœnicaceæ. **Burity palm.**

From Januaria, Minas Geraes, Brazil. Collected by Messrs. Dorsett, Shamel, and Popenoe, of the Bureau of Plant Industry. Plants received April 13, 1914.

(No. 72. February 14, 1914.) The Burity palm. See No. 32873 for previous introduction and description.

37820 and 37821. *PELARGONIUM* spp. Geraniaceæ. **Geranium.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Cuttings received April 16, 1914.

37820. *PELARGONIUM CAPITATUM* (L.) L'Herit.

For previous introduction see S. P. I. No. 31957.

37821. *PELARGONIUM RADULA* (Cav.) L'Herit.

For previous introductions see S. P. I. Nos. 31965 and 31966.

Var. *major.*

37822 to 37869.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Willson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. (Quoted notes (except as otherwise indicated) by Messrs. Dorsett, Shamel, and Popenoe.

37822. *OPUNTIA* sp. Cactaceæ. **Prickly-pear.**

From Sao Joao del Rey, Minas Geraes.

"(No. 64. January 26, 1914.) Cuttings taken from plants in a back yard in the edge of town. Quite common here."

37823. *CEREUS JAMACARU* DC. Cactaceæ. **Cactus.**

From Januaria, Minas Geraes.

"(No. 65. February 14, 1914.) *Mandacaru de boi*, growing 25 or 30 feet high. Said to produce an edible fruit, and the wood is commonly used in building. Several large plants were seen here."

Cuttings.

37824 to 37828. *OPUNTIA* spp. Cactaceæ. **Prickly-pear.**

Cuttings of the following:

37824. "(No. 66. Morrinhos, Minas Geraes. February 16, 1914.)

Low-growing cactus called *palma*, said to produce very good fruit.

Found on the hillside just back of the old church."

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37825. "(No. 67. Bom Jesus da Lapa, Bahia. February 23, 1914.) Collected on the side of the hill of solid rock which lies at the edge of town."
37826. "(No. 68. Joazeiro, Bahia. February 23, 1914.) From the Ilha do Fogo in the Rio Sao Francisco. Called *palma* by the natives."
37827. "(No. 70. Joazeiro, Bahia. February 24, 1914.) Two pads of nearly spineless *Opuntia* growing along the fence of the Horto Florestal."
37828. "(No. 71. Bom Fim. March 27, 1914.) Pads of a quite common spiny variety, secured a mile or two out of town on the hillside in the campo."

37829 to 37850.

From Rio de Janeiro. Plants purchased of Eickhoff, Carneiro Leão & Co.

37829. *MYRCIARIA EDULIS* (Vell.) Skeels. Myrtaceæ. **Cambucá.**
(*Eugenia edulis* Vell.)

"The *cambucá*, a native of the State of Rio de Janeiro, Brazil, and commonly cultivated in gardens for its highly appreciated fruit. In growth the tree is very similar to the jaboticaba, the leaves being considerably larger, however, and the bark a darker shade of brown. A row of fine specimens in the Jardim Botânico bears the garden number 58. The fruits are produced both on the small limbs and on the trunk, though the specimens we have seen do not fruit clear down to the ground, as the jaboticaba frequently does. The season is from February to May in this region.

"In form the fruit is oblate, $1\frac{1}{2}$ inches in length, and 2 inches in breadth; stem, practically none, the fruits being sessile, or nearly so; base flattened, cavity none; apex flattened, calyx persistent, a very small, brown disk not over one-eighth of an inch in diameter, level with the surface of the fruit; skins smooth, orange yellow in color, thin, tenacious, fairly tough; flesh divided into two portions, the firm outer flesh one-fourth of an inch thick, leathery, very acid in taste, light orange in color, the inner flesh, constituting the edible portion of the fruit, being soft, jellylike in consistency, translucent, light orange in color, subacid in flavor, greatly resembling some of the passifloras, quite pleasant, and evidently highly esteemed by the Brazilians; seed oval or nearly so, compressed, about seven-eighths of an inch in length, three-fourths of an inch in breadth, and seven eighths of an inch in thickness, the cotyledons light purple in color; seed coat deep brown, reticulated, not adhering very closely to the flesh. For trial in Florida and southern California."

37830 to 37832. *EUGENIA* spp. Myrtaceæ.

37830. *EUGENIA CAMPESTRIS* Velloso. **Cambuhy da India.**
(*Eugenia arrabida* Berg.)

"A small, highly ornamental tree, native of Brazil. It is commonly known as *Cambuhy da India* or *Uvaia do campo*. The leaves are small, linear lanceolate, opposite, deep green in color. The flowers, which are produced in September, are axillary

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

and terminal, and are followed by small, yellow, rather acid fruits which are appreciated by the natives. The bark is said to be astringent and aromatic. For trial in southern Florida and southern California."

37831. *EUGENIA MYRCIANTHES* Niedenzu.

(*Eugenia edulis* Benth. and Hook. not Vell.)

Cereja do Rio Grande.

"The *cereja do Rio Grande*, a small tree native of Brazil, with small, oblong, acute, dark-green leaves, producing in June oblong, purplish red fruits about the size of an olive, with greenish flesh. It is said to bear prodigiously. The fruits are rather hard when ripe, and for this reason are usually mashed into a paste before being eaten. For trial in southern Florida and southern California."

37832. *EUGENIA SPECIOSA* Cambess.

"A Brazilian myrtaceous fruit listed by Eickhoff, Carneiro Leão & Co. under this name. It is said to be of value for its fruit. For trial in southern Florida and southern California."

"A large much-branched tree, indigenous to the State of Sao Paulo, in Brazil. The leaves are petiolate, elliptic or obovate elliptic, obtuse, pubescent when young, but at length glabrate. The flowers are borne upon solitary peduncles in the axils of the leaves; petals obovate, concave, pellucid punctate, ciliolate. The fruit of this species is edible but is little known, and a good description is lacking." (*Cambessedes. In St. Hiltaire, Flora Brasiliæ Meridionalis, vol. 2, p. 1351, 1829.*)

37833. *GENIPA AMERICANA* L. Rubiaceæ.

Genipap.

"A large tree, native of the American Tropics. In the British West Indies it is called *genipap*; in Brazil, *genipapo*. At Bahia it is very common, and during the season the markets are full of the fruit. Some of the finest specimen trees we saw were fully 60 feet in height, symmetrical and stately in appearance, but devoid of foliage for a part of the year, as the species is deciduous in this climate. The leaves are a foot or more in length, oblong obovate, sometimes entire, sometimes more or less dentate, dark green in color. The flowers, which are produced in November, are small and light yellow in color. The fruits are the size of an orange, broadly oval to nearly spherical in form, russet brown in color. After being picked they are not ready to be eaten until they have softened and are bordering on decay. A thin layer of granular flesh lies immediately under the tender membranous skin, and inclosed by this is a mass of soft, brownish pulp in which the numerous small, compressed seeds are embedded. It is difficult to eat the pulp without swallowing the seeds. The flavor is characteristic and quite pronounced; it may be likened, perhaps, to that of dried apples, but it is somewhat stronger and the aroma is considerably more penetrating.

"Besides being eaten in the fresh state, the fruit is put to numerous other uses, one of the most important of which is the manufacture of a distilled liquor known as *licor de genipapo*. This article retains the peculiar and distinctive flavor of the ripe fruit

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

and is highly esteemed by the Brazilians. Its manufacture is carried on commercially in certain regions. A refreshing drink, known as *genipapada*, is also prepared from the ripe fruit, with the addition of sugar and water, much as lemonade is made in the United States.

"A dye is extracted from the green fruit which, according to Barbosa Rodrigues, is employed by the Mundurucu Indians for tattooing. It is also used for coloring clothes, straw, hammocks, etc.

"Various medicinal uses are attributed to the genipap by the Brazilians; the root is said to be purgative and the juice of the fruit diuretic. For trial in southern Florida and southern California."

37834. *CAMPOMANESIA FENZLIANA* (Berg) Glaziou. Myrtaceæ.

Guabiroba.

"A small Brazilian myrtaceous tree with foliage remarkably similar to that of some of the European oaks. The common name, *guabiroba*, which is applied to it, is also given, with various minor variations, such as *gabiropa* and *guabiraba*, to several fruits of the two allied genera *Abbevillea* and *Campomanesia*.

"Although occasionally reaching a height of 30 or 35 feet, the *guabiroba*, as commonly seen in gardens, is a tree of 20 or 25 feet in height, rather sparsely foliated, with elliptical-ovate entire leaves about 2 inches in length, the veins depressed on the dorsal surface, prominent on the ventral surface.

"The fruits greatly resemble small guavas; they are from three-fourths to 1 inch in diameter, oblate in form, the apex crowned by a large disk and prominent 5-parted calyx. In color they are orange yellow when fully ripe, the surface slightly wrinkled and covered with a thick tomentum or down. The skin is thin, and surrounds a layer of granular, light-yellow pulp which incloses the seeds and the soft pulp in which they are embedded. The flavor is similar to that of the guava, but frequently a little stronger. The principal use to which the fruits are put is the manufacture of jams and jellies.

"According to Padre Tavares, there are four varieties of this species, but they are not well known.

"The tree seems likely to prove suitable for cultivation in southern Florida and southern California. It should be given a trial in these regions."

37835. *PSIDIUM GUAJAVA* L. Myrtaceæ.

Guava.

"The *Goiaba roxa*, or purple guava, a selected variety of the common tropical guava which is cultivated in Rio de Janeiro. It is said to be of superior size and quality and should be given a trial in Florida."

37836. *EUGENIA DOMBEYI* (Sprengel) Skeels. Myrtaceæ.(*Eugenia brasiliensis* Lam.)

Grumichama.

"The *grumizama* or *grumichama*. See S. P. I. No. 36968 for description. For trial in Florida and California."

37837 to 37839. *MYRCIARIA* sp. Myrtaceæ.

Jaboticaba.

For general information concerning the jaboticaba, see S. P. I. No. 36702.

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37837. "*Jaboticaba murta*. One of the commonest varieties (or species) of the jaboticaba both in Rio de Janeiro and the State of Minas Geraes. The most noticeable difference between it and the other principal variety, *coróá*, is the smaller size of the leaves. Ordinarily the leaves of *murta* are not over 1 inch in length. The fruit is said to be about the same as that of *coróá*.

"It is impossible, at the present time, to determine the actual status of this and other varieties of the jaboticaba. There is great need of a careful study of the species and varieties of *Myrciaria* to throw some light on the subject."

37838. "*Jaboticaba de cabinho* or *de Para*. While this variety of jaboticaba is offered by one nursery firm, no data concerning it was obtainable. It is said to be of very good quality."

37839. "*Jaboticaba coróá*. This and *murta* are the two commonly recognized varieties of jaboticaba in Rio de Janeiro and Minas Geraes. The leaves of the *coróá* are 2 inches in length, about twice the size of those of *murta*. There is said to be very little difference in the fruits of the two."

37840 to 37845. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. Orange.

37840. "*Laranja selecta*. This unusually choice orange is one of the two principal varieties grown in the Rio de Janeiro district and has the added distinction of having been, as all the evidence indicates, the parent of the Bahia navel orange, or *Selecta de umbigo*, as it is still called, whose culture in California at the present day forms so important an industry.

"The origin of the *Selecta* orange is obscure. It has been cultivated in Brazil for more than a century, and although it has been superseded in Bahia by its offspring, the navel orange, it is still cultivated commercially near Rio de Janeiro, particularly in the Sao Goncalo district at Nictheroy. The main crop ripens in July, but it commences to come into the market in March and continues until October. On the fancy-fruit stands it brings 2 to 3 milreis (65 cents to \$1) per dozen, but in the public market it can be purchased at a considerably lower price. Around Nictheroy the fruit is picked and brought to the market in baskets strapped across the backs of mules or horses.

"The typical *Selecta* differs from the Bahia navel in form and in the absence of a navel, with the accompanying presence of seeds. In other points the two varieties are very similar. The typical *Selecta* as found in the markets may be described as follows: General form roundish oblate; cross section regularly round; size medium large, good specimens being 3 to 3½ inches in length and 3¼ to 3½ inches in breadth; stem sometimes inserted slightly obliquely; base usually tapering very little, flattened for a distance of one-half to three-fourths of an inch from the stem insertion, sometimes slightly rough, due to thickening of the skin; cavity none or practically none; apex flattened and frequently depressed for a distance of half an inch from the stigmatic point; surface varying from

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

smooth to rather coarsely pitted; color varying from yellowish green to greenish yellow early in the season, becoming entirely yellow later and bright orange-yellow when fully ripe; skin one-eighth to one-fourth of an inch thick, usually thickest around the base of the fruit, the oil glands large and abundant; segments 11 to 13, rag extremely tender, but core rather large, frequently one-fourth of an inch in diameter at the center of the fruit, usually solid; flesh light orange, tender, very juicy; flavor never mawkish or insipid, always sprightly, subacid, with plenty of character, probably as good as the Bahia navel, and with greater acidity; quality very good; seeds variable in number, ranging from 1 to 20, but commonly about 12 perfect ones and 6 abortive or undeveloped ones, in size rather large, varying from one-fourth to one-half an inch in length.

"It is common to find rudimentary navels in *Selecta* oranges from trees which ordinarily produce normal fruits. This phenomenon is so common that in some lots of fruit examined in the Rio de Janeiro markets as many as 10 per cent showed rudimentary navels in varying stages of development. In some instances the navels are as large as in an average navel orange.

"Natives of Rio de Janeiro generally consider the *Selecta*, as grown in that locality, superior to the navel orange as grown in Bahia. The Bahians, of course, do not admit this, but the fact remains that *Selecta* as grown in Rio de Janeiro is somewhat more highly flavored than the Bahia navel. For this and other reasons it seems important that *Selecta* be given a thorough trial in the orange-growing sections of the United States."

37841. "*Laranja selecta branca*. The white *Selecta* orange, a subvariety of the commercially important *laranja selecta*, propagated by the firm of Eickhoff, Carneiro Leão & Co. As yet it does not appear to be widely distributed, and we have had no opportunity to examine specimens of its fruits. It is said to be a desirable form and should be given a trial along with *laranja selecta*."

37842. "*Laranja selecta rajada*. Another subvariety of the *Selecta* orange, of which no description is available. For trial in the orange-growing sections of the United States."

37843. "*Laranja da pera*. This variety is distinguishable from *Selecta* by its elongated form, smaller size, thinner skin, and sweeter flavor. It is extensively cultivated in the vicinity of Rio de Janeiro, especially at Maxambomba and in the neighborhood of Cascadura. It is not pyriform in shape, as the name 'pear orange' would indicate, but is usually oval, and as seen in the markets is rarely more than 3 inches in diameter. Ripening at the opposite season of the year from *Selecta*, the two do not usually compete in the markets.

"The typical fruit may be described as follows: Form broadly oval to nearly spherical; cross section round; size medium small, length $2\frac{3}{8}$ inches to $3\frac{1}{2}$ inches, diameter $2\frac{1}{2}$ to $3\frac{1}{4}$ inches; stem inserted squarely; base rounded, cavity none

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

or practically none; apex rounded; surface smooth; color when fully ripe bright orange; skin one-eighth of an inch thick, pliable, oil glands rather small; segments commonly 10; rag rather tough, core open, one-fourth to three-eighths of an inch in diameter; flesh golden yellow, tender, exceedingly juicy; flavor sweet, apt to be cloying when the fruit is very ripe; quality good; seeds averaging 8 to 10, small to medium size.

“While most abundant in the markets about Christmas time, the season commences in late September or October and extends to the end of January. The variety is an extremely prolific bearer—quite a contrast in this respect to *Selecta*, whose bearing habits are like those of the Bahia navel orange. The branches of *Pera* trees are not infrequently so heavily laden with fruits that they have to be propped to prevent them from breaking.

“One of the finest groves of this variety seen in the vicinity of Rio de Janeiro is that of Shr. Cezar Augusto Henriques, at Maxambomba. The trees here are all budded on the sour orange (*laranja da terra*), the commonest stock in this region and generally considered the best; at 4 years of age the budded trees produce on an average 500 fruits per tree, according to the statement of the owner. The usual price obtained for the fruits is 5 milreis (about \$1.60) per hundred. The orchard is situated on a hillside, the soil being rich clay loam, grayish in color. No deep cultivation is given the trees, but the surface is frequently hoed to keep down weeds.

“The variety should be given a trial in the orange-growing sections of the United States to determine its quality and value, as well as its season of bearing, under different climatic conditions.”

37844. “*Laranja natal* (Christmas orange), as the name indicates, is so named because it ripens at Christmas time. In general appearance the variety is strikingly similar to *laranja pera*, so much so, in fact, that closer acquaintance may prove it to be *Pera* under another name. Its bearing habits are the same, and the fruits of both to the casual observer are identical in appearance. At Maxambomba, where large orchards of *Pera* are located, this variety does not appear to be grown; at Nictheroy, on the other hand, *Pera* does not seem to be common, *Natal* taking its place; all of which suggests that it may be known in the two different localities under different names. For trial in the orange-growing sections of the United States.”

37845. “The so-called *laranja verticillata*, a variety grown by Eickhoff, Carneiro Leão & Co. The leaves show the greatest variation in form and size, making the variety of interest to plant breeders. The fruit is of good size, but is considered of poor quality. For cultivation by those interested in the breeding of citrus fruits.”

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

Plants of the following:

37846. "*Manga da rosa*, or 'Rose mango,' a fruit of good size and attractive appearance, is extremely popular in the markets of Rio de Janeiro during the holiday season, when single specimens sell from 2 to 2½ milreis, the equivalent of 65 to 80 cents. Most of the fruits marketed in Rio de Janeiro are shipped down from the vicinity of Pernambuco, where the variety is said to be extensively grown. It is also grown at Bahia, and to a limited extent at Rio de Janeiro, but is not considered to reach such a high state of perfection in the latter region as it does farther north.

"As seen in Bahia and Rio de Janeiro, the typical fruit of this variety may be described as follows: General form compressed oval, tending to cordate, cross section oval; size medium large, weight 480 grams, length 4½ inches, breadth at widest point 3¼ inches; stem insertion oblique, stem long, rather slender; base slightly flattened, cavity shallow, flaring, somewhat irregular; ventral shoulder very broad and rounded, usually high; dorsal shoulder less prominent, sometimes falling; apex very slightly beaked, but not sharp, $\frac{1}{2}$ inch above the longitudinal apex, a small depression; surface smooth, color rich golden yellow tinged with salmon, one side of fruit overspread with bright rose red, varying to salmon red or flame red; dots and marblings subcutaneous, slightly lighter in color than surface; skin one-sixteenth of an inch in thickness, adhering rather closely, tough and firm, making the fruit a good shipper; flesh 1 inch thick on shoulder, slightly less on body of fruit, deep yellow in color, very little aroma, very juicy, firm and meaty, but rather fibrous, particularly near the ventral and dorsal edges of the seed; flavor sweet, slightly aromatic, but not so spicy and sprightly as in some of the better Indian mangos; quality good; seed large, 3½ inches long, 2 inches broad at widest point, about five-eighths of an inch thick, oblique, pointed at apical end, polyembryonic, fibrous over its entire surface but especially on edges, where the fibers are 1 inch long; season at Bahia December to late January.

"*Manga da rosa* is generally believed to have been introduced into Brazil from Mauritius. It is propagated by inarching, 2-year old grafted trees selling at the equivalent of \$2.35 to \$3.35 each. Because of its unusually handsome appearance and admirable shipping and keeping qualities it seems worthy of a careful trial in southern Florida."

37847. "*Carlota*. One of the few grafted varieties of mango cultivated in Brazil. It is known both at Rio de Janeiro and at Bahia. While rather small in size, it is of good flavor and less fibrous than many Brazilian mangoes. As seen in the garden of Dr. Antonio Calmon do Pin e Almeida, on the island of Itaparica, near Bahia, it may be described as follows: General form roundish oblate, compressed laterally, cross section ovate; size medium small, length 3 inches, breadth 3½ inches, thickness 2¼ inches; stem inserted squarely or nearly so; base flattened, slightly sunken on ventral side of

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

stem and raised on dorsal side, cavity practically none; dorsal shoulder rounded; ventral shoulder very broad, level; apex blunt, $\frac{3}{8}$ inch above the longitudinal apex, slightly sunken; surface smooth, dull orange yellow in color, tinged with green; dots numerous, subcutaneous, small, rounded, lighter in color than surface; skin medium thick, firm and tough, adhering closely; flesh bright orange in color, aroma pronounced and agreeable, juicy, firm, slightly fibrous; flavor rich, fairly spicy, sweet; quality good; seed oblong, apparently monoembryonic, $2\frac{3}{8}$ by $1\frac{3}{4}$ by 1 inch, fiber long on ventral edge, elsewhere short and fine; season December to January. Considered worthy of a trial in the mango-growing sections of Florida."

37848. "*Augusta*. A small mango, but one of the few varieties propagated in Brazil by inarching or grafting. As seen growing in the garden of Dr. Antonio Calmon do Pin e Almeida, on Itaparica Island, near Bahia, it may be described as follows: General form obliquely oval; cross section oval; size small, length $2\frac{3}{4}$ inches, breadth $2\frac{1}{2}$ inches, thickness 2 inches; stem inserted obliquely; base obliquely flattened, cavity practically none; dorsal shoulder rounded, low; ventral shoulder rounded, high; apex rounded, $\frac{5}{16}$ inch above the longitudinal apex, a slight depression; surface smooth, green yellow in color, tinged and overspread with orange on cheek; dots numerous, subcutaneous, small, rounded, lighter in color than surface; skin thick, firm and tough, adhering closely; flesh pale orange in color, very juicy, aroma pleasant but not pronounced; flavor subacid, not very aromatic; seed large for size of fruit, ovate reniform, $2\frac{1}{4}$ by $2\frac{1}{4}$ by 1 inch, very fibrous over entire surface, monoembryonic; season December to January. For trial in the mango-growing sections of Florida."

37849. PANICUM BARBINODE Trinius. Poaceæ. **Angola grass.**

"*Capim de Angola*, or 'Angola grass,' of the variety cultivated at Rio de Janeiro. M. Pio Corrêa considers this a forage crop of ordinary value, but states that in some sections of Brazil it is highly esteemed."

37850. STENOTAPHRUM SECUNDATUM (Walt.) Kuntze. Poaceæ.

Shore-grass.

"A broad-leaved grass, of which there are two varieties, one self-colored and one variegated. Both are extensively employed in Rio de Janeiro as lawn grasses, and while rather coarse for this purpose, they seem to be better adapted to the climatic conditions than many other lawn coverings which are planted."

37851 to 37853. OPUNTIA spp. Cactaceæ.

Prickly-pear.

37851. "(No. 138a. Morrinhos, Minas Geraes, Brazil. February 16, 1914.) An almost thornless species common on the rocky hillside back of town. Fruit said by the natives to be very good. Cuttings obtained and plants photographed."

Plant of No. 66 [S. P. I. No. 37824].

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37852. "(No. 159a. Joazeiro, Bahia, Brazil. February 23, 1914.) A small cactus on the Ilha do Fogo in the Rio Sao Francisco between Joazeiro and Petrolina. Pads flat, small, almost spineless. Called *palma* by the natives."

Plant of No. 68 [S. P. I. No. 37826].

37853. "(No. 189a. Joazeiro, Bahia, Brazil. February 24, 1914.) Seed of a nearly spineless opuntia from Horto Florestal."

Plant of No. 70 [S. P. I. No. 37827].

37854 to 37860. *ORYZA SATIVA* L. Poaceæ.**Rice.**

37854. "(No. 117a. Pirapora, Minas Geraes, Brazil. February 9, 1914.) Taken from a spot in the field where the thrasher had stood in the previous year and where the plants were twice as tall as in other parts of the field. From the fazenda of Col. Caetano Mascarenhas."

37855 to 37857.

From Rio de Janeiro, Brazil. March 23, 1914. Seed from Naples, Italy.

37855. "(No. 206a.) Called *Louro do Japão*. (Japanese golden)."

37856. "(No. 208a.) Called *Kitaima do Japão*."

37857. "(No. 209a.) Var. *branco*, or white."

37858. (Pirapora, Minas Geraes, Brazil. February 9, 1914. One head taken from specimen No. 358b [S. P. I. No. 37854].)

37859 and 37860.

"(Bahia, Brazil, December 18, 1913. Single heads taken from specimen No. 114b.) Specimens taken from rather dry upland, on the estate of Col. João Argollo, Agua Comprida, near Bahia. Cultivated on a small scale only."

37859. A. Length of head $10\frac{1}{4}$ inches.

37860. B. Length of head 9 inches.

37861 to 37865. *SPONDIAS TUBEROSA* Arruda. Anacardiaceæ.**Imbu.**

37861 and 37862. From Januaría, Minas Geraes, Brazil, February 15, 1914.

37861. "(No. 128a.) Seeds of the *imbu* or *umbu*, one of the most popular fruits of this region. The tree, which is wild here and quite common in some places, is of a peculiar habit of growth, branching 4 to 6 feet above the ground and forming a very broad, dense, and flat-topped head of foliage. When the large limbs are cut and placed in the ground as fence posts, they take root and grow. The fruits, which are sometimes produced in great profusion and are ripe at this season, are oval in form, about $1\frac{1}{2}$ inches in length, and light green in color. The skin is

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

rather tough, and incloses the translucent, juicy pulp in which is embedded the single large seed. The flavor of the pulp is rather suggestive of a sweet orange, and is agreeable in the extreme. Aside from being consumed in the fresh state, the fruit is extensively used for the manufacture of jellies and jams, in which a considerable trade has been built up. In addition, a popular dessert called *im-buzada* is made from the slightly unripe fruit by mixing the strained and sweetened pulp with milk. The ease of its culture, together with the superiority of its fruit, recommends the *imbu* for careful trial in Florida and California."

37862. "(No. 133a.) The *imbu*. See 128a [S. P. I. No. 37861] for description. Seeds procured from boys who picked them up off the ground where they had been discarded after the fruit was eaten. Seeds may not all grow; a few appeared to be old."

37863. "(No. 149a. Remanso, Brazil. February 20, 1914.) For description, see No. 128a [S. P. I. No. 37861]."

37864. "(No. 157a. Joazeiro, Bahia, Brazil. February 23, 1914.) Seed of the *imbu*, picked up along the bank of the river where the fruits had been eaten and the seeds dropped. See No. 128a [S. P. I. No. 37861] for description."

37865. "(No. 223a. Bom Fim, Bahia, Brazil. February 27, 1914.) Seeds collected on the streets of Bom Fim, where they had been dropped by the natives after eating the fruit. See No. 128a [S. P. I. No. 37861] for description."

37866. COPERNICIA CERIFERA Martius. Phœnicaceæ.

Carnauba palm.

"(No. 182a. Joazeiro, Bahia, Brazil. February 24, 1914.) Seeds of the *carnahuba*, a valuable wax palm found along the banks of the Rio Sao Francisco from well above Barra to below Joazeiro. In places it grows in great abundance, forming large groves along the banks of the stream. The leaves are fan shaped, rather finely cut, about 2 to 3 feet in diameter, light green in color. The plant frequently attains a height of 25 to 30 feet. The wax is extracted by cutting the leaves and drying them in the sun, when the wax exudes in the form of a powder. Candles made from it are yellowish brown in color, extremely hard, and burn with a clear yellow, fairly brilliant light. They sell for 40 reis (1.2 cents) each, but very few are made nowadays and they are difficult to obtain. The fruit is valued for hog feed and many of the large landowners are preserving the trees for the production of fruit. The trunks are extensively employed in building houses. The wax industry was formerly prosperous in this region, but is not now very remunerative, and only small quantities are exported. The leaves are used for brooms, etc. For trial in Florida and California."

For an illustration of the carnauba palm tree, see Plate IV.

37867. COCOS CORONATA Martius. Phœnicaceæ. **Nicuri palm.**

"(No. 217a. Bahia, Brazil. March 18, 1914.) Seeds of the *nicuri* palm. See No. 29a [S. P. I. No. 36927] for description."

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37868. *ATTALEA FUNIFERA* Martius. Phœnicaceæ. **Piassava palm.**

“(No. 218a. Bahia, Brazil. March 20, 1914.) A large, pinnate-leaved palm, found in certain sections of the State of Bahia. It is valuable because of the fiber which it furnishes, as well as for its hard, black fruits, which are used to make buttons. The oily kernel, elliptical and nearly 2 inches in length, is used as an article of food by the natives of the poorer classes. Piassava fiber is an important article of export at Bahia, and the manufacture of piassava brooms forms an industry of considerable extent. The fiber is extracted from the leaf stalks, and is coarse, stiff, cinnamon brown in color. For trial in the warmest sections of the United States.”

37869. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. **Dendé palm.**

“Bahia, Brazil. Seeds of the dendé palm. See No. 39a [S. P. I. No. 36973] for description.”

37870 and 37871. *PANAX QUINQUEFOLIUM* L. Araliaceæ.

(*Aralia quinquefolia* Decne. and Planch.) **Ginseng.**

From Peking, China. Presented by His Excellency Ts'ao Julin, twice Minister for Foreign Affairs, through Dr. Paul S. Reinsch, American minister, Peking, China, at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 18, 1914.

“Kwantien and six other places in Fengtien Province have always been famous for the cultivation of ginseng. There are two varieties—‘Mountain ginseng’ (*Shan shên*) and ‘Garden ginseng’ (*Yüan shên*). Mountain ginseng is popularly known as ‘Great Mountain ginseng’ (*Ta shan shên*), or ‘stick’ (*Pang chi*). The popular name of ‘Garden ginseng’ is ‘Sprouting ginseng’ (*Yang shên*).

“‘Mountain ginseng’ is cultivated at high altitudes. The length of the root in the soil is over 2 feet. The stalk puts forth branches. The plant commences to grow in the spring and ceases in the autumn. It is not injured either by drought or by floods, and is consequently easy to cultivate.

“‘Garden ginseng’ has always been grown on shady slopes and in black earth. Every year at harvest time the seeds are stripped off and soaked in clear water. The outer skin is rubbed off and the seeds dried in the sun. They are then mixed with clean earth and placed on the ground. At the end of a year they are taken out and replanted. In the second year they will put forth buds, and in the fourth they will bear seeds.

“If, after stripping off the seeds, it is not desired to plant them the coming year, the soaking process should be omitted and the seeds left in their skins and wrapped up and placed in a high place, out of reach of the least dampness. They may then be left for any number of years. When planted they should be left in their skins in 2 inches of earth. After two years they will begin to put forth buds, and after four years they will bear seeds. But after first being planted they should be covered with mats and kept moist by fine rain.” (*Ts'ao Julin.*)

37870. “Seeds of the wild ginseng from Tunghwahsien, located in Hsingking Subprefecture, Shengking Province, Manchuria, east of Mukden, latitude 41° 37' north and longitude 128° 7' east.” (*Ts'ao Julin.*)

37871. “Seeds of the wild ginseng from Fusung.” (*Ts'ao Julin.*)

37872 to 37936.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes (except as otherwise indicated) by Messrs. Dorsett and Popenoe.

37872. *ROLLINIA* sp. Annonaceæ.

Rollinia.

"(No. 76a. Larvas, Minas Geraes, Brazil. January 24, 1914.) Seeds of a wild *araticum* collected near Lavras."

37873 to 37877.

From Sao Joao del Rey, Minas Geraes, Brazil.

37873. *HIERACIUM* sp. Cichoriaceæ.

"(No. 77a. January 25, 1914.) Seeds of a small plant, apparently an annual, occasionally seen along the watercourses and around the edge of town. It grows to a height of 1½ to 2 feet and produces bright scarlet flowers about half an inch in diameter."

37874. *CAESALPINIA* sp. Cæsalpiniaceæ.

"(No. 88a. January 26, 1914.) Shrub 15 to 18 feet high, used as a hedge plant; stems very thorny. Seeds said to be poisonous. Collected near the edge of town."

37875. *JATROPHA CURCAS* L. Euphorbiaceæ.

Mamona.

"(No. 89a. January 26, 1914.) A low, spreading tree; sometimes used as a hedge plant. Fruit a 3-celled capsule, containing three seeds. We were told that the common name is *mamona*, but this belongs to the castor bean."

37876. *ORMOSIA MONOSPERMA* (Swartz) Urban. Fabaceæ.

"(No. 90a. January 26, 1914.) A bean used by the negroes to keep off fever. A necklace of them is placed around the children's necks. We have not seen the tree which produces them. These were purchased from a negro woman."

37877. *CIPURA PALUDOSA* Aublet.

"(No. 91a, January 26, 1914.) A beautiful dwarf irislike plant, growing along the river bank. Its grasslike leaves grow to a height of 12 or 15 inches under favorable conditions; the flowers are not over 1 inch in diameter, but of a most delicate light-blue color, similar to that of the *Iris pallida dalmatica*. Well worthy of a trial as a border plant in warm climates and for forcing."

"Root a round tunicated bulb, covered with membranous integuments. Leaves radical, about a foot high, narrow lanceolate, laxly plicate, 3-nerved or thereabouts, with longitudinal parallel lamellose ribs, thin, grass green, quite smooth, far acuminate, upright, springing from even petiolelike convolute submembranous bases, equitant near the bulb. Stem round, short, strict, terminated by the flower fascicle, which rises from the bosom of a 2-valved involucre, the outer valve of which is similar to the leaves and though smaller yet far longer than the fascicle and even with the summits of the other leaves, inner valve several times less [than the outer], convolute. Pedicels of the fascicle equal to their valves, 1-flowered; flowers several, expanding in succession, and of very short duration. A native of Guiana, where it was found by Aublet in moist meadows (savannahs) at the foot of Mount Coutou, flowering in August; he says it varies with blue flowers." (*Curtis's Botanical Magazine*, pl. 1803.)

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

37878. CROTALARIA sp. Fabaceæ.

“(No. 93a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Seeds of a leguminous shrub growing on the edge of a small stream below town. Height about 6 feet. Flowers pealike, bright yellow in color. To be tried as a green cover crop.”

37879 and 37880. ROLLINIA spp. Annonaceæ.

Araticum.

37879. ROLLINIA DOLABRIPETALO (Raddi) St. Hilaire.

“(No. 94a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Seed from *araticum* fruit, large variety with prominent protuberances, partly eaten away by birds.”

37880. ROLLINIA GLAUDESCENS Sond.

“(No. 95a. Sao Joao del Rey, Minas Geraes, Brazil. January 26, 1914.) Tree about 15 feet high, leaves oblong lanceolate, smooth, the fruits about 1 inch in diameter, more or less heart shaped, bright orange-yellow in color, the surface smooth or nearly so. Flavor only fair, and seeds almost fill the interior of the fruit.”

37881. MICHELIA CHAMPACA L. Magnoliaceæ.

Champac.

“(No. 96a. Sao Joao del Rey, Minas Geraes, Brazil. January 26, 1914.) The Indian *champac*, very popular here in Brazil as a street and ornamental tree. Its growth is symmetrical and compact, usually rather pyramidal in habit. The largest specimen seen was about 40 feet in height. The bright orange-colored, star-shaped flowers 2 inches in diameter have a delightful fruity fragrance.”

37882. ROLLINIA LAURIFOLIA Schlecht. Annonaceæ.

“(No. 98a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Seeds from one fruit, shown cut in halves in photograph. This is the species with prominent protuberances on the surface, fruit heart shaped, about 1½ inches in length.”

37883. MAURANDIA BARCLAIANA Lindley. Scrophulariaceæ.

“(No. 99a. Barbacena, Minas Geraes, Brazil. January 30, 1914.) A small vine, found in the cemetery of the church of Boa Morte. It grows 5 or 6 feet in height and forms a dense mat of foliage, the individual leaves not more than 1 inch in diameter. The flowers, which are produced in the utmost profusion, are funnel form, about 1 inch in diameter, and of a rich blue-purple color. A handsome ornamental, well worthy of a trial in different parts of the United States.”

37884. COSMOS SULPHUREUS Cav. Asteraceæ.

Cosmos.

“(No. 100a. Bello Horizonte, Brazil. February 2, 1914.) An annual plant, very similar in growth and appearance to our northern cosmos. Found near the railroad track below town, apparently escaped from cultivation. Flowers bright orange, 1½ inches in diameter, identical in form with our cosmos flowers. May already be known in the United States; if not, it is well worthy of cultivation.”

37885. RUBUS ROSAEFOLIUS Smith. Rosaceæ.

Raspberry.

“(No. 101a. Sao Joao del Rey, Minas Geraes, Brazil. January 26, 1914.) Seeds of the *Amora* berry, which appears to us to be *Rubus rosae-folius*. The plant grows in an apparently naturalized state around cultivated areas and in abandoned gardens. The berries are larger than raspberries, bright red in color, and of good flavor, though a trifle lacking in character.”

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)**37886. CESTRUM** sp. Solanaceæ.

"(No. 102a. Sitio, Minas Geraes, Brazil. January 28, 1914.) A shrub, 6 to 8 feet high, with lanceolate leaves and corymbs of tubular, orange-yellow flowers, about 1 inch long. Looks very similar to one of the *Cestrum*s grown in California."

37887. RUBUS sp. Rosaceæ.

"(No. 103a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Plant, 5 to 6 feet high, found in the river valley below town. The fruits, which are produced very abundantly, are the size and form of blackberries, but light green in color when ripe and very sweet in flavor. Of possible value for hybridization."

37888. PHASEOLUS VULGARIS L. Fabaceæ.**Bean.**

"(No. 105a. Barbacena, Minas Geraes, Brazil. January 30, 1914.) Sulphur bean. According to Mr. Frank R. Brainard, Chefe das Culturas, this is one of the best dry beans cultivated on the experimental farm. It is used as a dry bean. He does not know whether it can be used as a snap bean. Very attractive in appearance."

37889. PUNICA GRANATUM L. Punicaceæ.**Pomegranate.**

"(No. 104a. Bello Horizonte, Brazil. February 2, 1914.) Seed from a fruit purchased in the market here. One of the largest we have seen in Brazil, about 4 inches in diameter and of fairly good quality."

37890 and 37891. PHASEOLUS VULGARIS L. Fabaceæ.**Bean.**

From Barbacena, Minas Geraes, Brazil.

37890. "(No. 106a. January 30, 1914.) *Amendoim* or 'peanut bean,' from the experimental farm of the Aprendizado Agricola. A dry bean of large size and attractive appearance, considered of excellent quality."

37891. "(No. 107a. January 30, 1914.) Spotted bean, a variety considered by Mr. Frank Brainard, Chefe das Culturas of the Aprendizado Agricola, as a very good quality."

37892. ROLLINIA GLAUCESCENS Sond. Annonaceæ.

"(No. 108a. Sao Joao del Rey, Minas Geraes, Brazil. January 9, 1914.) Seeds of the *araticum* sent in under No. 95a [S. P. I. 37880], which see for description. Collected on our first visit to Sao Joao."

37893. ARISTOLOCHIA GALEATA Mart. and Zucc. Aristolochiaceæ.**Birthwort.**

"(No. 110a. Bello Horizonte, Minas Geraes, Brazil. February 2, 1914.) A vine found on the fence along the railroad track 5 or 6 miles east of town. It covers the fence for a distance of 15 or 18 feet, and produces its peculiar shaped, large, spotted flowers in great profusion. Brown is the predominating color of the flowers, the mottlings being greenish and cream colored."

37894. VIGNA SINENSIS (Torner) Savi. Fabaceæ.**Cowpea.**

"(No. 111a. Vespasiano, Minas Geraes, Brazil. February 5, 1914.) Seed from plants growing in a cornfield a short distance east of town along the railroad track. The plants were climbing up the cornstalks, which were 10 to 15 feet high."

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

- 37895.** BUNCHOSIA sp. Malpighiaceæ. Café do matto.
 "(No. 112a. Lagoa Santa, Minas Geraes, Brazil. February 5, 1914.)
Café do matto. A tree about 25 feet high, producing clusters of bright-red fruits the size of small cherries. Each fruit contains one large seed surrounded by a viscous, sticky substance, of sweetish flavor but very astringent. The leaves are said to make a tea equal to *maté*, and the fruit to have medicinal value."
- 37896.** ZEA MAYS L. Poaceæ. Corn.
 "(No. 114a. Vespasiano, Minas Geraes, Brazil. February 5, 1914.)
 Two ears of corn from a field in the edge of town. Picked at random. The crop in general is not yet ripe."
- 37897.** PSIDIUM sp. Myrtaceæ. Guava.
 "(No. 127a. Pirapora, Minas Geraes, Brazil. February 10, 1914.)
 A wild guava, produced by a small tree 15 to 20 feet high, abundant along the banks of the Rio Sao Francisco in this region. The fruits, while rather small in size, are remarkable for the large proportion of pulp to seeds. The seeds are not only small but very few in number. The pulp is yellowish in color and of very agreeable flavor, having very little of the musky flavor so much objected to in most guavas. The size of the fruit is about 1 to 1½ inches in length by 1 inch in breadth, color light green, light yellow when fully ripe. Should be given a trial in Florida and California."
- 37898.** BROMELIA sp. Bromeliaceæ. Bromelia.
 "(No. 118a. Pirapora, Minas Geraes, Brazil. February 9, 1914.) A plant similar in general appearance to the pineapple, except that the spines on the leaf margins are fewer and larger. Common on the campo here. Fruits individually about 1½ inches in length, plump, oval, containing several seeds. Very similar to the *gravatá* sent in from Bahia. For breeding experiments."
- 37899.** ATTALEA sp. Phœnicaceæ. Palm.
 "(No. 119a. Pirapora, Minas Geraes, Brazil. February 9, 1914.)
 Seed of a native palm from the region near the Rio Sao Francisco below here. Kernels said to be very good to eat. Presented by Mr. Barker, of this place, who states that there were 82 nuts in the cluster from which this came."
- 37900.** CELTIS MORIFOLIA Planch. Ulmaceæ. Jua mirim.
 "(No. 121a. Pirapora, Minas Geraes, Brazil. February 10, 1914.)
Jua mirim or small *jua*, growing on the river bank right in town. The tree is about 30 feet high, somewhat spreading in habit. Fruits about one-fourth of an inch in diameter, orange colored, much sought after by children."
- 37901.** BARYXYLUM DUBIUM (Spreng.) Pierre. Cæsalpiniaceæ.
 (*Peltophorum vogelianum* Walp.)
 "(No. 122a. Pirapora, Minas Geraes, Brazil. February 10, 1914.)
 Seed of a large tree 50 to 60 feet high, broad and spreading, giving fine shade. A handsome ornamental tree. Flowers bright yellow, with golden-yellow anthers. Called *cana fistula* here, but this name properly belongs to another plant. Seed obtained from trees growing on the bank of the Rio Sao Francisco at the landing across from railroad station."

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

37902. ROLLINIOPSIS DISCRETA Safford. Annonaceæ. **Monkey fruit.**

“(No. 125a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Possibly a Guatteria. Small tree 20 to 25 feet high, common between here and Brejo, 4 miles back from the river. Called *fruta de macaco*, not eaten by the people.”

37903. MAURITIA VINIFERA Martius. Phœnicaceæ. **Burity palm.**

“(No. 126a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Seeds of the *Burity* palm, which grows in low, moist places along the river. Its fiber is used for making hammocks, cordage, etc. These seeds were purchased from a native, and some of them may be too old to germinate.”

37904. CARYOCAR BRASILIENSIS Cambessedes. Caryocaraceæ. **Piqui.**

“(No. 129a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Fruit of the *piqui*, a common wild fruit in Minas Geraes. It grows on the campos from here to Lavras, where we first saw it. The fruit is just commencing to ripen; the layer of yellow pulp surrounding the seed is edible and has a peculiar taste. The tree grows to a height of 30 feet or more and is broad and spreading in habit.”

37905. XYLOPIA CARMINATIVA (Arruda) R. E. Fries. Annonaceæ.

Monkey's-pepper.

“(No. 131a. Januaria, Minas Geraes, Brazil. February 15, 1914.) *Pimenta de macaco*, ‘monkey's-pepper.’ Sold in the market here for seasoning and also used as a remedy for intestinal troubles. Said to be produced by a small tree native to this region. For trial in California and Florida.”

37906. AMBURANA CLAUDII Schwacke and Taub. Fabaceæ.

Fragrant imburana.

“(No. 134a. Januaria, Minas Geraes, Brazil. February 15, 1914.) *Imburana de cheiro*, fragrant imburana, a seed highly esteemed in this region. It is ground and mixed with tobacco, to be taken in the form of snuff, and a tea prepared from it is valued as a remedy for colds. Produced by a tree native to this region.” Large leguminous tree with odd pinnate leaves composed of 11 to 15 alternate leaflets and large clusters of cream-white flowers. The valuable wood, which is used for flooring, window frames, vats, etc., is much sought after. The crushed seeds are used to perfume tobacco. Both the wood and the seeds have a strong odor of coumarin. (Adapted from *Engler and Prantl, Natürlichen Pflanzen-Familien, III, 3 p. 387.*)

See S. P. I. No. 37019 for previous introduction.

37907. ZIZIPHUS JOAZEIRO Mart. Rhamnaceæ. **Jua.**

“(No. 135a. Januaria, Minas Geraes, Brazil. February 14, 1914.) Seeds of the *jua*, called here *jua de boi*. A tree growing to 40 or 50 feet high, symmetrical and compact in growth, densely foliated and very thorny, the thorns, however, being short and rather small. The fruits are used only as a remedy, a tea made from them being considered an emollient and very good for bronchial affections. Stock eat the fruit. The tree is believed to have considerable value as forage, particularly for dry lands, where it succeeds extremely well.”

37908. ANNONA SQUAMOSA L. Annonaceæ. **Anona.**

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

"(No. 136a. *Januaria*, Minas Geraes, Brazil. February 15, 1914.) Here called *pinha*. Just now it seems to be the most important fruit in *Januaria*; the season is at its height and the fruits are hawked about the streets at 2 vintens (40 reis) each. This tree bears so heavily here and is of such fine quality that these few seeds are sent because of the possibility that they may prove to be a superior strain."

37909. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 137a. Bom Jesus da Lapa, Bahia, Brazil. February 17, 1914.) Two ears of corn purchased in the village. The common type of corn in this region, used for the manufacture of *farinha* (corn meal, for human consumption) and for hog feed."

37910. *ATTALEA* sp. Phœnicaceæ.

Palm.

"(No. 130a. *Januaria*, Minas Geraes, Brazil. February 15, 1914.) Seed of the palm sent in under No. 119a [S. P. I. No. 37899] from Pirapora. A large species, growing along the banks of the Rio Sao Francisco between here and Pirapora. Called *palmeira* by the natives. Each fruit contains several seeds."

37911. *ANNONA SPINESCENS* Martius. Annonaceæ.

Anona.

"(No. 140a. Urubu, Bahia, Brazil. February 17, 1914.) Seed of an *araticum* growing on low, marshy land near the river bank. Bushy shrub 10 to 15 feet high, which because of its compact form and stout spines may be of value as a hedge plant. The fruit, about 3 inches in length and orange-red in color, is edible, but of little value. Hogs seem to be very fond of it. We saw this plant first at Morrinhos; there it was scarce, here it is the commonest plant along the riverside."

For illustrations of this shrub in its native habitat and of its fruits, see Plates V and VI.

37912. *CAPSICUM* sp. Solanaceæ.

Red pepper.

"(No. 141a. Barra, Bahia, Brazil. February 18, 1914.) Small pepper, collected near a native hut at a landing above Barra where we stopped to take on wood."

37913. *SARCOSTEMMA APICULATUM* Decne. Asclepiadaceæ.

"(No. 146a. Xiquexique, Bahia, Brazil. February 19, 1914.) Seed of a sand-binding plant collected on the banks of the Rio Sao Francisco. This plant is most vigorous in growth and forms a loose mat close to the ground, as well as growing up to 4 or 5 feet high in a tangled mass under favorable conditions. For trial in Texas and the Southwest."

37914. *RICINUS COMMUNIS* L. Euphorbiaceæ.

Castor bean.

"(No. 147a. Pilao Arcado, Bahia, Brazil. February 19, 1914.) Seeds collected from plants growing on the bank of the Rio Sao Francisco, in an apparently naturalized state, a few miles above Pilao Arcado."

37915. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

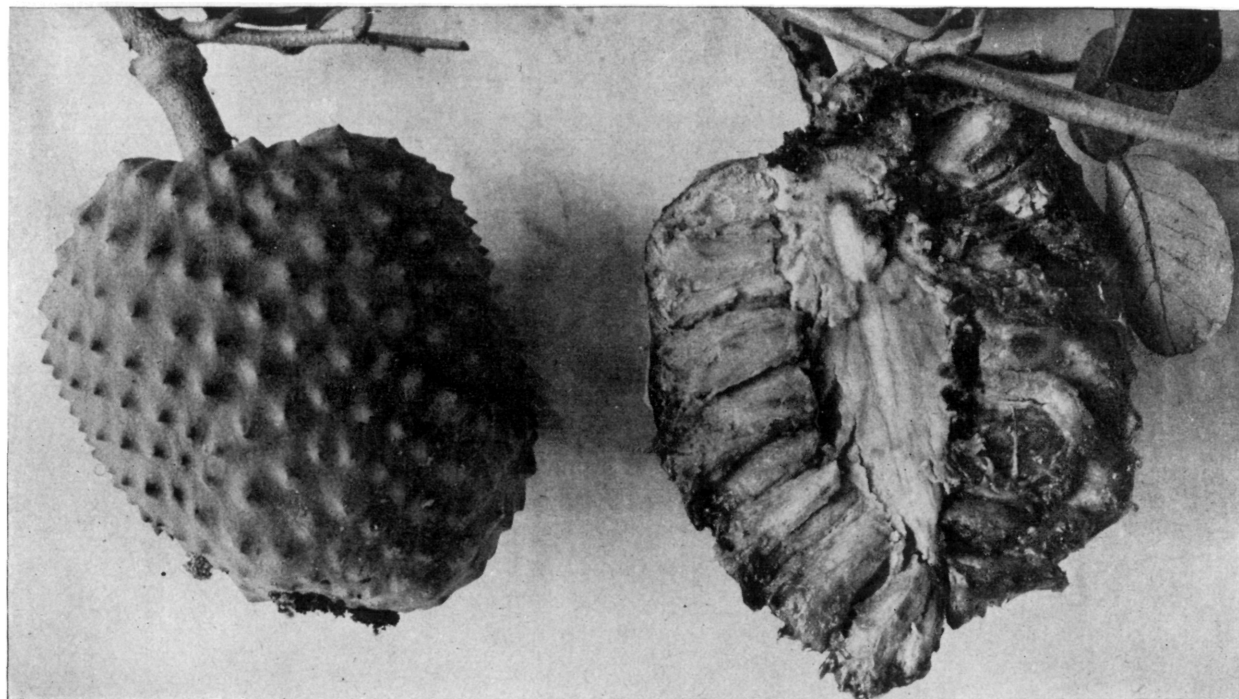
"(No. 148a. Barra, Bahia, Brazil. February 19, 1914.) Known here as *Feijão gurutuba*. In the dry regions of the interior it is said to ripen in 60 days from the sowing of the seed, and to produce most abundantly. Planted in October and November, the beginning of the wet season, in hills 18 to 20 inches apart. Considered specially suited to dry soils. Varieties badly mixed; should be separated into various types if used for planting."

37916. *JATROPHA ACANTHOPHYLLA* Löfgren. Euphorbiaceæ. **Favelleira.**



AN ORANGE-COLORED SWAMP ANONA (*ANNONA SPINESCENS* MARTIUS), S. P. I. No. 37911, ON THE BANKS OF THE RIO SAO FRANCISCO.

This spiny, compact shrub is abundant on the banks of the Rio Sao Francisco near Urubu, Bahia. The plants are low and shrubby, with numerous heavy spines. They grow in low, swampy situations and along the edges of pools, streams, and lakes. The fruit, heretofore unknown to science, is of a brilliant reddish orange color. The flesh, which is practically of the same color, is sweetish, rather insipid, and unattractive. It has been introduced as a possible wet-land stock for the cherimoya and for breeding purposes. (Photographed at Urubu, Bahia, by Messrs. Dorsett and Popenoe, February 17, 1914; P14870FS.)



FRUITS OF THE SWAMP ANONA (*ANNONA SPINESCENS* MARTIUS), S. P. I. No. 37911.

When fully ripe these fruits are so soft that even the gentlest handling will break the skin. The flesh, which is of a brilliant reddish orange color, is sweetish, rather insipid, and unattractive, and although known to be edible, it is not esteemed by the natives. Introduced for breeding purposes. (Photographed at Urubu, Bahia, by Messrs. Dorsett and Popenoe, February 17, 1914; natural size; P14875FS.)

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

“(No. 150a. Remanso, Bahia, Brazil. February 20, 1914.) Seeds of the *favelleira*, a medium-sized tree with handsome dark-green foliage and spines on the young wood. The seeds are rich in oil and are delicious to the taste, having the flavor of the Brazil nut. Presented by Col. Angelo Camilho, of this place.”

37917. IPOMOEA FISTULOSA Martius. Convolvulacæ.

“(No. 151a. Oliveira, Bahia, Brazil. February 20, 1914.) Seed of a shrub very common along the banks of the Rio Sao Francisco and in low, wet places in this region; height, 10 to 15 feet, tall and slender, branching very little, stems slender and supple, flowers funnellform, 4 inches in diameter, lilac red in color. A very abundant bloomer. Seeds are expelled from the capsules at the slightest disturbance.”

37918. SIDA sp. Malvacæ.

“(No. 152a. Joazeiro, Bahia, Brazil. February 22, 1914.) Small plant 1 to 2 feet high, compact and bushy in form, shrubby at base. The flowers are funnellform, clear light yellow in color, very similar in appearance to *Linum flavum*, but not so deep in color. Might be of value as a greenhouse plant, on account of its dwarf, compact form and profuse blooming.”

37919. NEOGLAZIOVIA CONCOLOR C. H. Wright. Bromeliacæ.

Macambira.

“(No. 153a. Joazeiro, Bahia, Brazil. February 23, 1914.) The *Macambira*, a bromeliaceous plant greatly resembling the pineapple in growth and appearance. It is found growing in great profusion among the rocks on the Ilha do Fogo, in the middle of the Rio Sao Francisco between Joazeiro and Petrolina, whence these seeds were obtained. The flower stalks are 4 to 6 feet high, the flower heads a foot long and 3 inches in diameter, producing seed in the greatest abundance. As far as we can learn, the fiber is not used here, though that of the caroá (*Neoglaziovia variegata*) is employed extensively for the manufacture of cordage.”

37920. CUCUMIS MELO L. Cucurbitacæ.

Muskmelon.

“(No. 154a. Joazeiro, Bahia, Brazil. February 23, 1914.) Seed of the large yellow *melão* commonly sold here and grown in the vicinity of town. A salmon-fleshed melon with smooth, deeply ribbed skin, light yellow in color. The size is large, up to 15 or 20 pounds. The flavor is that of a small muskmelon; the quality very good. For trial in the Southwest, as it seems to be suited to dry lands.”

37921. HYPRTIS LONGIPES St. Hil. Menthacæ.

“(No. 155a. Joazeiro, Bahia, Brazil. February 23, 1914.) A trailing plant, common on the Ilha do Fogo, in the middle of the Rio Sao Francisco, between Joazeiro and Petrolina. It flourishes on pure sand and forms a close mat of stems, which suggests that it might be used in the Southwest as a sand-binding plant. Its flowers, borne in heads 1 inch in diameter and 6 inches above the ground, are bright purple in color, very ornamental in appearance.”

37922. PSIDIUM sp. Myrtacæ.

Guava.

“(No. 156a. Joazeiro, Bahia, Brazil. February 23, 1914.) The *araca mirim*, or small guava, from the Horto Florestal. Fruit about an inch in diameter, yellow in color, thin skinned, the pulp soft, translucent, the

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

seeds abundant. In appearance the plant is similar to *Psidium guajava*. For guava breeding experiments."

37923. ZIZIPHUS JOAZEIRO Mart. Rhamnaceæ.**Jua.**

"(No. 158a. Joazeiro, Bahia, Brazil. February 23, 1914.) Seed of the jua, collected from wild trees on the caatinga near the river 2 miles below town. This interesting and valuable tree is common on the caatingas or dry lands bordering on the Rio Sao Francisco from Joazeiro nearly up to the border of the State of Minas Geraes. Here at Joazeiro it is quite common, but the trees are usually found scattered among the other plants on the caatinga and do not occur in large groves. In places where cattle and horses can get at the trees while young they are kept eaten off almost to the ground, and have a peculiar dwarfed, stunted appearance. When allowed to develop to mature size the tree forms a beautiful, dense green, umbrageous head of foliage 30 feet in diameter. The leaves are somewhat hard and brittle in texture, oval to ovate, about 2 inches in length. The small wood is armed with short, stiff thorns, which are not, however, particularly dangerous. The fruit varies greatly in size, according to the tree by which it is produced. The best fruits are nearly an inch in diameter, creamy yellow in color, spherical or nearly so. Inside the thin skin is a thick layer of mealy flesh, within which lies the seed and the layer of translucent, mucilaginous pulp which surrounds it. The seed is about the size and shape of a small olive stone. The pulp adheres to it very closely and can scarcely be separated even in the mouth. The flavor is peculiar and somewhat insipid. The trees bear prodigiously, the ground under them being covered with fruits at the end of the season. Sheep, cattle, horses, and swine eat the fruit greedily, and it is considered wholesome for them. The principal value of this tree would seem to be as a source of stock feed in dry regions, both the fruits and the foliage being of value for this purpose. In addition, the ornamental value of the tree and its drought-resisting qualities commend it for culture in arid regions. While it is probably not very hardy, it seems likely to be adapted to the Southwest."

37924. INGA AFFINIS DC. Mimosaceæ.**Jatuba.**

"(No. 181a. Joazeiro, Bahia, Brazil. February 24, 1914.) *Jatuba*. A native leguminous tree of slow growth, furnishing lumber extensively used in boat building. The pod in which the seeds are produced contains a soft, sweet pulp which is sometimes eaten."

37925. PHASEOLUS SEMIERECTUS ANGUSTIFOLIUS Martius. Fabaceæ.

"(No. 183a. Joazeiro, Bahia, Brazil. February 24, 1914.) Seed of a brown-flowered leguminous plant 3 to 4 feet high, very slender and with few branches. Common near the river in Horto Florestal. Grows in clay soil near the bank of the Rio Sao Francisco. Flowers deep brown, pealike in form."

37926. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**

"(No. 190a. Bahia, Brazil. March 9, 1914.) Seeds of the *nogucira*, from the small park in the praça of Piedade. According to Dr. Argollo Ferrão, these seeds are eaten by the natives. A rapid-growing tree, which bears heavily in this climate."

37927. BACTRIS CARYOTAEOFOLIA Mart. Phœnicaceæ.**Palm.**

"(No. 191a. Bahia, Brazil. March 9, 1914.) Palm seeds sold in the market under the name of *manivelho*. The seed is surrounded by

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

a thin layer of subacid pulp of very agreeable flavor. Clusters of fruit are common in the market now."

37928. MIMUSOPS CORIACEA (DC.) Miquel. Sapotaceæ.

"(No. 192a. Bahia, Brazil. March 9, 1914.) A native fruit called *bacopariu* by Dr. Argollo Ferrão, but it certainly is not the true *bacopari* (*Rheedia brasiliensis*). The fruits are round, about 1½ inches in diameter, yellow in color. The two to five seeds are surrounded by a dry, mealy pulp of sweet, rather mawkish flavor."

37929. POUTERIA CAIMITO (R. and P.) Radlk. Sapotaceæ. **Abiu.**

"(No. 193a. Bahia, Brazil. March 9, 1914.) The *abiu*, a rather rare fruit, but highly esteemed both here and at Rio de Janeiro. In form it is elliptical, 2 to 3 inches long, deep yellow in color. The one to four large, oblong seeds are surrounded by a translucent, whitish pulp very similar in flavor to the *sapote* and fully as agreeable."

37930. ROLLINIA SYLVATICA (St. Hil.) Mart. Annonaceæ. **Araticum.**

"(No. 194a. Bom Fim, Brazil. February 27, 1914.) Seed of an *araticum*. Secured along the railroad right of way about a mile east of town; small shrub or small tree."

37931. SESBAN MACROCARPUM Muhl. Fabaceæ.

"(No. 195a. Bom Fim, Brazil. February 27, 1914.) *Amores casadas*. Ornamental yellow or yellowish brown flowered tree."

37932. SYZYGIUM sp. Myrtaceæ. **Azeitona.**

"(No. 196a. Bom Fim, Brazil. February 27, 1914.) *Azeitona*. Seed from small shrubby tree near town in low, swampy ground."

37933. ANNONA SALZMANNI A. DC. Annonaceæ.

"(No. 202a. Bahia, Brazil. March 11, 1914.) Seed of an *araticum* from Col. Decca's."

37934. COUMA RIGIDA Muell. Arg. **Mucujé.**

"(No. 203a. Bahia, Brazil. March 13, 1914.) *Mucujé*. Seed from fruit purchased in the market. Said to be a large tree."

37935. GENIPA AMERICANA L. Rubiaceæ. **Genipap.**

"(No. 204a. Bahia, Brazil. March 8, 1914.) This fruit is quite common in the market now."

37936. MOQUILEA TOMENTOSA Benth. Rosaceæ.

"(No. 205a. Rio de Janeiro, Brazil. March 23, 1914.) Seeds of the *oily tree*."

Distribution.—A tree found in the vicinity of Pernambuco in Brazil.

37937 to 37939. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Lausanne, Switzerland. Presented by Prof. G. Martinet, Federal Establishment for Seed Control and Experiments, through Mr. E. Brown, of the Department of Agriculture. Received April 30, 1914. Quoted notes by Prof. Martinet.

37937. "No. 944. *Apitrêfle* (hummelbee clover), a variety which is very productive for three years and can be used two years after being sown. It has the peculiarity of being accessible to honeybees, owing to its short corolla, which is more open at the top. The Director of the Office of Experiment Stations, Dr. A. C. True, last summer in

37937 to 37938—Continued. (Quoted notes by Prof. G. Martinet.)

visiting our establishment saw several bees getting honey from this clover, although he had declared himself to be skeptical before seeing this. As this selection is also one of our best as regards the crop, farmers and beekeepers will find it useful."

37938. "No. 943. This is a perennial clover with numerous fine stocks and many leaves. It develops daughter plants beside the parent stock. This will last for four years and more. The seeds are uniformly yellow, so that it is easy to verify their identity."

37939. "No. 950. Perennial clover higher than the preceding, but not lasting for so long a time. Most of the seeds are dark violet."

37940. ASPARAGUS TENUIFOLIUS Lam. Convallariaceæ.**Asparagus.**

From Chene, Geneva, Switzerland. Plant presented by Mr. Henri Correvon. Received May 7, 1914.

"This asparagus I found in the Alps of Como, Lombardy." (*Correvon.*)

37941 and 37942. MEDICAGO SATIVA L. Fabaceæ.**Provence alfalfa.**

From Paris, France. Presented by Mr. A. M. Thackara, American consul, who obtained it from Mr. A. Rousset, Paris. Received April 24, 1914. Quoted notes by Mr. Thackara.

37941. "Ordinary Provence alfalfa re-cleaned against dodder. Mr. Rousset states his belief that this newly harvested seed is desired by the United States Department of Agriculture to distinguish the place of growth in France, but adds that, as he explained to the Chief of the Seed Laboratory, the climate of France is, in his opinion, too even to justify such a theory. He declares that alfalfa seed grown in the Provence district would not, when newly harvested, be any different or contain other varieties of foreign seed than alfalfa grown in other parts of France."

37942. "Extra Provence alfalfa re-cleaned."

37943. DIOSCOREA ALATA L. Dioscoreaceæ.**Yam.**

From Santa Rosa, Fla. Received February 17, 1913, from Mr. William M. Wilson, who obtained them from Dr. E. K. Neal, of the same place. Dr. Neal secured the original material from Mr. J. De Hoff, Arch Creek, Fla. Additional material received from Mr. J. J. Chapman, March 9, 1915.

"The tubers received were rather small and resembled the Jamaica yampee in both form and quality. Judging from these specimens the variety is well worth cultivating in Florida." (*R. A. Young.*)

"I got one seed tuber in 1893, when I first came to Avon Park, De Soto County, Fla., from a neighbor, H. G. Burnett, who had a few in his garden; he got them from his father-in-law, at Fort Myers, where they have been grown, I understand, for 50 years; not in large quantity, however. I have kept seed from year to year since that time, no more, though, than I wanted myself, until year before last, when somehow they made several times more seed tubers than I ever saw before. This last year they again made only a very few seed tubers. I received them under the name of *White Jamaica* yam, but do not know whether

37943—Continued.

this name is correct. Mr. Burnett, who was quite a horticulturist, said their botanical name was *Dioscorea alata*. I grew them for five years near Palatka (at Florahome) and they did well on high hammock land. Down here in Dade County, on very light sandy and rocky land, they produce as much as sweet potatoes, and with me take the place of Irish potatoes; the latter will not succeed in this dry soil at all. The yams keep for months." (*J. De Hoff.*)

37944. PHOEBE NANMU (Oliver) Gamble. Lauraceæ. Nanmu.
(*Machilus nanmu* Hemsl.)

From Chungking, China. Presented by the American consul. Received May 1, 1914.

37945 and 37946. COIX spp. Poaceæ. Job's-tears.

From the northern Shan States, Burma. Presented by Mr. H. G. Carter, Economic Botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received April 20, 1914. Quoted notes by Mr. Carter.

For detailed information relating to these two varieties, see Sir George Watt's account of *Coix* published in the Agricultural Ledger No. 13, of 1904.

37945. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf.

"Forma 4. No. 3b195, edible."

37946. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf.

"No. 3b197. Used for bead chains, door screens, and rosaries."

37947. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Raetihi, New Zealand. Purchased of Mr. J. G. Harris. Received April 22, 1914.

"*New Era* potato. The potatoes are lemon colored in the skin and oval in shape; they are shallow in the eyes and will be economical in use. They grow to a large size, and it is no infrequent thing for a whole root to average a pound per tuber. Indeed, a drawback to the propagation of this potato is the remarkably few small potatoes grown. On my land, which is light and lies in the center of the North Island of New Zealand at an elevation of 2,000 feet, I have grown this variety up to 20 tons to the acre. We have frequent summer frosts here on account of the elevation, but these frosts, though they blacken the ordinary varieties of potatoes, do not affect the *New Era*. Indeed, nothing short of a heavy frost will touch it, but it is the blight-resisting qualities of this potato which are chiefly remarkable. Season after season, growing in a field with other kinds on both sides, it has remained unaffected while the various other kinds have been blackened and ruined. I am confident that unless long cultivation lessens the potato's virility the Irish blight will soon be no longer a terror to potato growers." (*Harris.*)

37948 to 37955.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 1, 1914. Cuttings of the following; quoted notes by Mr. Meyer.

37948 to 37952. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

From near Tsaochowfu, Shantung, China. Collected March 10, 1914.

37948 to 37955—Continued. (Quoted notes by Mr. F. N. Meyer.)

37948. "(No. 1181. A local variety of persimmon, said to be large, and of elongated, square form, with a constriction running around close to the calyx. Color red; contains few seeds as a rule. Can be dried or kept fresh for a long time, and is considered to be a very good variety. The trees grow to be tall, but have well-formed heads. Chinese name *Ssü lêng shih tzü*, meaning 'four-squared persimmon.' This and the following varieties are grown on an open plain on sandy loam, and they may possibly be hardier than other varieties. According to Father Petrie, of the Roman Catholic Mission at Tsaochowfu, these persimmons are injured by cold whenever the mercury goes below zero F. The stocks, which are *Diospyros lotus*, never freeze locally, being able to stand severe cold, apparently."

37949. "(No. 1182.) A local variety of persimmon, said to be large, of round form, with rounded-off top. Color yellow, seedless; can be dried or kept fresh for a long time; considered to be a fine variety. The trees are of sturdy growth and are prolific bearers. Chinese name *Pên shih tzü*, meaning 'original persimmon.'"

37950. "(No. 1183.) A local variety of persimmon, said to be medium large; of round, pointed form, with a square base. Seedless; can be kept fresh for a long time. Chinese name *Yu lou t'ou shih tzü*, meaning 'oil-basket persimmon.'"

37951. "(No. 1184.) A local variety of persimmon, said to be small, of round, flattened shape, with square base. Color yellow; seedless. Is generally eaten pickled in brine. Chinese name *Yen shih tzü*, meaning 'salted persimmon.'"

37952. "(No. 1185.) A local variety of persimmon, said to be small, of round, flattened form, with top slightly curved in. Of yellow color; seedless. A very early ripener; good only when fresh. Chinese name *Pa yüeh huang shih tzü*, meaning 'eighth moon yellow persimmon.'"

37953. *POPULUS TOMENTOSA* Carr. Salicaceæ.

Poplar.

From near Lungkuchi, Shantung, China.

"(No. 1189. March 13, 1914.) The tall-growing North Chinese white poplar, especially recommended as a shade and avenue tree for deep, sandy lands in semiarid regions. See former notes [S. P. I. No. 37542.]"

37954. *CHAENOMELES LAGENARIA CATHAYENSIS* (Hemsl.) Schneider.
(*Cydonia cathayensis* Hemsl.) Malaceæ. **Quince.**

From Tsaochowfu, Shantung, China.

"(No. 1190. March 11, 1914.) A large-fruited variety of Chinese quince, much grown on the sandy loam around Tsaochowfu."

For previous introductions and descriptions, see S. P. I. Nos. 35458 and 35639.

37955. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ.

Hawthorn.

From Tsaochowfu, Shantung, China.

"(No. 1191. March 11, 1914.) A medium large fruited variety of Chinese haw, of beautiful red color, much used preserved and as a jelly. Chinese name *Hung kuo*, meaning 'red fruit.'"

37956 to 37964.

From Victoria (Pittoa, near Garua), Kamerun, German West Africa. Presented by the Agricultural Experiment Station. Received April 15, 1914.

37956 to 37961. *HOLCUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

37956. No. 1. *Kakassirie.*

37959. No. 7. *Kilburie.*

37957. No. 5. *Baierie bodérie.*

37960. No. 8. *Deparie danérie.*

37958. No. 6. *Danérieballois-solodérie.*

37961. No. 9. *Ssanerari.*

37962. *PENNISETUM GLAUCUM* (L.) R. BROWN. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

No. 10. *Jadirie (Kolbenhirse).*

37963 and 37964. *HOLCUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

37963. No. 11. *Gaderie.*

37964. No. 12. *Gordori or Deparie bodérie.*

37965 to 37972.

From Peru. Presented by Mr. A. Martin Lynch at the request of Dr. Harry V. Harlan, of the Bureau of Plant Industry. Received April 2-3, 1914. Quoted notes by Dr. Harlan.

37965 to 37967. *ZEA MAYS* L. Poaceæ. **Corn.**

"Purchased in Sicuani (elevation, 11,500 feet), but possibly coming from lower down the valley of the Vilcanote."

37965. "(No. 1. Arequipa, Peru.) Large-grained calico maize."

37966. "(No. 2. Sicuani, Peru.) Large white-grained maize."

37967. "(No. 3. Arequipa, Peru.) Large-grained yellow and mixed maize."

37968. *HORDEUM VULGARE* L. Poaceæ. **Barley.**

"(No. 5.) Seed purchased in Juliaca (elevation, 12,500 feet); a coarse 6-rowed barley grown for hay as horse feed on the pampas and for grain in some of the protected areas."

37969 and 37970. *CHENOPODIUM* spp. Chenopodiaceæ.

37969. *CHENOPODIUM* sp.

Cañagua.

"(No. 6.) *Cañagua* from Juliaca, Peru. Commonly grown as a cereal crop in elevations as high as 13,500 feet. Is not injured by light freezes at any stage of growth. Not particularly palatable. Might prove useful in high mountain areas, but should be tested under strict control, as it is possible that it might become a weed."

37970. *CHENOPODIUM QUINOA* Willd.

Quinoa.

"(No. 7.) *Quinoa* from Juliaca. Only slightly less hardy than *Cañagua*. It is a very palatable cereal and is much less likely to become a weed. Worth testing in areas subject to frosts where wheat and barley are grown with difficulty."

37971. *TRITICUM AESTIVUM* L. Poaceæ.
(*Triticum vulgare* Vill.)

Wheat.

"(No. 8.) Wheat purchased in Juliaca but imported probably from the valley of the Vilcanote. Apparently mixed."

37965 to 37972—Continued. (Quoted notes by Dr. H. V. Harlan.)

37972. *ZEА MAYS* L. Poaceæ. Corn.

"(No. 9.) Small-grained yellow maize. Purchased in Juliaca, but imported from Cuzco."

37973 to 37979.

From Chelsea, London, England. Purchased from James Veitch & Sons, Ltd. Plants received April 27, 1914.

37973 and 37974. *RHODODENDRON* spp. Ericaceæ. Rhododendron.

37973. × *RHODODENDRON FORSTERIANUM* Hort.

"White and fragrant." (*Veitch, Indoor Plants, 1910.*)

Listed by William Watson, Rhododendrons and Azaleas, p. 43, as a hybrid between *R. edgeworthii* and *R. veitchianum*.

37974. × *RHODODENDRON FRAGRANTISSIMUM* Burb.

"Pure white and very fragrant." (*Veitch, Indoor Plants, 1911.*)

Supposed to be a hybrid between *R. ciliatum* and *R. edgeworthii*.

37975 and 37976. *BERBERIS* spp. Berberidaceæ. Barberry.

37975. *BERBERIS STAFFIANA* Schneider.

"This species of *Berberis* is very similar to *B. thunbergii*, but the growths are more erect and the leaves are not red tinted. It is a dense, spiny bush with deciduous oblanceolate entire leaves, racemose fascicles of yellow globose flowers, and coral or currant-red berries borne in clusters. It is a native of China." (*Kew Bulletin of Miscellaneous Information, 1913, Appendix III.*)

37976. *BERBERIS CORYI* Hort.

"This species of *Berberis* is apparently an evergreen, and as an ornamental plant is far superior to either *B. veitchii* or *B. giraldii*. The leaves are in clusters, spatulate and glaucous beneath. The berries, which are also glaucous, are round in shape and currant red in color. It is a native of China." (*Gardeners' Chronicle, 3d ser., vol. 52, p. 321, 1912.*)

37977 to 37979. *ROSA* spp. Rosaceæ. Rose.

37977. *ROSA ALBERTI* Regel.

"A species with long, graceful shoots clothed with glaucous foliage and bearing ornamental club-shaped coral-red fruits about 1 inch long, which last in good condition for a long time. It is a native of Turkestan." (*Kew Bulletin of Miscellaneous Information, 1912, Appendix III.*)

Distribution.—A white-flowered rose found in the Sungari region of southern Siberia.

37978. *ROSA SETIPODA* Hemsl. and Wilson.

"A remarkable rose, allied to *R. macrophylla*, with large corymbs of handsome rose-pink flowers. Its long pedicels clothed with spreading, gland-tipped bristles and numerous foliaceous bracts give it a singular appearance. The species is not uncommon in shrubberies in the mountains of the northwestern part of the Province of Hupeh, China." (*E. H. Wilson, in Kew Bulletin, 1916, p. 158.*)

37979. *ROSA MOYESII* Hemsley and Wilson.

Received as *R. fargesii*.

37980. ALEURITES sp. Euphorbiaceæ. Tung tree.

From Chaoyanghsien, Kwangtung, China. Presented by Dr. C. B. Leshner, American Baptist Mission, who secured them through Rev. C. E. Bousfield. Received April 23, 1914.

"Aleurites seeds from about 200 miles in the interior."

37981. PYRUS COMMUNIS L. Malaceæ. Pear.

From Newark Valley, New York. Presented by Mr. A. F. Barrott. Received April 28, 1914.

"Scions from a pear tree bearing seedless and coreless fruits. Several years ago I purchased from Green's Nursery Co., Rochester, N. Y., a Bartlett pear tree. The second year after this tree was put out it was broken off level with or just a little below the ground. It sprouted again and grew rapidly. I had been away from my farm about five years; when I returned last year I found a fine pear tree which had over half a bushel of *Seckel* pears on it. We ate and used them all, and did not find a seed or a core in any of them. I have not been able to find out from my former tenants whether or not this seedless and coreless condition has heretofore existed. It seems to me that if this pear will stand propagation without changing its character it would be quite a find." (*Barrott.*)

37982. PYRUS sp. Malaceæ. Pear.

From China. Presented by Rev. Hugh W. White, American Presbyterian Mission, Yencheng, Kiangsu, China. Received April 28, 1914.

"*Tangshan.* Unquestionably the finest pear of China. But it is not widely known, because the region of production has heretofore been very secluded, and the fruit does not keep more than one or two months. It is the only Chinese pear that does not have the woody taste and feel, and it has a sweet, juicy flavor. It also grows large, much larger than the ordinary American pear. It grows about 40 miles west of a city called Hsuechowfu, Kiangsu Province. I suppose I am one of the three or four white men that have been in the immediate section where this pear grows. This pear is called the *Tangshan* pear, from Tangshanku, the name of the place that produces it." (*White, extract from letter dated March 26, 1912.*)

Cuttings.

37983 to 38041. Grasses.

From Brazil. Collected by Messrs. P. H. Dorsett and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes by Messrs. Dorsett and Popenoe.

37983 to 37993.

From Sao Joao del Rey, Minas Geraes, Brazil. Collected January 26, 1914.

37983. MELINIS MINUTIFLORA Beauv. Poaceæ. Capim gordura.

"(No. 78a.) Seeds of *capim gordura* from plants in an old abandoned garden which had been completely overrun with this grass."

37984. PANICUM MAXIMUM Jacq. Poaceæ. Guinea grass.

"(No. 79a.) Seed of a grass growing on top of an old adobe wall at the church Senhor do Bom Fim. Seed heads viscous; in stripping off seed they stick together. In an extremely dry situation."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)**37985.** *ERAGROSTIS BAHIENSIS* Schrad. Poaceæ.

"(No. 80a.) Seed of a bunch grass from the top of a hill at the church Senhor do Bom Fim. An open-bunch grass, rather spreading, about 4 to 6 inches high, seed stalks 12 to 18 inches high. Growing on top of a high hill, in very exposed and dry situation; soil almost pure sand. Seeds dull greenish purple in color."

37986. *ARISTIDA SANCTAE LUCIAE* Trin. Poaceæ.

"(No. 81a.) Seed of a bunch grass from the top of a hill at the church Senhor do Bom Fim. Close bunch grass, bunches about 4 inches in diameter; height of seed stalks about 18 inches; dry soil, almost pure gravel. Open pasture land."

37987. *AXONOPUS CHRYSOBLEPHARIS* (Lag.) A. Chase. Poaceæ.

"(No. 82a.) Seed of a bunch grass, growing on a hill at the church Senhor do Bom Fim. Growing in very small bunches, height 3 or 4 inches, flower stalks 18 to 20 inches; exposed and very dry location; soil dry and almost pure gravel. Flower heads usually 2 partite, rarely 3 or 4 partite."

37988. *ERAGROSTIS ARTICULATA* (Schrank) Ness. Poaceæ.

"(No. 83a.) Seed of a grass growing on a hill at the church Senhor do Bom Fim. A low grass, 3 to 4 inches high, flower stalks about 6 inches high, on very dry and exposed situation, soil almost pure gravel."

37989. *SPOROBOLUS INDICUS* (L.) R. Br. Poaceæ.

"(No. 84a.) Seeds of a grass growing on a hill at the church Senhor do Bom Fim. Bunch grass in clumps 2 to 8 inches or more in diameter; height 6 to 8 inches; flower stalks 18 to 24 inches; on exposed and very dry location, very gravelly soil."

37990. *ERAGROSTIS EXPANSA* Link. Poaceæ.

"(No. 85a.) Seed of a grass growing on a hill at the church Senhor do Bom Fim. Bunch grass in small clumps, exposed and dry location, soil almost pure gravel."

37991. *PANICUM CAMPESTRE* Nees. Poaceæ.

"(No. 86a.) Seed of grass growing on a stock range back of the church Senhor do Bom Fim. Bunch grass closely eaten off by cattle in pasture where collected. Height, where not browsed, 8 to 10 inches. Dry pasture land, heavy red clay soil, altitude 1,000 meters."

37992. *CHAETOCHELOA IMBERBIS* (Poir.) Scribner. Poaceæ.

(*Setaria imberbis* R. and S.)

"(No. 87a.) Seed of a grass from a stock range back of the church Senhor do Bom Fim. Foxtail grass, fairly common on stock ranges, one that the cattle eat. Dry, reddish clay soil."

37993. *ANDROPOGON LEUCOSTACHYUS* H. B. K. Poaceæ.

"(No. 109a.) Grass seed from a hill near the church Senhor do Bom Fim. Bunch grass, in small clumps, height about 8 to 12 inches, flower stalks 18 to 20 inches, growing in an exposed and dry situation, soil almost pure gravel."

37994 to 37996.

From Pirapora, Minas Geraes, Brazil.

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)**37994.** CHLORIS POLYDACTYLA (L.) Swartz. Poaceæ.

"(No. 113a. February 8, 1914.) A grass found in the village across the river from here. It grows to a height of about 1½ feet, with seed stalks running up to 3 feet. It seeds profusely, is said to be good, when young, as a pasture grass, and appears to be suitable for hay."

37995. AXONOPUS sp. Poaceæ.*Axonopus* sp. prox. *Paspalum marginatus* Trin.

"(No. 116a. February 9, 1914.) Seed of grass growing on campo here. One of the common grasses on the campo. Flower stalks up to 2 to 2½ feet in height. Appears to have been closely grazed by stock."

37996. PASPALUM NOTATUM Fluegge. Poaceæ.

"(No. 120a. February 10, 1914.) Seed of grass collected on the campo about 100 yards from the west bank of the Rio Sao Francisco, where it covers the ground in a solid mat, and makes a good pasture."

37997 to 37999.

From Januaria, Minas Geraes, Brazil.

37997 and 37998. PANICUM spp. Poaceæ.**37997.** PANICUM MAXIMUM Jacq.

Guinea grass.

"(No. 123a. February 14, 1914.) *Capim colonia*, one of the principal forage grasses here, second in importance to *capim bengu*. Seed collected in a field recently planted to this grass. Does not appear to be as widely known as *capim bengu*, but is said to be of very good quality."

37998. PANICUM BARBINODE Trin.

Para grass.

"(No. 124a. February 14, 1914.) *Capim bengu*, very similar in appearance to *capim de Angola* of Bahia. The most important forage grass here, and preferred above all others. Grows to a height of 7 or 8 feet under favorable conditions and is considered one of the best forages for cattle and horses. Does not seem to be cut very much, the stock being turned in on it to pasture."

37999. DACTYLOCTENIUM AEGYPTIUM (L.) Willd. Poaceæ.*(Eleusine aegyptiaca* Desf.)

Crowfoot grass.

"(No. 132a. February 15, 1914.) A low grass growing in a pasture back of town. Makes a close sod and propagates by runners."

38000 to 38003.

From Xiquexique, Bahia, Brazil. Collected February 19, 1914.

38000. DACTYLOCTENIUM AEGYPTIUM (L.) Willd. Poaceæ.*(Eleusine aegyptiaca* Desf.)

Crowfoot grass.

"(No. 142a. Seed of a grass collected on the bank of the Rio Sao Francisco, previously collected at Januaria. It grows very tall on soil that is pure sand."

38001. SYNTHESISMA DIGITATA (Sw.) Hitchc. Poaceæ.

"(No. 143a.) Seed of a grass collected on the bank of the Rio Sao Francisco. Appears to be a large Bermuda grass. Grown on soil which is pure sand."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38002. *ERAGROSTIS ACUMINATA* Doell. Poaceæ.

"(No. 144a.) Seed of a grass collected on the bank of the Rio Sao Francisco from soil that is a pure sand. Looks like a grass collected previously at Sao Joao del Rey."

38003. *ANTHEPHORA HERMAPHRODITA* (L.) Kuntze. Poaceæ.
(*Anthephora elegans* Schreb.)

"(No. 145a.) Seed of a grass with which we are unfamiliar, brought on board by one of the passengers, who had collected it on the sandy bank of the Rio Sao Francisco. The only specimen we had became misplaced."

38004 to 38023.

From Joazeiro, Bahia, Brazil. Collected February 24, 1914.

38004. *CHAETOCHELOA SETOSA* (Sw.) Scribner. Poaceæ.

(*Setaria setosa* Beauv.)

Bitter grass.

"(No. 160a.) Seed of *capim amargo* (bitter grass) from Horto Florestal. Grows on very poor soil, but is not considered very good for stock."

38005. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc.

"(No. 161a.) Seed of *capim de boi* from Horto Florestal. When young it is much liked by cattle; when old the stems are rather tough. Not good for hay; height 5 feet; on clay silt soil."

38006. *PASPALUM SCUTATUM* Nees. Poaceæ.

"(No. 162a.) Grass from Horto Florestal. On clay silt soil."

38007. *LEPTOCHLOA FILIFORMIS* (Pers.) Beauv. Poaceæ.

"(No. 163a.) Grass from Horto Florestal. Grown on clay silt soil. Probably good."

38008. *ANTHEPHORA HERMAPHRODITA* (L.) Kuntze. Poaceæ.

(*Anthephora elegans* Schreb.)

"(No. 164a.) *Capim espelta* from Horto Florestal. Called by Dr. Zehntner *capim espelta*, and considered by him very good. Grown on clay silt soil."

38009. *NAZIA ALIENA* (Spreng.) Scribner. Poaceæ.

"(No. 165a. *Capim carapicho de ovelho* from Horto Florestal. Grown on clay silt soil, considered not very good, but grows on poorest soil."

38010. *ERAGROSTIS CILIARIS* (L.) Link. Poaceæ.

"*Capim barba de bode*, on clay silt soil in Horto Florestal. Not considered of great value."

38011. *SPOROBOLUS ARGUTUS* (Nees) Kunth. Poaceæ.

"(No. 167a.) Grass grown on clay silt soil in Horto Florestal. Small, not of much value."

38012. *ERAGROSTIS ARTICULATA* (Schrank) Nees. Poaceæ.

"(No. 168a.) *Capim fino*, on clay silt soil in Horto Florestal. Not considered very good; not sufficient leaf growth."

38013. *CHLORIS LEPTANTHA* Hitchcock. Poaceæ.

"(No. 169a.) Grown on clay silt soil in Horto Florestal. Name not known. Looks like a very good grass; 3 feet high."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38014. *PANICUM HIRTICAULE* Presl. Poaceæ.

"(No. 170a. From Horto Florestal. Probably a *capim de passarinho*, grown on clay silt soil."

38015. *SYNTHESISMA DIGITATA* (Sw.) Hitchcock. Poaceæ.

"(No. 171a.) From Horto Florestal, on dry silt soil."

38016. *PASPALUM DENTICULATUM* Trinius. Poaceæ.

"(No. 172a.) Grass from Horto Florestal, on clay silt soil; not abundant here."

38017. *DACTYLOCTENIUM AEGYPTIUM* (L.) Willd. Poaceæ.

(*Eleusine aegyptiaca* Desf.) **Crowfoot grass.**

"(No. 173a.) *Capim pe de gallinha* or *pe de periquito*, on clay silt soil in Horto Florestal. Not considered to have much value. Resists drought well; not abundant here."

38018. *PANICUM HIRTICAULE* Presl. Poaceæ.

"(No. 174a.) *Capim de passarinho*, a very good grass, on clay silt soil, in Horto Florestal."

38019 and 38020. *ERIOCHLOA POLYSTACHYA* H. B. K. Poaceæ.

38019. "(No. 175a.) On clay silt soil in Horto Florestal. Not abundant here."

38020. "(No. 176a.) On clay silt soil in Horto Florestal. Of very good quality; better for hay than pasture. Seems to prefer clay soil."

38021. *TRICHOLAENA ROSEA* Nees. Poaceæ. **Favorita grass.**
(*Panicum teneriffae* R. Br.)

"(No. 177a.) *Capim favorita*, believed to be native, but now planted in Minas Geraes, Sao Paulo, and elsewhere. Considered a very good grass; used for hay in Sao Paulo.

For an illustration of favorita grass as grown in Brazil, see Plate VII.

38022. *ERIOCHLOA PUNCTATA* (L.) Hamilton. Poaceæ.

"(No. 179a.) Height about 4 feet, on clay silt soil near river bank in Horto Florestal. Good forage for stock."

38023. *CHLORIS ELEGANS* H. B. K. Poaceæ. **Caatingueiro grass.**

"(No. 180a.) *Capim caatingueiro*, believed by Dr. Leo Zehntner to be one of the best grasses here. Has come into flower three weeks after cutting. On clay silt soil in Horto Florestal."

For an illustration of caatingueiro grass as grown in Brazil, see Plate VIII.

38024 to 38027.

From Bom Fim, Bahia, Brazil. Collected February 26, 1914.

38024. *PANICUM MAXIMUM* Jacq. Poaceæ. **Guinea grass.**

"(No. 184a.) *Capim guiné* (guinea grass), or, as it is sometimes called, *capim assú* (big grass). Commonly cultivated here, there being a number of small plantations 1 to 3 acres in extent. Planted about 4 by 4 feet, grows 6 to 10 feet high. Said to be fine for cattle but rather too fattening for horses."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38025. *VALOTA INSULARIS* (Elmg.) Chase. Poaceæ. **Sour-grass.**

“(No. 186a.) A grass collected on a hillside in the outer edge of town. It is rather abundant in this region and may have value as a hay grass. It grows rather luxuriantly, reaching a height of 5 feet or even 6.”

38026 and 38027. *CHAETOCHELOA* spp. Poaceæ.

38026. *CHAETOCHELOA LACHNEA* (Nees) Hitchcock.

Foxtail grass.

“(No. 187a.) A foxtail grass, growing on the hillside at the edge of town. Does not seem to be of any particular value. Grows 2 to 2½ feet high.

38027. *CHAETOCHELOA CAUDATA* (Lam.) Scribner.

“(No. 188a.) A grass about 3 feet high, growing abundantly on the hillsides around town. The soil is stiff clay, and the climate here is very dry for a large part of the year.”

38028. *PASPALUM ATTENUATUM* Presl. Poaceæ.

En route from Bom Fim to Bahia, Brazil. Collected February 28, 1914.

“(No. 198a.) Collected between Agua Fria and Entroncamento, 45 kilometers above Alagoinhas. Very common on rolling dry uplands.”

38029. *CHLORIS VIRGATA* Swartz. Poaceæ.

From Serrinha, Brazil. Collected February 28, 1914.

“(No. 199a.) Secured at Serrinha.”

38030. *PANICUM MAXIMUM* Jacq. Poaceæ.

Guinea grass.

From Bom Fim, Bahia, Brazil. Collected February 26, 1914.

“(No. 200a.) *Capim guiné* (guinea grass), or, as it is sometimes called, *capim assú* (big grass). Commonly cultivated here, there being a number of small plantations 1 to 3 acres in extent. Planted about 4 by 4 feet, grows 6 to 10 feet high. Said to be fine for cattle but rather too fattening for horses.”

38031. *PASPALUM CONJUGATUM* Berg. Poaceæ.

From Ramona, Bahia, Brazil. Collected March 11, 1914.

“(No. 201a.) Seed of what appears to be and is reported to be a very good pasture grass. When pastured close it makes a good sod; likes low situations.”

38032 to 38039.

From Rio de Janeiro, Brazil. Purchased from Eickhoff, Carneiro Leão & Co.

38032 to 38034. *HOLCUS* spp. Poaceæ.

38032. *HOLCUS HALEPENSIS* L.

Sudan grass.

(*Sorghum halepense* Pers.)

“(No. 207a. March 23, 1914.)”

38033 and 38034. *HOLCUS SORGHUM* L.

Sorghum.

(*Sorghum vulgare* Pers.)

38033. “(No. 210a.)”

38034. “(No. 211a. March 23, 1914.)”



TRIAL PLAT OF FAVORITA GRASS (*TRICHO LAENA ROSEA* NEES), S. P. I. No. 38021, AT THE HORTO FLORESTAL, AN EXPERIMENT STATION AT JOAZEIRO, BAHIA, ON THE BANKS OF THE RIO SAO FRANCISCO.

This handsome grass with rose-colored flower heads, as indicated by the name, under favorable conditions grows to a height of 2 or more feet. It is planted to a limited extent in some parts of the State of Bahia, and also, it is said, in parts of the State of Sao Paulo. Its principal use is as green forage. (Photographed by Messrs. Dorsett and Popenoe, February 24, 1914; P14946FS.)



A FIELD OF CAATINGUEIRO GRASS (*CHLORIS ELEGANS* H. B. K.), S. P. I. No. 38023.

This dry-land grass has been planted experimentally in the Horto Florestal at Joazeiro, State of Bahia, Brazil. It resists the severe climate of this region and produces a fairly good yield. Live stock are said to prefer it to many other grasses grown in Brazil. Mr. Dorsett is shown collecting seeds of this number. (Photographed by Wilson Popenoe, February 24, 1914; P14944FS.)

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38035. *CAPRIOLA DACTYLON* (L.) Kuntze. Poaceæ. **Bermuda grass.**
(*Cynodon dactylon* Pers.)

"(No. 212a. March 23, 1914.)"

38036. *ARRHENATHERUM ELATIUS* (L.) Beauv. Poaceæ. **Oat-grass.**

"(No. 213a. March 24, 1914.)"

38037. *CYMBOPOGON RUFUS* (Nees) Rendle. Poaceæ.
(*Andropogon rufus* Kunth.)

"(No. 214a. March 24, 1914.) *Capim jaragua.*"

38038. *MELINIS MINUTIFLORA* Beauv. Poaceæ. **Molasses grass.**

"(No. 215a. March 23, 1914.) *Capim gordura roxo.*"

38039. *PANICUM BULBOSUM* H. B. K. Poaceæ. **Guinea grass.**

"(No. 216a.) *Capim guiné*, or guinea grass."

38040 and 38041.

From Bahia, Brazil. Collected March 19, 1914.

38040. *HOMOLEPIS ISOCALYCINA* (Meyer) Chase. Poaceæ.
(*Panicum isocalycinum* Meyer.)

"(No. 221a.) Seed from grass growing in clay on a hillside in a small pasture near the 'Centro Agricola' Experiment Station near Bahia. Grass roots at joints."

38041. *PANICUM LAXUM* Swartz. Poaceæ.

"(No. 222a.) Seed from grass growing in clay soil on a hillside in a small pasture near the 'Centro Agricola' Experiment Station near Bahia. This appears to be a bunch grass; soil dry; exposed situation."

38042 and 38043. *CINCHONA* spp. Rubiaceæ.

From Kalimpong, Bengal, India. Presented by Mr. Henry F. Green, manager, Government Cinchona Plantations, at the request of the superintendent of cinchona cultivation in Bengal. Received May 2, 1914.

38042. *CINCHONA OFFICINALIS* L. **Cinchona.**

"The loxa or crown bark, the pale bark of commerce. This is a native of Ecuador and Peru and with *C. succirubra* was the species assigned by Markham to his colleague, Spruce, to discover. It is grown at high elevations (above 7,000 feet) in the Nilgiris, Ceylon, and Sikkim, but not extensively. It is a weak, straggling tree, attaining at most only 20 feet in height. Its cultivation in Sikkim has, however, been almost abandoned, owing to the climate being too moist, but it is perhaps the most important of the species grown in the Nilgiri Hills." (*Watt, Commercial Products of India.*)

38043. *CINCHONA SUCCIRUBRA* Pavon. **Cinchona.**

"The red bark is largely cultivated on the hills of South India at altitudes of 4,500 to 6,000 feet; at higher altitudes the growth is too small to make its cultivation profitable. On the hills east of Toungoo in Burma and in some parts of the Satpura Range of Central India it is grown, and also met with in the Government plantations of Sikkim, but it is not popular, and is rapidly being replaced by *C. calisaya* var. *ledgeriana*.

38042 and 38043—Continued.

It is a hardy plant with a bold, sturdy stem. In rich and sheltered situations it grows to a height of 50 feet or more. The leaves are bright apple green in color, the plantation in consequence looking light and bright, while one of *C. officinalis* looks dark and gloomy." (*Watt, Commercial Products of India.*)

38044. ORYZA SATIVA L. Poaceæ.**Rice.**

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell, through Mr. W. R. Lamberth, Oakdale, Cal. Received May 6, 1914.

"Seed of the African hill rice. This rice is raised here on the hillsides, where it can get no water, except that which rains on it.

"I had thought of its being used at home in this way. In Louisiana, where I used to live, we have what are known as the 'pimple prairies,' and where these pimples or mounds occur in the rice fields, it causes not only that much land to be wasted but often weeds grow on them, the seeds of which are very hard to remove from the rice. I thought that perhaps if these mounds were planted with this hill rice that this trouble could be avoided." (*Stockwell.*)

38045. VICIA FABA L. Fabaceæ.**Broad bean.**

From Algiers, Algeria. Presented by the American consul. Received May 1, 1914.

38046. VIGNA NILOTICA (Delile) Hook. f. Fabaceæ.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Public Works, Department of Agriculture, Horticultural division, through Prof. S. C. Mason, of the Department of Agriculture. Received May 1, 1914.

"In Muschler's Flora it is stated that this grows in the Delta, but I have seen it only in Aswan and Nubia. This seed was grown at Gizeh. It is of much less value than the common variety of *Vigna sinensis*, commonly cultivated throughout the country." (*Brown.*)

38047. CEIBA ACUMINATA (S. Wats.) Rose. Bombacaceæ.(*Eriodendron acuminatum* S. Wats.) **Mexican cotton tree.**

From Tlatlaya, State of Mexico. Presented by Mr. William Brockway. Received April 25, 1914.

"Mexican cotton tree (*pochota*). Collected near Tlatlaya, April 6, 1914." (*Brockway.*)

38048. SALVIA sp. Menthaceæ.**Chia.**

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Prof. C. A. Purpus. Received May 6, 1914.

"The seeds are put into water, where they swell up and soften and are used as a drink, mixed with sugar and red wine. *Chia* was used by the Aztecs in olden times to make a drink, mixed with corn (maize)." (*Purpus.*)

38049 to 38052.

From Epsom, Auckland, New Zealand. Presented by Mr. D. Petrie. Received April 21, 1914.

38049 to 38052—Continued.

38049. GAYA LYALLII (Hook. f.) Baker. Malvaceæ. *Plagianthus lyallii* Hook f.) Large-flowered ribbonwood.

"A very fine small tree of the order Malvaceæ, with fine clusters of cherrylike flowers, and it is hardy here." (*Petrie.*)

"A beautiful shrub, found only in the mountainous districts of the South Island. This is one of the very few New Zealand trees which shed their leaves in the winter and show autumnal tints. The leaves are clothed with stellate hairs, and are deeply notched. This plant is one of the many surprises of the New Zealand forest. The traveler, who sees for the first time its cherrylike blossoms amidst the greenery of the bush, usually regards it as an escape from some garden. Its soft, tender, deciduous leaves are in strong contrast to the normal, hard, glossy leaf of the typical trees of the New Zealand forest, whilst its flowers are equally different from the typical, minute, greenish clusters of *Nothopanax*, etc." (*Laing and Blackwell, Plants of New Zealand.*)

38050. FUCHSIA PROCUMBENS R. Cunningh. Onagraceæ. *Fuchsia.*

"A spreading slender shrub with sweet flowers. Good for rockery if climate is mild." (*Petrie.*)

"A slender, prostrate plant 6 to 18 inches long. Leaves ovate or cordate, one-fourth to one-half an inch long. Flowers one-half to three-fourths inch long, solitary, axillary, erect. Petals none. Berry shining, pale red. In sandy or rocky places. It lacks the graceful, pendulous flower stalks which enhance so much the beauty of the cultivated forms, but it is a very dainty little species. The sharp contrast between the beautiful waxy yellow of the calyx and the intense pure blue of the pollen would make it noticeable anywhere. Any other color but yellow is rare in pollen, and such a bright blue as this has probably some definite though unknown significance. It is of the same color in the two other New Zealand species. It is also extremely viscid. This no doubt enables it to cling readily to any insect which may enter the flower. The viscosity is due to the development by the pollen grains of structureless drops of a glutinous fluid that very readily draws out into long fine threads. In each of the three New Zealand species of *Fuchsia* there are three forms of flower, and in some cases, also, intermediate forms. In *F. procumbens* there is a long-, short-, and mid-styled form, but the stamens are of the same length in each case." (*Adapted from Laing and Blackwell, Plants of New Zealand.*)

38051. METROSIDEROS DIFFUSA Smith. Myrtaceæ.

"A fine low-branching shrub, crimson flowers. North Island, New Zealand." (*Petrie.*)

38052. PITTOSPORUM EUGENIODES Cunningh. Pittosporaceæ. *Tarata.*

"South and North Islands, New Zealand." (*Petrie.*)

"A tree sometimes 40 feet in height, glabrous, with large corymbs of fragrant flowers of a greenish yellow hue. Leaves 2 to 3 inches long, broadly oblong, usually waved at the margins. Bark white. Capsules 2 to 3 valved. A beautiful tree whose pale-green leaves with undulating margins emit, when bruised, a lemonlike odor. The delicate venation and light-colored, almost white, midrib add to the beauty of the leaf. The Maoris mixed the resinous exudation from the bark with the juice of the sow thistle and worked it into a ball, which they chewed. In October the tree produces masses of yellowish green flowers, whose heavy

38049 to 38052—Continued.

honed odor is almost sickening in its intensity. According to Mr. G. M. Thomson, the plant is probably often self-pollinated; but Mr. Kirk points out, in his Forest Flora, that though stamens and pistils are always present, one or the other is often abortive, so that the flowers are often practically unisexual. The wood of this species, like that of the other species of the genus, is almost worthless. The tree is often cultivated for its beauty, and is sometimes—though not so often as *P. tenuifolium*—used to form an ornamental hedge." (*Laing and Blackwell, Plants of New Zealand.*)

38053. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

From San Giovanni a Teduccio, Italy. Purchased from Dammann & Co.
Received January 30, 1914.

"Durra."

38054 and 38055. *RUBUS BOGOTENSIS* H. B. K. Rosaceæ.

Blackberry.

From Bogota, Colombia. Procured by Mr. F. L. Rockwood, clerk, American Legation, at the suggestion of Mr. Frank M. Chapman, curator, American Museum of Natural History. Received May 6, 1915.

Rooted plants; quoted notes by Mr. Chapman.

38054. "A remarkable blackberry which we found growing near a roadside posada, called El Pinyon, on the road between Bogota and Fusagasuga. El Pinyon, with an altitude of 9,600 feet, is in the Temperate Zone, with an average annual temperature of probably about 60°. The warm air from the Magdalena Valley at this point draws up through a cut in the mountains and is condensed as it reaches El Pinyon, at which place the descent to Fusagasuga begins; the result is a cold, perpetually moist climate, such as I imagine we should find it very difficult to duplicate in the United States, and for this reason it might be hard to introduce the berry into this country. As for the berry itself, I, unfortunately, can tell you very little about it except in regard to its size and flavor. We did not, I am sorry to say, even make measurements of the berries, and I have therefore found great difficulty in making my friends believe my stories of its size. From memory, however, I should say that its length was between 3½ and 4 inches, its breadth between 2 and 2½ inches, and its height between 2 and 3 inches. The flavor was most delicious, and suggested in part that of the blackberry of the subtropical zone of the Andes, known as *El Moral de Castile*, and to some extent that of the raspberry. The berries grew in small clusters of three or four, and not many appeared to be on one bush. The bushes, as I remember, were rather tall and scraggly, but they were placed with other vegetation, and I gained no clear idea of their form. They were not abundant."

38055. "*El Moral de Castile*. This berry, which appears to grow wild, attains a size and shape comparable to that of our best cultivated varieties, and to my mind has a better flavor than any of them. It may be found in abundance in the subtropical zone at an elevation of 6,000 to 8,000 feet; or, to be more definite, at a posada about one hour below El Pinyon, toward Fusagasuga, known as El Roble. Here, too,

38054 and 38055—Contd. (Quoted notes by Mr. F. M. Chapman.)

the rainfall is high, for the entire Temperate Zone is included in the area of condensation. We worked at these localities during the first part of April, when the blackberry crop had not reached full maturity. I should say that, provided similar conditions prevail in other years, April 15 would be about the proper time to find the plants in fruit."

38056. PELARGONIUM ODORATISSIMUM (L.) Soland. Geraniaceæ. Rose geranium.

From Nice, France. Presented by the American consul. Received May 5, 1915.

"From Pegomas, the center of the geranium-plant industry in this district. The vice consul was informed by the principal growers of geranium that only one variety is used in the perfume industry, the botanical name being *Pelargonium odoratissimum*, and that the cuttings are taken at the end of October or at the beginning of November, and must be very carefully handled during the winter months, and especially protected against cold and frost, which necessitates careful attention." (Extract from report by *William Dulany Hunter, American consul, Apr. 23, 1914.*)

38057 to 38062. HORDEUM spp. Poaceæ. Barley.

From Zurich, Switzerland. Presented by Prof. Dr. Albert Volkart, Swiss Seed Experiment Station, through Mr. David F. Wilber, American consul. Received March 23, 1914. Quoted notes by Dr. Volkart.

38057. HORDEUM VULGARE COERULESCENS Seringe.

"Four-rowed winter barley (unimproved domestic variety) from Riniken, Canton Aargau."

38058. HORDEUM VULGARE L.

"*Argovia* (4-rowed winter barley, pure bred from domestic barley). From the Agricultural School at Brugg, Canton Aargau."

38059 and 38060. HORDEUM DISTICHON NUTANS Schubl.

38059. "Two-rowed spring barley (unimproved domestic variety) from Adlikon bei Andelfingen, Canton of Zurich."

38060. "Adliker barley (2-rowed, pure bred from a single domestic variety) from Jb. Ohninger, Adlikon."

38061 and 38062. HORDEUM VULGARE L.

38061. "Four-rowed spring barley (unimproved domestic variety) from Vorrenwald Eich, Canton Lucerne."

38062. "Six-rowed spring barley (unimproved domestic variety) from Pfyn, Canton Thurgau."

38063 to 38084. OPUNTIA spp. Cactaceæ. Prickly-pear.

From Berlin, Germany. Presented by the Botanic Garden. Cuttings received May 6, 1914.

38063. OPUNTIA ALBICANS Salm-Dyck.**38064. OPUNTIA ANACANTHA** Speg.**38065. OPUNTIA CANDELABRIFORMIS** Mart.**38066. OPUNTIA CHRYSACANTHA** Hort.**38067. OPUNTIA CONSOLEANA** Hort.

38063 to 38084—Continued.

38068. *OPUNTIA CURASSAVICA* Mill.
 38069. *OPUNTIA ELATA DELAETIANA* Weber.
 38070. *OPUNTIA* sp.
 38071. *OPUNTIA ELATA* Salm-Dyck.
 38072. *OPUNTIA ELONGATA* (Willd.) Haworth.
 38073. *OPUNTIA GLAUDESCENS* Salm-Dyck.
 38074. *OPUNTIA GLAUCOPHYLLA* Wendl.
 38075. *OPUNTIA GLOMERATA* Haw.
 38076. *OPUNTIA KLEINIAE* P. DC.
 38077. *OPUNTIA LANCEOLATA* Haw.
 38078. *OPUNTIA LEMAIREANA* Console.
 38079. *OPUNTIA MICROCARPA* Engelm.
 38080. *OPUNTIA PARAGUAYENSIS* K. Schumann.
 38081. *OPUNTIA SPEGAZZINII* Web.
 38082. *OPUNTIA SULPHUREA* Gillies.
 38083. *OPUNTIA MIECKLEYI* K. Schumann.
 38084. *OPUNTIA VULPINA* Web.

No. 38070 was received as *Opuntia diacantha*, the name of which is not found to have been published.

38085 to 38087. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
 (*Sorghum vulgare* Pers.)

From Sapporo, Japan. Presented by Mr. T. Minami, Professor of Agronomy, College of Agriculture, Tohoku Imperial University, at the request of Dr. R. Shoji. Received May 6, 1914. Quoted notes by Mr. Minami.

38085. "No. 1. Sorghum (so-called sorghum *Janome*) produced in Hokkaido in 1912."
 38086. "No. 2. Sorghum (common) produced in Hokkaido in 1912."
 38087. "No. 3. Sorghum (common) produced in Honshu (the mainland of Japan) in 1913."

38088 to 38093. *ORYZA SATIVA* L. Poaceæ. Rice.

From Southern Circle, Burma, India. Presented by Mr. A. McKerral, Deputy Director of Agriculture. Received May 4, 1914.

38088. *Ngasein paddy*. No. 1. 38091. *Bau-gauk*. No. 4.
 38089. *Baw yoot*. No. 2. 38092. *Java paddy*. No. 5.
 38090. *Nga-cheik-gale*. No. 3. 38093. *Saba-net-Taungbya*. No. 6.

38094 and 38095. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
 (*Prunus persica* Stokes.)

From Arequipa, Peru. Presented by Mr. Leon Campbell, Superintendent of the Observatorio. Received May 2, 1914. Quoted notes by Mr. Campbell.

38094. "Peach seeds gathered in Arequipa market February 15 to March 20, 1914."
 38095. "A distinct class, known here as *Uvillas*. Collected near the Observatorio, March, 1914."

38096 to 38099.

From Queensland, Australia. Presented by Mr. J. A. Hamilton, Tolga, via Cairns, Queensland, Australia. Received April 29, 1914. Quoted notes by Mr. Hamilton, except as otherwise stated.

38096. *BACKHOUSIA BANCROFTII* Bailey and Muell. **Myrtaceæ.**

"Seed of a giant hardwood, one of our best; likes a fairly wet climate; grows 5 to 6 feet in diameter."

"Wood of a light-gray color, hard, close grained, something like teak, useful as a building timber; rather dark toward the center in large trees; splits straight and freely." (*Bailey. In Maiden, Useful Native Plants of Australia.*)

38097. *PASSIFLORA EDULIS* Sims. **Passifloraceæ.** **Passion fruit.**

"A large-fruited passion fruit."

38098. *TRISTANIA SUAVEOLENS* (Soland.) Smith. **Myrtaceæ.**

"A common tree here; makes a fair shade tree."

"Timber used for buggy and coach frames, tool handles, mallets, cogs of wheels, posts, etc. It is remarkably strong and elastic, tough, close grained, and durable, but it is liable to rend in seasoning. 'It is of a red color, resembling Spanish mahogany. It is extensively used for piles, as it is found to resist the ravages of the teredo longer than any other wood as yet tried in the colony.' (*Catalogue, Queensland Woods, Colonial Exhibition, 1886.*)" (*Maiden, Useful Native Plants of Australia.*)

38099. *MAXIMILIANEA* sp. **Cochlospermaceæ.**

(*Cochlospermum* sp.)

38100 to 38104.

From Lamac, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamac Experiment Station. Received April 29-30, 1914.

38100. *ABROMA AUGUSTA* L. f. **Sterculiaceæ.**

"It is found in various parts of India, growing to be a small tree. Flowers most profusely during the rains, and ripens seed during the cold season. The bark abounds with strong white fibers, which make a very good substitute for hemp; and as the plant grows so quickly as to yield two, three, or even four crops of cuttings within the year fit for peeling, etc., it may be advantageously cultivated (in India) for its fibers which, though not so strong as hemp, make a good common cordage. The top leaves of this stately vegetable are oblongly cordate, nearly twice longer than broad, scarcely angular or scalloped, and have short stalks, the lower ones are obovately cordate, nearly round in the circumference, cut into 5 to 7 pointed lobes, and have long stalks. The corolla is nodding, and the petals converge." (*Botanical Register, pl. 518, 1821.*)

38101 and 38102. *CITRUS* spp. **Rutaceæ.**

38101. *CITRUS NOBILIS DELICIOSA* (Tenore) Swingle. **Mandarin.**

"Seeds of a small, oblate, very thin-skinned mandarin of most excellent quality, that is imported from China in considerable quantities. It is to my mind greatly superior to all the mandarins I have eaten here or in Florida, with possibly the exception of the *Oneco*, which it very much resembles in flavor. Considering how well the

38100 to 38104—Continued.

mandarin reproduces itself from seed, at least a few seedlings of excellent quality ought to be obtained from these seeds." (*Wester.*)

38102. CITRUS sp.

Lime.

38103. TALAUMA sp. Magnoliaceæ.

"A very ornamental tree in the Philippines. This species in all probability is too tender for the mainland of the United States." (*Wester.*)

38104. MUSSAENDA PHILIPPICA A. Richard. Rubiaceæ.

"A very ornamental tree in the Philippines. This species in all probability is too tender for the mainland of the United States." (*Wester.*)

"A shrub or small tree 3 to 5 meters high, more or less pubescent or nearly glabrous. Leaves oblong ovate to oblong lanceolate, acuminate, 6 to 14 cm. long, base acute; stipules about 4 mm. long, 2-fid. Cymes terminal, rather open, pubescent, few flowered. Calyx about 7 mm. long, four of the teeth as long as the tube, one very much enlarged as a white, leaf-like, long-petioled, elliptic-ovate appendage, the lamina 4 to 8 cm. long. Corolla yellow, pubescent, about 2 cm. long, enlarged upward. Fruit about 1.5 cm. long. Common and widely distributed in the Philippines, variable. Perhaps only the Philippine representative of the Indo-Malayan *Mussaenda frondosa* L." (*Merrill, Flora of Manila.*)

38105 to 38110.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received May 4, 1914. Notes by Mr. Bircher.

38105. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Watermelon.

"From Rhodesia. A watermelon with greenish flesh of poor taste, but a good keeper, which can be stored away for six months or more; it may be valuable for hybridization purposes."

38106 and 38107. HIBISCUS spp. Malvaceæ.

38106. HIBISCUS PHYSALOIDES Guill. and Perr.

"From the Kongo. The leaves are cooked like spinach; the taste slightly acid."

Distribution.—A tall herb or under shrub with cordate 5-lobed leaves and purple flowers, found in the Senegal region of Upper Guinea, in the Mozambique district, and in the vicinity of Durban, Africa.

38107. HIBISCUS SABDARIFFA L.

Roselle.

38108. HOLCUS HALEPENSIS L. Poaceæ.

Sudan grass.

(*Sorghum halepense* Pers.)

"A fodder grass growing spontaneously in Egypt."

38109. PHYSALIS CUBASSAVICA L. Solanaceæ.

"Berries edible in cooked state."

38110. VIGNA SINENSIS (Torner) Savi. Fabaceæ.

Cowpea.

"Var. *Mammoth*, of gigantic growth."

38111. ZEPHYRANTHES sp. Amaryllidaceæ.

From Bom Fim, Bahia, Brazil. Collected by Messrs. Dorsett, Shamel, and Popenoe, of the Bureau of Plant Industry. Received April 13, 1914.

"(No. 75. February 27, 1914.) A beautiful bright pink amaryllislike flower, found in a field of *Capim favorita*." (*Dorsett, Shamel, and Popenoe.*)

38112. SEAFORTHIA ELEGANS R. BROWN. Phœnicaceæ. Palm.
(*Ptychosperma elegans* Blume.)

From Belize Botanical Station, British Honduras. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 8, 1914.

"Said to grow wild in the Stann Creek district, south of Belize, but a native of northern Australia. A slender, graceful palm, reaching 30 feet in height, growing in the garden of the British consul at Livingston. Large-fruited form. This appears to be the genuine *Ptychosperma elegans*, originally described as *Seaforthia elegans*. The palm that is commonly planted in California under the name *Seaforthia elegans* does not represent this species, but has been described recently as the type of a new genus, under the name *Loroma amethystina*." (Cook.)

38113. CUCUMIS ANGURIA L. Cucurbitaceæ.

From Joazeiro, Brazil. Collected by Messrs. Dorsett, Shamel, and Popenoe, of the Bureau of Plant Industry. Received April 13, 1914.

"(No. 197a. February 23, 1914.) *Maxixe*. Seed of a small, spiny, oval, green fruit used extensively as a vegetable in the interior." (Dorsett, Shamel, and Popenoe.)

"An annual plant, native of South America, where the fruit is eaten; much branched, creeping; stems slender, reaching a length of 2 to 3 meters, coarsely hairy and with simple tendrils; leaves divided into 5 to 7 rounded, very slightly dentate leaves; flowers yellow, very small, numerous. Fruit oval, green, striped lengthwise with whitish bands, and becoming pale yellow at maturity. It is entirely covered with fleshy, pointed or bent protuberances, simulating true spines; the fruit attains at maturity a length of 5 cm., with a diameter of 3 to 4 cm. The peduncle is very nearly twice the length of the fruit, the interior of which is entirely filled with the seeds. The flesh itself is far from abundant; it is white, solid, and has a very agreeable cucumber taste, without any bitterness. In the colonies they eat the fruit of this Antillean cucumber cooked or preserved in vinegar." (Vilmorin-Andrieux & Cie., *Plantes Potageres*, p. 197-198.)

38114 and 38115. RUBUS BOGOTENSIS H. B. K. Rosaceæ.
Blackberry.

From Bogota, Colombia. Procured by Mr. F. L. Rockwood, clerk, American Legation. Received May 7, 1914.

38114. "Seeds of an extra large blackberry from Fusagasuga." (Rockwood.)

38115. "Big blackberry from Facatativa, Colombia." (Rockwood.)

See S. P. I. Nos. 38054 and 38055 for previous introductions and description.

38116. (Undetermined.)

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received May 6, 1914.

38117 to 38135.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received April 28, 1914. Quoted notes by Commander Stearns, except as otherwise indicated.

38117 to 38135—Contd. (Quoted notes by Commander Stearns.)

38117. *ADENANTHERA PAVONINA* L. Mimosaceæ. Coral-bean tree.

"*Lopa*. Has red berries that are used for necklaces."

For previous introduction, see S. P. I. No. 36866.

"*La Aulopa*. A handsome deciduous tree. The heart of the wood (of the larger trees) is a deep-red color. It is hard and durable and in India is used at times as a substitute for red sandalwood. Yields a dye."

38118. *CALOPHYLLUM INOPHYLLUM* L. Clusiaceæ. Mast wood.

"A valuable tree; grows tall, with heavy trunk; the wood cuts nearly white but grows red as exposed; it is hard, curly, and heavy, suited to cabinetwork on account of its beautiful red color. Canoes are made of this wood, and it is much used for general purposes. The oil extracted from the seeds is used as a medicine for eye diseases. In southern Polynesia the green, fragrant oil from the nut is used for lamps and as an external remedy for bruises and rheumatism. The resin from the trunk is one of the tacamahac gums of commerce; it is agreeably aromatic (in Tahiti it is used as a scent), yellowish green in color, and soluble in alcohol."

38119. *CANNA INDICA* L. Cannaceæ. Canna.

"*Fagamanu*."

"*Fanamanu*. In India the seeds are sometimes used for shot, and are made into necklaces and other ornaments; they yield a purple dye, but it is not very permanent. Starch may be obtained from this, but not so good as that from another variety."

38120. *CASSIA* sp. Cæsalpiniaceæ.

"*Lauvai matui*."

38121. *CAPSICUM FRUTESCENS* L. Solanaceæ. Red pepper.

"*Polo*. Bush, small Chile pepper."

38122. *CORDIA SUBCORDATA* Lam. Boraginaceæ.

"Very light wood; serves for floats for fish nets. The berries are used as paste for native cloth. The wood is rather soft, but it is durable and of a rich walnut color; it is much prized in Hawaii, where it is used for cups and poi calabashes. When polished, the wood shows wavy bands of light and dark."

Distribution.—Southeastern Asia and Madagascar and eastward through the Malayan Archipelago to Australia and Hawaii.

38123. *CASSIA OCCIDENTALIS* L. Cæsalpiniaceæ.

"*Fuefuesina*. A small creeper. The leaves are used by natives as a liniment, and were used in olden times to drive evil spirits from the body."

38124. *DYSOXYLUM MAOTA* Reinecke. Meliaceæ.

"*Maota*. A short, heavy tree with dense foliage; wood is light colored, straight grained, not durable. It is the favorite tree of the wild pigeon, which eats its fruit."

38125 and 38126. *GYNOPOGON* spp. Apocynaceæ.

38125. *GYNOPOGON* sp.

"*Ma Ali*. A large tree, very abundant; wood light slate color, coarse grained, but straight, dry, and light; quite hard; the odoriferous gum is much used by the natives."

38117 to 38135—Contd. (Quoted notes by Commander Stearns.)

38126. GYNOPOGON BRACTEOLOSA (Rich.) Schumann. Gau.
(*Alyxia bracteolosa* Rich.)

"Gau. A shrub used in making 'ula.'"

38127. HERNANDIA PELTATA Meissner. Hernandiaceæ.

"Pua. The wood is very soft and light and takes fire readily from a flint and steel. It has been used in Guam for making canoes, but they soon become water-logged and useless if unpainted and left exposed to the weather. The bark, seeds, and young leaves are slightly purgative, and the juice of the leaves is a depilatory, destroying hair without pain. Distributed in tropical Asia, Africa, and Australia, and eastward in the Pacific as far as Tahiti. The Samoan name signifies 'iris' (of the eye) and is given because of the fruit, which is inclosed in an inflated, globular involucre, having a circular orifice." (*Safford, Useful Plants of Guam.*)

38128. SANTALUM sp. Santalaceæ. Asi.

"Asi. A kind of sandalwood. Wood used for building purposes."

38129. MACARANGA TANARIUS (Stickman) Muell. Arg. Euphorbiaceæ.

"Pata. A very large tree of the forest; the wood, however, is of no value, decaying rapidly."

38130 and 38131. VITEX TRIFOLIA L. Verbenaceæ.

38130. "*Gaunulega*. A small-sized shrub; the leaves when pounded fine and mixed with water form, it is said, a valuable medicine for tropical fever, using three times a day."

Distribution.—Scattered throughout India and eastward and northward to Japan, the Philippines, and northern Australia.

38131. "Said to be a valuable remedy for fever."

38132. CITRUS HYSTRIX DC. Rutaceæ. Moli.

"Moli. Nonedible. In several islands of the Pacific the fruit is used as soap in washing clothes and the hair."

38133. TACCA PINNATIFIDA Forster. Taccaceæ.

"Masoá."

38134. DIOSCOREA sp. Dioscoreaceæ. Yam.

"Yams are troublesome to raise. They are very nutritious, however, and may be prepared in many ways. In many of the islands they are combined with coconut milk and made into dumplings."

38135. INOCARPUS EDULIS Forster. Fabaceæ. Tahiti-chestnut.

"Samoan chestnut. One of the most striking features of the forest. It bears a kidney-shaped fruit which is eaten cooked, when not quite ripe, and tastes much like a chestnut. The wood is of light color, straight, of fine texture, and very tough. It is used for burning lime in open kilns, the wood having the remarkable quality of burning readily when green. In some of the Pacific islands the nuts are preserved in pits, like breadfruit, where they ferment. In Samoa it forms a staple food for several months of the year. The wood is perishable and of little economic value; the bark is astringent."

38136. PELARGONIUM CAPITATUM (L.) L'Herit. Geraniaceæ.
Rose geranium.

From Marseille, France. Presented by Mr. Alphonse Gaulin, American consul general, who secured them through Mr. P. Basson from the Jardin Botanique de Marseille. Received May 20, 1914.

"Rose geranium plants grown in this district. These plants are similar to those grown in the Toulon region." (*Gaulin.*)

38137. PELARGONIUM ODORATISSIMUM (L.) Solander. Geraniaceæ.
Rose geranium.

From Nice, France. Presented by Mr. William Dulany Hunter, American consul. Received May 20, 1914.

See S. P. I. No. 38056 for description.

38138. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Paris, France. Procured from H. Fauchet & Co., through Mr. Alexander M. Thackara, American consul. Received May 9, 1914.

For previous introduction, see S. P. I. No. 34863.

38139. TRIFOLIUM ALEXANDRINUM L. Fabaceæ. **Berseem.**

From Cairo, Egypt. Presented by Mr. Ralph S. Green, through Mr. Olney Arnold, agent and consul general. Received May 18, 1914.

"Our special *Misgawi* [also called *Muscovi* and *Muskawi*] is by far the most important variety. It is tall, luxuriant in growth, and yields an astonishing amount of green forage. It is very largely grown under perennial irrigation. It requires plenty of water and will give four or five cuttings and a seed crop.

"The cultivation of *Misgawi* berseem is of the simplest nature, as the crop is little trouble after a stand is obtained. The seed is usually sown here in October and November, the amount used being 30 kilos per acre. The method of sowing depends on the locality. In the basins it is sown broadcast on the mud as soon as the water is off. After cotton or doura (maize) there are two chief ways of sowing the berseem. In one the standing crop is heavily watered about 10 days before harvesting, and the seed is broadcast in the water. In the other method the crop is removed and the land ridged; the ridges are split with the native plow. In case the crop is doura on the flat, a single plowing is given with the native plow. The land is then rolled, divided by ridges into convenient areas for watering, watered heavily, and the seed sown broadcast on the water. It sinks to the bottom, and on the removal of the water quickly germinates. In some cases the seed is soaked before sowing to make it sink more readily, but this does not seem to be necessary unless there is wind. Whether it is better to sow among the standing crop or not, depends on the locality. It is better to plow, if possible, but in the northern part of the delta region the cotton picking is late, and if the *Misgawi* is sown after the cotton is off, it is very slow in coming to maturity, as the cold weather has then set in. It is usual there to sow among the cotton when the land is being flooded after the picking.

"When the seed is sown early, and so gets the benefit of the warm weather, the plant grows rapidly and is watered as often as seems necessary. There is danger in very early sowing, however, as the young plants, particularly in the southern part of the delta region, are subject to the attacks of surface caterpillars and cotton worms. Late sowing, on the other hand, may retard a crop

38139—Continued.

very much, indeed, since cold weather in the early stages will almost stop the growth altogether. About three waterings will be needed before the first cutting, which is taken when the plants are about 25 cms. high. The time elapsing between sowing and first cutting is about 45 to 80 days, according to the character of the weather. In the majority of cases the crop is eaten on the ground by animals; in other cases the crop is cut or pulled by hand and carried. The soil should be just moist enough to stimulate the plant to grow again at once when cut. This is best attained by watering 10 days or so before it is intended to cut it off. A few days after the crop has been removed the land is again watered, and the Misgawi grows very rapidly, usually giving a second cutting in from 25 to 35 days. This crop is treated like the first, and in this way the land is made to give four good cuttings from the main crop. With early sowing a fifth may be gotten, and then the plant is allowed to flower and produce seed. With late planting the fifth cutting would be light, and it is usual to allow it to seed after the fourth.

"The cultural management of our Misgawi berseem is also very simple. Manures are never applied, as the growth is quite satisfactory without them. It will grow well on most cultivated soils. On very light soils drought must be carefully guarded against, and the plants will not grow on salt lands.

"The following are the approximate areas of Misgawi which will carry the various farm animals on average land during the season: Bullock, two-thirds of an acre; cow and young stock, slightly less; horse and mules, half an acre; donkey, one-fourth acre; sheep usually pick up what is left by the other animals and would never be allowed uncut berseem. About one-third more of the first cutting than of the subsequent ones is required for animals." (*Green.*)

"Repeated trials for several years subsequent to 1900 failed to find a region in this country where the temperature conditions were suited to the culture of this plant. It requires cool weather, without frost. For a complete account of this plant as used for forage and soiling in Egypt, see Bureau of Plant Industry Bulletin 23, Berseem: The Great Forage and Soiling Crop of the Nile Valley." (*Fairchild.*)

38140. CROTALARIA JUNCEA L. Fabaceæ. Sunn hemp.

From Jubbulpur, Northern Circle, India. Presented by Mr. John H. Ritchie, Deputy Director of Agriculture, at the request of Mr. A. Howard, Imperial Economic Botanist, Pusa. Received May 11, 1914.

"*Sunn hemp.* The seed is not of a pure agricultural line, but is simply seed as grown by the Indian ryot and represents the common crop of this district. I may add that all the finest qualities of sunn hemp come from this part of India, which is within the limits of my working circle."

38141. CORCHORUS CAPSULARIS L. Tiliaceæ. Jute.

From Dacca, Bengal, India. Presented by the Department of Agriculture at the request of Mr. A. Howard, Imperial Economic Botanist, Pusa. Received May 11, 1914.

"*Bengal jute.*"

"*Corchorus capsularis* is an annual plant, growing from 5 to 10 feet high, with a cylindrical stalk as thick as a man's finger, and seldom branching except near the top. The leaves, which are of a light-green color, are about 4 to 5 inches long by 1½ inches broad toward the base, but tapering upward into a long, sharp point with edges cut into sawlike teeth. The two teeth next

38141—Continued.

to the stalk being prolonged into bristlelike points. The flowers are small and of a whitish yellow color, coming out in clusters of two or three together opposite the leaves. The seed pods are short and globular, rough and wrinkled." (*Charles Richards Dodge, Descriptive Catalogue of Useful Fiber Plants of the World*, which see for a brief description of the plant, its cultivation, manufacture, and uses.)

38142 to 38168.

From Ventimiglia, Italy. Presented by Mr. Alwin Berger, curator, La Mortola Garden. Received April 10, 1914. Quoted notes that embody Wilson's numbers are from his original field notes.

38142 and 38143. ASPARAGUS spp. Convallariaceæ. **Asparagus.**

38142. ASPARAGUS COOPERI Baker.

See S. P. I. No. 35089 for previous introduction and description.

38143. ASPARAGUS ASPARAGOIDES (L.) W. F. Wight.

(*Asparagus medeoloides* Thunb.)

See S. P. I. Nos. 18466 and 30014 for previous introduction. The "smilax" of florists.

38144 and 38145. BERBERIS spp. Berberidaceæ. **Barberry.**

38144. BERBERIS GLOBOSA Benth.

See S. P. I. Nos. 31245 and 32920 for previous introductions.

38145. BERBERIS GUIMPELI Koch and Bouche.

See S. P. I. Nos. 32921 and 34304 for previous introductions.

"Small-leaved, short-thorned shrub of upright growth." (*Späth.*)

Referred by Rehder (in Bailey, Standard Cyclopedica) to *B. sinensis*.

38146. BETULA LUMINIFERA Winkler. Betulaceæ. **Birch.**

"(Wilson No. 17.) From Hingshanhsien, western Hupeh, China."

38147. CASUARINA GLAUCA Sieb. Casuarinaceæ. **Belar.**

See S. P. I. No. 18686 for previous introduction.

Distribution.—A large tree found along streams and in the mountains in Queensland, New South Wales, Victoria, and South Australia.

An evergreen tree, 40 to 50 feet high and 1 to 2 feet in diameter, with reddish flowers. The timber is strong and tough, and is used for staves, shingles, etc., also for rails, but not for posts. It is of a red color, beautifully marked, close in the grain, but very brittle. It might be useful for cabinetwork. A specimen of the bark contained 17.2 per cent of extract and 11.58 per cent of tannic acid. (Adapted from *Guilfoyle, Australian Plants*, and *Maiden, Useful Native Plants of Australia*.)

38148. CLERODENDRUM TRICHOTOMUM Thunb. Verbenaceæ.

"Wilson No. 216. From Ichang, western Hupeh, at an altitude of 1,000 meters."

38149 to 38151. COTONEASTER spp. Malaceæ.

38149. COTONEASTER DIVARICATA Rehder and Wilson.

(Wilson No. 232.)

"From thickets, Hingshanhsien, western Hupeh, at altitudes of 1,650 to 2,000 meters, September, 1907 (No. 232, type). This species is most nearly related to *C. simonsii* Baker, from which it is readily

38142 to 38168—Continued.

distinguished by its smaller leaves, constantly fewer flowered racemes, less acuminate sepals, and by its ovoid darker red fruits; in habit and general appearance the two species are very distinct. It seems also related to *C. mucronata* Franchet from Yunnan, which differs chiefly in the lax 2 to 4 flowered racemes and more densely hairy leaves." (*Sargent, Plantae Wilsonianae, vol. 1, p. 157-158, 1912.*)

38150. COTONEASTER HORIZONTALIS PERPUSILLA Schneider.

"(Wilson No. 496.) On bare, rocky ground, north and south of Ichang, western Hupeh, at an altitude of 1,300 to 2,000 meters. Prostrate, fruit red."

"This small-leaved form of *C. horizontalis* is the common cotoneaster of the moorlands in western Hupeh, being abundant in open, rocky ground. It is probably merely a climatic form of the type, since the seedling plants under cultivation have the larger leaves of the type." (*Rehder and Wilson. In Sargent, Plantae Wilsonianae, vol. 1, p. 155, 1912.*)

38151. COTONEASTER PANNOSA Franchet.

See S. P. I. Nos. 32936, 33159, and 37597 for previous introductions and description.

38152. DIOSPYROS LOTUS L. Diospyraceæ.

Persimmon.

"(Wilson No. 621.) From Changlohsien, western Hupeh, at an altitude of 1,000 meters."

38153. HYPERICUM PATULUM HENRYI Bean. Hypericaceæ.

((?) Wilson No. 1355.)

"From Tachienlu, western Szechwan, abundant in thickets at altitudes of 1,500 to 2,400 meters, November, 1908. A shrub with golden flowers, from three-fourths to 1 meter tall. This variety is easily distinguished from the type by its narrower acute sepals, which are broad and rounded in the type. The cymes are several to many flowered, the flowers larger and the leaves, too, are usually larger and of thicker texture. At the Arnold Arboretum it has proved of more vigorous growth and hardier than the type." (*Rehder. In Sargent, Plantae Wilsonianae, vol. 2, p. 403, 1915.*)

38154. JASMINUM FLORIDUM Bunge. Oleaceæ.

Jasmine.

(Wilson No. 789.)

"From Ichang, Hupeh, at altitudes of 300 to 700 meters, December, 1907. A yellow-flowered bush 1 meter tall." (*Sargent, Plantae Wilsonianae, vol. 2, p. 614, 1916.*)

See S. P. I. No. 35101 for previous introduction and description.

38155. INDIGOFERA AMBLYANTHA Craib. Fabaceæ.

(Wilson No. 786.)

"Ichang, western Hupeh, at altitudes of 300 to 1,000 meters, December, 1907. The erect, racemose inflorescence of this pleasing shrub continues to grow and bear flowers from mid-July until late autumn. The flowers vary from pale rose to red pink and are very freely produced. The shrub is common in western Hupeh but has not been recorded from Szechwan." (*Sargent, Plantae Wilsonianae, vol. 2, p. 99-100, 1914.*)

38142 to 38168—Continued.

- 38156.** *CAMPYLOTROPIS MACROCARPA* (Bunge) Rehder. Fabaceæ.
(*Lespedeza macrocarpa* Bunge.)

(Wilson No. 576.)

"A bush 1 to 2 meters high, flowers pale purple, from thickets at an altitude of 1,000 to 1,600 meters, Hingshanhsein, western Hupeh, November, 1907." (*Sargent, Plantae Wilsonianae, vol. 2, p. 113, 1914.*)

- 38157.** *PRUNUS CERASIFERA DIVARICATA* (Ledeb.) Schneider. Amygdalaceæ. **Cherry.**

See S. P. I. Nos. 37463, 37464, and 37688 for previous introductions and description.

"A deciduous tree with the same habit and general aspect as *P. cerasifera*; neither does it appear to differ in the flowers or foliage. The fruit, however, is smaller (about three-fourths of an inch across), yellow, and not indented at the junction with the stalk. Probably this tree and *P. cerasifera* are only varieties of one species. They flower at the same time, and are not distinguishable then. There is an old specimen near the Cactus House at Kew which is probably one of the largest in the country. It is 25 feet high, 27 feet through, and its trunk is 3 feet 8 inches in girth. Quite possibly trees may be growing in various gardens as *P. cerasifera*. The trees at Kew have rarely borne fruits, but these are quite distinct from cherry plums (*P. cerasifera*). The species is said to be a native of the Caucasus, Persia, Macedonia, etc., and to have been introduced in 1822." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 235.*)

- 38158.** *RHUS PUNJABENSIS SINICA* (Diels) Rehder and Wilson. Anacardiaceæ. **Sumach.**

(Wilson No. 275.)

"From woodlands, north and south of Ichang, at altitudes of 1,000 to 1,600 meters, September, 1907. A small tree 5 to 8 meters tall; flowers whitish, fruit crimson. This variety differs from the type chiefly in the slightly winged upper part of the rhachis of the leaf, and in the usually fewer and more sessile leaflets. The fruits agree exactly with those of *R. punjabensis*. In cultivated plants from 4 to 6 years old the wing on the rhachis is very pronounced and continues down its whole length. The differences, however, are not always obvious, but until more is known of the distribution of these plants it is convenient to keep the Chinese as a distinct variety. This sumach is abundant in the thickets and margins of woods in western Hupeh and Szechwan as a small tree with a short, relatively thick trunk covered with dark-gray, moderately smooth bark. The numerous branches are spreading and form a flattened round head. In autumn when laden with pendulous panicles of dark red or crimson this tree is very attractive. Colloquially this tree is known as the *Hung fu yang* and the galls which are produced on the leaves and at the ends of the young shoots are sometimes distinguished as *Tu pei tzu*, but more usually are called *Wu pei tzu*, though this name strictly speaking belongs to the galls produced on the leaves of *R. javanica*." (*Sargent, Plantae Wilsonianae, vol. 2, p. 176-177, 1914.*)

38142 to 38168—Continued.

38159 to 38166. *ROSA* spp. Rosaceæ.

Rose.

38159. *ROSA SOULIEANA* Crep.

See S. P. I. Nos. 21747 and 32962 for previous introductions.

38160. *ROSA XANTHINA* × (?).

Hybrid.

38161. *ROSA RUBUS* Léveillé and Vant.

"Wilson No. 431. From Patung, western Hupeh, at an altitude of 600 to 1,300 meters."

"This is a common species everywhere in western Hupeh and eastern Szechwan from river level to 1,300 meters. The densely hairy shoots and leaves readily distinguish it from its near relatives. The leaflets are often large and coarsely toothed, and the leaves though variable in shape resemble those of certain species of *Rubus*. The fruit is globose, and the pedicels are relatively long and stout." (*Sargent, Plantae Wilsonianae, vol. 2, p. 309, 1915.*)

38162. *ROSA BANKSIAE NORMALIS* Regel.

"(No. 619. Near Ichang, Hupeh, China. October, 1907.) A scandent bush 6 meters and more tall and as much in diameter, flowers pure white, fragrant, fruit dull red, abundant. This rose is very abundant in western Hupeh and eastern Szechwan from river level to 1,000 meters altitude, and is fairly common in western Szechwan in the valleys of the Tung and Min Rivers and neighboring regions up to 1,500 meters altitude. It delights in glens, ravines, and rocky places generally, where it forms tangled masses 6 meters and more high and as much in diameter; commonly it rambles over trees, and Wilson has seen trees 15 meters and more tall completely festooned with this rose. The flowers are always pure white, and we have never observed any tendency toward double flowers in the wild plant; nor did Wilson see it or any of its forms cultivated in gardens in central or western China. The umbellate inflorescence well distinguishes this species from its nearest relation *Rosa microcarpa* Lindley. The root bark is used locally for strengthening and dyeing fishing nets brown. This variety appears to be confined to central and western China, and we have seen no specimens of the wild plant from regions east of the 112th meridian of longitude." (*Sargent, Plantae Wilsonianae, vol. 2, p. 317, 1915.*)

38163. *ROSA HELENÆ* Rehder and Wilson.

"Wilson No. 666. From Wushan, eastern Szechwan, at an altitude of 1,000 to 1,500 meters."

"*Rosa helenae* is very abundant in rocky places from river level to 1,500 meters everywhere in western Hupeh and eastern Szechwan, but has not yet been reported from farther west. It forms in wayside thickets and by the banks of streams tangled masses often 6 meters tall and as much through, and in the margins of woods it rambles over small trees. When covered with masses of its white fragrant flowers this rose is very beautiful. It has proved quite hardy and flowered profusely at the Arnold Arboretum." (*Sargent, Plantae Wilsonianae, vol. 2, p. 311, 1915.*)

38142 to 38168—Continued.

38164. ROSA RUBUS Léveillé and Vant.

"Wilson No. 666A. From Hingshanhsien, western Hupeh, at an altitude of 1,300 meters."

38165. ROSA BRUNONII Lindl.

"Wilson No. 1125. From Washan, western Hupeh, at an altitude of 1,300 to 2,000 meters."

"*Rosa brunonii* is fairly common in the valley of the Tung River, where it forms tangled masses 6 meters and more high and as much in diameter." (*Sargent, Plantae Wilsonianae, vol. 2, p. 307, 1915.*)

38166. ROSA FILIPES Rehder and Wilson.

"Wilson No. 1228 [received as No. 1128]. From near Wenchwan, western Szechwan, at altitudes of 1,300 to 2,300 meters."

A white-flowered shrub up to 15 feet in height, with a few hooked prickles and producing long runners. The scarlet, globose fruits are up to one-half inch in diameter. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 5, p. 2997.*)

38167. SPIRAEA JAPONICA ACUMINATA Franch. Rosaceae.

(Wilson No. 579.)

"A pink-flowered bush, three-fourths to 1½ meters high, from roadsides, south of Ichang, western Hupeh, at altitudes of 1,000 to 1,700 meters, November, 1907." (*Sargent, Plantae Wilsonianae, vol. 1, p. 452, 1912.*)

"This species of *Spiraea*, which is a native of the northern part of China and Japan, is a handsome, hardy, deciduous shrub with brilliant rose-colored flowers, which are produced in July and August. In general appearance this species resembles the Nepal *Spiraea bella*, but is far more ornamental on account of the brilliant tint of its petals, especially when the flower buds first begin to expand. The leaves are dark green, the under sides being glaucous but not hairy." (*Paxton, Flower Garden, vol. 11, p. 113.*)

38168. VITIS RETICULATA Gagnep. Vitaceae.

(Wilson No. 378.)

"From cliffs at altitudes of 900 to 1,500 meters, Hingshanhsien, western Hupeh, October, 1907." (*Sargent, Plantae Wilsonianae, vol. 1, p. 103, 1911.*)

38169 and 38170. STIZOLOBIUM CINEREUM Piper and Tracy.
Fabaceae.

From Amani, German East Africa. Presented by the Kaiserlich Biologisch Landwirtschaftliches Institut. Received May 9, 1914.

38169. *Mangutungu*. From Alt Langenburg. 02101.

38170. *Lusumbi*. From Usumbwa, Tabora, German East Africa. January, 1914.

"02102. Apparently identical with S. P. I. No. 32021." (*C. V. Piper.*)

38171 to 38174.

Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

38171 to 38174—Contd. (Quoted notes by Mr. Dorsett and others.)

38171. *ROLLINIA DELICIOSA* Safford. Annonaceæ. **Fruta de condessa.**

“(No. 224a. Rio de Janeiro, Brazil. March 20, 1914.) The *fruta de condessa* (fruit of the countess), indigenous in the State of Rio de Janeiro, whence the fruit is shipped to the markets of the capital and sold there at 100 to 400 reis (3 to 12 cents) apiece. In general form the fruit is conical to cordate, frequently 3 to 4 inches in diameter. The surface is covered with conical protuberances of varying prominence, and is creamy yellow in color when the fruit is fully ripe. The skin is rather tough and not easily broken; it surrounds the milky white, somewhat mucilaginous flesh, in which the seeds are embedded. The flavor is somewhat insipid, but is much esteemed by the Brazilians, as evidenced by the quantity of the fruit sold. The seeds are not so numerous as in many other annonaceous fruits, but they are about the same size as those of cherimoya. The fruit ripens in February and March in this region. Should be given a trial in Florida and southern California, particularly as a stock for the cherimoya and other choice annonaceous fruits.”

38172. *MIMUSOPS* sp. Sapotaceæ.

“(No. 225a. Rio de Janeiro, Brazil, March 22, 1914.) A small sapotaceous fruit from the Jardim Botânico. Tree about 20 feet high. Fruit oval, slightly under 1 inch in length, maroon in color. The flesh surrounding the single seed is whitish and of very pleasant flavor, resembling that of the sapodilla.”

38173. *HOLCUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

“(No. 226a. From Barbados, British West Indies. April 5, 1914.) One head of sorghum, collected in a field near Bridgetown, where it was being cultivated.”

38174. *SOLANUM* sp. Solanaceæ.

“(No. 227a. Brazil.) Data concerning seed has been lost, but it probably came from the interior of Bahia State, Brazil.”

38175. *PARINARI EXCELSUM* Sabine. Rosaceæ.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received May 11, 1914.

Rough-skinned plum (?).

“The fruit is about the size of an *Imperatrice* plum, covered with a rough skin of a grayish color, and commonly called the *Rough-skin* or *Gray* plum. It is brought into the market on the west coast of Africa, but is not much esteemed on account of the small quantity of edible matter it contains, which is only the dry farinaceous substance surrounding the large stone.” (*Lindley, Treasury of Botany, vol. 2, p. 846.*)

38176 to 38182.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 14–15, 1914. Quoted notes by Mr. Meyer.

38176. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. **Hawthorn.**

“(No. 1209. Village of Tachingko, near Tainanfu, Shantung, China. March 21, 1914.) A large-fruited variety of Chinese hawthorn, fruit

38176 to 38182—Continued. (Quoted notes by Mr. F. N. Meyer.)

said to be red outside and inside. Of agreeable sour taste. Can be kept almost a year. A most excellent fruit for jellies, compotes, cake fillings, etc. Chinese name *Ta suan cha*, meaning 'large sour haw.'

Grafted trees and scions.

38177. *QSTERDAMIA* sp. Poaceæ.

"(No. 1212. Mountains near Taianfu, Shantung, China. March 22, 1914.) A grass of low growth and of spreading habits, thriving to perfection on thin, decomposed rock soil, along mountain paths where much tramping takes place; also found on inclines, where the mat of roots prevents the soil from being washed out. Of decided value, apparently, as a bank, lawn, and golf-course grass, especially for the drier parts of the United States."

38178. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Fei peach.

(*Prunus persica* Stokes.)

"(No. 1213. Feicheng, Shantung, China. March 27, 1914.) A remarkable variety of clingstone peach, considered to be the best in all China. Size large to very large; shape round; very heavy, often over 1 pound apiece; skin quite downy and of a pale yellowish color with a slight blush on one side. Meat very juicy and sweet and of excellent aromatic flavor, of white color except near the stone, where it is reddish. Stone very large and pointed, meat strongly adhering to it. Ripens in early to middle October and possesses excellent shipping and keeping qualities. The trees are of erect growth when young; when older, however, they spread out considerably, but they remain of open growth. To reach their greatest perfection these peaches are fertilized every spring, while during a dry season they are irrigated from wells; the fruit is also thinned out. The soil wherein they seem to thrive best is a porous, light clayey loam of reddish color, retaining moisture quite well but not becoming too soggy. The local people calculate that on an average a tree supplies \$10 worth (Mexican) of fruit each season, and they consider an orchard of these trees a very valuable asset indeed. The climate around Feicheng is of a semiarid nature, and this variety of peach may be expected to thrive especially well in the regions west of the Rocky Mountains. Chinese name *Fei t'ao*, meaning 'Fei peach.'"

Grafted trees and scions.

38179. *SALIX* sp. Salicaceæ.

Willow.

"(No. 1179. Village of Chenkiao, Honan, China. March 8, 1914.) A willow of golden yellow color, much planted on the sandy flats along the Yellow River for sand-binding purposes. Of value for similar uses, especially for the drier parts of the United States."

38180. *ZINZIBER OFFICINALE* Rosc. Zinziberaceæ.

Ginger.

"(No. 1214. Feicheng, Shantung, China. March 26, 1914.) A variety of ginger grown on sandy loam in the vicinity of Minyang to the south of Taianfu. Much hawked about throughout Shantung and retailing at from 10 to 12 cents (Mexican) per pound. Is much relished as a condiment in soups and with meat dishes and considered to be very *healthful*, so much so in fact that Confucius advised his pupils to make ginger one of their relishes to be eaten daily. The Chinese plant the rhizomes as soon as the soil becomes warm and harvest the plants in the autumn after a light frost; the rhizomes are stored in cool dugouts and kept

38176 to 38182—Continued. (Quoted notes by Mr. F. N. Meyer.)

covered over with slightly moist, sandy soil. Chinese name *Hsien chiang*, meaning 'fresh ginger.'

Rhizomes.

38181. QUEECUS LIAOTUNGENSIS Koidzumi. Fagaceæ. **Oak.**

"(No. 188a. Hsiao Wutaishan, Chihli Province, China. August 25, 1913.) A low-growing, scrubby oak, found in thickets at elevations between 5,000 and 7,000 feet above sea level. Looks in leaf very much like *Q. pedunculata*. Of value as a shade tree in parks and as a ground cover on mountain slopes in the cooler parts of the United States."

38182. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

"(No. 2013a. Chiningchow, Shantung, China. March 16, 1914.) A Chinese chestnut, of which the nuts have a somewhat peculiar form, being bent in at their tops. From the Taishan region near Talanfu, Shantung, where the trees are all badly attacked by the bark disease *Endothia parasitica*."

38183. HOLCUS SORGHUM L. Poaceæ. **Giant Sudan sorghum.**

(*Sorghum vulgare* Pers.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Cuttings received May 14, 1914.

"The stalk of this sorghum is very tall, sometimes reaching a height of 4.24 meters. The leaves are large and the panicles are small. This sorghum does not mature in Algiers but is propagated by cuttings." (*Trabut*.)

38184 to 38187.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 4, 1914. Cuttings of the following; quoted notes by Mr. Meyer.

38184. PAULOWNIA FORTUNEI (Seem.) Hemsley (?). Scrophulariaceæ.

"(No. 1180. Village of Chenkiao, Honan Province, China. March 8, 1914.) A Paulownia, planted here and there on sandy lands as a soil binder and windbreak. The wood is of a very light nature and is used in the construction of light furniture, playthings for children, bowls, jars, etc. Of value as a soil binder and an ornamental park tree, especially for the mild-wintered sections of the United States. Chinese name *T'ung shu*."

Root cuttings.

38185. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"(No. 1186. Tsaochowfu, Shantung, China. March 10, 1914.) A pomegranate, producing very large double flowers of a brilliant red color. No fruits are set. Chinese name *Shuang shih liu hua*, meaning 'double-flowering pomegranate.' Obtained from the garden of the Roman Catholic Mission at Tsaochowfu."

38186. VITIS VINIFERA L. Vitaceæ. **Grape.**

"(No. 1187. Tsaochowfu, Shantung, China. March 10, 1914.) A Chinese variety of grapevine, producing large bunches of black grapes, the individual berries of which are very elongated. This grape is very sweet and possesses good keeping and shipping qualities. Chinese name *Nai tzü p'u t'ao*, meaning 'nipple grape.'"

38184 to 38187—Continued. (Quoted notes by Mr. F. N. Meyer.)

38187. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. Jujube.
(*Ziziphus sativa* Gaertn.)

“(No. 1188. Near Kuyehsien, Shantung, China. March 14, 1914.) A large-fruited variety of jujube of oblong shape and reddish brown color. Good for drying. Local name *Ta tsao*, meaning ‘large jujube.’”

38188. CASTILLA NICOYENSIS O. F. Cook. Moraceæ.

Central American rubber.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received May 14, 1914.

See S. P. I. Nos. 33784 and 35892 for previous introductions and description.

38189 and 38190. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Rosthern, Saskatchewan, Canada. Presented by Mr. Seager Wheeler, through the Office of Forage-Crop Investigations. Received May 11, 1914.

“Seed of red clover grown at Rosthern, Saskatchewan, Canada. It was grown under very severe winter conditions and is expected to prove extremely hardy.” (*J. M. Westgate.*)

38189. From seed of S. P. I. No. 31205.

38190. From seed of S. P. I. No. 31232.

38191. BERTHOLLETIA NOBILIS Miers. Lecythidaceæ. Brazil nut.

From Para, Brazil. Presented by the American consul. Received May 13, 1914.

38192 and 38193. DIOSPYROS spp. Diospyraceæ.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received May 15, 1914.

38192. DIOSPYROS DISCOLOR Willd.

Mabola.

See S. P. I. Nos. 19216, 26112, and 30518 for previous introductions and description.

“A tree of moderate size, 40 feet or more high; the trunk furnishes a hard, compact ebony of an exceedingly black color. Fruit thick, fleshy, globose or subglobose, densely hairy, reddish, like a quince, 4 to 6 seeded, with flesh rose colored, 3 to 4 inches in diameter; pulp white, hairs ferruginous; albumen cartilaginous, not ruminated; fruiting calyx flattish, appressed, rather more than 1 inch in diameter. The wood is very hard, of a dark flesh color, which in time becomes black like ebony. The fruit has an agreeable smell like a quince (but sometimes not so), and is edible after removing the hairs and skin.” (*Hiern, Monograph of the Ebenaceæ, p. 251, 1873.*)

38193. DIOSPYROS SUBTRUNCATA Hochreutiner.

Persimmon.

Distribution.—A persimmon found in Sumatra, closely related to *D. borneensis* Hiern, from which it differs in having the calyx truncate, the corolla tomentose outside, and a slightly larger fruit.

38194 to 38205. HOLCUS SORGHUM L. Poaceæ. Sorghum.*(Sorghum vulgare Pers.)*

From Sapporo, Japan. Presented by Mr. T. Minami, College of Agriculture, Tohoku Imperial University. Received May 13, 1914. Seeds produced in Manchuria last year; quoted notes by Mr. Minami.

38194. "(No. 1.) *Kokkoku kinsui* (means red glume and thick ear)."

38195. "(No. 2.) *Kōnen-kōryō* (means red glutinous sorghum)."

38196. "(No. 3.) *Gai-hansaku* (meaning is not clear)."

38197. "(No. 4.) *Shōkōwaishin-han-kōryō* (means small yellow dwarf)."

38198. "(No. 5.) *Nen-kōryō-kō* (means glutinous sorghum which is red)."

38199. "(No. 6.) *Shōkōkoku-han-kōryō* (small yellow glume)."

38200. "(No. 7.) *Kokkoku dagan-kōhan-kōryō* (means black glume and red grain, looks like snake's eye)."

38201. "(No. 8.) *Kokkoku sasui* (means black glume and loose ear)."

38202. "(No. 9.) *Chikuyō-scihan-kōryō* (means bamboo leaf and green grain)."

38203. "(No. 10.) *Kokkoku hakunen-kōryō* (means black glume and white glutinous grain)."

38204. "(No. 11.) *Kokoku waishin-han-kōryō* (means black glume and dwarf)."

38205. "(No. 12.) *Kijaku-haku-han-kōryō* (means white grain which is very much liked by swallows)."

38206 and 38207.

From Tokyo, Japan. Procured from the Tokyo Plant, Seed & Implement Co. Received May 14, 1914.

38206. PRUNUS SERRULATA Lindl. Amygdalaceæ. **Flowering cherry.**

"Young shoots slightly hairy. Leaves broadly ovate or obovate, 2 to 4½ inches long to 1¼ to 2¼ inches wide; wedge shaped or almost rounded at the base, the apex abrupt narrowed to a long point, margins doubly toothed, both surfaces, but especially the lower one, hairy on the midrib and veins; stalk one-fourth to half an inch long; hairy. Flowers in short racemes, sometimes reduced to a fascicle of usually four blossoms; each flower three-fourths of an inch across, the five petals jagged at the apex, borne on a bristly hairy stalk one-half to three-fourths of an inch long; calyx tube hairy; the lobes ovate triangular; glabrous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, under *P. pseudocerasus*.)

Introduced for use as a stock on which to test both the fruiting cherries and the Japanese double-flowered forms.

37207. PISUM SATIVUM L. Fabaceæ.

Pea.

38208. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Batum, Russia. Presented by Mr. Leslie A. Davis, American consul. Received May 16, 1914.

"Grown in the Caucasus. I think a better quality is grown in Turkestan and that the Turkestan seed is planted in the Caucasus to some extent." (*Davis.*)

38209. ANACARDIUM EXCELSUM (Bert. and Bal.) Skeels. Anacardiaceae.
(*Anacardium rhinocarpus* DC.)

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received May 18, 1914.)

"Fruits of a rare tree. This fruit was collected at Casilda, Trinidad, Santa Clara Province, and is commonly known as *nariz* on account of its similarity to the fruit of the *Marañon* (*Anacardium occidentale*) in appearance, foliage, and inflorescence. It is a very tall tree; the leaves are very large and the peduncle not so succulent as in the *Marañon*. The botanist thinks that it could perhaps be *Anacardium rhinocarpus*, and says that it is found only in the district of Trinidad, and no use is made of the tree or its fruits." (Crawley.)

38210 to 38212.

From Asmara, Eritrea, Africa. Presented by the Direzione di Colonizzazione Service. Received May 18, 1914.

38210. COLUTEA ISTRIA Miller. Fabaceae.
(*Colutea halepica* Lam.)

See S. P. I. No. 33029 for previous introduction.

"A shrub 1 to 4 meters high with the appearance of *C. arborescens*, from which it differs in its smaller, oblong, slightly silky leaves, in its raceme of 2 to 4 flowers, and in its legumes, which are more acute at the two extremities. Rocky places of the Altipiano and its slopes, at 1,600 to 2,600 meters." (Adriano Fiori, *Boschi e Piante legnose dell'Eritrea*, p. 184.)

38211. SESBAN sp. Fabaceae. 38212. (Undetermined.)

38213 to 38228.

From Tokyo, Japan. Presented by the director, Japanese Imperial Department of Agriculture. Received May 15, 1914.

38213 to 38220. SOJA MAX (L.) Piper. Fabaceae. Soy bean.
(*Glycine hispida* Maxim.)

38213. <i>Tsurunoko.</i>	38217. <i>Aotsurunoko.</i>
38214. Var. <i>Aksaya.</i>	38218. <i>Kōsuirasu.</i>
38215. <i>Gowari.</i>	38219. Var. <i>Juningonomi.</i>
38216. <i>Hadaka.</i>	38220. <i>Aoniūdō.</i>

38221 to 38227. ORYZA SATIVA L. Poaceae. Rice.

38221. Var. <i>Shinriki.</i>	38225. <i>Kame-no-o.</i>
38222. Var. <i>Aikoku.</i>	38226. <i>Ōbō.</i>
38223. <i>Takenari.</i>	38227. <i>Shekitori.</i>
38224. <i>Omachi.</i>	

38228. SOJA MAX (L.) Piper. Fabaceae. Soy bean.
(*Glycine hispida* Maxim.)

Shirashaya.

38229. DIOSCOREA sp. Dioscoreaceae. Yam.

From Brooklyn, N. Y. Purchased from Mr. A. I. Wilson. Received May 22, 1914.

"Yams sell at 6 cents per pound." (Wilson.)

"A yam of good quality. The flesh is mealy, yet firm and of good flavor. The specimen received weighed 6 pounds." (R. A. Young.)

38230 to 38285.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., March 30, 1914. Quoted notes by Mr. Meyer.

38230. *PRUNUS ARMENIACA* L. Amygdalaceæ. **Apricot.**

"(No. 1105. Sianfu, Shensi, China. January 30, 1914.) An apricot, said to bear large fruits, besides being very ornamental when in blossom. The trees grow to a remarkably large size. Scions collected in an old mandarin's garden."

38231. *MALUS* sp. Malaceæ. **Crab apple.**

"(No. 1106. Sianfu, Shensi, China. January 30, 1914.) A flowering crab apple, of low-branching, wide-spreading growth, said to bear masses of small double flowers of rosy red color. Scions obtained from the garden of the English Baptist Mission Hospital."

38232. *POPULUS* sp. Salicaceæ. **Poplar.**

"(No. 1108. Village of Beetchi, near Fuping, Shensi, China. February 2, 1914.) A poplar of remarkable fastigiate growth, used as a windbreak on a dry loess table-land. Apparently the same as No. 1064 [S. P. I. No. 37482], but possibly more drought resistant. Of value as a windbreak for the drier parts of the United States."

Cuttings.

38233 to 38235. *SALIX* sp. Salicaceæ. **Willow.**

From the village of Tungchiaopu, Shensi, China. Cuttings collected February 3, 1914.

38233. "(No. 1120.) A willow, growing to be a tall tree with heavy trunk. The main branches are of erect growth and of dark-green color, but the young twigs are slender and gracefully drooping while possessed of a delicate yellowish color. A fine tree for parks, especially when planted in a clump or as solitary specimens, where they can be seen from some distance."

38234. "(No. 1121.) A willow, forming heavy trunks, of erect-spreading growth, while the reddish colored young twigs are slightly drooping. Of value for parks when planted in clumps or as solitary specimens where they can be seen for some distance."

38235. "(No. 1122.) A willow, growing to be a tall tree, forming heavy trunks with dark-brown bark. The young branches are somewhat pendent. This and the preceding two numbers [S. P. I. Nos. 38233 and 38234] are all three grown locally as timber trees. They seem to be of remarkably fast growth, especially when planted alongside irrigation canals."

38236. *WIKSTROEMIA CHAMAEDAPHNE* (Bunge) Meissner. Thymelæaceæ.

"(No. 1124. Near Kwanshanchen, Shensi, China. February 4, 1914.) Rooted plants of a thymeleaceous small shrub, growing from 1 to 3 feet in height, having somewhat leathery, small foliage, which is semipersistent throughout winter; bears small terminal racemes of yellow flowerlets. Found here and there on dry banks and hill slopes in great quantities. The bark is of a tenacious nature and the plant might possibly be cultivated as a prospective leather-paper supply."

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38237. *EUONYMUS* sp. Celastraceæ.

"(No. 1125. Village of Tchangpai, Shensi, China. February 5, 1914.) Cuttings of spindle wood, usually seen as a shrub, but when not molested growing to be a medium-sized tree. The plant is an excellent bank binder, throwing up suckers all around; it stands drought to a wonderful extent, while it resists alkali also to a certain degree. In most places this shrub is cut down every year, but this treatment seems to make it spread more. It deserves to be given a thorough test as a bank and soil-binding plant, especially in the semiarid parts of the United States."

38238. *SALIX* sp. Salicaceæ.

Willow.

"(No. 1126. Near Chaoyi, Shensi, China. February 7, 1914.) Cuttings of a willow of wide-spreading growth, forming a characteristically well rounded head when becoming older. Apparently able to stand a goodly amount of drought and alkali."

38239. *GLEDITSIA* sp. Cæsalpiniaceæ.

"(No. 1128. Near Puchowfu, Shansi, China. February 8, 1914.) A very thorny shrub of rather tall growth, occurring on dry places. Said to bear whitish flowers. Of value perchance as a hedge shrub for the drier sections of the United States. Chinese name *Lang ya ch'ih*, meaning 'wolf's teeth.' Roots, to be planted slantingly."

38240 to 38242. *PYRUS CHINENSIS* Lindl. Malaceæ.

Pear.

From near Puchowfu, Shansi, China. Scions or cuttings collected February 10, 1914.

38240. "(No. 1136.) A very large variety of Chinese pear, producing fruits that often weigh 1 pound apiece. Of barrel shape, color dark yellow, flesh nonmelting, somewhat coarse in texture, but juicy and sweet to the taste. Possesses good keeping and shipping qualities. Of value for hybridization experiments. Chinese name *Chin li*, meaning 'golden pear.'"

38241. "(No. 1137.) A variety of Chinese pear, of medium large size, of round form, color pale yellow, flesh nonmelting, of somewhat granular texture, juicy, and of but moderately sweet taste. Of value for hybridization experiments and for canning purposes. Chinese name *Pai li*, meaning 'white pear.' This *Pai li* is quite different from the Peking pear that passes under the same name."

38242. "(No. 1138.) A variety of Chinese pear of apple shape and looks, being red cheeked on one side and other yellow on the other. Flesh hard and sourish. A most remarkable keeper and shipper. Of value as a cooking pear, for sauces, and possibly in hybridization experiments. Chinese name *Hung hsiao li*, meaning 'red sour pear.'"

38243 to 38247. *ZIZIPHUS JUJUBA* Miller. Rhamnaceæ.

Jujube.

(Ziziphus sativa Gaertn.)

From near Pailiangchen, Shansi, China. Scions collected February 13, 1914.

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38243. "(No. 1140.) A very valuable variety of jujube, producing fruits among which there are some as large as ordinary hens' eggs; fruits of roundish oblong form, of somewhat cylindrical shape; color mahogany brown; meat quite sweet and of a solid texture. This is one of the most famous jujubes of all China, and merchants come from far away to buy them up. The fruits can be eaten fresh, sun dried, baked in bread, stewed with rice, millet or meat, dry baked in the oven, preserved with honey and cane sugar, and also put up in weak brandy, tasting very well in each of these ways. They are also prized for medicinal purposes, especially when several years old, and, though 1-year-old fruits retail locally at 8 to 10 cents (Mexican) per catty, fruits 7 to 10 years old sell at \$1 (Mexican) and over for the same weight. They are used for relief of pain in the chest and respiratory organs and are considered to be very strengthening. The trees of this variety appear not to grow to large size; they are of open, loose habit, and do not produce fruit of uniform size. In the vicinity of Paihsiangchen several thousand acres are given over to their cultivation, and it seems to be a paying industry, as the acreage is constantly being enlarged. Propagation is done only by planting suckers; grafting, budding, and ringing seem to be unknown to the local people. A peculiar bunch disease is much in evidence on this variety as well as on other varieties, and growers complain that it is causing considerable reduction of the crop; they do not combat it, however, by cutting the bunches out. Special attention should be paid in America that this disease does not get a foothold. Chinese name of this variety *Ta yüan tsao*, meaning 'big round jujube.'"

38244. "(No. 1141.) A local variety of jujube, producing fruits of medium size, of elongated cylindrical shape; color, light mahogany brown. Can be eaten fresh, but they are best when put up in weak brandy. Chinese name *T'iao tsao*, meaning 'stick jujube,' referring to the shape of the fruit."

38245. "(No. 1142.) A variety of jujube, said to be of medium size, of tapering, elongated form, good only when fresh. Chinese name *Shui mên tsao*, meaning 'water-breath jujube.'"

38246. "(No. 1143.) A variety of jujube of medium size, of oblong-pointed form; color, light mahogany brown. Fruits can be brandied. Trees of vigorous growth, making long, outstretched branches. Chinese name *Chi hsin tsao*, meaning 'chicken-heart jujube.'"

38247. "(No. 1144.) A variety of jujube, said to be of medium size, of round form; color, dark mahogany brown; meat somewhat brittle. Good only when fresh. Chinese name *Yüan ts'ui tsao*, meaning 'round, fragile jujube.'"

38248. *JASMINUM NUDIFLORUM* Lindley. Oleaceæ. Jasmine.

"(No. 1145. Paihsiangchen, Shansi, China. February 14, 1914.) A yellow-flowered jasmine occurring at the edges of dry banks, ravines, and grave mounds, flowering before the leaves come out, sometimes even in midwinter. The plants are of spreading habit, the very long, slender,

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

and angular green branches rooting wherever they touch moist ground and making a regular matting of living twigs, keeping soil and stones from moving away. This plant is by its nature fit to cover rockeries, to be grown at the edges of terraces, to cover old walls, etc., and deserves to be given a thorough test as a bank and soil binder, especially in the sections of the United States where the winters are not too severe, while the summers can be hot and dry. Chinese name *Ying ch'un hua*, meaning 'meeting-the-spring flower.'

Cuttings.

38249 to 38253. *ZIZIPHUS JUJUBA* Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

Scions of the following:

38249. "(No. 1146. Fuma, near Anyih sien, Shansi, China. February 14, 1914.) A variety of jujube supposed to be the largest of all; fruits are said to be larger than ordinary hens' eggs and resemble small pears; oval shape; color, mahogany brown. This variety is said to have originated through having grafted an ordinary jujube on pear roots(?). Chinese name *Li tsao*, meaning 'pear jujube.' Good only when eaten fresh."

38250. "(No. 1147. Village of Nanyangyao, near Anyih sien, Shansi, China. February 14, 1914.) A variety of jujube of peculiar shape, the top being larger than the base in some fruits and protruding above it with a circular constriction just below, giving the impression of one fruit placed above another; size, medium; color, light mahogany. Can be eaten fresh or put up in weak brandy. Chinese name *P'o p'o tsao*, meaning 'mother-in-law jujube,' having reference to the peculiar shape of the fruit, in connection with the fact that a Chinese wife generally sits under the rule of her husband's mother."

38251. "(No. 1148. Village of Siao shu, near Anyih sien, Shansi, China. February 14, 1914.) A variety of jujube of oval, tapering shape, medium sized; color, light brown-red. Can be put up in weak brandy. Chinese name *Kên tsao*, meaning 'hard jujube.'"

38252. "(No. 1149. Village of Nantsunwu, near Anyih sien, Shansi, China. February 14, 1914.) A variety of jujube, the fruits of which are said to be flat in shape and somewhat undulated. The branches are curiously bent and twisted, while the tree assumes a beautiful bowl-like form. Chinese name *Kuai tsao*, meaning 'bent jujube.'"

28253. "(No. 1150. Village of Nantsunwu, near Anyih sien, Shansi, China. February 14, 1914.) A variety of jujube, said to be much like the preceding (No. 1149); the branches, however, are less twisted, while the form of the tree is more open and loose."

38254. *CATALPA BUNGEI* C. A. Meyer. Bignoniaceæ.

"(No. 1151. Village of Wangyuko, near Anyih sien, Shansi, China. February 15, 1914.) A quick-growing Chinese timber tree, growing to large size, specimens being seen 100 feet tall, with trunks 10 to 15 feet in circumference a few feet above the ground. The Chinese plant this tree for its wood, which is strong, light, durable, and nonwarping. It resembles walnut to some extent and is much in demand for table tops and for

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

fine furniture. This tree might possibly be profitably cultivated in the semiarid regions of the United States where the winters are not too severe, while the summers may be quite hot. They are easily propagated from suckers that spring up from roots that are close to the surface of the ground, and the tree thrives best when planted close to irrigation canals and on sheltered places. They prefer a porous soil. Chinese name *Ch'iu shu*, meaning 'autumn tree.'

Young rooted trees.

38255. *POPULUS TOMENTOSA* Carr. Salicaceæ. **Poplar.**

"(No. 1152. Village of Wangyuko, near Anyih sien, Shansi, China. February 15, 1914.) A quick-growing form of white poplar, much planted by the Chinese for its timber. Forms a tall, straight trunk when kept trimmed up high. Of value as a timber tree on the farm and possibly a good wood for match sticks and for light fruit boxes. May thrive especially well in the southwestern United States. Chinese name *Ta pai yang shu*, meaning 'big white poplar.'

Rooted trees.

38256. *GLEDITSIA* sp. Cæsalpiniaceæ.

"(No. 1155. Village of Changtienyuan, Shansi, China. February 16, 1914.) A soap-pod tree, apparently of scrubby growth, occurring on dry, rocky mountain slopes. May possibly possess value as a hedge shrub, especially in semiarid sections."

Roots.

38257. *SACCHARUM NARENGA* (Nees) Wallich(?). Poaceæ. **Sugar cane.**

"(No. 1164. Chengchow, Honan, China. February 25, 1914.) A very hardy variety of Chinese sugar cane cultivated here and there along the Yellow River. The canes reach a height of 4 to 6 feet, have a diameter of about 1 inch, and are of a beautiful purplish violet color. Sugar percentage low. Of value possibly for the milder parts of the United States as a source of supply for sirups, molasses, and sweets for the children. The canes should be stored during the winter in frost-proof cellars or dugouts with dry soil sprinkled over and between them. In China young and old are fond of pieces of raw sugar cane, which in the milder sections form one of the most common articles of winter sweetmeats. Chinese name *Kan ché*."

Cuttings.

38258 to 38271.

From the village of Wulipu, Honan, China. Collected February 27, 1914. Scions of the following:

38258 to 38261. *ZIZIPHUS JUJUBA* Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

38258. "(No. 1165.) A variety of jujube, producing fruits of medium large size, of cylindrical shape, slightly tapering down toward base; color light mahogany brown; meat of firm texture and very sweet; can be eaten fresh, as well as smoked and dry baked in the oven. Chinese name *Hui tsao*, meaning 'ashy jujube,' referring to its looks before being quite ripe."

38359. "(No. 1166.) A variety of jujube, said to be of medium size, of round form; meat of crackling nature. Eaten fresh only. Chinese name *Su tsao*, meaning 'brittle jujube.'"

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38260. "(No. 1167.) A variety of jujube, said to be of medium size, of elongated shape, tapering toward the base. Ripens very late in the summer. Good only when fresh. Chinese name *Chui yüeh ch'ing tsao*, meaning 'ninth-moon green jujube' (the Chinese ninth moon being October)."

38261. "(No. 1168.) A variety of jujube, said to be medium large, of barrel shape, and pointed on both sides. Good only when fresh. Chinese name *Ma ya t'ou tsao*, meaning 'horse's-teeth jujube.'"

38262 to 38271. *PYRUS CHINENSIS* Lindley. Malacææ. Pear.

38262. "(No. 1169.) A variety of Chinese pear, growing to a very large size, of round-oblong shape; color dark yellow; meat of somewhat coarse texture, but juicy and sweet; a good keeper and shipper. Chinese name *Fé li*, meaning 'swan pear.'"

Of value like No. 1136 [S. P. I. No. 38240] for hybridization purposes.

38263. "(No. 1170.) A variety of Chinese pear, said to reach very large size, of round-oblong shape; color dark yellow; does not keep long. Chinese name *Pin li*, meaning 'luscious pear.' Of value possibly in breeding experiments."

38264. "(No. 1171.) A variety of Chinese pear, said to be large, of round shape and of pale-yellow color. Ripening in summer and not keeping long. Chinese name *Sha pai li*, meaning 'sand white pear.' Of value possibly in breeding experiments."

38265. "(No. 1172.) A variety of Chinese pear, said to be large, round, and of purplish violet color. Able to withstand long shipping and keeping until late in spring. Chinese name *Tzú su li*, meaning 'violet brittle pear.'"

38266. "(No. 1173.) A variety of Chinese pear, said to be of medium size, of real pear shape; sweet; not a keeper. Chinese name *Nai li*, meaning 'milk pear,' or *Yin li*, which means 'silver pear.' Of value possibly in breeding experiments."

38267. "(No. 1174.) A variety of Chinese pear, said to be of medium size, of yellow color; very sweet; ripening in summer and not keeping. Chinese name *Huang li*, meaning 'yellow pear.' Of value possibly for breeding purposes."

38268. "(No. 1175.) A variety of Chinese pear, said to be large, of green color, of sweet taste, ripening in early August; does not possess keeping qualities. Chinese name *Ch'ing p'i t'ien li*, meaning 'green-skin sweet pear.' Of value possibly for breeding purposes."

38269. "(No. 1176.) A variety of Chinese pear, said to be medium large; of round shape; sweet. Ripening in summer and not a keeper. Chinese name *Shui pai li*, meaning 'water white pear.' Of value possibly for breeding purposes."

38270. "(No. 1177.) A variety of Chinese pear, said to be large, of barrel shape; color pale yellow; sweet. Does not possess keeping qualities. Chinese name *Kao ting pai li*, meaning 'tall top white pear.' Of value possibly for breeding purposes."

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38271. "(No. 1178.) A variety of Chinese pear, said to be of medium size; round oblong in shape, of russet-brown color; flesh soft and mealy, does not keep long. Chinese name *T'ien kua li*, meaning 'sweet melon pear.' Of value possibly in breeding."

38272 to 38274. *AMYGDALUS PERSICA* L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From near Taianfu, Shantung, China. Scions or cuttings collected March 20, 1914.

38272. "(No. 1197.) A Chinese variety of peach, said to be very large, weighing up to 1 pound apiece. Of greenish white color, of pointed shape; meat very juicy; sweet and fragrant. Possessing good keeping qualities, being kept until December. Chinese name *Fo shou t'ao*, meaning 'Buddha's hand peach.'"

38273. "(No. 1198.) A Chinese variety of peach, said to be medium large, of white color; meat firm and sweet. A late ripener and possessing good keeping qualities. Chinese name *Ch'iu pai t'ao*, meaning 'autumn white peach.'"

38274. "(No. 1199.) A flowering variety of peach, said to be very ornamental when bearing its large rosy red flowers. The fruits are small, of dark rosy red color and of a peculiar shape, having 3 points; taste sweet and reminding one of pineapple. Chinese name *Pi t'ao*, meaning 'fragrant peach.'"

38275 and 38276. *AMYGDALUS PERSICA PLATYCARPA* (Decne.) Ricker.
Amygdalaceæ.

38275. "(No. 1200.) A Chinese variety of peach, said to be of large size, of flat shape; meat juicy and sweet. Color greenish outside, while red inside, especially around the stone. Chinese name *Ta pien t'ao*, meaning 'large flat peach.'"

38276. "(No. 1201.) A Chinese variety of peach, said to be small, of flat shape, meat juicy and sweet, color red. Chinese name *Hsiao pien t'ao*, meaning 'small flat peach.'"

38277 and 38278. *PYRUS CHINENSIS* Lindley. Malaceæ. **Pear.**
From near Taianfu, Shantung, China. Scions collected March 21, 1914.

38277. "(No. 1202.) A variety of pear, said to be medium large, of round-oblong shape, of yellow color; juicy and sweet. Possesses good keeping qualities. Chinese name *Chin sui tsü li*, meaning 'golden earring pear.'"

38278. "(No. 1203.) A variety of pear, said to be medium large, of round-oblong shape, yellow color, good flavor, breaking easily when falling. Chinese name *Su li*, meaning 'brittle pear.'"

38279 and 38280. *MALUS* sp. Malaceæ. **Apple.**
From the village of Fanchiachwang, near Taianfu, Shantung, China. Scions collected March 22, 1914.

38279. "(No. 1204.) A variety of apple, said to be large, of red color; flesh firm and of sweet flavor. Chinese name *Ta p'in kuo*, meaning 'large apple.' Apparently very drought resistant and possibly of value for the drier parts of the United States."

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38280. "(No. 1205.) A variety of crab apple, said to be large, of light-green color and of subacid taste. Chinese name *Ta sha kuo*, meaning 'large crab apple.' Of value for the drier parts of the United States."

38281 and 38283. *PRUNUS* spp. Amygdalaceæ.

From the village of Tachingko, near Taianfu, Shantung, China. Collected March 21, 1914.

38281. *PRUNUS ARMENIACA* L.

Apricot.

"(No. 1206.) A variety of apricot, said to be very large; color half red and half yellow; sweet and juicy. Chinese name *Ta shui hsing*, meaning 'large water apricot.'"

38282. *PRUNUS* sp.

Apricot plum.

"(No. 1207.) Scions of an apricot plum, said to produce medium large fruits of red color. Chinese name *Hsing mei*, meaning 'apricot plum.'"

38283 and 38284. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ.

Hawthorn.

From the village of Tachingko, near Taianfu, Shantung, China. Scions collected March 21, 1914.

38283. "(No. 1208.) A variety of Chinese hawthorn, fruit said to be large, of red color outside, while the meat inside is white, of agreeable subacid taste, not keeping as long as other varieties. Chinese name *Mien shan cha*, meaning 'soft mountain haw.'"

38284. "(No. 1210.) A variety of Chinese hawthorn, fruit said to be large and of red color both inside and out. Chinese name *Hung ü shan cha*, meaning 'red inside mountain haw.' This may possibly be the same variety as No. 1209 [S. P. I. No. 38176]. The Chinese haw fruit seems to thrive best on well-drained semigravelly or sandy loam, and the best quality of fruit is produced on trees that grow on mountain terraces. It is not unlikely to become a fruit of considerable importance in America, whenever it shall become known. The Chinese graft and bud this haw on wild and seedling stock of *Crataegus pinnatifida*, but experiments should be made, to determine whether other species of *Crataegus* will be suitable also for stocks."

38285. *ALBIZZIA* sp. Mimosaceæ.

From the mountains near Taianfu, Shantung, China. Root cuttings collected March 22, 1914.

"(No. 1211.) A silk-flowered tree, occurring on sterile, rocky mountain slopes; grows into a medium-sized tree. Apparently a good soil binder and of value possibly for the drier sections of the United States as a soil retainer on mountain slopes and as an ornamental park tree. The wood is tough and is used in the construction of carts. Local name *Fu jung hua*, meaning 'old-man's-face flower.'"

38286. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

From Brazil. Purchased through Cowdrey & Co., New York City. Received April 3, 1914.

38287 to 38290.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden, through Mr. Wilson Popenoe of the Bureau of Plant Industry. Seeds of Sikkim plants received May 14, 1914.

38287. *BETULA UTILIS* D. Don. Betulaceæ. **Birch.**

Distribution.—A large tree found at an altitude of 7,000 to 14,000 feet on the temperate slopes of the Himalayas from Kashmir to Sikkim in northern India, and eastward through China and Japan.

"A tree 60 feet high, with a creamy white trunk and branches; bark peeling off in papery flakes; young shoots densely covered with gray down, becoming reddish brown. Leaves ovate, rounded at the base, pointed, 2 to 3½ inches long, about two-thirds as wide, rather coarsely and irregularly toothed; upper surface dark green, with scattered down; lower surface pale, downy on the midrib and veins, the latter in 9 to 12 pairs; leafstalk three-fourths of an inch long, downy; fruiting catkins 1½ inches long, one-third of an inch in diameter, cylindrical; scales downy on the margins, the middle one considerably the longer, and rounded at the end. Native of the Himalayas; introduced by Sir Joseph Hooker in 1849; perhaps before, certainly several times since, from which, judging by its rarity, it would seem that it is not very hardy. A tree over 30 feet high, planted by the late Mr. Chambers at Grayswood in 1882, is the best I know. Young plants have been raised at Kew from its seed, but have not yet had to withstand hard frost. In a letter Mr. Chambers remarked that the bark of his tree 'even to the branches is creamy white, the young twigs of an orange chocolate, very pretty in winter.' Some trees also exist in Trinity College Botanic Gardens, Dublin." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 263.*)

38288 and 38289. *MICHELIA* spp. Magnoliaceæ.

38288. *MICHELIA CATHCARTII* Hook. f. and Thoms.

Distribution.—A tall tree with white flowers, found on the temperate slopes of the Himalayas at an altitude of 5,000 to 6,000 feet in Sikkim, northern India.

38289. *MICHELIA LANUGINOSA* Wallich.

Distribution.—A large bush or tree, with large white flowers, often 4 inches in diameter, found on the temperate slopes of the Himalayas at an altitude of 5,000 to 7,000 feet, from Nepal to Bhutan in northern India.

38290. *ALNUS NEPALENSIS* D. Don. Betulaceæ. **Alder.**

38291 and 38292.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received May 25, 1914. Quoted notes by Commander Stearns.

38291. *PIPER METHYSTICUM* Forster. Piperaceæ. **Ava (kava).**

"These cuttings are of the best variety grown in the island, and in planting them care should be taken to place the stalk at an angle of about 30° from the perpendicular, as it grows far more quickly in this position. Most of the ava raised in American Samoa is used as a beverage. The product of the ava plant is ready for use after about 4 to 6 years' growth."

38291 and 38292—Contd. (Quoted notes by Commander Stearns.)**38292.** *CARICA PAPAYA* L. Papayaceæ.**Papaya.**

"The mummy-apple tree is very prolific in Samoa. Any land that is cleared, no matter where its location, unless immediately put in cultivation, will be covered in a few months with a thick growth of mummy apples. It has been suggested that the mummy-apple seeds were carried by birds, but they grow so prolifically that this seems almost impossible. I have known tracts of land cleared in Samoa and inside a year to be so thick with mummy-apple trees that a man could not walk over the land without cutting his way through, the mummy-apples being so closely spaced and coming up without apparent cause. Mummy-apples are used here as a fruit for breakfast. The seeds are eaten by many as an aid to digestion, as they contain a digestive somewhat similar to pepsin; the fruits are also baked like squash. The flesh is used to flavor ice cream, as a diet for the sick, in fruit salad, and in a number of other dishes, so it is a rather valuable fruit to us."

38293 and 38294.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received May 25, 1914.

38293. *CITRUS HYSTRIX* DC. Rutaceæ.

"*Cabuyao*. A thorny tree from 6 to 12 meters in height, with a rather dense rounded head, frequently with drooping branches; young growth more or less purplish, smooth; leaves 16 to 24 centimeters long, ovate, acute, smooth, shining, lighter below than above, crenate; petioles 8.5 to 12 centimeters long, broadly winged, the area of the wings frequently exceeding the leaf area; fruit variable, from oblate to pyriform turbinate or oblong, smooth to more or less corrugate, greenish lemon-yellow; rind medium thick; flesh greenish, juicy, sharply acid, aromatic, contained in 12 to 15 locules; juice sacs short and blunt; seeds usually many, flat, reticulate. Malaysia, including the Philippines to India. Like all other Philippine citrus fruits, the *cabuyao* goes under a multiplicity of names, varying with the many tribal languages of the Archipelago and the different forms of the fruit; some of these names are *saha*, *balincolong*, *biasong*, *tibulit*, *colobot*, etc. Excepting the citron, the *cabuyao* is perhaps less esteemed than any of the better known citrus fruits in the Philippines and can scarcely be said to be cultivated. Some kinds are eaten with fish by the Filipinos and make a fairly good adé. Most forms are also used in cleaning clothes and as a hair wash. The *cabuyao* has scarcely been introduced beyond its native habitat and is seldom seen even in botanical collections. For attractive shape lines certain forms of the *cabuyao* are surpassed by no other citrus fruit. Some of these forms unquestionably will be recognized as subspecies on closer study, or possibly as separate species." (Wester, *Bulletin No. 27, Citriculture in the Philippines.*)

For a further account of the *cabuyao* and related forms see Wester's *Citrus Fruits in the Philippines*, Philippine Agricultural Review, First Quarter, 1915.

38294. *LAGERSTROEMIA SPECIOSA* (Muenchh.) Pers. Lythraceæ.*(Lagerstroemia flos-reginae* Retz.)**Crape myrtle.**

"*Banaba*. One of our most showy forest trees when it is in bloom. The wood is valuable also, very hard, and almost indestructible. It ought to be introduced into Porto Rico and Panama." (Wester.)

38295 and 38296. VIGNA SINENSIS (Torner) Savi. Fabaceæ.**Cowpea.**

From Pungo Andongo, Angola. Presented by Rev. J. C. Wengatz, Methodist Episcopal Mission. Received May 21, 1914. Quoted notes by Mr. Wengatz.

38295. "Black Makunde or '*Makunde ia bafeta.*'"

38296. "Red Makunde or '*Makunde ia kusuku.*'"

38297 and 38298.

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent, Royal Botanic Gardens. Received May 22, 1914.

38297. *ATALANTIA CEYLANICA* (Arn.) Oliver. Rutaceæ.

38298. *PARAMIGNIA MONOPHYLLA* Wight. Rutaceæ.

Distribution.—A stout, climbing evergreen shrub, found in India from the Sikkim Himalayas at an altitude of 2,000 to 5,000 feet, southward mostly in the low mountains, to Ceylon.

38299. BELOU MARMELOS (L.) Lyons. Rutaceæ.**Bael.**

(*Aegle marmelos* Correa.)

From Calcutta, India. Presented by the Royal Botanic Garden, Sibpur. Received May 21, 1914.

"A small, spiny tree, originally a native of India, now commonly grown in the low country of Ceylon and other tropical countries for its fruit. The latter is globular, and varies in size from that of a cricket ball to a large melon; it has a very hard green shell, inclosing a mass of doughy aromatic pulp, intermingled with which is a limpid glutinous substance, which some people relish for its flavor, but more particularly for its medicinal value. The fruit is a well-known specific for dysentery, and is much used in native medicine. The principal season for it is during the months of February to April. The tree is propagated by seed, and thrives in ordinary soil." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

38300 and 38301. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Alford, Lincolnshire, England. Procured from Mr. S. Brewer through Mr. Charles M. Hathaway, American consul, Hull, England. Received May 19, 1914. Quoted notes by Mr. Brewer.

38300. "*Vitality.* Blight-proof potato. First growth is weak; they will then grow strong and throw a large top. Allow plenty of room. Grown on black fen land."

38301. "*Vitality.* Blight-proof potato. Allow good room; the first growth weak; then they thicken and throw large haulms. Grown on fine soil."

38302 to 38326. HORDEUM spp. Poaceæ.**Barley.**

From St. Petersburg, Russia. Presented by Mr. Robert Regel, Bureau of Applied Botany. Received May 6, 1914.

Reintroduced for the work of Mr. A. G. Johnson, of the University of Wisconsin, on the various species of *Helminthosporium* and their distribution throughout the barley districts of the world.

38302. *HORDEUM* sp.

38303 and 38304. *HORDEUM DISTICHON NUTANS* Schubl.

38302 to 38326—Continued.

38305 and 38306. HORDEUM VULGARE L.

38307. HORDEUM VULGARE L. mixed with *H. distichon nutans* Schubl.

38308 to 38310. HORDEUM VULGARE L.

38311. HORDEUM VULGARE HIMALAYENSE Rittig.

38312. HORDEUM VULGARE L.

38313. HORDEUM VULGARE LEIORRHYNCHUM Koernicke.

Received as *H. vulgare leiorrhynchum nckludovi* R. Regel, described in full in Regel's *Glattgrannige Gersten*, p. 69-71, 1909.

38314. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

Received as *H. vulgare nigrum daghestanicum* R. Regel, described in Regel, Flaxberger, and Malzeff, *The Most Important Forms of Wheat Barleys, etc. (Russian)*, p. 31, 1910.

38315. HORDEUM VULGARE PALLIDUM Seringe.

Received as *H. vulgare pallidum hibernaculum* R. Regel, op. cit., p. 31.

38316. HORDEUM VULGARE L.

Received as *H. distichum persicum erivancense* R. Regel, *Glattgrannige Gersten*, p. 75-76, 1909.

38317. HORDEUM DISTICHON ERECTUM Schubl.

38318 and 38319. HORDEUM VULGARE L.

38320. HORDEUM DISTICHON ERECTUM Schubl.

38321. HORDEUM VULGARE L.

38322. HORDEUM VULGARE L.

38323. HORDEUM DISTICHON NUTANS Schubl.

38324. HORDEUM VULGARE L.

38325. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

38326. HORDEUM VULGARE L.

38327. ORYZA SATIVA L. Poaceæ.**Rice.**

From Dakhleh Oasis, western Egypt. Purchased from Sheik Abu Bakr, through contract made by Prof. S. C. Mason, of the Bureau of Plant Industry, on his visit to the oasis in October, 1912. Received May 20, 1914.

"This rice is a variety grown in the Oases of Khargeh and Dakhleh and there regarded as quite distinct from the so-called valley rice which is used in reclaiming the salty lands in the delta of Lower Egypt.

"Mr. Wright, manager of the Corporation of Western Egypt, at Khargeh, and Sheik Abu Bakr, the chief man of Dakhleh Oasis, both especially recommended this rice as being a valuable crop for reclaiming salty lands. They stated that it can be grown successfully on land quite too strong for barley.

"My idea in bringing this in was not that it would be of sufficient importance to use as a main crop on high-priced irrigated lands, but that it should be given a test as a useful crop in reclaiming lands at present too salty for the growing of alfalfa and barley. Considerable areas of land of this character in the Coachella Valley are accessible to a good flow of artesian water.

"In Dakhleh the land is bordered with quite high ridges and the water kept almost continuously on the rice, it being essential, of course, that there be some wash or lower tract into which the surplus water can be diverted. My idea is that it is this excess of water that really does the chief

38327—Continued.

work of improving the alkaline ground, rather than the rice crop itself; but if a crop of rice can be raised, contributing toward the expense of reclaiming such land and bringing it into condition for usefulness with other crops, the rice certainly justifies itself." (Mason.)

38328. RAPHANUS SATIVUS L. Brassicaceæ. Radish.

From Taianfu, Shantung, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Roots received May 27, 1914.

"(No. 1216. March 28, 1914.) A peculiar variety of Chinese winter radish of very mild and sweet taste. Eaten by the people like apples. Promoting an appetite and aiding digestion. Chinese name *Hsiang ch'ing lo po*, meaning 'sweet green root.'" (Meyer.)

38329 to 38331.

From Lavras, Minas Geraes, Brazil. Presented by Mr. B. H. Hunnicutt, director, Escola Agricola de Lavras, through Miss Charlotte Kemper. Received May 19, 1914. Quoted notes by Mr. Hunnicutt.

38329. CALOPOGONIUM ORTHOCARPUM Urban. Fabaceæ.

"Leguminous vine, well liked by stock. Popularly known as *Corda de viola*, 'violin chord.' From the farm, Lavras Agricultural School, April 15, 1914.

38330. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

"Seeds from the *Paina* tree that is in the praça in front of our school. The silky fiber in the fruit with the seed is highly appreciated for pillows, fine mattresses, etc. It sells here for from 30 to 40 milreís (\$10 to \$13) for an arroba, or 15 kilos (33 pounds). The tree is also a very handsome shade tree."

38331. MEIBOMIA sp. Fabaceæ.

"A weed very similar to Florida beggarweed, popularly known as *carapicho*; leguminous plant. From Lavras Agricultural School, Lavras, Minas Geraes, April 15, 1914."

38332. SACCHARUM NARENGA (Nees) Wallich (?). Poaceæ.**Sugar cane.**

From Kaifeng, Honan, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Cuttings received May 27, 1914.

"(No. 1215. March 4, 1914.) Several varieties (mixed) of hardy sugar cane, grown in the vicinity of Kaifeng. They contain a much greater percentage of sugar than the variety obtained under No. 1164 [S. P. I. No. 38257]. To be tested like that number, for sirups, molasses, and sweets for children, and might possibly be a good fodder for milch cows." (Meyer.)

38333. PHOEBE NANMU (Oliver) Gamble. Lauraceæ. Nanmu.

(*Machilus nanmu* Hemsl.)

From Yachow, Szechwan. Presented by Dr. Edgar T. Shields, West China Baptist Mission. Received May 27, 1914.

For previous introduction, see S. P. I. No. 37944.

38334. PELARGONIUM sp. Geraniaceæ. Rose geranium.

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul, who procured them from J. Robillard & Co. Cuttings received May 29, 1914.

"*Malvarrosa*, or rose geranium. This is the variety which yields the geranium oil of commerce." (*Dawson*.)

38335. CITRUS sp. Rutaceæ. Orange.

From Yokohama, Japan. Presented by Mr. E. H. Wilson. Received May 6, 1914.

"*Natsu Mikan*. During my recent trip to southern Kyushu I made a collection of the various citrus fruits cultivated here. Among these fruits is an orange with which I am unfamiliar. Its Japanese name is *Natsu Mikan*, and it is said to keep longer than any other variety and to be very sweet at midsummer. It is a light-skinned variety with rather pale flesh, and the skin separates from the flesh as in the pummelo. The tree bears in a small state and the fruit is decidedly handsome in appearance. In February and March it is still on the tree and the flavor is sour and very decidedly bitter. I shall test the fruit again at midsummer to find if it becomes distinctly sweet. Very likely this orange is well known to you, but it occurs to me that sweet oranges at midsummer would find a ready market. If of any interest to you there would be no difficulty in securing a supply of seeds. I think growing plants could also be obtained. Apparently it is as hardy as the navel orange." (*Wilson*.)

"Regarding the so-called 'sweet summer orange,' fruits of which I sent in the spring, I have since eaten this fruit in the summer and unhesitatingly say that the term 'sweet' is a misnomer; sour is the correct word to use, and I do not think there is the remotest possibility of this fruit appealing to the American palate." (*Wilson*, in letter dated September 7, 1914.)

38336. OLEA EUROPAEA L. Oleaceæ. Olive.

From Bermuda. Collected by Mr. Peter Bisset, of the Bureau of Plant Industry. Received June 2, 1914.

"Cuttings from an olive that fruits sparingly in Bermuda. For trial in Florida, where soil and climatic conditions are similar, and where the olive does not fruit." (*Bisset*.)

38337 to 38340.

From Tsaochowfu, Shantung, China. Collected by Mr. Frank N. Meyer Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 27, 1914. Plants of the following; quoted notes by Mr. Meyer.

38337. PRUNUS GLANDULOSA Thunberg. Amygdalaceæ.

"(No. 1192. March 11, 1914.) A shrub of small dimensions, said to be quite ornamental in the spring when in flower. Apparently rare Chinese name *Yü hua mei*.

"A. Has pure white flowers; Chinese name *Pai yü hua mei*.

"B. Has rosy flowers; Chinese name *Hung yü hua mei*.

"C. Has white flowers dotted with red spots; Chinese name *Hua yü hua mei*."

38337 to 38340—Continued. (Quoted notes by Mr. F. N. Meyer.)

38338. *BUXUS SEMPERVIRENS* L. Buxacæ. **Box.**

"(No. 1194. March 11, 1914.) A broad-leaved variety of box of dense, sturdy growth, apparently fairly hardy. The trees, when getting older, assume umbrellalike shapes and are quite ornamental when seen in old temple yards. Chinese name *Huang ya*, meaning 'yellow bud.'"

Rooted plant.

38339. *PAEONIA ALBIFLORA* Pallas. Ranunculacæ. **Peony.**

"(No. 1195. March 11, 1914.) A collection of five rare varieties of herbaceous peonies, among which yellow, green, and black ones are said to occur.

"A. *Hei shao yao*, meaning 'black peony.'

"B. *Chin chan shao yao*, meaning 'golden spreading peony.'

"C. *Lu huang shao yao*, meaning 'reed-yellow peony.'

"D. *Ping ch'ing shao yao*, meaning 'ice-green peony.'

"E. *Kao kan hung shao yao*, meaning 'tall-stem red peony.'

38340. *PAEONIA SUFFRUTICOSA* Andrews. Ranunculacæ. **Peony.**

(*Paeonia moutan* Sims.)

"(No. 1196. March 11, 1914.) A collection of 12 rare varieties of tree peonies, among which yellow, blue, green, and black flowering ones are said to occur.

"A. *Lan t'ien mu tan*, meaning 'beautiful sky-blue peony.' Flowers said to be of a deep-blue color.

"B. *Yü kuo t'ien ch'ing mu tan*, meaning 'cleared-up-weather peony.' Flowers said to be of an opaque-blue color.

"C. *Yü i huang mu tan*, meaning 'imperial dress yellow peony.' Flowers said to be of dark-yellow color.

"D. *Chin lun mu tan*, meaning 'golden wheel peony.' Flowers said to be of a bright yellow color.

"E. *Yao huang mu tan*, meaning 'handsome yellow peony.' Flowers said to be of ocher-yellow color.

"F. *Mo chin mu tan*, meaning 'black and gold peony.' Flowers said to be of dark leather-brown color.

"G. *Lü yü mu tan*, meaning 'green-jade peony.' Flowers said to be of a transparent-green color.

"H. *Tou lü mu tan*, meaning 'mung-bean green peony.' Flowers said to be of an opaque-green color.

"I. *Hao pai mu tan*, meaning 'crane-white peony.' Flowers said to be very large and of a brilliant white color.

"J. *Mei jên mien mu tan*, meaning 'handsome woman's-face peony.' Flowers said to be large and of a particularly fine shade of rose color.

"K. *Chuang yüan hung mu tan*, meaning 'superior red peony.' Flowers said to be of a beautiful brilliant red color.

"L. *Tung wu erh chiao mu tan*, meaning 'Tung wu, doubly beautiful peony.' Flowers said to be large, of variegated color, being white with red spots here and there.

"The soil best suited to these tree peonies is of a loose, porous, sandy loam nature, with perfect drainage and of great depth. In the district to the northwest of Tsaochowfu one finds such soil and climatic conditions as seem to suit this peony to perfection, and the plants are grown there on fields as regular crops and are sent all over eastern China, going as far south as Canton and as far north as Mukden, to be used

38337 to 38340—Continued. (Quoted notes by Mr. F. N. Meyer.)

mainly for forcing purposes. More than 300 varieties are said to be in cultivation here. The best time for transplanting is considered to be September, while propagation is effected through division. The plants require $3\frac{1}{2}$ feet distance in all directions to develop to perfection, while older plants even need to be 4 to 6 feet apart. At the approach of winter these peonies are covered over with some soil, which is taken away again in early March. This saves the flower buds from being winterkilled and reduces danger from damage by men or beasts, as the wood of the tree peony is quite brittle. Possibly an industry could be established in some suitable section of the semiarid southwestern United States, where the tree peony could be grown in large quantities, to supply florists with one of the most decorative flowers for winter forcing purposes."

38341. COPAIVA COPALLIFERA (Benn.) Kuntze. *Cæsalpiniaceæ*.
(*Copaifera guibourtiana* Benth.)

From Kindia, French Guinea, Africa. Presented by the director of the agricultural station. Received May 25, 1914.

Distribution.—A tree with compound leaves and small flowers in paniced spikes, found in the Sierra Leone region of Upper Guinea. It is called *Kobo* tree by the natives. The wood is odoriferous and furnishes a valuable copal.

38342. PSIDIUM sp. *Myrtaceæ*. **Guava.**

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received May 25, 1914.

"*Araça cagão*. A native guava, pear shaped and of good size. The flesh is white, and the seeds, though large, are few in number. The tree grows to a height of 20 to 25 feet. The fruit is used principally for jams." (*Wilson Popenoe*.)

38343 to 38353. TRITICUM AESTIVUM L. *Poaceæ*. **Wheat.**
(*Triticum vulgare* Vill.)

From Perth, West Australia. Presented by Mr. E. A. Cook, Department of Agriculture. Received May 25, 1914.

"These wheats are well-known Australian varieties, almost all of them having been produced by the wheat breeders of the Department of Agriculture of New South Wales, Australia, from which State they were evidently sent to West Australia. These are all soft, or comparatively soft, wheats of the general type grown so abundantly in Australia. They are comparable to the soft, white wheats of the Great Basin and Pacific coast regions of this country. Their principal value to us is for testing in the Southwest under conditions climatically similar to those of Australia. They may also have value as the basis for crossbreeding. (*C. R. Ball*.)

38343. *Alpha*. Medium early.

38344. *Bayah*. Late.

38345. *Bunyip*. Very early.

38346. *Comeback*. Medium early.

38347. *Federation*. Late.

38348. *Firbank*. Very early.

38349. *Florence*. Very early.

38350. *Gluyas Early*. Medium early.

38351. *Steinwedel*. Medium early.

38352. *Warren*. Medium early.

38353. *Yandilla King*. Late.

38354 and 38355. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

From Sapporo, Japan. Presented by Mr. T. Minami, Professor of Agronomy, Tohoku Imperial University. Received May 28, 1914. Quoted notes by Mr. Minami.

38354. "No. 1. Early ripening. Cultivated in Honshu, the mainland of Japan."

38355. "No 2. Middle ripening. Cultivated in Honshu, the mainland of Japan."

38356 to 38360. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Warsaw, Russia. Presented by Mr. Józef Glisczyński, at the request of Mr. Edouard de Kostecki, Central Agricultural Society in Poland. Tubers received June 3, 1914.

Five varieties of the very best starch, table, and feeding potatoes, exclusively of Polish origin.

"All these varieties take their origin from the well-known potato breeder Henry Dotowski in Nowa Wies, Austrian Poland, and for many years have undergone an excellent and very careful selection at my seed-producing olgri." (*Glisczyński*.)

38356. "1. *Maguola*. First-rate table variety."

38357. "2. *Busola*. Excellent starch potato."

38358. "3. *Olgierd*. Excellent starch potato."

38359. "4. *Faryd*. Excellent starch potato."

38360. "5. *Bohun*. One of the best feeding potatoes."

38361 to 38366. ORYZA SATIVA L. Poaceæ. Rice.

From Paramaribo, Surinam. Presented by the director, Department of Agriculture. Received June 1, 1914.

38361. *Boeloeh itum* (Boeloe item).

38362. *Boeloeh poetih* (Boeloeh pith).

38363. *Ketan item*.

38364. *Moetmoerio* (Moetmoeria).

38365. *Patraka* (*Skrivimas Koti*; Patarka).

38366. *Witte Wanica* (Wittie Wanica).

38367 to 38371. ORYZA SATIVA L. Poaceæ. Rice.

From Bangalore, India. Presented by Mr. G. H. Krumbiegel, economic botanist, Mysore Government Botanic Gardens. Received June 1, 1914.

"The growing period is from 120 to 130 days." (*Krumbiegel*.)

38367. 1. *Banku paddy*.

38370. 4. *Kareyur* or *Pallaiya*

38368. 2. *Garudan Samba*.

Samba.

38369. 3. *Vallai Kattai*.

38371. 5. *Muthu Samba*.

38372 to 38398.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, Director of Agriculture, through Mr. Harry H. Boyle, assistant horticulturist. Received May 22, 1914. Plants of the following, quoted notes by Mr. Boyle, unless otherwise indicated.

38372 to 38398—Continued. (Quoted notes by Mr. H. H. Boyle.)

38372. *CANARIUM OVATUM* Engler. Balsameaceæ. **Pili nut.**

"Trees are found growing in the various islands of southern Luzon, in the Province of Albay. The leaves are compound; the fruit is a triangular drupe, containing one seed. The nuts are eaten quite extensively in the islands and throughout the eastern part of the world. From them an oil is extracted, which is used for the table and also for burning in lamps. This nut is the best I have ever eaten. During the past two years quite a number of shipments of this nut have been made to San Francisco and find a ready market. A gum, that resembles in properties the copaiba balsam, is extracted from the bark."

38373. *PASSIFLORA LAURIFOLIA* L. Passifloraceæ. **Passion fruit.**

"An edible variety obtained from Mr. P. Morange, director of the Botanic Gardens, Saigon, Cochin China. The fruit is of a bright yellow color, pear shaped, about the size of the ordinary pear tomato, and very similar to it in appearance. A bitter substance, which is being employed to counteract intermittent fever, is extracted from the leaves."

38374. *EUPHORIA CINEREA* Radlk. Sapindaceæ.

"Undoubtedly a new species, closely allied to the *longan*, found in the mountains of Cavite Province near the town of Silang, Philippine Islands. The trees are 1½ feet in caliper, and from 50 to 60 feet in height. The fruit has a remarkably sweet flavor; the pulp is semitransparent, and is greatly prized by all who eat it."

38375. *EUGENIA CURBANII* C. B. Robinson. Myrtaceæ.

"Native of the island of Catanduanes, Philippine Islands. Fruits the size of a large cherry, glossy, purplish black in color, borne on the stem near the axil of the leaf in very large clusters. As many as a gallon of fruits have been noted attached to a branch 1½ feet in length. Native name *Egot*, *Igot*, or *Igut*."

38376. *CARISSA OVATA* R. Brown. Apocynaceæ.

"A species introduced from the Botanic Gardens, Sydney, Australia. Spines and foliage much reduced in comparison with the species *arduina*. This variety has not yet fruited or flowered in the Philippines. Greatly valued in Australia for its fruit, as well as its medicinal properties."

38377. *ARTOCARPUS ODOBATISSIMA* Blanco. Moraceæ. **Marang.**

See S. P. I. No. 36256 for previous introduction and description.

38378. *STADMANNIA OPPOSITIFOLIA* Lam. Sapindaceæ.

"No. 4255."

38379 to 38381. *MANGIFERA INDICA* L. Anacardiaceæ. **Mango.**

"Three of the best fruiting varieties grown in the Buitenzorg Botanic Gardens, Java. These were received at the Bureau of Agriculture, Philippine Islands, without varietal names."

38379. P. I. No. 3651.

38381. P. I. No. 3649.

38380. P. I. No. 3650.

38382. *MANGIFERA* sp. Anacardiaceæ. **Mango.**

"(No. 3123.) Obtained from the northern part of the island of Palawan by Mr. E. D. Merrill, botanist, Bureau of Science, Philippine Islands. Remarkable for its small seeds and the small amount of fiber. Tree of very large size."

38372 to 38398—Continued. (Quoted notes by Mr. H. H. Boyle.)

38383. *DILLENIA PHILIPPINENSIS* Rolfe. Dilleniaceæ.

"Native name '*Catmon*.' A very ornamental shade tree indigenous throughout the Philippine Islands. The fruit consists of five distinct united carpels; it is acid and is extensively used by the natives for flavoring fish."

38384. *DILLENIA* sp. Dilleniaceæ.

"This tree is used throughout the Malay Peninsula as a shade tree. The fruits are used by the natives along with fish. It contains from 5 to 20 cells, the carpels growing together around the fleshy center and surmounted by as many radiating styles, each cell containing numerous seeds surrounded by a gelatinous pulp."

38385. *ATALANTIA* sp. Rutaceæ.

"Perhaps *Atalantia retusa*. Two plants obtained from Mr. P. Morange, Director of the Botanic Gardens, Saigon, Cochin China. A very interesting type, which perhaps might be of value for plant breeding."

38386. *HIBISCUS MUTABILIS* L. Malvaceæ.

"A double white-flowering variety. Perhaps the only one of its kind in cultivation. Has the same shaped flower as the *Peachblow* variety. A beautiful ornamental shrub."

38387. *MANGIFERA INDICA* L. Anacardiaceæ.

Mango.

"Var. *mekongensis*. Obtained from the Botanic Gardens, Cochin China. Native name *Xoai thanhca*. One of the best edible varieties grown in the country."

38388. *CITRUS* sp. Rutaceæ.

"Obtained from Mr. P. Morange, director of the Botanic Gardens, Saigon, Cochin China. A very distinct citrus species which resembles a pomelo both in foliage and in the fruit. Named after the town of Moi in Indo China." Received as *Citrus moi*, for which no place of publication has yet been found.

38389. *BELOU MARMELOS* (L.) LYONS. Rutaceæ.

Bael.

(*Aegle marmelos* Correa.)

"Seedlings of a fruit obtained from a tree grown on the plaza of the largest pagoda in Siam, which is situated in the town of Propatone. As this fruit is of a different type from the ordinary *Aegle marmelos*, it is thought that it might be of some value. The fruit is fully 5 inches in length and 2½ inches in width, more of the melon shape than pyriform."

38390 and 38391. *MANGIFERA INDICA* L. Anacardiaceæ.

Mango.

38390. "*Carabao*. This variety is a native of the Philippines, and is, without doubt, the best mango fruit I have ever eaten. It is indigenous all over the Philippine Islands, principally found growing along the walls of the rice paddies. Rarely cultivated in orchard form."

38391. "*Pico*. To my mind this is the second best mango I have ever eaten. For scarcity of fiber and for excellent flavor it is worthy of this rank. The name *Pico* has reference to the fruit being sharp pointed, resembling a pickax."

38372 to 38398—Continued. (Quoted notes by Mr. H. H. Boyle.)

38392. *GARCINIA BINUCAO* (Blanco) Choisy. Clusiaceæ. **Batuan.**

"Native name '*Batuan.*' Native of Augusan Province. Might possibly prove a good stock for *Garcinia mangostana.*"

38393. *ANACARDIUM OCCIDENTALE* L. Anacardiaceæ. **Cashew.**

"A pink-fleshed variety, obtained from Mr. P. Morange, Director of the Botanic Gardens, Saigon, Cochin China."

38394. *MANGIFERA VERTICILLATA* C. B. Robinson. Anacardiaceæ.

Baño.

For previous introduction and description, see S. P. I. No. 34431.

38395. *ANACOLOSA LUZONIENSIS* Merrill. Olacaceæ. **Galo.**

"A tree 20 to 30 feet in height, resembling in appearance the *Diospyros virginiana.* Produces small fruits the shape of an olive, the kernels of which have the flavor of corn and contain very nourishing properties. Found in the mountains of Cavite near the towns of San Francisco and Silang."

38396. *GUSTAVIA GRACILLIMA* Miers. Lecythidaceæ.

"A very pretty tree, obtained from Mr. P. Morange, Director of the Botanic Gardens, Saigon, Cochin China."

38397. *ANTIGONON GUATIMALENSE* Meissn. Polygonaceæ.

"Obtained from the Botanic Gardens, Singapore, Straits Settlements. Flowers more numerous and much larger than *A. leptopus.*"

"A trailing or climbing plant, with slender, angular, pubescent stems, the leaves about 4 by 3 inches, the upper ones smaller, supported on short, terete downy stalks, and of a broadly ovate-oblong form, deeply cordate at the base with two rounded lobes, the apex shortly acuminate. The upper surface is puberulous, the lower softly downy. The flowers are very numerous and borne in tufts along the sides of long racemes or panicles, which terminate in branched tendrils. Each flower is raised on a slender pedicel about three-fourths of an inch long, subtended by an ovate-acute bract about half the length of the pedicel. The calyx, which is the showy part of the flower, has five membranous segments; the three outer are of a beautiful rosy pink color about 1 inch in length by rather less in breadth, cordate at the base, oblong, rounded toward the apex, which terminates in a very short deltoid point. Within these are two other sepals of about the same length as the outer ones, but much narrower, falcate, lanceolate, apiculate. Within these sepals are eight stamens of unequal length, united into a short tube at the base surrounding the 3-cornered ovary, but above free. The fruit exceeds the stamens in length, and is terminated by the remains of three styles, each surmounted by a capitate stigma. Messrs. Shuttleworth and Carder speak in the most glowing terms of the beauty of this plant, and the specimens they have brought certainly confirm their good opinion. It is much the finest *Antigonon* known to us." (*M. T. Masters, in Gardeners' Chronicle, ser. 2, vol. 7, p. 780, 789, 1877.*)

39398. *CANARIUM OVATUM* Engler. Balsameaceæ.

Pili nut.

38399 to 38404.

From Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 9 and 10, 1914. Quoted notes by Mr. Cook.

38399 to 38404—Continued. (Quoted notes by Mr. O. F. Cook.)**38399.** *COLLINIA* sp. Phœnicaceæ.**Palm.**

"A small species with narrow pinnæ and slender, short-jointed trunk. A few plants were introduced several years ago and have been found very well suited to household cultivation."

38400 to 38402. *PERSEA AMERICANA* Miller. Lauraceæ.**Avocado.***(Persea gratissima* Gaertn. f.)

"The avocado season is much too far along to do satisfactory work. In most places the season is completely over, but at these higher altitudes a few fruits are still in the market, as yet none of a quality to particularly recommend them. But I see one thing clearly, that it is the late varieties of these countries that we want. The early varieties ripen in August and September, the others in December, etc., and as the colder places are reached the crop goes around into the spring months."

38400. "From Purulha, Department of Bajo Verapaz, Guatemala. Cuttings from a tall, slender tree, 30 feet high, growing in the garden of Señor Ernesto Avouet, at Purulha; altitude, 5,000 feet. A large, round, hard-shelled, small-seeded type, without fruit at this time (May 25), but said to be one of the very best in this vicinity."

38401. "From Coban, Department of Alta Verapaz, Guatemala. *Dieseldorff* No. 2. Scions from a tree bearing large, oval, hard-shelled fruit with reddish flesh. Without fruit at this time (May 22.) Growing in garden of Señor Dieseldorff, at Coban; altitude, 4,300 feet. Fruit said to be of superior quality."

38402. "From Coban, Department of Alta Verapaz, Guatemala. *Dieseldorff* No. 3. Round shaped fruit, flesh yellowish green, large proportion of flesh, rather small seed, very tough, thick shell. Scions from a large spreading tree 50 feet tall, growing in garden of Señor Dieseldorff, at Coban; altitude, 4,300 feet. At this time (May 22) the tree carried a large crop of mature fruit."

For an illustration of Guatemalan avocado fruits, see Plate IX.

38403 and 38404. *CHAMAEDOREA* sp. Phœnicaceæ.**"Pacaya" salad palm.**

"From Coban, Department of Alta Verapaz, Guatemala. Collected at an elevation of 4,300 feet. A large species, with a large fleshy edible inflorescence, used as a cooked vegetable or as a salad.

"Pacaya palms are grown here in great abundance, so that any amount of seed could be obtained. Some of the palms have four, five, and even six pacayas, as the edible male inflorescences are called, so that we did not overestimate the amount of fruit that might be produced in a successful planting. I feel confident that the palms would grow very well in sheltered situations in southern Florida, or I would suggest that a planting be made in the slat house at Miami, with the idea of leaving some of the palms to grow to maturity. They attain a height of 12 to 15 feet, but fruit much younger, possibly in the third or fourth year."

38403. Small seedling plants. **38404.** Collected May 22, 1914.

38405 to 38407.

From Zaria, Northern Nigeria. Presented by Mr. P. H. Lamb, director, Department of Agriculture. Received June 1, 1914.

"These varieties are crops which occupy the land for about five months in Nigeria, and the seed was obtained from Bornu, where it matured last season with a rainfall of 10 to 20 inches. The soil on which they were grown is, generally speaking, a light sandy loam, and the yield per acre here generally varies between 300 and 600 pounds of clean corn per acre." (*Lamb.*)

38405 and 38406. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

38405. *Kaura.* **38406.** *Jan dawa.*

38407. *PENNISETUM GLAUCUM* (L.) R. BROWN. Poaceæ. Pearl millet.
(*Pennisetum typhoideum* Rich.)

"*Matwa.*"

38408 to 38414.

From Novospasskoe, Russia. Presented by Mr. A. Woeikoff, director, Bureau d' Acclimatation. Received May 18, 1914.

38408. *AMYGDALUS PEDUNCULATA* Pallas, Amygdalaceæ.
(*Prunus pedunculata* Maxim.)

Seeds from M. M. Timogovich, Tchita, Transbaikalia. See S. P. I. No. 37559 for previous introduction.

38409. *PICEA OBOVATA* Ledeb. Pinaceæ. Fir.

Seed from the Provinces of Transbaikalia and Jakutsk. See S. P. I. Nos. 20319 and 36729 for previous introductions and description.

"In its general appearance this species bears a considerable resemblance to the common spruce, having similar leaves and very downy young shoots. It is, however, distinct in the cones, which are smaller (about 3 inches long) and have the scales rounded and entire at the apex (not jagged as in *P. excelsa*). It is widely spread in Siberia and northeast Russia, and in places reaches a stature of 100 feet; valuable in supplying timber and fuel in cold, inclement regions. It has little garden value, being less to be preferred than the common spruce." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 160.*)

38410. *PRUNUS PADUS* L. Amygdalaceæ.

Var. *sibirica*. Seed from the Provinces of Transbaikalia and Jakutsk.

38411 and 38412. *RIBES* spp. Grossulariaceæ. Currant.

38411. *RIBES DIKUSCHA* Fisch.

Var. *appendiculatum*. Seed from the Provinces of Transbaikalia and Jakutsk.

38412. *RIBES DIACANTHA* Pallas.

Seed from the Provinces of Transbaikalia and Jakutsk.

Distribution.—A bush bearing oblong, golden-red currants, found in the Altai and Transbaikal regions of Siberia, in Songaria, and in Mongolia.

"A deciduous shrub, 4 to 6 feet high, armed with spines in pairs one-eighth to one-fifth of an inch long, or sometimes unarmed; young shoots not downy. Leaves obovate or rounded, often 3-lobed, the lobes coarsely toothed, three-fourths of an inch to 2 inches wide,

38408 to 38414—Continued.

the base ordinarily wedge shaped but sometimes rounded, quite smooth; stalk one-fourth to five-eighths of an inch long, more or less furnished with bristles. Flowers unisexual, the sexes on different plants. Males yellowish in erect glandular racemes. Fruit roundish oval, about as big as a red currant, smooth, scarlet red. Native of Siberia, Manchuria, etc.; introduced in 1781. This shrub, which has no particular merit, resembles *R. alpinum* in the plants being 1-sexed, but differs in having prickles and in the markedly wedge-shaped leaves. In having spines and flowers in racemes, it unites the characters of the currants and gooseberries, but its affinities are with the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

Introduced for breeding purposes.

38413. RHODODENDRON DAURICUM L. Ericaceæ.

Seed from the Provinces of Transbaikalia and Irkutsk.

"This rhododendron is a native of Dahuria, Mandshuria, and Sachalin, and, coming from a cold region, a spell of mild weather in midwinter causes it to begin to open its flowers very early in this country [England]; therefore they often fall a prey to frost before they can expand. Nevertheless, it is a good kind of plant, for in those seasons when it does escape injury it adds a brilliant touch of color to the garden at a very dull season. There are several forms of the plant, some having deciduous leaves, and in other cases the leaves are evergreen or subevergreen." (*The Garden, January 11, 1913, p. 18.*)

"A deciduous or semievergreen shrub up to 6 feet in height; young shoots scaly and downy. Leaves oval, rounded at the apex, tapering or rounded at the base, half an inch to 1½ inches long, one-fourth to five-eighths of an inch wide, dark glossy green and slightly scaly above, paler and scaly beneath. Flowers bright rosy purple, 1 to 1½ inches across, produced during January and February singly from each one of a cluster of scaly buds at the end of the previous summer's growth, where there are usually but one or two flowers open at a time. Corolla flat, saucer shaped; calyx lobes five, short." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 352.*)

38414. LARIX KURILENSIS Mayr. Pinaceæ.**Larch.**

Seed from the Provinces of Primorskaya and Sakhalin.

See S. P. I. No. 35171 for previous introduction and description.

8415. LOTUS TETRAGONOLOBUS L. Fabaceæ.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received June 9, 1914.

Distribution.—The countries bordering on the Mediterranean from Spain through Italy and the Balkan peninsula to the Transcaucasian Provinces of outtheastern Russia, and in northern Africa.

8416 to 38427.

From Novospasskoe, Russia. Presented by Mr. A. Woelkoff, director, Bureau d'Acclimatation. Received May 16-18, 1914.

38416 to 38418. AMYGDALUS PERSICA L. Amygdalaceæ.**Peach.**

(*Prunus persica* Stokes.)

38416 to 38427—Continued.

Seed of peaches cultivated by the natives of Turkestan and northern Persia.

38416. *Rugani Gau.*

38418. Var. 1.

38417. *Pastack Shaftaly.*

38419. *CATALPA BUNGEI* Meyer. Bignoniaceæ.

See S. P. I. Nos. 16914 and 22578 for previous introductions.

Seed from the Caucasus by Mr. G. I. Strunnikoff.

"A tree 20 to 30 feet high, of bushy habit. Leaves 2 to 7½ inches long, 1½ to 4½ inches wide, ovate or somewhat triangular, with a wedge-shaped or straightly cut base, sometimes entire, but often coarsely scalloped, so as to form 1 to 6 large teeth on each side, mostly on the lower half, quite smooth at maturity; stalk one-half to two-thirds as long as the blade. Flowers not yet seen in this country, but described as 'white and purple'; they are produced 3 to 12 together in a flattish corymb. Corolla 1½ inches long and wide. Native of China, and evidently frequent in the neighborhood of Peking. Although the true species was only introduced in 1905, through Prof. Sargent, plants under the name have long been in cultivation; these, however, are nearly always *C. bignonioides* var. *nana*, but sometimes *C. ovata*. The true *C. bungei* is still very rare. Of its ornamental qualities little can yet be said, but as represented by dried specimens at Kew, its inflorescence is small. Its quite smooth leaves distinguish it from other cultivated species except the new *C. duclouxii* (which is said to have pale-pink flowers with deeper spots)." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 312.*)

38420. *DAPHNE CAUCASICA* Pallas. Thymelæaceæ.

Seed from the Caucasus by Mr. G. I. Strunnikoff.

See S. P. I. No. 30573 for previous introduction.

"A deciduous shrub, up to 4 feet high, with flowering twigs downy; barren young twigs less so or smooth. Leaves produced oftener rounded than tapered at the apex, 1 to 1½ inches long; one-third to half an inch wide; smooth, pale green above; somewhat glaucous beneath. Flowers glistening white, fragrant, produced during May and June in terminal heads of usually 4 to 12 blossoms; the perianth one-third of an inch across, with ovate lobes; tubes one-third of an inch long, cylindrical, silky outside; ovary slightly downy. Native of the Caucasus; many times introduced and lost. It has no great merit, but is pleasing in its fragrance and for its abundant flower clusters borne at the end of crowded, short, leafy shoots springing from the previous year's growth. It thrives exceedingly well at Warley Place, where there are rounded bushes 4 feet high. It differs from *D. alpina* in its smooth leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 468.*)

38421 to 38426. *PRUNUS* spp. Amygdalaceæ.

Seed from the Caucasus by Mr. G. I. Strunnikoff.

38421 to 38424. *PRUNUS CERASIFERA DIVARICATA* (Ledeb.) Schneider.

38421. Var. *flava*. See S. P. I. No. 38157 for description of the subspecies.

38422. Var. *macrocarpa*.

38424. Var. *hortensis flava*.

38423. Var. *nigra macrocarpa*.

38425. *PRUNUS PROSTRATA* Labill.

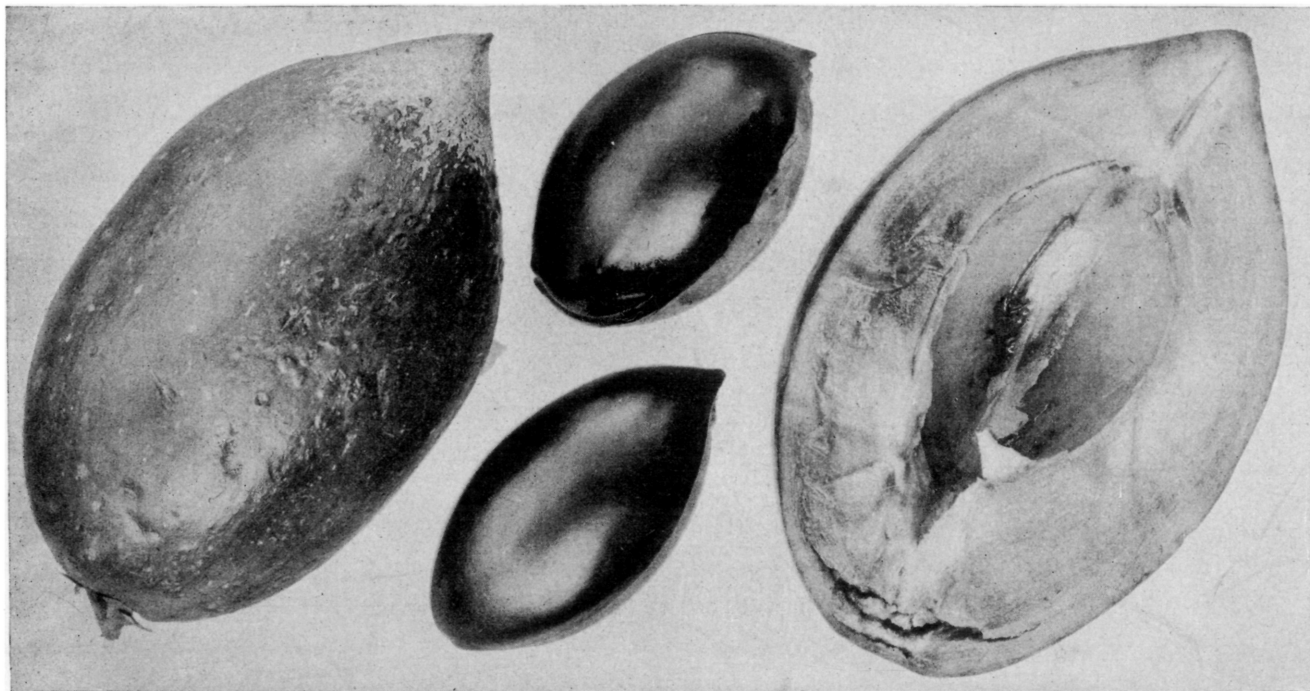
Bush cherry.

See S. P. I. Nos. 28945, 30564, and 37642 for previous introductions.



GUATEMALAN AVOCADO FRUITS (*PERSEA AMERICANA* MILLER), S. P. I. NOS. 38400 TO 38402. COLLECTED BY THE O. F. COOK EXPEDITION TO GUATEMALA IN 1914.

Although taken late in the season, when most of the fruit was gone, this illustrates the great variety of size, roughness of exterior, thickness of shell, and relative proportion of seed to fruit of these important winter-ripening avocados, which are beginning to attract the attention of orchardists in Florida and California because of their good quality, hardness, and remarkably thick shells, which make them excellent shippers. (Photographed by C. B. Doyle at the city of Guatemala, June 1, 1914; P16523CA and P16527CA.)



THE GREEN SAPOTE (*ACHRADELPHA VIRIDIS* (PITTIER) O. F. COOK), S. P. I. Nos. 38478 TO 38481.

A Guatemalan fruit much superior to and harder than the true sapote (*Achradelphia mammosa*) and much more likely to be of value in the United States. The tree is large and vigorous, with dense, handsome, deep-green foliage, not unlike the magnolia. The fruit is of good texture and flavor, and most nearly resembles a good Japanese persimmon, but with no trace of astringency. The taste is like that of the sapodilla (*Achras zapota*), but the fruit does not soften so much with maturity and the flesh is not granular like that of the sapodilla. (Photographed at Coban, Guatemala, by O. F. Cook, May 19, 1914; natural size; P16479CA.)

38416 to 38427—Continued.

38426. PRUNUS SPINOSA MACROCARPA Wallroth.

Sloe.

A large-seeded form of the sloe, which W. J. Bean (*Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 253-254) describes as "a deciduous, suckering shrub 10 to 15 feet high, or in gardens a small tree; bark of young shoots downy, many short branches terminated by a spine. Leaves varying from obovate to oval and ovate, three-fourths of an inch to 1½ inches long, one-half to three-fourths of an inch wide, sharp toothed, downy beneath on the midrib and veins, becoming sometimes quite glabrous with age. Flowers produced in March or early April, usually on the naked wood, singly, sometimes in pairs, from the previous year's buds, each one-half to three-fourths of an inch across, pure white, and borne on a smooth stalk one-fifth of an inch long. Fruit round, half an inch in diameter, at first blue, then shining black, very harsh to the taste. The sloe is found wild in Britain and other parts of Europe as well as in north Asia. It occurs in hedgerows and in woods, where it is occasionally a tree over 20 feet high. It is oftenest seen in wild places or poor soils as a scrubby bush. The wood of the species is very hard and prized in rural districts for making hayrake teeth."

38427. PTEROCARYA FRAXINIFOLIA (Lam.) Spach. Juglandaceæ.

* (*Pterocarya caucasica* C. A. Meyer.)

Caucasian walnut.

See S. P. I. Nos. 27768 and 30809 for previous introductions. Seed from the Caucasus sent by Mr. G. I. Strunnikoff.

"A large deciduous tree, ultimately 80 to 100 feet high, usually much less in this country (England) and branching low down, forming a wide-spreading head; trunk of large trees 10 to 12 feet in girth, with deeply furrowed bark; ends of young shoots minutely scurfy. Leaves 8 to 18 inches (sometimes over 2 feet) long, composed of from 3½ to 13½ pairs of leaflets; these are stalkless, oblong, obliquely rounded at the base, pointed, toothed, normally 2 to 4½ inches long by three-fourths of an inch to 1½ inches wide (occasionally, on vigorous shoots, 8 or 9 inches long); dark green, smooth and glossy above, tufted with stellate hairs along the midrib beneath; common stalk round. Male catkins 3 to 5 inches long, cylindrical, the flowers closely packed; female catkins 12 to 20 inches long, with the flowers scattered; both pendulous; afterwards developing nuts which, with the wings, are three-fourths of an inch in diameter, roundish, oblique, horned at the top. Native of the Caucasus and Persia, inhabiting moist places. It was introduced to France by the elder Michaux, who took back seeds from Persia in 1782. According to Elwes, the finest specimen in Britain is at Melbury, in Dorset, which is 90 feet high and 12 feet in girth of trunk. There is a beautiful specimen at Claremont, Surrey, which, when I saw it in 1910, measured 19 feet around its short, rugged trunk. The tree likes a rich, loamy soil and abundant moisture, and whilst the fine specimens mentioned above show that it will thrive very well in the south of England, it loves more sunshine than our climate affords. The lover of trees will find nothing more interesting in and around Vienna than the magnificent examples of *Pterocarya*. There, of course, the summers are much hotter and the winters colder than ours; the tree bears fruit freely and is very striking in late summer when hung with the long, slender catkins." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 261-262.)

38428 to 38434. COCOS NUCIFERA L. Phœnicaceæ. Coconut.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received May 25, 1914.

Notes by Commander Stearns, except that the meaning of the native names is given by Mr. W. E. Safford.

- 38428.** (4) *Niu Afa*. Cordage coconut. A good tree but the nuts are mostly picked green, owing to the fact that the husk is considered of more value by the natives in the manufacture of sinnet, which is used as a binding twine in the construction of Samoan houses.
- 38429.** (2) *Niu Ui*. Dark-colored coconut. This has a very thick kernel and the trees yield from 80 to 100 nuts per year.
- 38430.** (1) *Niu Mea*. Ordinary coconut. This has a very thick kernel and the trees yield from 80 to 100 nuts per year.
- 38431.** *Niu Vai*. Water-bottle coconut.
- 38432.** (5) *Niu Lea*. Fine-flavored coconut. A tree that seldom grows over 8 to 10 feet high, producing a large nut; the kernel is better suited for confectionery purposes than for copra. The Samoan coconut has a very high value in the copra market.
- 38433.** *Niu Nai*. Select, or choice coconut.
- 38434.** (3) *Niu Kea*. Pale-leaf coconut. This has a very thick kernel and the trees yield from 80 to 100 nuts per year.

38435 to 38472.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received June 8, 1914. Quoted notes by Mr. Meyer.

38435 and 38436. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.

- 38435.** "(No. 2014a. Sianfu, Shensi, China. January 24, 1914.) A small variety of lentil, much grown as a winter field crop all through the milder sections of the Provinces of Honan, Shansi, Shensi, and Kansu; also much planted as a ground cover in persimmon orchards and among other fruit trees. The seeds are sown in the fall after the other crops have been harvested; they germinate quickly, but make little growth during the winter months. In spring, however, they shoot up rapidly and in June they are harvested, after which winter wheat or short-seasoned soy beans, mung beans, or other quick-maturing crops are sown. Chinese name *Tsa pien tou*, meaning 'mixed flat beans.' This lentil deserves a trial as a winter crop among citrus orchards and other fruit trees in the mild-wintered sections of the United States."
- 38436.** "(No. 2015a. Puchowfu, Shansi, China. February 10, 1914.) A larger variety of lentil; otherwise the same remarks apply to it as to the preceding number [S. P. I. No. 38435]. The lentil might possibly also be grown as a summer crop in the intermountain sections, either for forage purposes or for human food."

38437. VICIA FABA L. Fabaceæ. Horse bean.

"(No. 2016a. Sianfu, Shensi, China. January 24, 1914.) A variety of horse bean grown as a winter garden crop in the milder parts of

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

Shensi. The beans are planted in the fall, make but little growth during the winter, but in spring they make an astonishingly rapid growth and the green beans are one of the earliest vegetables on the markets. Of value as a garden or field crop for the mild-wintered sections of the United States, especially in the West and Southwest; possibly also for the intermountain sections. Chinese name *Hsiao ts'an tou*, meaning 'small silkworm bean,' referring to the silky lining of the green pod."

38438 to 38440. *PISUM* spp. Fabaceæ. **Pea.**

From Sianfu, Shensi, China. Collected January 24, 1914.

38438 and 38439. *PISUM SATIVUM* L.

38438. "(No. 2017a.) A small yellow variety of garden pea, much grown as a winter crop throughout the milder sections of Shantung, Honan, Shansi, Shensi, and Kansu, and especially utilized as a cover crop in persimmon orchards. To be utilized in America like Nos 2014a and 2015a [S. P. I. Nos. 38435 and 38436]. Chinese name *Huang wan tou*, meaning 'yellow pea bean.'"

38439. "(No. 2018a.) A variety of garden pea, somewhat different from No. 2017a [S. P. I. No. 38438]; but the same remarks apply to it."

38440. *PISUM ARVENSE* L. **Field pea.**

"(No. 2019a.) A variety of field pea grown in immense quantities as a winter crop all through the milder parts of north-central China. The roughly broken peas form the main food, when mixed with moistened, chopped-up straw, for all the hard-working farm animals. For possible uses see remarks under Nos. 2014a and 2015a [S. P. I. Nos. 38435 and 38436]. Chinese name *Hei wan tou*, meaning 'black pea bean.'"

38441 to 38446. *PHASEOLUS* spp. Fabaceæ. **Bean.****38441.** *PHASEOLUS CALCARATUS* Roxb.

"(No. 2020a. Kwanyintang, Honan, China. December 20, 1913.) A rare variety of bean used in soups as a human food, also being mixed with chopped and moistened straw and fed to domestic animals. Chinese name *Wan tou*, meaning 'pea bean.' This bean is said to be very prolific, and it does not require a long season to mature."

38442 and 38443. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. **Adzuki bean.**

38442. "(No. 2021a. Sianfu, Shensi, China. January 24, 1914.) A large, white variety of adzuki bean used boiled in soups, for bean-sprout production, and when ground up and mixed with sugar as a stuffing in certain cakes. Chinese name *Pai hsiao tou*, meaning 'white small bean.'"

38443. "(No. 2022a. Lintung, Shensi, China.) A mixed lot of adzuki beans, consisting of several distinct varieties. Used like No. 2021a [S. P. I. No. 38442], being also sparingly fed to domestic animals. Chinese name *Tsa hsiao tou*, meaning 'mixed small beans.'"

38444 and 38445. *PHASEOLUS VULGARIS* L. **Bean.**

From Sianfu, Shensi, China. Collected January 24, 1914.

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

38444. "(No. 2023a.) A red-seeded variety of garden bean much grown as a vegetable around Sianfu. Of value possibly for semiarid climes. Chinese name *Hung yün tou*, meaning 'red garden bean.'"

38445. "(No. 2024a.) A white-and-red speckled variety of garden bean much grown around Sianfu. Of value, like No. 2023a [S. P. I. No. 38444]. Chinese name *Hua yün tou*, meaning 'mottled garden bean.'"

38446. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight.

Adzuki bean.

"(No. 2025a. Sianfu, Shensi, China. January 24, 1914.) A large red variety of adzuki bean, used in all ways like No. 2021a [S. P. I. No. 38442.] Chinese name *Hung hsiao tou*, meaning 'red small bean.'"

38447 to 38449. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. **Cowpea.**

38447. "(No. 2026a. Sianfu, Shensi, China. January 24, 1914.) Mixed varieties of cowpeas, eaten as human food. Chinese name *Tsa Chiang tou*, meaning 'mixed cowpea.'"

38448. "(No. 2027a. Lingpau, Honan, China. December 24, 1913.) A red-seeded variety of cowpeas, rare. Used like No. 2026a [S. P. I. No. 38447]. Chinese name *Hung Chiang tou*, meaning 'red cowpea.'"

38449. "(No. 2028a. Sianfu, Shensi, China. January 24, 1914.) A variety of cowpea, being white with a black 'eye.' Used like Nos. 2026a and 2027a [S. P. I. Nos. 38447 and 38448]. Chinese name *Yang yen pai Chiang tou*, meaning 'sheep's-eye white cowpea.'"

38450 to 38462. *SOJA MAX* (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

38450 and 38451.

From Sianfu, Shensi, China. Collected January 24, 1914.

38450. "(No. 2029a.) A large variety of yellow-seeded soy bean. Chinese name *Ta Huang tou*, meaning 'large yellow bean.'"

38451. "(No. 2030a.) A medium-large variety of yellow-seeded soy bean. Chinese name *Ta Huang tou*, meaning 'large yellow bean.'"

38452. "(No. 2031a. Puchowfu, Shansi, China. February 10, 1914.) A large, yellow-seeded variety of soy bean. Chinese name *Ta Huang tou*, meaning 'large yellow bean.'"

38453 to 38457.

From Sianfu, Shensi, China. Collected January 24, 1914.

38453. "(No. 2032a.) A small, yellow-seeded variety of soy bean. Chinese name *Hsiao Huang tou*, meaning 'small yellow bean.'"

38454. "(No. 2033a.) A small, yellowish seeded variety of soy bean. Chinese name *Huang tou*, meaning 'yellow bean.'"

38455. "(No. 2034a.) A very small, yellow-seeded variety of soy bean. Chinese name *Hsiao Huang tou*, meaning 'small yellow bean.'"

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

38456. "(No. 2035a.) A variety of soy bean with light-green seeds. Chinese name *Ch'ing tou*, meaning 'green bean.' Used pickled in brine as appetizers with meals."

38457. "(No. 2036a.) A variety of soy bean with dark-green seeds. Used like No. 2035a [S. P. I. No. 38456]. Chinese name *Ch'ing tou*, meaning 'green bean.'"

38458. "(No. 2037a. Kwanyintang, Honan, China. December 20, 1913.) A rare variety of soy bean, of dark olive-drab color. Said to be very productive. Chinese name *Huai tou*."

38459. "(No. 2038a. Lingpao, Honan, China. December 24, 1913.) A rare local variety of soy bean, having reddish seeds. Chinese name *Ta tzü tou*, meaning 'large violet bean.'"

38460 to 38462.

From Sianfu, Shensi, China. Collected January 24, 1914.

38460. "(No. 2039a.) A black-and-brown striped variety of soy bean, used mainly roasted as a delicacy. Chinese name *Hu p'i tou*, meaning 'tiger-skin bean.'"

38461. "(No. 2040a.) A large, black-seeded variety of soy bean. Chinese name *Ta hei tou*, meaning 'large black bean.'"

38462. "(No. 2041a.) A small, black-seeded variety of soy bean, used mainly boiled as a feed for hard-working draft animals. Chinese name *Hsiao hei tou*, meaning 'small black bean.'"

38463. *HOLCUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Puchowfu, Shansi, China. Collected February 10, 1914.

"(No. 2042a.) A vigorous variety of kaoliang, producing long, strong stems, much employed in building the poorer kinds of dwellings. The grains are used for distilling purposes and as feed for animals. Chinese name *Hung kao liang*, meaning 'red kaoliang.'"

38464. *MEDICAGO SATIVA* L. Fabaceæ. **Alfalfa.**

From Linchinhsien, Shansi, China. Collected February 11, 1914.

"(No. 2043a.) An alfalfa extensively grown here and there on fairly alkaline soils. The young sprouts are eaten by the people as a vegetable. Chinese name *Mu hsü*, meaning 'wooden beard.'"

38465. *TRIGONELLA FOENUM-GRÆCUM* L. Fabaceæ. **Fenugreek.**

From Sianfu, Shensi, China. Collected January 24, 1914.

"(No. 2044a.) A legume grown as a winter vegetable around Sianfu; tastes slightly bitter. Chinese name *K'u t'ou tzü*, meaning 'bitter head.' Of value possibly as a winter-forage plant for the mild-wintered sections of the United States."

38466. *CANNABIS SATIVA* L. Moraceæ. **Hemp.**

From Sianfu, Shensi, China. Collected January 24, 1914.

"(No. 2045a.) A variety of hemp, said to produce very strong fiber. Chinese name *Ma tzü*, meaning 'hempseed.'"

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

38467 and 38468. *PINUS ARMANDI* Franchet. Pinaceæ. Pine.

38467. "(No. 2046a. Tungkwansien, Shensi, China. December 26, 1913.) Edible pine seeds, coming from the Tsin Range. Chinese name *Sung tsü*, meaning 'pine seeds.'"

38468. "(No. 2047a. Tahuashan, Shensi, China. December 29, 1913.) A pine, growing to medium size only; produces very large cones, full of large edible seeds, which are eagerly collected by the priests in the temples, while the cones supply an excellent fuel. Occurs on somewhat sheltered spots at altitudes of 5,000 feet and over."

38469. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Feicheng, Shantung, China. Collected March 26, 1914.

"(No. 2048a.) A very large clingstone peach of which grafted trees and scions are sent under No. 1213 [S. P. I. No. 38178]."

38470. *AMYGDALUS PERSICA PLATYCARPA* (Decne.) Ricker. Amygdalaceæ. Flat peach.

"(No. 2049a.) A large variety of flat peach, said to be of light-red color, while being very juicy and sweet. Chinese name *Ta hung pien t'ao*, meaning 'large red flat peach.'"

38471 and 38472. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

38471. From Weichutchien, south of Sianfu, Shensi, China. Collected January 22, 1914.

"(No. 2050a.) A Chinese variety of walnut of quite elongated shape, said to be grown in the Tsin Range."

38472. From Peking, China. Collected April 17, 1914.

"(No. 2051a.) A peculiar walnut with strangely deep grooves and markings, highly prized by the Chinese, who use them in pairs to fumble with in their hands to keep the finger muscles limber. Said to grow in the mountains to the north of Peking. Possibly a hybrid between *Juglans regia* and *J. mandchurica*. Chinese name *Shan ho t'ao*, meaning 'mountain walnut.'"

38473 to 38476. *COIX* spp. Poaceæ. Job's-tears.

From the northern Shan States, Burma. Presented by Mr. H. G. Carter, Economic Botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received April 20, 1914. Quoted notes by Mr. Carter.

For detailed information, see Sir George Watt's account of *Coix*, published in the Agricultural Ledger No. 13, of 1904.

38473. *COIX LACRYMA-JOBI* MA-YUEN (Rom.) Stapf.

"Forma 2. No. 3b193, edible."

38474. *COIX LACRYMA-JOBI* L.

"Var. *typica*. No. 3b194. The typical Job's-tears."

38475. *COIX LACRYMA-JOBI GIGANTEA* (Koen.) Stapf.

"No. 3b196."

38476. *COIX LACRYMA-JOBI* L.

"Var. *typica*. No. 3b194. The typical Job's-tears."

38477. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Coban, Department of Alta Verapaz, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 10, 1914.

"*Dieseldorff* No. 1. Scions from a large spreading tree, 30 feet high, in the garden of Señor Dieseldorff at Coban; altitude 4,300 feet. Fruit oval, hard shelled, small at this time (May 22). Flesh firm, smooth; seed medium large." (Cook.)

For further description, see S. P. I. Nos. 38400 to 38402.

38478 to 38481. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook.
(*Calocarpum viride* Pittier.) Sapotaceæ. **Injerto.**

From Coban, Department of Alta Verapaz, Guatemala; altitude 4,300 feet. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry, May 22, 1914. Received June 9-10, 1914.

"Another find not properly appreciated heretofore is the green sapote, *injerto* (Spanish) or *raxtul*, as the Kekchi Indians call it. This was described recently by Pittier as *Calocarpum viride*, but the generic name is a homonym and I have proposed *Achradelpha* to replace it. This new species *Achradelpha viridis* is a much finer tree than the true sapote, and apparently much better adapted to a cool climate. The foliage is much heavier than that of the sapote and of a deeper green color; in form and general appearance not very unlike that of the loquat, but the trees grow to a large size and are very handsome. They take the place of the sapote altogether at the higher altitudes around Coban, where they thrive at elevations of 3,000 to 6,000 feet, though both trees are found in the Senshu and Cajabon districts. The failure of the sapote to thrive in Florida need not exclude the green sapote, and a trial planting will be in order. The seeds are like those of the true sapote, but smaller and in some varieties much shorter. The fruits of this green sapote run through a series of different forms, about the same as those of the sapodilla, from long, pointed, oval to short, broad, and flat or concave at the base. The fruit is of good texture and flavor, and the taste is like that of the sapodilla (*Achras zapota*), but the fruit does not soften so much with maturity and the flesh is not granular like that of the sapodilla. The quality of the flesh is distinctly superior to that of the true sapote and much more likely to please the American palate. Anybody who likes papayas or Japanese persimmons might be expected to think favorably of the green sapote, as it comes distinctly into the same class of sweetish, smooth, tender, pulpy fruits. There is no astringency or unpleasant aftertaste whatever, so that none of the curing difficulties of the persimmons would be encountered. On the outside the fruits are a pleasing yellowish green color, more or less russeted at either end. The flesh inside is yellow, but with a reddish or brownish tinge, not as yellow as some of the Japanese persimmons nor as dark as others. There are many varieties of the green sapote in Guatemala, those of the Coban district being distinctly superior to those found in the markets of the city of Guatemala." (Cook.)

38478. (No notes.)

38480. Large, top shaped.

38479. Small, heart shaped.

38481. Heart shaped.

For an illustration of the fruit of the green sapote, see Plate X.

38482. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

From Sunnylands, Bermuda. Presented by Mr. Theodore Outerbridge, through Mr. Peter Bisset, of the Bureau of Plant Industry. Received June 9, 1914.

"Cuttings of a variety bearing annually about 50 staminate flowers to one pistillate; therefore it should prove a valuable pollinator for planting in orchards of kaki persimmons, if the plants maintain this feature, as up to the present time a great loss in fruit is incurred yearly in these orchards from lack of pollination. The fruit borne by the parent tree is said to be of good size and quality." (*Bisset.*)

38483. DIOSPYROS DISCOLOR Willd. Diospyraceæ. Mabola.

From Hamilton, Bermuda. Presented by Mr. T. M. Dill, through Mr. Peter Bisset, of the Bureau of Plant Industry. Received June 9, 1914.

"Scions from a tree growing in the garden of Mr. T. M. Dill, Hamilton, Bermuda." (*Bisset.*)

38484 and 38485. HORDEUM DISTICHON NUTANS Schubl. Poaceæ. Barley.

Presented by Mr. J. B. Jackson, American consul, Aleppo, Syria. Received June 2, 1914. Quoted notes by Mr. Jackson.

38484. "No particular name is applied locally to this variety except 'white' barley. The qualities possessed are unknown here. The market price for this and the black variety is the same."

38485. "No particular name is applied locally to this variety except 'black' barley. According to dealers the black barley is very hard and resists against insects for two or three years, and even longer if kept in dry places. The qualities possessed are unknown here. The market price for this and the white variety is the same."

38486. BOMBYCODENDRON VIDALIANUM (Naves) Merr. and Rolfe. Malvaceæ. Lanutan.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received June 4, 1914.

"Seed of the *lanutan*, a tree valuable for its wood, and also quite ornamental, with large white flowers having a red center, shaped like those of the tropical *Hibiscus rosasinensis*, about 7 inches in diameter. It is probably too tender for Florida." (*Wester.*)

38487 and 38488.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 27, 1914. Quoted notes by Mr. Meyer.

38487. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. Hawthorn.

From Taianfu, Shantung, China. Collected March 20, 1914.

"(No. 47b.) A sample of fine large Chinese hawthorn fruits. Excellent for jellies, preserves, etc. Price locally 5 to 7 cents (Mexican) per catty (16 ounces). Grafted trees and scions sent of this variety under No. 1209 [S. P. I. No. 38176], which see for description."

38487 and 38488—Continued. (Quoted notes by Mr. F. N. Meyer.)**38488.** *THLADIANTHA DUBIA* Bunge. Cucurbitaceæ.

From Peking, China. Collected April 18, 1914.

“(No. 1217.) Tubers of a climbing cucurbitaceous plant, producing yellow flowers followed by fruits the size of hen’s eggs, which become scarlet when fully ripe. The Chinese plant the roots of male and female plants close together so as to insure a bountiful supply of fruits. The roots of male plants are said to be large and elongated, while those of the female plants are small and round.”

38489. *TRICHOSANTHES KIRILOWII* Maxim. Cucurbitaceæ. **Gourd.**

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 25, 1914.

“(No. 1218. April 28, 1914.) Tubers of a rare gourd, cultivated as an ornamental perennial. The fruits are also used for medicinal purposes, when dried. Chinese name *Kua lü*.” (Meyer.)

38490. *HORDEUM VULGARE* L. Poaceæ. **Barley.**

From La Paz, Bolivia. Presented by Mr. John D. O’Rear, American minister, La Paz. Received June 9, 1914.

“Seeds of the barley generally grown over the whole Bolivian highlands, and of which, as far as I have been able to ascertain, no other varieties are used. It is planted, and in most cases the Indians forget all about it until time to reap the harvest. To plant it, the ground is tilled in a primitive manner and as the seed is thrown in, it is covered with about half an inch of dirt, this being done especially to keep the birds from eating the seed. The planting is done here in the early spring and the crop reaped in the autumn, but in many parts of the country it is planted the year round and always seems to produce equally well. Once planted, in some places it is watered daily, this producing the best results, but in places where water is scarce the irrigation is left entirely to the rains. The Indians very seldom use any fertilizers, excepting now and then a little manure, and almost immediately after reaping a crop they begin to plow and prepare the ground for another planting of seed. After four or five years they allow the ground to rest for a year. The grass is used generally all over the highlands as food for cattle and especially for horses and mules, when it is dry, and the grain is also fed to cattle and used for human food. The barley grows to a height of about 3 or 4 feet under ordinary circumstances here, and it is allowed to dry thoroughly before it is cut. The thrashing is done by allowing donkeys to tramp on it till the grain is thoroughly separated.” (O’Rear.)

38491 and 38492. *ULMUS* spp. Ulmaceæ. **Elm.**

From Cambridge, England. Presented by Mr. R. Irwin Lynch, Botanic Garden. Received June 9, 1914.

38491. *ULMUS FOLIACEA* Gilib.“*East Anglian elm.*” (Lynch.)

“A tree 100 feet high, represented in Great Britain by several forms varying in habit from slender, cone-shaped trees to beautifully pendulous-branched ones. The typical form is a pyramidal tree, at least up to middle age, the branches often corky, sometimes extremely so; young shoots almost or quite without down in the adult tree, slender. Leaves

38491 and 38492—Continued.

obliquely oval or ovate, doubly toothed, narrowing at the apex to a shortish point, very unequal at the base (one side of the blade being tapered, the other rounded or semicordate), $1\frac{1}{2}$ to 4 inches long, 1 to 2 inches wide (on vigorous shoots considerably larger), upper surface glossy green and smooth, lower surface downy only in the vein axils or along the midrib; stalk one-fourth to half an inch long; veins in 10 to 13 pairs. Flowers crowded in dense clusters close to the leafless shoot. Fruit oval or obovate, smooth, one-half to five-eighths of an inch long, notched at the top, with the seed close to the notch. Native of Europe and western Asia, and one of the two undisputed species of British elms. The other, *U. montana*, is amply distinguished by the seed being in the middle of the fruit, by the very downy shoots and much larger, downy leaves. The common elm, *U. campestris*, differs in its rounder leaf, downy all over beneath and rough above. The usual autumn color is yellow." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 618.*)

38492. ULMUS HOLLANDICA VEGETA (Loud.) Rehder.

"The *Huntingdon* elm." (*Lynch.*)

"This fine elm, according to information given to Loudon by Mr. John Wood, of Huntingdon, in 1836, was raised in the nursery of his firm about the middle of the eighteenth century from seed gathered in Hinchingsbrook Park. It is, no doubt, a hybrid between *U. montana* [*U. scabra* Miller] and *U. nitens* [*U. glabra* Miller], and, like many hybrid trees, is of remarkably vigorous growth. One of the largest of all elms, it reaches 100 feet in height, forming a thick, short trunk 5 or 6 feet in diameter with ascending branches. Leaves up to 5 or 6 inches long, more than half as wide, smooth above and downy beneath only in the leaf axils. Fruit oval, up to seven-eighths of an inch long, the seed not reaching to the notch at the top. This last character and its less downy leaves distinguish it from *U. major*, of presumably the same parentage. The veins, too, are more numerous (14 to 18 pairs) than in *U. major*. According to Elwes it has the defect of splitting in the trunk, due to its habit of forking low down. This, however, can be prevented by timely pruning. The tree produces suckers." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 621.*)

38493 to 38495.

From Chiengrai, Siam. Presented by Dr. W. T. Lyon, Overbrook Hospital. Received June 4, 1914. Quoted notes by Dr. Lyon.

38493 and 38494. ORYZA SATIVA L. Poaceæ.**Rice.**

38493. "*Kow chow*, Siamese name. This bears a little heavier than *Kow san* [S. P. I. No. 38494]. Is white and has very hard kernels, and resembles American rice very much. About 18 varieties are grown here in North Siam."

38494. "*Kow san*, Siamese name. Is very glutinous and is prepared by steaming; the kernels are very sticky. The fields are not measured in acres like ours in America, but are measured by baskets. A field planted to *Kow san*, which requires 4 baskets to plant, will yield from 400 to 450 baskets."

38495. GOSSYPIMUM sp. Malvaceæ.**Cotton.**

"This was grown at Chiengkum about 60 miles from here, near the French Indo-China border."

38496 and 38497. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malacææ.
Early loquat.

From Italy. Presented by Dr. Gustav Eisen, Rome, Italy. Received June 10, 1914. Quoted notes by Dr. Eisen.

38496. "From Naples, Italy. Seeds of a large plum-shaped loquat. Very early; ripe April 1. Extraordinarily sweet; seeds variable and not in conformity with the fruit. This is the earliest in the market and quite remarkable as to size and quality."

38497. "From Boscotrecase, Italy. Giant loquat. Very finest quality and largest size. Of bright deep-orange color, seeds round. The tree is said to be an enormous bearer and of the very best quality. May 1 to 24."

38498. SYNECANTHUS FIBROSUS H. Wendland. Phœnicacææ.
Uchul palm.

From Senahu, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 11, 1914.

"Ripe fruits red. Collected May 20, 1914. A slender, graceful, pinnate-leaved palm reaching 15 feet in height, with large, open inflorescences bearing beautiful bright-red fruits the size of a large cherry. Grows in cool, damp mountain-side forests in the Senahu district at an altitude of 2,000 to 4,000 feet." (*Cook.*)

38499 to 38514.

From Buitenzorg, Java. Presented by the Director of the Botanic Garden. Plants received May 27, 1914.

38499. CITRUS AURANTIFOLIA (Christm.) Swingle. Rutacææ.

No. 2. *Djeroek citroen basar.*

38500 and 38501. CUDRANIA JAVANENSIS Trecul. Moracææ.

38500. No. 5.

"This climbing thorny shrub can be utilized for hedges. Fruit edible, of a pleasant taste. The root furnishes a yellow dye." (*Mueller, Select Extra-Tropical Plants.*)

38501. No. 6.

38502 to 38508. CITRUS spp. Rutacææ.

38502. CITRUS MEDICA L.

Citron.

No. 7. Var. *genuina* Engl. (*Djeroek citroen.*)

38503. CITRUS AURANTIUM L.

Bitter orange.

No. 9. (*Djeroek manis.*)

38504. CITRUS HYSTRIX DC.

No. 10. (*Djeroek peoroet.*)

"A wild species whose fruit is used for washing hair and bleaching clothes." (*H. N. Whitford, Forests of the Philippines.*)

"A tree 15 meters in height and 15 to 20 cm. in diameter, wood yellowish, fibrous, with very hard grain, good for making tool handles, and for joinery and cabinetwork." (*Lanessan, Plantes Utiles des Colonies Françaises.*)

38505. CITRUS PAPAYA Hassk.

No. 11. (*Djeroek papaya.*)

38499 to 38514—Continued.

38506 to 38508. CITRUS AURANTIUM L. Bitter orange.

38506. No. 12. (*Djeroek pandan.*) 38508. No. 15. (*Dje-*

38507. No. 14. (*Djeroek balie.*) *rock balie.*)

38509 and 38510. SEVERINIA BUXIFOLIA (Poir.) Tenore. Rutaceæ.
(*Atalantia buxifolia* Oliv.)

38509. No. 16. One plant. 38510. No. 17. One plant.

38511. ATALANTIA MONOPHYLLA DC. Rutaceæ.

No. 20. Var. *genuina* Hochr.

"A large shrub or small tree, native to India, Ceylon, Burma, Siam, and Indo-China, usually spiny; leaves glabrous or sometimes pubescent, 1 to 3 inches long; petioles short, slightly or not at all winged; flowers borne in axillary panicles; calyx irregularly lobed, split to the base on one side; petals usually 4, stamens 8, the filaments connate and forming a completely closed tube; ovary 3 to 5 celled; fruit from one-half to three-fourths of an inch in diameter, with skin like a lime, globose, with several cells (generally 4), each usually containing one seed and filled with pulp vesicles, making the fruit much like a miniature orange. This tree, still little known outside of India and Ceylon, the type of the genus *Atalantia*, is one of the promising species for trial as a stock on which to graft other citrus fruits and also for use in breeding new types of citrus fruits. The fruits yield an oil which in India is considered a valuable application in chronic rheumatism." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

38512. DIOSPYROS PEREGRINA (Gaertn.) Guerke. Diospyraceæ.
(*Diospyros embryopteris* Pers.)

No. 21.

See S. P. I. No. 33567 for previous introduction and description.

38513 and 38514. GARCINIA KIDIA Roxb. Clusiaceæ.

38513. No. 23. One plant. 38514. No. 24. One plant.

"*Toung-tha-lai.* An evergreen tree 50 to 70 by 20 to 30 by 5 to 6 feet. Berry the size of a small lime, globular ovoid, dark purple-brown, much depressed at the apex, terminated by a nipple-shaped protuberance on which the thick and short-styled stigma rests. Frequent in the moister upper mixed and in the tropical forests all over Burma from Chittagong, Pegu, and Martaban down to Tenasserim and the Andamans. Flowers in March to May, fruits May to June. Shade loving. Substratum permeable sandstone and metamorphic. Wood white, turning yellowish, rather heavy, coarsely fibrous, loose grained, very perishable. Yields inferior gamboge." (*Vesque, Guttiferæ.*)

38515 and 38516. CHAMAEDOREA spp. Phœnicaceæ.

From Senahu, Department of Alta Verapaz, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 11, 1914. Quoted notes by Mr. Cook.

38515. CHAMAEDOREA SP.

Canquib palm.

"A handsome dwarf, finely pinnate-leaved palm, growing in the deep shade of mountain forests and dry protected hillsides in the Senahu district at an altitude of 2,000 to 4,000 feet. Grows up to 3 feet in

38515 and 38516—Continued. (Quoted notes by Mr. O. F. Cook.)

height. Shows wide range of adaptability to flourish under moist forest conditions as well as dry hillsides exposed to considerable dry weather. It is specially attractive as a household or table palm."

38516. CHAMAEDOREA ERNESTI-AUGUSTI H. Wendland.

Shella-accum palm.

"A small, handsome, slender-stemmed, simple-leaved palm, growing in the moist mountain forests of the Senahu district at an altitude of 2,500 feet. Suitable for greenhouse and household cultivation."

38517 to 38522.

From La Paz, Bolivia. Presented by Mr. Horace G. Knowles, Incaoro Mines Company. Received May 26, 1914. Quoted notes by Mr. Knowles.

38517. ZEA MAYS L. Poaceæ.

Corn.

"Cuzco."

38518. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Watermelon.

"These seeds were taken from small melons resembling somewhat in size, flavor, and color of flesh the Princess Marie and Roumanian melon."

38519. CUCUMIS MELO L. Cucurbitaceæ.

Muskmelon.

"Seeds from the largest muskmelon or cantaloupe I ever saw. It weighed about 15 pounds and the flavor was very good. It can be considered the other extreme in size to that of the watermelon [S. P. I. No. 38518]."

38520 to 38522. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.

Strawberry.

"I have been very much impressed with the firmness and keeping quality of the Bolivian strawberry. To reach this market they have to make a long and hard trip on burros, and after that I have kept them for two weeks in good condition. It occurred to me that they might be crossed with some of our berries and impart to them some of their firmness and keeping quality. They are longer than our berries, and the color is light flesh, with shade of yellow, not as pretty as our deep-red varieties. The white one with cream tint [S. P. I. No. 38520] was curious because of its color and also its flower, which was quite distinct from that of our wild strawberry."

38523. MEDICAGO SATIVA L. Fabaceæ.

Alfalfa.

From Mamouret ul Aziz (Harput), Turkey. Presented by Mr. William W. Masterson, American consul. Received May 28 and June 9, 1914.

"These seeds were procured last season near a mountain village some six hours away." (Masterson.)

38524. ACACIA VEREK Guill. and Per. Mimosaceæ. Gum arabic.

From Khartum, Sudan. Presented by Mr. S. A. Wood, Assistant Director of Forests, Department of Agriculture and Forests. Received June 13, 1914.

"This tree produces the true gum arabic of commerce. It thrives best in a dry climate, with a maximum rainfall of 21 inches and a dry period of no rain for several months. Any soil will suit it. The tree as it grows out here is fit for tapping in the fifth year after sowing." (Wood.)

Distribution.—The Senegambia region of Upper Guinea on the west coast of Africa, and in the Nile Valley in Nubia.

38525 and 38526. *ANNONA* spp. Annonaceæ.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received June 11, 1914.

38525. *ANNONA SENEGALENSIS* Pers.

Anona.

"Fresh seeds collected by Dr. Medley Wood, of the Natal Herbarium, Durban." (*Pole Evans.*)

"*Annona senegalensis* Pers. is remarkably variable, occurring sometimes as a small shrub less than a meter high, and sometimes as a large tree. The flowers are 6 petaled, with the inner petals narrow, connivent, their tips meeting above the center of the gynœcium. The seeds are small, oblong, hard, smooth, and glossy, with relatively large caruncles at the base, somewhat like those of *A. cornifolia* and *A. nutans* of southern Brazil and Paraguay. It is possible that the species *A. senegalensis* as now understood may be found to be composed of several species." (*Safford, Classification of Annona.*)

38526. *ANNONA CHERIMOLA* Miller.

Cherimoya.

"Seeds of the cultivated variety grown by Mr. Trollope, Wonderboom, Pretoria, Pretoria district. Although of fair size, it is not abnormal by any means, as fruits up to 21 pounds in weight are not altogether uncommon. The variety in question is unnamed and was grown from seed of a specimen brought to Durban from India, which country may be set down as the home of the fruit. The custard-apple has a very wide range in South Africa; it is grown successfully in the warmer districts of the Transvaal, Natal, and Cape Provinces, and may be found from Louis Trichardt in the north to the district of George on the south coast. Propagation is simple, as the tree grows readily from seed, but (as in the case of most other fruits) it can not be depended upon to reproduce itself true from seed; recourse therefore is had to grafting, and this is accomplished usually by much the same method as the Western Province farmer employs in grafting his grapevines; the scions are inserted in the stocks and the whole covered over with soil. It appears to be immaterial whether the grafting is done below, on a level with the surface, or above the ground, as long as the scion is covered and kept fairly moist for the first week or two. From what may be gathered from Indian writers on the subject, it would appear that the custard-apple tree has a decided weakness for growing out of cracks and crannies in rocks, old walls, and other similar situations. Possibly in the wild state this may be the case, and so, assuming the correctness of this statement, one is prepared to read that 'a deep stony soil is generally suitable, but alluvial produces good specimens.' From what the writer has seen in South Africa, both the best-grown trees and the finest fruit are produced in the deep free loams, such as may be found along the Magaliesberg Mountains in the Transvaal and in any other parts both of the Cape and Natal. It is necessary, however, for the tree to succeed that a frostless situation be selected in which to plant it; that plenty of room be allowed for the spread of its roots and branches; and that it receive such attention with the pruning shears and cultivator as is meted out to any other fruit tree when planted in orchard form. When single trees are grown in a garden it may be possible to afford them plenty of liquid cow manure, and to this particular dressing they seem to respond more readily than to any other.

38525 and 38526—Continued.

In the case of a small plantation, this system would be more difficult to carry out, but in case cow manure were obtainable it should certainly be used and a complete fertilizer applied biennially. The custard-apple is supposed to be one of those fruits for which a taste must be acquired." (*Agricultural Journal of the Union of South Africa*, vol. 6, no. 2, p. 273.)

38527. ALEURITES FORDII Hemsley. Euphorbiaceæ. Tung tree.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 3, 1914.

38528 and 38529. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*Triticum vulgare* Vill.)

From Johannesburg, Transvaal, Africa. Presented by Mr. J. Burt Davy. Received June 11, 1914. Quoted notes by Mr. Davy.

38528. "*Gluyas Early*. One of the two useful wheats now grown here."

38529. "*Wolkoren*. One of the two useful wheats now grown here."

38530 to 38532. ORYZA SATIVA L. Poaceæ. Rice.

From Georgetown, British Guiana. Presented by Mr. Lester W. Collins, vice and deputy consul in charge, who secured it from Mr. C. A. Bancroft, Science and Agriculture Department. Received June 8, 1914. Quoted notes from Mr. Bancroft.

38530. "Hill or Upland rice No. 6 (H6). Introduced in 1902 from Ceylon. Appearance vigorous. Stooling good. Growth spreading, 2 to 3 feet in height. Grain shape, long; paddy color, pale straw; husking good. Comes to maturity in six months. Milling qualities good and well adapted for making both white and brown rice. In a series of tests extending over nine years (1905 to 1913, inclusive) the mean results are as follows: Bags (120 pounds) paddy per acre, 38.9."

38531. "Ordinary or Lowland rice No. 75 (O75). Eastern name *Sura dhani*. Has been cultivated at the experimental fields since 1905. Appearance vigorous, stooling freely. Growth spreading, 2 to 3 feet height. Grain shape, long; paddy color, pale straw; husking easy. Comes to maturity in six months. Milling qualities good and well adapted for making both white and brown rice. In a series of tests extending over nine years (1905 to 1913, inclusive) the mean results are as follows: Bags (120 pounds) paddy per acre, 38.9. This variety is at present in demand by the East Indians, in whose hands the greater part of the rice cultivation of this colony is."

38532. "*Demerara Creole*. This variety, which was probably brought from the East by the indentured Indians, many years back, is the most extensively cultivated. It has been cultivated in the colony for a number of years. Growth spreading, 2 to 3 feet in height. Grain shape, long; paddy color, pale straw; husking easy. Comes to maturity in six months. Milling qualities good but not quite up to H6 [S. P. I. No. 38530] and O75 [S. P. I. No. 38531]. In a series of tests extending over nine years (1905 to 1913, inclusive), the mean results are as follows: Bags (120 pounds) paddy per acre, 37."

38533. HOLCUS SORGHUM L. Poaceæ. Sorghum.*(Sorghum vulgare Pers.)*

From Victoria, Kamerun, German West Africa. Presented by the director of the experiment station. Received June 1, 1914.

Gabli killiröm. Sown in the rainy season. Seed from the Mora residency in the German lands near Lake Chad.

38534 to 38536.

From Marionofka, Seytler, Crimea, Russia. Procured by Mr. E. Brown, of the Bureau of Plant Industry, from Mr. Christian Fey. Received June 3, 1914.

38534. TRITICUM AESTIVUM L. Poaceæ. Wheat.*(Triticum vulgare Vill.)*

"Semihard winter wheat." (*C. R. Ball.*)

38535 and 38536. HORDEUM spp. Poaceæ. Barley.**38535. HORDEUM DISTICHON NUTANS Schubl.**

Two-rowed barley.

38536. HORDEUM VULGARE L.

Six-rowed barley.

38537. CHRYSANTHEMUM sp. Asteraceæ.

From Liverpool, England. Presented by Joseph Gardner & Sons. Received June 6, 1914.

Sample of Asiatic pyrethrum.

38538. PTYCHOSPERMA GRACILIS Labill. Phœnicaceæ. Palm.

From Belize, British Honduras. Procured by Mr. O. F. Cook, of the Bureau of Plant Industry, from the Belize Botanical Station. Received June 12, 1914.

"No. 1. Small species. April 19, 1914. A cespitose pinnate-leaved palm 12 to 15 feet high, growing in the Belize Botanic Garden about 10 miles from the mouth of the Belize River. Probably suitable for cultivation in Florida and California. The pinnæ are broader than those of *Seaforthia elegans*, and more broadly truncate at the ends. The inflorescence has simple branches covered with a rusty tomentum." (*Cook.*)

38539 and 38540. SEAFORTHIA ELEGANS R. BROWN. Phœnicaceæ. Palm.*(Ptychosperma elegans Blume.)*

From Livingston, Department of Izabal, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 12, 1914. Quoted notes by Mr. Cook.

38539. "No. 2. Large fruit. April 21, 1914. From a tree with larger seeds than No. 3 [S. P. I. No. 38540]."

38540. "No. 3. Small-fruited form. A small palm, 10 to 15 feet high; trunk 4 inches thick, bearing large clusters of coral-red fruits about the size of thorn-apples (*Crataegus*) and having exactly the same taste."

38541 and 38542. STYLOMA spp. Phœnicaceæ. Palm.

From Belize, British Honduras. Procured by Mr. O. F. Cook, of the Bureau of Plant Industry, from the Belize Botanical Station. Handsome fan-leaved palms growing in the Belize Botanic Garden about 10 miles from the mouth of the Belize River; received June 12, 1914.

38541. *STYLOMA PACIFICA* (Seem. and Wendl.) O. F. Cook.
(*Pritchardia pacifica* Seem. and Wendl.)

No. 4. "Probably suitable only for extreme southern Florida."
(Cook.)

38542. *STYLOMA THURSTONII* (Muell. and Drude) O. F. Cook.
(*Pritchardia thurstonii* Muell. and Drude.)

No. 5.

38543. CHAMAEDOREA GRAMINIFOLIA H. Wendland. Phœnicaceæ. Palm.

From Lanquin, Department of Alta Verapaz, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 12, 1914.

"No. 6. Collected May 7, 1914. Nearly ripe seeds. A small, stoloniferous, slender-stemmed, finely pinnate-leaved palm growing at the summits of very rocky hills and cliffs, after leaving Lanquin on the road to Chiacum. Altitude, about 3,000 feet." (Cook.)

38544 to 38547.

Collected on the Roosevelt expedition to South America by Mr. Leo E. Miller, of the American Museum of Natural History, New York City. Received June 9, 1914. Quoted notes by Mr. Miller.

38544 to 38546. *ZEA MAYS* L. Poaceæ. Corn.

38544. "No. 1. Upper Gy Parana River, Brazil. Corn received from the Panetes, or Powetes, Indians on the upper Gy Parana (Machabo) River, Brazil, South America. This tribe of Indians was absolutely unknown. I was the first person to come in contact with them. The Gy Parana flows into the Madeira. March, 1914."

38545. "No. 2. October, 1913. Forty-day corn from southern Argentina, said to mature within 40 days of planting."

38546. "No. 3. October, 1913. Corn from extreme southern Argentina. Said to grow in cold climate; requires five months to mature."

38547. *LECYTHIS USITATA* Miers. Lecythidaceæ. Paradise nut.

"No. 4. May, 1914. Nuts from the lower Amazon. Comparatively rare, considered better, and more expensive than 'Brazil nuts.' Trees are said to produce within three years. Requires marshy or swampy ground in hot locality."

38548 to 38567.

From Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 18, 1914. Quoted notes by Mr. Cook, unless otherwise indicated.

38548 to 38567—Continued. (Quoted notes by Mr. O. F. Cook.)

38548. SOLANUM MURICATUM Aiton. Solanaceæ. **Pepino.**

"June 6, 1914. Antigua, Guatemala."

"According to Wercklé, the unripe fruits of this species under the name *pepino mango* are eaten cooked like pumpkins, and when ripe form a very good salad. It appears to be native to Guatemala, but in Costa Rica, where it is also called *manguena*, it is met with only in a state of cultivation." (*Pittier, Plantas Usuales de Costa Rica.*)

Cuttings and rooted plants.

38549 to 38564. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persca gratissima* Gaertn. f.)

38549. "No. 1. From Antigua, Department of Sacatepeques, Guatemala. Cuttings from a large spreading tree, 35 feet high, growing behind the Hotel Casa de Rojas. Altitude 5,000 feet. At this time (June 6) the tree carried a large crop of mature fruit. The fruit was large (3½ inches in diameter), round, and hard shelled. The outer skin was smooth and of a pleasing dark-green color. The flesh was thick, firm, pale yellow near the seed, becoming yellowish green toward the surface. Flavor excellent. Seed medium large."

38550 to 38564.

Hard-shelled avocados from the market, city of Guatemala, Guatemala.

38550. "No. 1. Round type, 10 cm. long by 9 cm. in diameter. Surface green, smooth. Shell thick. Flesh firm, pale yellowish green near seed, becoming darker toward surface. Seed large."

38551. "No. 2. Round green type with rather smooth outer surface thick; tough shell. Flesh pale, whitish, firm; seed large. Fruit measured about 10.5 cm. long by 9.5 cm. in diameter."

38552. "No. 3. Fruit had thick flesh of a bright-yellow color, much superior in attractiveness to Nos. 1 and 2 [S. P. I. Nos. 38550 and 38551]. Fruit measured 10.5 cm. long by 9.5 cm. in diameter, shell less than 2 mm. thick, but fairly firm. Outer surface rather smooth. Seed smaller than Nos. 1 and 2.

38553. "No. 4. Fruit with very rough outer surface, green, slightly longer than broad. Flesh superior to any of the others. Shell thick and hard. Seed rather small. Fruit measures about 10.5 cm. long by 9.5 cm. in diameter."

38554. "No. 5. Fruit round, green, very rough-skinned, shell extremely hard and thick (4 to 5 mm.). Flesh pale greenish white around seed, becoming darker toward outer shell. Seed rather large. Fruit measured about 8.5 cm. long by 9 cm. wide. Flat on both ends."

38555. "No. 6. Fruit green, rather smooth on surface, not so large as No. 5 [S. P. I. No. 38554], but of similar shape. Shell thick. Flesh pale greenish white near the seed, becoming darker toward the skin; rather thin but firm. Seed large."

38548 to 38567—Continued. (Quoted notes by Mr. O. F. Cook.)

38556. "No. 7. Fruit oval, outer surface very smooth, pleasing dark-green color. Shell thick. Flesh thick, firm, pale greenish white near the seed, becoming darker toward the shell. Fruit measured 10.5 cm. long by 9 cm. in diameter. Seed rather small."
38557. "No. 8. This was the largest fruit seen in the market. Obovate, outer skin purplish, smooth, 12 cm. (5 inches) long by 10.5 cm. in diameter. Shell thick. Flesh thick, firm, pale greenish white near the seed, becoming darker toward the surface. Seed large."
38558. "No. 9. Large purplish, smooth-skinned type like No. 8 [S. P. I. No. 38557], but slightly smaller. Seed about the same size. Flesh not so thick."
38559. "No. 10. Fruit round, flat topped, purplish, outer surface rough. Shell thick. Flesh pale greenish near the seed, becoming darker toward the surface. Seed large. Fruit 8 cm. long by 9 cm. in diameter."
38560. "No. 11. Fruit flattest seen at market. Length, 7.5 cm.; diameter, 9 cm. Purplish in color; surface rough; shell thick. Flesh pale greenish near the seed, becoming darker toward the surface. Seed large."
38561. "No. 12. Fruit purplish, rough, nearest round, measuring 8 cm. each way. Shell thick. Flesh pale greenish near the seed, becoming darker toward the surface. Seed large."
38562. "No. 13. Fruit obovate, 10.5 cm. long by 9.5 cm. in diameter. Surface rough. Shell not so thick as others. Flesh thick, firm, pale greenish near the seed, becoming darker toward the surface. Seed small. This fruit would be very desirable if the shell were thicker."
38563. "No. 14. Fruit pear shaped, purplish, slightly longer than No. 38562. Shell thick (3 to 4 mm.). Flesh yellowish in color at the middle, but the greenish layer under the shell is quite deep. Proportion of flesh in this type is greater than in the round forms. Seed very small."
38564. "No. 15. Fruit pear shaped, purplish, about same size as No. 14 [S. P. I. No. 38563]; shell not so thick. Flesh yellowish at the middle, but the greenish layer under the shell is quite deep. Proportion of flesh in this type is greater than in the round forms. Seed very small."

38565. HYMENAEA COURBARIL L. Cæsalpiniaceæ. Guapinol.

"From the market of the city of Guatemala, June, 1914. Altitude, 5,000 feet. A handsome tree with curious compound leaves, consisting of only two leaflets, comparable to Bauhinia, but not united. Thick, woody shells of large pods contain a resin and are burned by the Indians like torches. Said also to be used in the manufacture of varnish. The seeds are packed in a thick layer of grayish powdery substance like licorice root, having a somewhat similar sweetish taste. Commonly eaten, and the pods are often sold in the markets."

Distribution.—From southern Mexico through Central America and the northern part of South America to Brazil.

38548 to 38567—Continued. (Quoted notes by Mr. O. F. Cook.)

38566. *ACHRADELPHA VIRIDIS* (Pittier) O. F. Cook. Sapotaceæ.
(*Calocarpum viride* Pittier.)

“Inferior variety from the market of the city of Guatemala.”

See S. P. I. Nos. 38478 to 38481 for previous introductions and description.

38567. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Sw.)

“Thin-skinned variety of chayote from the market of the city of Guatemala.”

38568. *ERIOBOTRYA JAPONICA* (Thunb.) Lindl. Malaceæ. **Loquat.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received June 20, 1914.

“*Tanaka* loquat. An excellent variety of fruit, with very firm flesh of a yellow color. Stands transportation for a period of one week. In Algeria the seeds give varieties superior to the original type, furnishing interesting varieties for the market.” (*Trabut.*)

See S. P. I. No. 8890 for description of the original introduction of this variety from Japan into the United States.

38569 and 38570. *HOLCUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Victoria, Kamerun, German West Africa. Presented by the director of the Experiment Station. Received June 1, 1914. Quoted notes by the director.

“Seed from the Mora residency in the German lands near Lake Chad.”

38569. “*Gabli nialgo*. Sown at the rainy season.”

38570. “*Massaggioa adjagama*. For the manufacture of firki-boden this variety is preferred. It is planted after the rainy season.”

38571 to 38576. *RUBUS* spp. Rosaceæ.

From Sibpur, near Calcutta, India. Presented by the Royal Botanic Gardens. Received June 15, 1914.

38571. *RUBUS ALPESTRIS* Blume.

Distribution.—A straggling shrub found on the temperate slopes of the Himalayas at an altitude of 7,000 to 18,000 feet and also in Java.

38572. *RUBUS ANDERSONI* Hook. f.

Distribution.—A bramble from altitudes of 7,000 to 8,000 feet in the Sikkim Himalayas.

38573. *RUBUS CALYCNINUS* Wallich.

Distribution.—A creeping herbaceous perennial with simple reniform leaves and scarlet fruits, usually with but few fruitlets, found in India on the temperate slopes of the Khasi Hills at an altitude of 4,000 to 5,000 feet.

38574. *RUBUS NIVEUS* Thunb.

See S. P. I. Nos. 32453, 33344, and 34334 for previous introductions and description under the name *R. lasiocarpus*.

38571 to 38576—Continued.

"A large, spreading shrub; stems and branches glabrous, purple, pendulous, and often rooting at the tips; prickles small, usually few. Leaflets 5 to 11, ovate or ovate-lanceolate, lateral leaflets $1\frac{1}{2}$ to $2\frac{1}{2}$ inches, terminal one rather larger, often lobed; upper surface green, glabrous, lower white tomentose. Flowers dark pink, one-third to two-thirds of an inch in diameter, crowded in small, tomentose panicles. Calyx lobes tomentose inside and out, lanceolate, acute, longer than the petals. Drupelets black, hoary. Throughout the Himalayas, 4,000 to 10,000 feet." (*Collett, Flora Simlensis.*)

38575. RUBUS PEDUNCULOSUS Don.

(*Rubus niveus* Wall.)

Distribution.—A large rambling bush found on the temperate slopes of the Himalayas at an altitude of 6,000 to 10,000 feet, from Kashmir to Bhutan in northern India.

"A deciduous shrub, with very stout, erect, biennial stems, 1 to $1\frac{1}{2}$ inches thick and in vigorous plants 4 to 6 yards high, covered with a soft, thick, velvety down, and sprinkled over with minute prickles. Leaves 6 to over 12 inches long, composed of 3 to 5 leaflets. Side leaflets about half the size of the terminal one, stalkless or nearly so, obliquely ovate, coarsely and doubly toothed, slightly hairy above, covered with a close white felt beneath, and with silvery hairs on the veins; terminal leaflets ovate to roundish heart shaped, long stalked, from 3 to 5 inches long and wide, in other respects the same as the side ones. Flowers white or pale pink, half an inch across, the petals shorter than the sepals. Fruits blue-black, small.

"Native of western and central China, whence it was introduced about 1901; the species has, however, been known to botanists as far back as 1825 from plants growing on the Himalayas. The Chinese plants are chiefly remarkable for their vigor; Mr. Wilson states that it is occasionally 20 feet high. It is the most robust of all *Rubi*; hardy in Britain, as may be seen by plants in the Kew collection." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 458-459.*)

38576. RUBUS PANICULATUS Smith.

See S. P. I. No. 23870 for previous introduction and description.

"A rambling climber; prickles few, very small; branches tomentose. Leaves simple, broadly ovate, 3 to 5 inches, usually cordate, long pointed, more or less lobed, upper surface nearly glabrous, lower white tomentose. Flowers white, in spreading, tomentose, terminal panicles. Calyx white tomentose; lobes narrowly pointed, longer than the petals. Drupelets black or dark purple. Temperate Himalayas, 3,000 to 7,000 feet." (*Collett, Flora Simlensis.*)

38577. AMYGDALUS PERSICA L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

From Concepcion and Temuco, Chile. Presented by Mr. G. F. Arms, Concepcion, Chile. Received June 15, 1914.

"Seeds of a very late peach ripening in May, which would correspond to our November." (*W. F. Wight.*)

38578. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 20, 1914.

"Seed of large round type (hard shelled), dark brown on outside, flesh cream colored. Called 'Antigua No. 3.' Weight of fruit 2 pounds. June 7, 1914." (Cook.)

38579. TRIFOLIUM REPENS L. Fabaceæ. **Wild white clover:**

From Chester, England. Procured from Mr. James Hunter. Received April, 1914.

"An indigenous variety of white clover of Kentish origin which, owing to its success in experiments made by the Armstrong College at Cackle Park, has lately been much sought after. It is a very desirable variety of white clover, is very permanent, and superior to the ordinary white Dutch clover, inasmuch as one pound of seed of the wild variety seems to be as effective as two pounds of the Dutch. It is well suited for pasture." (Hunter.)

38580. ELEPHANTORRHIZA ELEPHANTINA (Burch.) Skeels. Mimosaceæ.
(*Elephantorrhiza burchellii* Benth.)

From Johannesburg, Transvaal, South Africa. Presented by Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received June 19, 1914.

See S. P. I. Nos. 25941 and 31309 for previous introductions.

"The plants of this genus can hardly be said to grow to shrub size; they are merely shrublets of annual growth, 1 to 2 feet high, from perennial roots. Leaves bipinnate, with 6 to 8 pairs of pinnæ, each many foliate, the leaflets half an inch long, obliquely linear. Racemes simple or branched, many flowered, 2 to 4 inches long, rising from the axils of the lower leaves; the flowers shortly pedicelled, one-sixth of an inch long, yellowish. Calyx 5-toothed. Petals 5, free. Stamens 10, ovary sessile, many ovuled. Pod 6 to 8 inches long, 1½ inches wide, thin, with a persistent margin from which the valves dehisce separately. *E. elephantina* is the only Cape species, being distinguished from the other, a Transvaal plant, by its linear pointed leaflets. The huge roots are rich in tannin, and were formerly used largely in colonial tanning, and are still preferred for the production of a certain color and quality not obtained with other tanning materials. Its cultivation has not been attempted, and the natural supply is insufficient to meet a large commercial demand." (Sim, *Forest Flora of Cape Colony*.)

38581 to 38583.

From Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 20 and 23, 1914. Quoted notes by Mr. Cook.

38581. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala. Fruit from tree described under S. P. I. No. 38549.

38582. CHAMAEDOREA sp. Phœnicaceæ. **Pacaya palm.**
From San Antonio, Guatemala.

"June 5, 1914. Perhaps not the same species as the *pacaya* of Coban. A somewhat smaller palm, with the pinnæ closer together and somewhat broader."

38581 to 38583—Continued. (Quoted notes by Mr. O. F. Cook.)

38583. *PERSEA AMERICANA* Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala.

"Slightly pear shaped, hard shelled, flesh thick, firm. '*Antigua* No. 2.'
Collected June 6, 1914, in the market at Antigua. Surface green, rough;
shell thick; seed small."

38584 to 38586. *PENNISSETUM GLAUCUM* (L.) R. Brown. Poaceæ.
(*Pennisetum typhoideum* Rich.) **Pearl millet.**

From Victoria, Kamerun, German West Africa. Presented by the director
of the experiment station. Received June 1, 1914. Quoted notes by the
director.

"Seed from the Mora residency in the German lands near Lake Chad. The
resident writes: 'These species appear in all parts of the residency.' For the
construction of firkiboden the *Massaggoa adjagama* [S. P. I. No. 38570] is pre-
ferred. The latter is only sowed after the rainy season, the others at the rainy
season."

38584. "*Argum breke*. Planted during the rainy season."

38585. "*Argum matia*. Planted during the rainy season."

38586. "*Argum moro*. Sown during the rainy season."

38587. *PERSEA AMERICANA* Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of
Plant Industry. Received June 26, 1914.

"*Antigua* No. 1. From the same tree as the bud wood [S. P. I. No. 38549].
June 6, 1914." (*Cook*.)

38588. *COCOPS RIVALIS* O. F. Cook. Phœnicaceæ. **Palm.**

From Mayaguez, Porto Rico. Presented by Mr. W. E. Hess, Agricultural
Experiment Station. Received June 16, 1914.

"Plants of the rarest and prettiest of Porto Rico palms. This species greatly
resembles in habit and appearance *Geonoma gracilis*, but has more leaflets.
At its type location it is growing on the bank of a stream, with the roots
in the water, and in another location some 8 miles distant in an apparently
dry limestone ravine; there are probably not more than a couple of dozen
specimens left, and among this less than half a dozen fruiting trees; being
of little value to the natives they are, when large enough, cut down for fence
posts." (*Hess*.)

38589 to 38600.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, horticulturist,
Egyptian Ministry of Agriculture, Gizeh, at the request of Prof. S. C.
Mason, of the Bureau of Plant Industry. Received June 15, 1914.
Quoted notes by Mr. Brown, except as otherwise indicated.

38589 to 38591. *ZEA MAYS* L. Poaceæ. **Corn.**

38589. "*Amricani* (American)."

38589 to 38600—Continued. (Quoted notes by Mr. T. W. Brown.)

38590. "*Beladi* (Egyptian)."

"*Beladi* is the earliest variety. It is short, with a thin stem and a small cob and grain. It is a light cropper and ripens in less than three months. The seed is yellow or white and round. It is much grown near towns for human consumption." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

38591. "*Biltani.*"38592. *HOLCUS SORGHUM* L. Poaceæ.
(*Sorghum vulgare* Pers.)

Sorghum.

"*Isnawi.*"38593. *ZEA MAYS* L. Poaceæ.

Corn.

"*Nab el Gamal.*"

"*Nab el Gamel* is the variety probably most extensively grown. It is tall, thick stemmed, with a large cob and large, flat, translucent grains. The name is given from a fancied resemblance of the grain to the tooth of a camel. The yield is large, but it requires liberal manuring to produce full crops. It is late in ripening, occupying the land about four months." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

38594. *HOLCUS SORGHUM* L. Poaceæ.
(*Sorghum vulgare* Pers.)

Sorghum.

"*Ewaiga.*"38595 to 38598. *ZEA MAYS* L. Poaceæ.

Corn.

38595. "*Fayoumi.*"38596. "*Manpalawi.*"38597. "*Sinebra.*"

"Resembles *Nab el Gamel* somewhat in habit, but is not so vigorous. The cobs are smaller than *Nab el Gamel*, but larger than *Beladi*. The grain is translucent." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

38598. "*Hadari.*"38599. *HOLCUS SORGHUM* L. Poaceæ.
(*Sorghum vulgare* Pers.)

Sorghum.

"*Saifi beladi rafeh* (Thin Summer Egyptian)."38600. *ZEA MAYS* L. Poaceæ.

Corn.

"*Safra* (yellow)."38601. *CEREUS TRIANGULARIS* Miller. Cactaceæ. Pitaya.

From the city of Guatemala, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 20, 1914.

"From the market, city of Guatemala. June, 1914. *Pitaya*, not *pitahaya*, as in Porto Rico. Outer surface of fruit old rose in color, including flesh and skin. Pulp of interior bright magenta, with more red than magenta (Ridgway No. 46), but not so much as rosolane purple, and somewhat lighter than either, but appearing darker from the black seeds. The flesh is not as dark as a purple beet, but of nearly the same color. Taste is very pleasant, very slightly acid, not unlike watermelon or like prickly pear fruits, but seeds delicate and thin walled, so that they are readily chewed, like seeds of the fig. The pulp does not seem sticky, but each seed is inclosed in a separate vesicle, purple like the pulp, but apparently much more sticky, that adheres readily to the finger or to any dry surface. This doubtless serves the purpose of attaching the seeds to tree trunks, where the plants grow as epiphytes, or to walls."

38602 to 38617.

From La Paz, Bolivia. Presented by Mr. Horace G. Knowles. Received June 19, 1914. Tubers of the following; quoted notes by Mr. Knowles.

38602 to 38615. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

38602 to 38604. "*Anco-choque (papa blanca de monda, white potato without admixture with other variety).*"

38602. A. **38603.** B. **38604.** C.

38605 to 38607. "*Chiar imilla (papa para caldo, potato for soup).*"

38605. A. **38606.** B. **38607.** C.

38608. "*Mamani (papa de monda, potato of unmixed variety).*"

38609. "*Phiñu (papa de mesa, table potato).*"

38610. Purple potato, round. **38613.** Dark purple, long.

38611. Reddish potato, round. **38614.** White potato, small.

38612. Dark purple potato, round. **38615.** Black potato.

38616. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Ulluco.**

"*Ullucu papa lisa (smooth potato). Not a true potato, but Ullucus tuberosus of the family Basellaceæ.*"

38617. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

Purple, long bent.

38618 to 38632.

From Johannesburg, Transvaal, South Africa. Presented by Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received June 19, 1914. Quoted notes by Mr. Davy, except as otherwise indicated.

38618 to 38631. TRITICUM spp. Poaceæ. **Wheat.**

38618 to 38621. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

38618. "Standerton Winter wheat. No. 14082."

38619. "(No. 14084.) Potchefstroom White wheat. This resembles the beardless *Wit Wolkoren*, but the glumes are smooth and shiny. A few specimens can generally be found in any field of wheat, but I have seen only one pure stand, and that was on the farm of Mr. Dirk Nolte, Groot Marico. Three seasons ago Mr. Nolte picked out a few ears from among his other wheats and sowed them apart from the others, harvesting the seed by itself. Last season he sowed from the progeny about a bag of seed, and now has 30 to 40 bags, which will enable him to test its comparative yield and milling qualities. This variety is sometimes known as *Kaal-kop*, but this name applies equally to other sorts." (*Transvaal Agricultural Journal, vol. 6, no. 22, p. 250, 1908.*)

38620. "(No. 14085.) Caledon Baard wheat."

38621. "(No. 14081.) Spring wheat."

38622. TRITICUM DURUM Desf.

"(No. 14087.) *Apulia (durum).*"

38623. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

"(No. 14088.) Grimbeek's *Kleinkoren.*"

38618 to 38632—Contd. (Quoted notes by Mr. J. Burt Davy.)**38624 and 38625.** TRITICUM DURUM Desf.

38624. "(No. 14089.) *Theunissen* (durum). The *Theunissen* shows an interesting transition from durum to soft type, which our millers think may make it useful in time."

38625. "(No. 14090.) *Medeah* wheat."

38626 to 38631. TRITICUM AESTIVUM L.*(Triticum vulgare Vill.)*

38626. "(No. 14091.) *Ecksteen* wheat. Resembles the *Wit Kleinkoren* [S. P. I. No. 38628], but is said to be some three weeks earlier in coming to maturity." (*Transvaal Agricultural Journal*, vol. 6, no. 22, p. 250, 1908.)

38627. "(No. 14093.) *Fourie* wheat."

38628. "(No. 14094.) *Wit Kleinkoren*. A short-stalked small-eared, white, bearded, glabrous wheat. By many farmers it is considered the best wheat of the country, though others prefer the softer grained, beardless *Wolkorens*. On many farms it was lost during the war and has not again been obtained, but some plants are to be found in almost every wheat field, and a few farmers have reestablished their stocks by selecting two or three and growing them separately; these farmers are now in a position to sell to their neighbors. The plants of *Kleinkoren* are low of stature as compared with the *Wolkorens*, hence the name *Kleinkoren*; the ears are smaller and average fewer grains than in the *Wolkorens*, but it is evident from the great variation in size under similar conditions that this fault could, to some extent at least, be improved away. *Kleinkoren* is said to require much manure, and it is not recommended for unmanured lands unless they are very rich. In the Crocodile Valley it is usually grown on lands manured with kraal manure and cropped with the tobacco during the previous summer." (*Transvaal Agricultural Journal*, vol. 6, no. 22, p. 250, 1908.)

38629. "(No. 14095.) *Rooi Wolkoren*. A beardless, tall-growing, heavy-headed variety, stooling well, i. e., producing a large number of stalks from a single root; the grains run from 75 to 100 per ear; the outer glumes are densely clothed with brownish red down, hence the name *Wolkoren*. This is the most widely grown variety in the Marico and Crocodile Valleys, and in the opinion of most farmers it divides honors with *Kleinkoren* as one of the two best wheats for these regions. For poor and unmanured lands it is considered the best wheat grown. The *wol* is considered objectionable, as it is said to felt the sieves of the machines; in damp seasons it hinders the drying out of the sheaves, as the moisture is retained longer than on the smooth ears of the *Kleinkorens*." (*Transvaal Agricultural Journal*, vol. 6, no. 22, p. 252, 1908.)

38630. "(No. 14096.) *Gluyas Early* wheat."

38631. "(No. 14097.) *Australian Early* wheat."

38632. ERYTHRINA ZEYHERI Harvey. Fabaceae.

"A very ornamental hardy herbaceous perennial. Flowers scarlet."

38633. FERULA sp. Apiaceæ.**Asafetida.**

From Teheran, Persia. Presented by Mr. Craig W. Wadsworth, American consul general. Received June 19, 1914.

"Ferula, which produces the asafetida of commerce, growing in the neighborhood of Meshed and Kerman. I wrote to the former place, but was unable to obtain the seed; however, one of our missionaries at Meshed, with the assistance of the British consul, succeeded in obtaining these roots." (*Wadsworth.*)

38634 to 38637.

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received June 20, 1914. Quoted notes by Mr. Goding.

38634. ACHRADELPHA MAMMOSA (L.) Cook. Sapotaceæ. Sapote.
(*Lucuma mammosa* Gaertn. f.)

For previous introductions and description, see S. P. I. Nos. 35673 and 37813.

38635. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"The fruit is the size of an orange, with pale-green skin, the markings of which resemble dressed alligator hide. Within, the appearance and taste resemble the other species. It grows on a bush found in the low coastal districts of Ecuador."

38636. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ.

Tree tomato.

"Seeds of a fruit locally called '*Tomate de arbol*,' found growing in the lowlands, but will stand a certain degree of frost. This tree tomato grows on a tree of good proportions, about 10 feet high. The fruit, ovoid in shape, about the size of a small peach, is of a bright reddish color; the skin, the interior divisions of them, the seeds, and the taste are almost identical with those of the ordinary tomato."

38637. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. Wild cherry.

"Seeds of a fruit locally called *capulies*, found growing in the lowlands, but will stand a certain degree of frost. This wild cherry grows on a large tree from which very hard lumber is made. It is said to be proof against insect borers and is used extensively where a strong and durable material is required. The fruit is pleasant to the taste."

38638 to 38640. PERSEA AMERICANA Miller. Lauraceæ.

(Persea gratissima Gaertn. f.)

Avocado.

From Antigua, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 19, 1914.

From the same tree as the bud wood (S. P. I. No. 38549).

38638. No. 1.**38640. No. 3.****38639. No. 2.****38641 and 38642. PASSIFLORA spp. Passifloraceæ.****Passion fruit.**

From Bogota, Colombia. Presented by Capt. H. R. Lemly, U. S. Army, retired. Received June 24, 1914. Quoted notes by Capt. Lemly.

38641 and 38642—Contd. (Quoted notes by Capt. H. R. Lemly.)**38641. PASSIFLORA MALIFORMIS L.**

"*Curuba*. A vine, bearing fruit, yellow when ripe, saffron-colored pulp. To be eaten with cream and sugar.

"This *Curuba* flourishes at this altitude, 9,000 feet, and a constant temperature of about 60° F. in the shade. It ought to grow in the United States."

38642. PASSIFLORA LIGULARIS JUSS.

"*Granadilla*. Fruit of the passion vine; greenish yellow when ripe."

38643. MEDICAGO SATIVA L. Fabaceæ.**Alfalfa.**

From Tripoli, Africa. Presented by Dr. F. Franceschi, Bogliasco, Genoa, Italy. Received June 25, 1914.

"Var. *khobezy*. This variety grows larger and yields more foliage than the ordinary type. It appears to be very common and the seed costs twice as much. Experiments made at the Agricultural School of Portici have shown that it is rather tender and will be fit only for Florida and southern California, perhaps also for breeding purposes." (*Franceschi*.)

38644. PLUKENETIA CONOPHORA Muell. Arg. Euphorbiaceæ.

From Victoria, Kamerun, German West Africa. Presented by the experiment station. Received June 27, 1914.

Another oil fruit which springs from the creeping plant which is cultivated everywhere in the Ossidinge district in the fields among maize and can be obtained in great quantity was sent in to us also by Dr. Mansfield, district magistrate. Prof. Gilg determined the fruit as *Plukenetia conophora*. The thin-shelled nut, about the size of a walnut, contains a firm, round, hard, oily kernel, loose in the shell. The kernel as well as the oil contains no harmful substance, as various experiments with animals show; it is used by the natives as a cooking oil. It belongs also, like the linseed oil (to which it is very similar in other ways), to the drying oils. It will be very valuable as a substitute for linseed oil, which is rising in price from year to year and which is a raw product for linoleum and varnish making. The kernels without the shells weigh 4 to 5 grams. The native name of the plant is *Ngart*. The fatty residue contains 7.3 grams nitrogen—45.6 per cent protein. The investigation of the oil gives the following data:

Specification.	Ngart oil.	Linseed oils.
Oil content of the kernels, per cent.....	53.8
Specific weight of the oil at 17.5° C.....	-0.934	0.930 to 0.934
Congealing point of oil °C.....	-33	-16 to -20
Iodin number of the oil.....	177.3	170 to 202
Iodin number of the free fatty acids.....	187.4	190 to 210
Saponification number.....	192	188 to 195
Refraction exponent at 17.5° C.....	-1.4830

(Adapted from *K. Raue and Diesselhorst, Tropenpflanzer, vol. 13, p. 282, 1909.*)

38645. OLEA FOVEOLATA E. Meyer. Oleaceæ. Wild olive.

From Cape Town, Union of South Africa. Presented by Mr. C. W. Mally, entomologist, Department of Agriculture, at the request of Mr. C. P. Lounsbury, Division of Entomology, Pretoria, Union of South Africa. Received June 27, 1914.

"Collected in the neighborhood of East London, Cape Province." (*Mally.*)

See S. P. I. Nos. 25846 and 33783 for previous introductions.

"A tree 30 to 40 feet in height, 9 to 15 inches stem diameter, usually found in what is or has been dense forest, and with a clean, straight stem so similar in marking to black ironwood (*O. laurifolia*) that expert woodcutters seldom differentiate between the two, but if they do it is considered of little importance which is used, the value being considered about equal, except that its size makes this more suitable for disselbooms (poles) than *O. laurifolia*, while for heavy timber the latter is the better. Leaves elliptical or oblong, varying a good deal in size and form, sometimes oval, usually about 2 inches long, three-fourths of an inch to 1½ inches wide, bluntly pointed, entire, coriaceous, glabrous glossy above, pale below, and with more or less hairy pits in the axils of the veins on the lower surface. Panicles axillary, much shorter than the leaves, few flowered; flowers one-fourth of an inch across, white; petals hooded, fruit half an inch long, elliptical, purple, nearly dry, with a large 1-seeded stone. Common in all the eastern and Natal forests, seldom so large as *O. laurifolia*, and not more sound. Fourcade gives its properties as 'Weight, 63 pounds per cubic foot; relative hardness, 7; coefficient of elasticity, 1,024 tons; modulus of rupture, 6.22 tons; crushing load, 4.5 tons per square inch.'" (*Sim, Forest Flora of Cape Colony.*)

38646. RUBUS BOGOTENSIS H. B. K. Rosaceæ. Blackberry.

From Fusagasuga, Colombia. Presented by Mr. F. L. Rockwood, clerk of the American Legation, Bogota, Colombia. Received June 25, 1914.

"Seeds of a large blackberry from Fusagasuga." (*Rockwood.*)

38647. MERREMIA HEDERACEA (Burm.) Hallier. Convolvulaceæ.

(*Convolvulus flavus* Willd.)

From the island of Guam. Presented by Mr. J. B. Thompson, Agricultural Experiment Station, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received June 29, 1914.

"A twining vine of the convolvulus family which is found to be an excellent forage plant here. It is very common here and springs up as volunteer growth on newly cleared and fallow fields at any time of the year providing there is sufficient moisture to germinate the seed. We have a tract of unseeded ground at the station with an area of approximately 2 acres, a portion of which is covered with this growth, and during the past three months three mature cows have been pasturing upon this tract exclusively and have made good gains every month, and this during a season when growth of most forage plants is backward and cattle generally have a tendency to fall in flesh. The tract would probably furnish plenty of pasture for two or three head of animals in addition to the three that are now maintained upon it. I am not aware of any other forage plant here for which stock in general seem to have an equal relish. Animals at the station showing a loss of appetite, during periods of fever, have frequently refused all else than this and the leaves of the bread-

38647—Continued.

fruit tree, and this little vine is generally the last nourishment to be declined. I wish, however, to caution in regard to the handling of this seed, as the tendency which this plant shows to reseed the soil and perpetuate itself for year after year on a given tract of land might make it a pest and a very troublesome one. Here it sometimes appears in cornfields after cultivation is discontinued and acts somewhat similar to the old related morning-glory pest of Kansas corn fields." (*Thompson.*)

Distribution.—A perennial twining vine with yellow flowers, found in tropical Africa and Asia, and eastward through the islands of the Indian Ocean to the Philippines.

38648 and 38649.

From St. Croix, Danish West Indies. Presented by Dr. Longfield Smith, director, Agricultural Experiment Station. Received June 27, 1914. Quoted notes by Dr. Smith, except as otherwise indicated.

38648. *CARICA PAPAYA* L. Papayaceæ. **Papaya.**

"Seeds of a very fine papaya."

38649. *TABEBUIA PENTAPHYLLA* (L.) Hemsley. Bignoniaceæ.

"A very fine flowering tree. The grandparent of these seeds is growing in Dominica, and when in flower presents the most handsome appearance."

"A tree of the forest, glabrous, with opposite compound, rigid leaves; leaflets petiolulate, elliptical, five and four; calyx campanulate, slightly bilabiate; corolla white or rose, glabrous, puberulent on the inside, with five slightly unequal lobes; four didynamous stamens; ovary with two cells; capsule linear, elongated, subcylindric, with 3-keeled valves. This tree, very widely distributed, gives a beautiful wood for cabinetwork and is much sought after for wheelwright's work. The bark is considered a febrifuge." (*Lanessan, Plantes Utiles des Colonies Françaises.*)

38650 to 38658.

From Manila, P. I. Presented by the Manila City Nursery, through Mr. Henry H. Boyle, assistant horticulturist, Bureau of Agriculture, Manila. Received June 26, 1914.

38650. *ADENANTHERA PAVONINA* L. Mimosaceæ. **Coral-bean tree.**

See S. P. I. Nos. 31585 (under the name *Ormosia calavensis*), 36866, and 38117 for previous introductions and description.

"A large deciduous tree met with in the moist forests of Bengal, Assam, Bombay, Madras, and Burma, and readily propagated by seed. A gum is said to be afforded by it. The wood is powdered and used as a dye and is the red paste with which the Brahmans color their foreheads after bathing. Taylor says a decoction of both the seeds and wood is used in pulmonary affections and as an external application in chronic ophthalmia. The timber is much employed for house building and cabinetmaking. The seeds, which are sometimes eaten, are bright and therefore used for rosaries and as weights (about 4 grains). Ground to a paste with borax they form a useful cement." (*Watt, Commercial Products of India.*)

38651. *BAUHNIA TOMENTOSA* L. Cæsalpiniaceæ. **St. Thomas tree.**

See S. P. I. No. 18685 for previous introduction.

38650 to 38658—Continued.

Distribution.—A shrub with large showy yellow flowers in clusters found in tropical Africa and Asia and the islands of the Indian Ocean.

38652. *CANANGIUM ODO RATUM* (Lam.) Baill. Annonaceæ.

(*Cananga odorata* Lam.)

Ylang-ylang.

See S. P. I. Nos. 20908 and 35243 for previous introductions and description.

"A tree bearing a profusion of greenish yellow fragrant flowers with long, fringelike petals, from which the perfume *ilang-ilang* [*ylang-ylang*] is made. Leaves alternate, simple, entire, ovate oblong, finely acuminate, puberulous beneath; sepals 3; petals 6, in two series, narrowly linear; stamens many, linear, borne at the base of the ovary, the connective produced into a lanceolate, acute process; ovaries many; style oblong; ripe carpels about 12, ovoid or obovoid, black, 6 to 12 seeded.

"Bark of tree smooth, ashy; trunk straight normally, but in Guam often twisted out of shape by hurricanes. Its wood is soft and white and not very durable, but in Samoa the natives make small canoes of it, and the Malaysians hollow out the trunks into drums or tom-toms. In Guam straight trunks of sufficient size for canoes are never found.

"This tree is found in Java, the Philippines, and in many islands of the Pacific. It is widely cultivated in the Tropics. Its introduction into Guam is comparatively recent; but the fruit-eating pigeons are spreading it gradually over the island. The natives sometimes use its flowers to perfume coconut oil. In Samoa it is very highly esteemed. Its fringelike flowers are there strung into wreaths and garlands by the natives, together with the drupes of *Pandanus* and the scarlet fruit of *Capsicum*.

"*Ilang-ilang* trees may be readily propagated either by cuttings or seeds. These should be planted in orchards or groves 8 meters apart. They thrive well on most tropical islands and in countries with moist, warm climates. About the third year the flowers appear. They bloom continuously, so that flowers and fruit may be always found on the same tree.

"From the flowers a pleasantly scented volatile oil is derived, known in commerce as the oil of *ilang-ilang*. In the Philippines and the East Indies this is sometimes adulterated with an oil extracted from the flowers of *Michelia champaca*. *Ilang-ilang* oil is obtained by steam distillation. In this process steam is generated in a small boiler and passed into a closed vessel containing the flowers. The mixed water and oil vapor as it leaves this vessel is condensed, and the oil separated from the water by decantation. In the Philippines, German distillers have obtained it in the ratio of about 25 grams from 5 kilograms of flowers (0.5 per cent). It finds a ready market in Paris, Nice, and Grasse, and is used also by perfumers in London, Leipzig, Berlin, and Frankfurt. The best quality of oil is perfectly clear and very fragrant. The second quality is yellowish and turbid. A perfume is also derived from the blossoms by the method known as *enfleurage*, as with jasmines and other fragrant flowers. By this process the fragrant oil is absorbed by refined fats, butter, or oil spread over trays, on the surfaces of which the flowers are sprinkled. These are changed at frequent intervals and the fat 'worked' so as to present a fresh surface each time the new flowers are laid upon it. Finally it is scraped off the tray, melted, strained, and poured into jars in the form of a pomade. When oil is used in this

38650 to 38658—Continued.

process, layers of cotton are steeped in it, spread upon trays, and the flowers sprinkled over the surface, after which the oil is pressed out. Care should be taken to use fresh oil. Coconut oil is liable to become rancid very soon.

"The method used by the natives to extract the perfume is very simple. The flowers are put into coconut oil and allowed to remain there a short time, after which they are removed and replaced by fresh ones. The process is hastened by heating the oil. To avoid excessive heat the vessel used for the process is partly filled with water and the oil poured upon it. This prevents the temperature rising above that of boiling water, and the lower specific gravity of the oil keeps it separate from the water. The Macassar oil of commerce 'is coconut oil in which the flowers of *Cananga odorata* and *Michelia champaca* have been digested.' (*Spon's Encyclopedia*, vol. 2, p. 1422. 1882.) Ilang-ilang oil is becoming an important article of export from the Philippines. From the commercial monthly summary, published by the Bureau of Insular Affairs (May, 1904), it appears that the amount exported is steadily increasing." (*Safford, Useful Plants of Guam.*)

38653. DELONIX REGIA (Boj.) Rafin. Cæsalpiniaceæ.

(*Poinciana regia* Boj.)

Royal poinciana.

"A rapid-growing tree with broad top and wide-spreading branches. Leaves gracefully bipinnate, 30 to 60 cm. long, with 10 to 20 pairs of pinnae, each pinna with numerous small oval leaflets; flowers large, in large racemes, bright scarlet, the upper petal striped with yellow; calyx segments valvate; petals 5, clawed, obovate; stamens 10, free, exerted; pod flat, straplike, 15 to 60 cm. long. This handsome ornamental tree is a native of Madagascar. It has become widely spread, and is now found in all tropical countries. It yields a yellowish or reddish brown mucilaginous gum, containing oxalate of lime." (*Safford, Useful Plants of Guam.*)

38654. SAMANEA SAMAN (Jacq.) Merrill. Mimosaceæ.

Saman tree.

(*Pithecolobium saman* Benth.)

"A handsome tree with spreading branches and bipinnate leaves. Pinnæ 2 to 6 pairs; leaflets 2 to 7 pairs, obliquely ovate or obovate oblong; corolla yellowish; stamens light crimson; flowers growing in globose clusters like crimson pompoms. Its pods contain a sweetish pulp and are relished by cattle and horses. In Honolulu it is one of the favorite shade trees." (*Safford, Useful Plants of Guam.*)

38655. BARYXYLUM INERME (Roxb.) Pierre. Cæsalpiniaceæ.

(*Peltophorum ferrugineum* Benth.)

"A medium-sized tree with dense rounded crowns, compound pinnate leaves and small leaflets. Flowers large, yellow, in large, terminal, erect, many flowered panicles, the pods flat, rather broad, with a narrow wing down one side. One of the finest shade trees in Manila, and quite frequently cultivated. Thrives well, gives a good shade, is not deciduous, and has abundant and beautiful flowers." (*Catalogue, Manila City Nursery.*)

38656. AGATI GRANDIFLORA (L.) Desv. Fabaceæ.

(*Sesbania grandiflora* Poir.)

Var. *coccinea*.

38650 to 38658—Continued.

The species is described (*Catalogue, Manila City Nursery*) as "a medium-sized or rather small tree, with compound, pinnate leaves with small oblong leaflets, and very large white flowers, 2½ to 5 inches long. The pods are long, slender, and pendulous. A desirable ornamental; not good for shade, however, as the top is rather thin. The large white flowers are used by the natives for food." The variety differs in having red flowers.

38657. LACTUCA SATIVA L. Cichoriaceæ. Lettuce.

"I have grown many varieties of lettuce and worked with a number of hybrids produced in the department. If my memory serves me well there is not one variety or one hybrid which will equal this lettuce when grown properly. It strongly resembles a cross between *Grand Rapids* and *Golden Queen*, a semiopen and semiheading variety. During its young stages of growth it has the brightest golden color of any lettuce of which I know. This character alone would make it especially valuable for garnishing dishes. Aside from this it is a very good table lettuce. This was obtained from Macao, a Portuguese possession off the coast of China. Sent to the Manila Bureau of Agriculture by Mr. Soares, of Hongkong, China." (*Boyle.*)

38658. CHRYSANTHEMUM sp. Asteraceæ. Chrysanthemum.

"A vegetable which is greatly used by the Chinese under the name of *Chung ow*. This vegetable is used by the Chinese in the same manner that we use kale and spinach. It is a very good substitute for both." (*Boyle.*)

38659 to 38663. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Warsaw, Russia. Presented by Mr. K. Drewitz, at the request of Mr. Edouard de Kostecki, director, Polish Agricultural Experiment Station. Received June 27, 1914.

Tubers of the following:

38659. <i>Warszawa.</i>	38662. <i>Bohun.</i>
38660. <i>Twitez.</i>	38663. <i>Clio.</i>
38661. <i>Wohltmann.</i>	

38664 and 38665.

From Burma, India. Presented by Mr. Henry Ware Hale, Savannah, Ga. Received June 26, 1914.

38664. BELOU MARMELOS (L.) Lyons. Rutaceæ. Bael.
(*Aegle marmelos* Correa.)

For previous introductions and descriptions, see S. P. I. Nos. 24450 and 33094.

"The bael fruit of India. A handsome tree, native to northern India, but widely cultivated throughout the Peninsula as well as in Ceylon, Burma, Siam, and Indo-China. The trifoliolate leaves, borne on wingless petioles, are thin in texture, probably owing to the fact that they are deciduous. Although not so hardy as the deciduous trifoliolate orange of China and Japan, the bael fruit tree is said to endure a considerable degree of cold (20° F. or lower) in the drier parts of northwestern

38664 and 38665—Continued.

India. The fruit is greenish yellow, globular, or nearly so, varying from 2 to 6 (usually 4 to 5) inches in diameter. The fruit of the wild tree is considerably smaller than that of the cultivated form. The hard shell, one-eighth of an inch thick, is filled with the pale-orange, aromatic pulp, in which occur 10 to 15 long, narrow cells containing the seeds embedded in transparent, tenacious gum. These cells correspond to the segments of an orange, while the pulp is made up of the pith and the greatly thickened fleshy membranes separating the cells. The ripe fruit is much esteemed by the Hindus, many of whom consider it the best of the citrus fruits; the European residents in India often become very fond of it. Watt (*Dictionary of Economic Products of India, 1:123*) says: 'The fruit, when ripe, is sweetish, wholesome, nutritious, and very palatable and much esteemed and eaten by all classes. The ripe fruit, diluted with water, forms, with the addition of a small quantity of tamarind and sugar, a delicious and cooling drink.' The famous botanist, Roxburgh (*Flora Indica, 2:580*), says: 'The fruit is nutritious, warm, cathartic, in taste delicious, in fragrance exquisite.' On the other hand, W. R. Mustoe, superintendent, Government Archaeological Gardens, Lahore, India, writes: 'The fruit is greatly prized for eating by the natives, but can scarcely be looked upon as palatable to the white man, except as a sherbet.' Sherbet is made from the mashed pulp, which is diluted with a little water and then strained into milk or soda water and sugared to taste. Sometimes a little tamarind is added to give a subacid flavor. All Indian medical authorities agree that the bael fruit has a most salutary influence on the digestive system. The ripe fruit is mildly laxative and is a good simple remedy for dyspepsia. The unripe fruit is a specific of the highest value for dysentery, but so mild that it can be given to children without danger. The bael fruit tree is widely cultivated in India and is found in nearly every temple garden. It is dedicated to Siva, whose worship can not be completed without its leaves. This promising fruit tree is now being tested at several points in the warmer parts of the United States." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

38665. CACARA EROSA (L.) Kuntze. Fabaceæ.
(*Pachyrhizus angulatus* Rich.)

Yam bean.

"Seeds of an edible tuber bean. The tubers are usually the size of an orange. Flesh white, somewhat like a turnip. It is usually eaten raw, though I believe the Chinese sometimes cook it with pork and the Burmese with their curries. This vine requires a long season. The tuber is cooling and refreshing, being as juicy as an artichoke." (*Hale.*)

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