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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1913.

(No. 37; Nos. 36259 to 36936.)



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GOVERNMENT PRINTING OFFICE.
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Chief of Bureau, WILLIAM A. TAYLOR.

Assistant Chief of Bureau, KARL F. KELLERMAN.

Officer in Charge of Publications, J. E. ROCKWELL.

Chief Clerk, JAMES E. JONES.

FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge.*

P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Field Stations.*

Peter Bisset, *Plant Introducer, in Charge of Foreign Plant Distribution.*

Frank N. Meyer and Wilson Popenoe, *Agricultural Explorers.*

H. C. Skeels, S. C. Stuntz, and R. A. Young, *Botanical Assistants.*

Nathan Menderson and Glen P. Van Eseltine, *Assistants.*

Robert L. Beagles, *Superintendent, Plant Introduction Field Station, Chico, Cal.*

Edward Simmonds, *Superintendent, Subtropical Plant Introduction Field Station, Miami, Fla.*

John M. Rankin, *Superintendent, Yarrow Plant Introduction Field Station, Rockville, Md.*

E. R. Johnston, *In Charge, Plant Introduction Field Station, Brooksville, Fla.*

Edward Goucher and H. Klopfer, *Plant Propagators.*

Collaborators: Aaron Aaronsohn, *Director, Jewish Agricultural Experimental Station, Haifa, Palestine;*

Thomas W. Brown, *Gizeh, Cairo, Egypt;* H. M. Curran, *Bahia, Brazil;* Dr. Gustav Eisen, *California*

Academy of Sciences, San Francisco, Cal.; E. C. Green, *Serviço do Algodão, Rio de Janeiro, Brazil;* A. C.

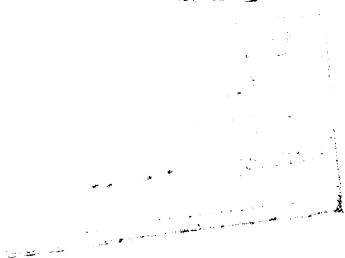
Hartless, *Shcharunpur Botanic Gardens, Shcharunpur, India;* Barbour Lathrop, *Chicago, Ill.;* William S.

Lyon, *Gardens of Nagtajan, Manila, P. I.;* Miss Eliza R. Seidmore, *Yokohama, Japan;* Charles Simpson,

Little River, Fla.; Dr. L. Trabut, *Director, Service Botanique, Algiers, Algeria;* E. H. Wilson, *Arnold*

Arboretum, Jamaica Plain, Mass.





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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OC- TOBER 1 TO DECEMBER 31, 1913 (NO. 37: NOS. 36259 TO 36936).

INTRODUCTORY STATEMENT.

This inventory records, among other plant material imported, the collections made by three separate expeditions which were sent out by this office to foreign countries.

An expedition composed of Mr. P. H. Dorsett, of this office, Mr. A. D. Shamel, physiologist, of the Office of Horticultural and Pomological Investigations, and Mr. Wilson Popenoe, of this office, was, during the time covered by this inventory, exploring in southern Brazil. This expedition left Washington on October 4, 1913, and made a careful survey of the navel-orange region around Bahia and also a study of orange growing around Rio de Janeiro. Its object was to find, if possible, the origin of the Bahia navel orange and to discover strains of this remarkable orange which might prove more productive or better in other respects than varieties which have originated in California from the cuttings introduced into North America in 1870. In addition to securing bud wood of promising strains of this orange which have originated in Bahia through bud variation, the expedition secured the stocks (*laranja da terra*, S. P. I. No. 36636) upon which the navel orange is grown in its own home. Strong evidence was also found that the Bahia navel originated, probably in Bahia itself, as a bud sport from the *Selecta* orange, which has been grown there since the earliest days of orange culture in Brazil. Shipments of the fruit of the Bahia orange were successfully made, and orange specialists were given an opportunity to compare the Bahia fruit with the best California-grown navels. The former are characterized by their light greenish yellow color and milder acidity. They are sweeter and perhaps juicier, but lack sprightliness. They might meet with favor among those who prefer a sweet orange, but on account of their paler color would not attract favorable attention in our markets. Whether the new and vigorous Bahia strains of the navel orange introduced (such as S. P. I. Nos. 36689 and 36691) will fruit in California over a longer period 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 co-operators.

year or prove otherwise more valuable will require several years to determine, but it seems probable that out of these new importations new and valuable strains will come.

As further results of this Brazilian expedition covered by this inventory may be mentioned the discovery of the Rosa mango at Rio de Janeiro, the showiest and one of the best mangos in that region (S. P. I. Nos. 36688 and 36841, Pl. IV), and the interesting fruit known as the jaboticaba. This latter, curiously enough, although one of the favorite fruits of the Brazilians, appears to have attracted little or no attention in other parts of the world, notwithstanding its delicious character and the remarkable way in which the fruits are borne on the trunk and limbs of the tree. (S. P. I. Nos. 36702 and 36888. Reproductions from photographs appeared in "Plant Immigrants," No. 92, December, 1913.)

Prof. S. C. Mason, of the Office of Crop Physiology and Breeding Investigations, prosecuted an extended study of the date-palm varieties of Egypt and Nubia, visiting the Oases of Dakhleh and Khargeh, where he established the identity of the long-sought "Wahi" with the Saidy, the choice export date of the Libyan Oases. A visit to Merowe, capital of the Province of Dongola, Sudan, was a very satisfactory and profitable trip. Through the unusual courtesies extended to him by Governor Jackson and the British officials generally, in Egypt, he secured as gifts from the important sheiks to the American Government, or by purchase, date offshoots of rare and valuable varieties. The Gondeila (S. P. I. No. 36827), one of the choicest dry dates; the Bentamoda (S. P. I. No. 36818), which Prof. Mason thinks will rank with the Deglet Noor and Menakher in quality; the great staple food date Barakawi (S. P. I. No. 36826), a variety as hard as bone but softening quickly in water; and the Kulma (S. P. I. No. 36828), which reminds one of the Moroccan variety, the Tafilelt, are among those described in this inventory.

In the governor's garden at Merowe Prof. Mason discovered a subtropical plant, *Dodonaea viscosa* (S. P. I. No. 36813), which will be tested in Florida and California as a new hedge plant.

The collections of Mr. Frank N. Meyer, agricultural explorer of this office, during the three months covered by this inventory, were for the most part made in the Chihli Province of China. They include large-fruited varieties of the Chinese walnut (S. P. I. Nos. 36662 and 36663), suited, he thinks, for the lower Rocky Mountain region; a species of Chinese chestnut, *Castanea mollissima* (S. P. I. No. 36666), which, while it does not form a large tree, bears excellent nuts and is seemingly more resistant there to the bark disease (*Endothia parasitica*) than our American chestnut is here; a wild hazelnut of good quality (S. P. I. No. 36726), occurring at an elevation of 5,000 to 7,000 feet, for trial in cool regions in America and

for breeding purposes; an edible wild grape, *Vitis amurensis* (S. P. I. No. 36753), from the Little Wu Tai Mountains, which appears not yet to have been hybridized with American or European grapes; an unusually vigorous form of wild peach, said to be a hybrid (S. P. I. No. 36665); three dwarf flint varieties of maize, ripening in 8 to 10 weeks (S. P. I. Nos. 36667 to 36669); dwarf sorghum, growing not over 3 or 4 feet high, for short-season regions (S. P. I. Nos. 36670 to 36672); three new wild roses (S. P. I. Nos. 36857 to 36859) from the Little Wu Tai Mountains, for the use of American rose breeders; three varieties of Chinese jujubes of good quality (S. P. I. Nos. 36852 to 36854); four species of wild asparagus, one of which produces edible shoots (S. P. I. Nos. 36766 to 36769); a variety of the kohlrabi, which weighs as much as 25 pounds (S. P. I. No. 36770); a variety of the plum species, *Prunus salicina* (S. P. I. No. 36804), which produces a fruit said to be the size of an apple, suited, according to Mr. Meyer, to the cooler sections of the United States; a biennial species of *Artemisia* (S. P. I. No. 36797), which the Chinese use as a stock upon which to graft chrysanthemums, suggested as of value in the North where the nights are too cool and the summers too short to raise chrysanthemums out of doors; and from the Little Wu Tai Mountains 39 species of shrubs and ornamental plants (S. P. I. Nos. 36726 to 36764), many of which will doubtless be of value around the farm homes and in the city dooryards of the Northwest.

Through the constantly growing circle of foreign and domestic friends of plant introduction the following important importations have been made:

A variety of Mexican avocado, to which the writer's attention was directed, found by Postmaster General Burleson growing in the little Mexican village of Lagas, at 5,000 feet altitude (S. P. I. No. 36687); a collection of spring and winter wheats from Turkestan (S. P. I. Nos. 36498 to 36527), sent by Dr. Richard Schroeder, who believes they should do especially well in California and Utah, where summer rains are rare; four varieties of the papaya (S. P. I. Nos. 36275 to 36278) from Minas Geraes, Brazil, where a single seedling produced by actual count 200 fruits in 30 months; four independent shipments of Korean ginseng seed (S. P. I. Nos. 36282, 36596, 36716, and 36900); the Quina de Pernambuco, a small yellow-flowered tree which will stand light frosts and which is used like cinchona as a medicinal plant (S. P. I. No. 36661); the ilama, a red-fleshed anona from Tlatlaya, Mexico (S. P. I. No. 36632); a collection of soy, mung, and adzuki beans from Harbin, Manchuria (S. P. I. Nos. 36914 to 36923); a collection of sorghum varieties from German East Africa (S. P. I. Nos. 36610 to 36616); a barberry with edible fruit from the foothills of the Cordilleras of Argentina (S. P. I. No. 36626); a yellow Ussurian plum (S. P. I. No. 36607), which will probably prove hardy

in the Northwest and which, because of its fine characteristic flavor, will be of use in hybridization experiments in that region; two Guatemalan varieties of avocado, originating from seed introduced into Hawaii many years ago by Admiral Beardsley (S. P. I. Nos. 36603 and 36604); seeds of *Prunus salicifolia* (S. P. I. No. 36371), a wild species which, according to Mr. W. F. Wight, is considered promising in Peru as a stock for the sweet cherry; the Shalil, probably a hard-fleshed peach, from the Kurram Valley in the Northwest Frontier Province, India (S. P. I. No. 36485); the madronho tree of the Canary Islands, a species which is gradually becoming rare, but which as a shade tree in Naples is strikingly beautiful (S. P. I. No. 36529); the Mu-yu, a south Chinese species of wood-oil tree, *Aleurites montana* (S. P. I. No. 36897), from Hongkong, of special interest because a larger proportion of its flowers are reported to be fertile than is the case in the central Chinese species which is now established in this country; a collection of Chinese corn (S. P. I. Nos. 36889 to 36895) made by Dr. Yamei Kin in the Chihli Province; nuts of the palm *Bactris utilis* (S. P. I. No. 36573), which when cooked have much the taste of potatoes and form one of the principal foods of the Indians of Costa Rica around San Jose and Cartago; the white sapote tree, *Casimiroa edulis* (S. P. I. No. 36602, Pl. III), from Sierra Madre, Cal., where the severe frost of 1913 caught only a few of the blossoms; a near relative of the chayote vine, *Polakowskia tacaco* (S. P. I. No. 36592, Pl. II), which forms one of the primitive foods of the Indians of Costa Rica and has been incorporated by the Spanish Costa Ricans in their menu; a perennial rice from Senegal, West Africa, discovered recently by M. Ammann, of the Jardin Colonial at Nogent sur Marne, France (S. P. I. No. 36533); a collection of strains of alfalfa, gathered together at Poona, India, from various parts of British India (S. P. I. Nos. 36551 to 36560); the fruit tree *Rollinia orthopetala*, which grows on soil which is often flooded for a considerable period of time at Para, at the mouth of the Amazon, and which produces a fruit similar to the cherimoya (S. P. I. No. 36561, Pl. I); and a hybrid of superior excellence between the cherimoya and the sugar-apple, produced by Mr. Edward Simmonds at the Miami Field Station (S. P. I. No. 36562).

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

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 4, 1915.

INVENTORY.

36259. *SCHINUS TEREBINTHIFOLIUS* Raddi.

Grown at the Plant Introduction Field Station, Miami, Fla., under Station No. 115, from seed received from the Hawaii Agricultural Experiment Station, through Mr. P. J. Wester, in 1909.

Medium-sized, ornamental, evergreen anacardiaceous tree, native of Brazil, with very striking foliage, highly prized for avenue and lawn planting in mild-wintered regions. Similar to *S. molle*, but with stiffer branches and leaves larger and darker green.

Plants.

36260. *KARATAS PLUMIERI* Morr.

From Caracas, Venezuela. Collected by Mr. H. Pittier, of the Bureau of Plant Industry. Received August 14, 1913.

"One of the peculiar bromeliaceous fruits common on the market at Caracas during the months from January to April is the *curujujúl*, said to proceed from the above-named species. It is a slender pod, in shape somewhat like a very young banana finger and of a pale greenish yellow color. Its thin skin contains a translucent fluid of sirupy consistency and very sweet in which are embedded the numerous black seeds. The *curujujúl* is very much relished on account of its refreshing qualities and its delicate perfume, being either sucked offhand or served in the form of sherbet. It is also used in the preparation of a fine preserve. This plant grows wild in the lower belt of Venezuela; it is also planted at times in hedges. As it is, the fruit is a valuable addition to the Venezuelan fruit market, and it could very likely be improved by cultivation. The same plant is reported from Colombia, Central America, and Mexico. I had previously partaken of the fruits in Nicoya, Costa Rica, where the plant is known as *piñuela de garrobo* and in Chepo, Panama, where it is called *piro*, but the fruits were much smaller and of a very inferior quality. These may have belonged to distinct species. The fruits of the Mexican *piñuela* as sold cooked on the market at Tehuantepec are smaller, according to a natural-size picture taken by Messrs. G. N. Collins and C. B. Doyle (No. 9513)." (*Pittier*.)

36261. *LILIUM LONGIFLORUM* Thunberg.

Harris's lily.

From Philadelphia, Pa. Presented by Mr. William K. Harris. Received October 3, 1913.

"Var. *eximium*. Bulbs raised from the original stock of the well-known *harrisii* Easter lily. To be grown to produce seed for the experimental work of Bureau officials." (*Bisset*.)

Bulbs.

36262. *CARICA PAPAYA* L.

Papaya.

From Buenos Aires, Argentina. Presented by Mr. H. M. Curran. Received September 29, 1913.

36263. PISTACIA spp.**Pistache.**

From Fresno, Cal. Collected at Roeding Park, September 25, 1913, by Mr. J. E. Morrow, for propagation at the Plant Introduction Field Station, Chico, Cal.

Seeds from trees numbered 1 to 24. To be grown for stocks only.

Trees 1 to 24 proved to be a mixture of species of *Pistacia*, probably including *P. mutica*, *P. vera*, and *P. terebinthus*, all of these species having been sent to Roeding Park.

36264. SCHINOPSIS LORENTZII (Griseb.) Engler.**Quebracho.**

From Buenos Aires, Argentina. Presented by Dr. Carlos Thays, Director of the Botanic Garden. Received October 2, 1913.

See S. P. I. No. 34016 for previous introduction.

For a full discussion of the economic value of this anacardiaceous tree, see "Quebracho wood and its substitutes," by Clayton D. Mell and Warren D. Brush, Forest Service Circular 202, 1912.

36265 and 36266. CITRUS SINENSIS (L.) Osbeck.**Orange.**

From Guatemala. Presented by Mr. S. Billow, Guatemala City. Received October 2, 1913.

36265. "An orange slightly acid in taste; very juicy; 23 cm. in circumference with a rind 3 mm. in thickness; 4 or 5 will weigh a pound. Grown at Escuintla, 1,111 feet above sea level. The average annual rainfall is 125 inches; temperature from 60° to 95° F." (*Billow.*)

Seeds.

36266. "An orange very sweet and juicy; 26 cm. in circumference with a rind 4 mm. in thickness; 4 or 5 will weigh a pound. Grown at Moran, 3,959 feet above sea level. The average annual rainfall is 60 inches; temperature 60° to 90° F." (*Billow.*)

Seeds.

36267 to 36269. ZEA MAYS L.**Corn.**

From Cuzco, Peru. Presented by Mr. F. A. Peralta, at the request of Mr. W. F. Wight, of the Bureau of Plant Industry. Received August 5, 1913.

Quoted notes by Mr. W. W. Tracy, who tested the varieties.

36267. "But five plants germinated, all but one of which died without coming into tassel, that one not maturing fruit. The plant was notably deep rooted."

36268. "Six plants germinated, all smaller and weaker than the preceding; no plants tasseled. They were very deep rooted, with a narrow, hard leaf. These two might develop into strains adapted to dry lands and high temperatures. They seem to suffer from cold and wet."

36269. (No report.)

36270. PERSEA AMERICANA Miller.**Avocado.**

(*P. gratissima* Gaertn.)

From Miami, Fla. From seedlings sent from Washington to the Plant Introduction Field Station, Miami, Fla., and grown there under Garden No. 1247. Received September 10, 1913.

"Oblong oval, slightly oblique in shape; medium large, 5 inches long, 3½ inches wide; weight 24 ounces; surface fairly smooth; yellowish green, almost yellow at base, numerous large yellow dots; meat deep yellow, light green near the skin, three-

fourths to 1 inch thick, of melting, buttery texture and rich, nutty flavor; quality good to very good; seeds medium small, oblate, flattened on sides, and slightly rough on the surface." (*Wilson Popenoe*.)

36271. SOLANUM ACULEATISSIMUM Jacquin.

From Caravellas, Brazil. Presented by Mr. Fred Birch. Received October 9, 1913.

"Seeds of the sweet hollow tomato; plant 18 inches to 2 feet high, forming a branched bush exceedingly spiny; leaf about the size of a medium maple leaf but shaped like those of the ordinary tomato; skin of fruit tough, scarlet in color; flesh about three-sixteenths to one-fourth inch thick, white, granular, soft, and sweet; the seeds grow in a loose, dry cluster in the center. Plants grown in the richest soil are less spiny than those growing on the dry hillside." (*Birch*.)

Under the name *arrebenta-cavillos*, M. Pio Corrêa describes this plant as being "used for cutaneous affections and in mesenteric tuberculosis." He says that it is poisonous.

36272. EUGENIA VENTENATII Benth.

Drooping myrtle.

From Victoria, Australia. Presented by Mr. J. Cronin, curator, Melbourne Botanic Garden. Received October 8, 1913.

"Drooping myrtle, or large-leaved water gum; 40 to 60 feet in height, 24 to 36 inches in diameter. Wood of a gray or pinkish hue and beautifully marked. It is close grained, hard, heavy, and tough; it is used for tool handles, poles of drays, ribs of boats, and the flooring boards of verandas." (*J. H. Maiden, Useful Native Plants of Australia*.)

Distribution.—This myrtaceous tree occurs in the valley of the Brisbane River in Queensland, the valley of the Clarence River in New South Wales, and along the coast of Moreton and Rockingham Bays in Queensland.

36273 to 36278.

From Minas Geraes, Brazil. Presented by Mr. Fred Birch. Received October 6, 1913.

36273. CARICA PAPAYA L.

Papaya.

"*Karl Schultz*. One of the regular-shaped papayas; under the average size, about 6 inches long and 4 to 4½ inches in diameter. The rich orange-colored skin was the clearest and most nearly free from spots and wrinkles that I have ever seen; the flesh is extra thick and the seed cavity very small; seeds large. Extra good quality." (*Birch*.)

36274. ANNONA sp.

"Seeds of the *Jaca-andu*, the 'wild dog's jack fruit' or wild forest soursop of Minas Geraes. Fruit the size of an orange; very aromatic and delicious when partaken of very sparingly." (*Birch*.)

36275 to 36278. CARICA PAPAYA L.

Papaya.

36275. "Seeds of the best long-stemmed papaya [*i. e.*, from staminate trees]; sweet and richly flavored; bears great quantities of sweet-scented jasminelike flowers on long stems, which are very attractive to humming birds and insects. As the young fruit grows its weight makes the long stem drop gradually to the trunk of the tree, where it forms one of the dangling clusters which surround and hide the trunk. Sometimes such a cluster will consist of from 15 to 25 pear-shaped fruits, weighing from 1 to 2 pounds each. They take a long time to grow and ripen. Most of this sort are inferior in taste." (*Birch*.)

36273 to 36278—Continued.

36273. "Seeds of a large, globular papaya, with firm, sweet flesh. One of the best tasting papayas and of very good keeping and shipping qualities." (*Birch.*)

36277. "Seeds from our *Watergate* papaya, of very delicate, rich flavor. The first ripe fruit was picked within 12 months of the setting out of the seedling tree, and within 18 months from that time we had over 200 fruits from it." (*Birch.*)

36278. "Seeds of a pear-shaped fruit weighing over 4 pounds each, about 12 inches long and 6 inches in diameter and of fine rich flavor. They would be worth growing in Florida or California. I have heard that colonists in Minas Geraes got them from Rio Grande do Sul." (*Birch.*)

36279. PEUMUS BOLDUS Molina.**Boldo.**

From southern Chile. Collected by Mr. W. F. Wight, of the Bureau of Plant Industry. Received May 7, 1913.

"(No. 47.) A shrub or small tree belonging to the Monimiaceæ, with dark-green, very aromatic foliage and abundant white, fragrant flowers. The fruit, although sweet and agreeable, has little flesh. It is considerably prized in southern Chile." (*Wight.*)

"The boldo has opposite short-stalked ovate leaves, which are entire and rough on the surface. The flowers are in little axillary racemes, the males and females on different plants. The center of the male flower is occupied by a great many stamens and that of the female by from two to nine ovaries, which when ripe are succulent drupes, about the size of haws and very aromatic, as are all the parts of the plant. The bark is serviceable to tanners, and the wood is preferred before any other in the country for making charcoal, while the fruits are eaten." (*A. A. Black, in Lindley's Treasury of Botany.*)

36280 and 36281. CARICA PAPAYA L.**Papaya.**

From Colombo, Ceylon. Presented by Mr. Charles K. Moser, American consul. Received October 7, 1913.

Notes, through Mr. Moser, from an interview with Mr. H. F. Macmillan, curator, Royal Botanic Gardens, Peradeniya, Ceylon.

"Mr. Macmillan said that *Carica papaya* was introduced into Ceylon from the West Indies before 1678. *Carica candamarcensis* was a native of Ecuador and was introduced into Ceylon about 1880. It is being grown with some difficulty in the Hakgala Gardens, near Newara Eliya, and through the operation of birds it has been scattered among remote, inaccessible places through the mountains, where it is growing wild. It will not grow lower than 3,000 feet, and while its fruits are edible when stewed, little use is made of them. The papaya in general cultivation in Ceylon is the ordinary West Indian variety without any changes in form or nature. There is no Singhalese variety or any other papaya indigenous to Ceylon. So far as he knows *Carica papaya* and *Carica candamarcensis* have never been crossed. There is no 'Ceylon hybrid papaya' and no hybrid papaya of any sort. The distinctions noted by Dr. Huysbertsz (that the 'Ceylon hybrid papaya' is not a cross between *Carica candamarcensis*, or mountain pawpaw, and *Carica papaya*, but a product of natural cross-fertilization between the *Carica papaya* introduced into the island from the West Indies about 1678 and a variety of the same species which he thinks indigenous to Ceylon and which he calls *Sinhala papaya*) are imaginary.

"If the flavor and papain of the papaya produced in Ceylon are superior to those produced in the West Indies or elsewhere, it is probably due to climatic or soil con-

ditions. A monœcious form, in which the trees of both sexes bear fruit, is not very general, but is often found. The same tree is quite likely to produce long or round fruit, one form weak in papain and one strong.

"According to a resident of Kegalle, the trade in papain has been carried on in that district for more than 30 years and it is chiefly in the hands of Chetties and coast Moors at the present time. Owing to religious objections, it is very difficult to get a photograph of these people and their connection with the papain industry. This resident says that a large business is at present carried on in artificial papain, which is prepared from rice flour or starch. A pound of artificial papain costs only about 14 cents gold to produce but is sold in Colombo at from 98 cents to \$1.25 per pound. It is asserted that a large number of parcels of this adulterated or artificial papain are being shipped to London. These facts, however, can not be verified by this office."

3C280. Ordinary Ceylonese papaya.

36281. "This is a selection of *Carica papaya*, the juice of which is rich in papain." (Moser.)

36282. PANAX QUINQUEFOLIUM L.

Ginseng.

(*Aralia quinquefolia* Decne. and Planch.)

From Songdo, Chosen (Korea). Presented by Mr. N. Gist Gee, Soochow University, Soochow, China. Received October 14, 1913.

"The soil is prepared by mixing sand and loam in the proportion of one to one. The sand is frequently obtained by sifting it from the bed of a near-by stream. In order to get as near as possible to the natural wild environments of the plant, the leaves of the oak or chestnut tree are collected, allowed to decay, and then dried. When dry, this material is crumbled very fine and then mixed, half and half, with sand sifted from the hillside. This is obtained by first removing the top layer and getting the unexposed earth. The plants are cultivated on elevated beds about 6 or 8 inches above the pathways between them. These beds are usually just about wide enough for one to work them from one side (about 2 or 2½ feet). The length of the bed varies with the kind of field; short on hillsides, quite long in the valleys. Fertilizer 1 inch thick is spread upon the beds before the seeds are planted. The beds are covered over with sheds (ordinary sheds with curtains which can be rolled up or down, closing them in front). They seem to keep the plants sheltered throughout their entire period of growth and regulate the amount of sunlight by the curtains. Before planting, soak the seeds in water for four days until they swell and are nearly ready to burst. Then take them out and dry them. This should be done before fall. Then in the fall bury a vessel in the earth in a shady place and place the seeds, as already prepared, in it, leaving it uncovered. Allow them to freeze, leaving them in the vessel until the spring. Drive nails with heads as large as the ginseng seeds in a plank, making them about 1 inch apart. Use this to plant the seeds regularly about five-eighths of an inch deep. Place a seed in each hole and cover lightly with the hand. The rows should be about 6 inches apart. Spray with a very fine stream of water twice a day. Allow the planted seeds to receive the sunlight until the sprouts appear. During all of this time the beds should be protected from rains, but sprayed regularly twice a day. The soil should be kept in good condition by hand cultivation after the young plants come up. This care must be constantly given to the plants. The plants are taken up at the time they are about 1 year old and only the best ones are saved for transplanting. Many planters do this each year for six years after the plant comes up. Others transplant and select for only the first two or three years. The plants are planted out about 6 inches apart and in rows about 1 foot apart. Care must be taken to give the two regular waterings each day during the growing seasons." (Gee.)

36283 to 36484.

Collected by Mr. W. F. Wight, of the Bureau of Plant Industry. Received July 7, 1913.

Quoted notes by Mr. Wight, except as otherwise indicated.

36283. ABRUS PRAECATORIUS L.**Jequirity.**

"(No. 310. Arequipa, Peru.) *Guarero*. Seeds obtained from an Indian medicine woman, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida and California."

36284 and 36285. AGROSTIS spp.

"From Tiahuanaco, Bolivia. Grass from the plateau near Tiahuanaco. It forms tufts and is rather wiry when old. It is doubtful whether even the llama will eat it except when it is young. The native grasses of this region appear to have little value, but they may be of botanical interest."

36284. "(No. 681.)"**36285. "(No. 683.)"****36286. ALLIUM CEPA L.****Onion.**

"(No. 292.) Seeds obtained from an Indian woman in Arequipa, Peru. There seems to be practically no seed trade, as a business, in Peru, and these seeds may show some interesting variations."

36287. AMARANTHUS sp.

"(No. 595.) Seeds obtained from an Indian medicine woman in Oruro, Bolivia."

36288 to 36293. ANNONA CHERIMOLA Miller.**Cherimoya.**

36288. "(No. 341. Cuzco, Peru.) This fruit is very abundant in the market at Cuzco and of excellent quality. Probably none are grown within one or two days' journey from the city, and they are often brought from valleys at four or five days' distance."

36289. "(No. 591. Oruro, Bolivia.) Some of the very finest cherimoyas seen in South America were in the market at Oruro. They came from the vicinity of Cochabamba."

36290. "(No. 650. From Peru.) A cherimoya with surface slightly roughened."

36291. "(No. 651.) Rough surface, the usual type in Peru, but still of excellent quality."

36292. "(No. 649. Peru.) This fruit had a practically smooth surface and by many is considered superior to those with the rough surface."

36293. "(No. 660. Arequipa, Peru.) An excellent specimen."

36294. ANNONA MURICATA L.**Soursop.**

"(No. 652. Lima, Peru.) *Guanábana* or *custard-apple*. This is usually a larger fruit than the cherimoya and of softer texture. Quite common in the market at Lima and perhaps at other places in some seasons."

36295. APIUM sp.

"(No. 293. Arequipa, Peru.) Seeds obtained from an Indian woman in Arequipa."

See S. P. I. No. 36286 for further note.

36283 to 36484—Continued.

36296 to 36298. *ARACHIS HYPOGAEA* L. **Peanut.**

36296. "(No. 330. Cuzco, Peru.) *Manin*. Peanuts sold by Indian women on the market at Cuzco."

36297. "(No. 311. Arequipa, Peru.) *Manin*. Peanuts sold by Indian women in the market."

36298. "(No. 339. Cuzco, Peru.)"

36299. *BRASSICA OLERACEA CAPITATA* L. **Cabbage.**

"(No. 288. Arequipa, Peru.) *Repallo*. Seeds obtained from an Indian woman in Arequipa.

See No. 36286 for further note.

36300. *BRASSICA OLERACEA CAPITATA* L. **Cabbage.**

"(No. 289. Arequipa, Peru.) *Repallo blanco*. Seeds obtained from an Indian woman in Arequipa."

See S. P. I. No. 36286 for further note.

36301. *BRASSICA RAPA* L. **Turnip.**

"(No. 290. Arequipa, Peru.) *Navo*. Seeds obtained from an Indian woman in Arequipa. Grown by the Indians. May show some interesting variations."

36302. *BRASSICA OLERACEA CAPITATA* L. **Cabbage.**

"(No. 291. Arequipa, Peru.) Seeds obtained from an Indian woman in Arequipa. Grown by the Indians. May show some very interesting variations."

36303. *CAESALPINIA* sp.

"(No. 312. Arequipa, Peru.) Seeds of a large tree obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida or California."

36304. *CHENOPODIUM* sp.

"(No. 295. Peru.) *Cañagua*. A species of *Chenopodium* said to be cultivated in the Puno district in the same way as quinoa, although what I supposed to be this is a smaller plant and more spreading in habit. It is probably less valuable than quinoa and certainly not grown to the same extent."

36305 to 36312. *CHENOPODIUM QUINOA* Willd. **Quinoa.**

"One of the plants cultivated by the native inhabitants of the highlands of Peru and Bolivia is a species of *Chenopodium* (*C. quinoa*) and so far as foliage is concerned not very unlike in general appearance our ordinary goosefoot. Its seeds, however, are white or nearly so and fully three times as large as those of *C. album*. In pre-Columbian times this plant was one of the main foods of the Indians, evidently ranking with the potato and corn in this respect. None of the Old World cereals being known before the discovery, it was only natural that the cultivation of this plant should have extended over a considerable area. In addition to Peru and Bolivia it was probably grown in some parts of Argentina and is known with certainty to have been cultivated in Chile; in fact, there even appears to have been an Araucanian or Mapuche name for it. Doubtless its cultivation at the present time is less extensive than formerly, due in part to the diminished Indian population and in part to an apparent ignorance or indifference on the part of the white population to its real merits as a food. At present it is probably most commonly grown on the Titicaca

36283 to 36484—Continued.

plateau. It is said to yield abundantly, though it does not seem to have occurred to any one to measure the yield of a given area. In late April and May some of the fields were red with compact panicles, for this seemed the only part of the plant visible for a short distance. Other fields had a greenish cast, there being two or probably more varieties. On the island of Chiloe, southern Chile, the plant grows much taller than any seen about Lake Titicaca and the foliage was also much more abundant, though whether the latter condition was due to the difference in the season or to the lower altitude and more abundant rainfall is uncertain. The grain is used by the Indians in the same manner as rice, being put in soups and made into porridge. It appeals to a North American primarily as a breakfast food and should rank with oatmeal and some of the better wheat preparations. It may be cooked and served in a manner similar to oatmeal, but to spread it out in a tray about an inch deep after steaming and then brown it in the oven makes it even more appetizing."

36305. "(No. 294. Peru.)"

36306. "(No. 355. La Paz, Bolivia.) *Cañahue*. This may be another species of *Chenopodium* grown by the Indians, or possibly the wild form of *C. quinoa*. What I supposed was this plant has a different habit from *C. quinoa*, however."

36307. "(No. 371. Peru.) The well-known quinoa, of which there are two and possibly three varieties."

36308. "(No. 619. Peru.)"

36309. "(No. 631. Cuzco, Peru.) White quinoa from near Cuzco"

36310. "(No. 643. Oraya, Peru.)"

36311. "(No. 644. Lima, Peru.) Quinoa from Lima."

36312. "(No. 648. Lima, Peru.)"

36313. *CORIANDRUM SATIVUM* L.

Coriander

"(No. 313. Peru.)"

36314 and 36315. *CUCUMIS MELO* L.

Muskmelon

36314. "(No. 306. Peru.)"

36315. "(No. 307. Peru.)"

36316 to 36323. *CUCURBITA* spp.

Squash

36316. "(No. 331. Cuzco, Peru.) There is a great variety of squash in Peru and Bolivia, and they have evidently been cultivated for many centuries. Some of the vases taken from graves said by archeologists to be very old have evidently been modeled from different types of squashes."

36317. "(No. 340. Cuzco, Peru.)"

36318. "(No. 345. Cuzco, Peru.)"

36319. "(No. 348. Oruro, Bolivia.)"

36320. "(No. 349. Oruro, Bolivia.)"

36321. "(No. 363. Oruro, Bolivia.)"

36322. "(No. 369. Cuzco, Peru.)"

36323. "(No. 372. Oruro, Bolivia.)"

36324. *LUCUMA* sp.

"(No. 582. Cuzco, Peru.) These fruits were smaller and not so good in quality as those from Arequipa. Whether this is due to their being brought from a higher altitude is uncertain."

36283 to 36484—Continued.

in before being fully mature or because of the higher altitude, it is impossible to say. They should be able to endure more cold than seeds from a lower altitude."

36325 to 36342. CUCURBITA spp.

36325 to 36327. CUCURBITA spp. Squash.

36325. "(No. 397. Cuzco, Peru.)"

36326. "(No. 586. Cuzco, Peru.)"

36327. "(No. 589. Cuzco, Peru.)"

36328. CUCURBITA FICIFOLIA Bouche.

"(No. 375. Cuzco, Peru.) *Lacayoti*. This vegetable has a rind resembling the watermelon in appearance, but with a thick stem like that of a squash. It is gathered before being completely matured and used with other vegetables and meats in the preparation of a kind of soup."

36329. CUCURBITA MAXIMA Duch. Squash.

"(No. 665. Lima, Peru.) Squash, pronounced excellent in quality by the American family to whom I took it to be tested."

36330 to 36341. CUCURBITA PEPO L.

"Most of them pronounced excellent by the American family to which I took them to be tested."

36330. CUCURBITA spp. Pumpkin.

"(No. 381. Oruro, Bolivia.) The only pumpkin seen either in Bolivia or Peru. Rather small, but of good quality."

36331. "(No. 654. Lima, Peru.)" Squash.

36332. "(No. 655. Lima, Peru.)" Squash.

36333. "(No. 656. Lima, Peru.) Large. Excellent in quality." Squash.

36334. "(No. 657. Lima, Peru.)" Squash.

36335. "(No. 659. Lima, Peru.) Middle-sized squash." Squash.

36336. "(No. 661. Lima, Peru.)" Squash.

36337. "(No. 662. Lima, Peru.)"

36338. "(No. 663. Lima, Peru.)" Squash.

36339. "(No. 664. Lima, Peru.)" Squash.

36340. "(No. 666. Lima, Peru.)" Squash.

36341. "(No. 667. Lima, Peru.)" Squash.

36342. CUCURBITA sp. Squash.

"(No. 669. Arequipa, Peru.) Squash from the market in Arequipa."

36343. CYPHOMANDRA sp. Tree tomato.

"(No. 346. Arequipa, Peru.) A fruit sold in the market at Arequipa. Not a true tomato, but called *Tomate chileno* by the Indians."

36344. EPHEDRA sp.

"(No. 364. Oruro, Bolivia.) A low-growing Ephedra on the mountains at Oruro. Probably of interest only in a botanical collection."

36345 and 36346. HORDEUM VULGARE L. Barley.

36345. "(No. 302. Arequipa, Peru.)"

36346. "(No. 303. Arequipa, Peru.)"

36283 to 36484—Continued.**36347 and 36348. LUPINUS spp.**

36347. "(No. 287. Arequipa, Peru.) Seeds obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida or California."

36348. "(No. 334. Cuzco, Peru.) A tall-growing lupine with very large white seeds, found in a garden at Cuzco, but of unknown origin."

36349. NASSELLA sp.**Grass.**

"(No. 680. Bolivia.) From the plateau near Tiahuanaco. This grass forms tufts and is rather wiry when old. It is doubtful whether even the llama will eat it except when it is young. The native grasses of this region appear to have little value, but they may be of botanical interest."

36350 to 36357. OPUNTIA spp.**Prickly pear.**

36350. "(No. 343. Cuzco, Peru.) *Tuna*. A variety with reddish fruits. This fruit is greatly prized in Peru and Bolivia, and this was exceptionally good in quality."

36351. "(No. 351. Oruro, Bolivia.) A wild cactus at 13,500 feet elevation, near Oruro. The seeds are very red, and dye is sometimes made from them."

36352. "(No. 359. Arequipa, Peru.) *Tuna*. From the market at Arequipa."

36353. "(No. 379. La Paz, Bolivia.) *Tuna*. With green fruit."

36354. "(No. 374. Oruro, Bolivia.) A wild species from the mountain above Oruro, 13,500 feet altitude."

36355. "(No. 354. La Paz, Bolivia.) The fruit of this is bronze colored and excellent in quality."

36356. "(No. 366. Oruro, Bolivia.) Seeds of a wild cactus found on the mountain above Oruro, at about 13,500 feet altitude."

36357. "(No. 370. Cuzco, Peru.) A tuna with green fruit, of good quality, but not quite equal to those with reddish or bronze-colored fruits."

36358 and 36359. ORMOSIA spp.**36358. ORMOSIA MONOSPERMA (Swartz) Urban.**

"(No. 309. Lima, Peru.) *Guarero de la montaña*. Seeds obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida or California."

36359. "(No. 309a. Lima, Peru.)"

The ormosias are tropical timber trees, the red and black seeds of which are often used for necklaces.

36360. HORDEUM VULGARE L.**Barley.**

"(No. 335. Oruro, Bolivia.)"

36361. PASSIFLORA sp.**Passion fruit.**

"(No. 352. Arequipa, Peru.) *Tumbas*. This is a fruit belonging to the Passifloraceæ and grown in the gardens of foreigners as well as by the Indians.

36283 to 36484—Continued.

The fruit is longer than that of *Passiflora ligularis*, being about 4 inches long and $1\frac{1}{2}$ to $1\frac{3}{4}$ inches in diameter."

36362 and 36363. *PASSIFLORA LIGULARIS* Juss.

Passion fruit.

36362. "(No. 588. Oruro, Bolivia.) This fruit is 2 or 3 inches in diameter and very agreeable in taste, being much prized by many foreigners as well as by the natives. It comes from some of the valleys a few days' journey from Oruro and at a lower altitude."

36363. "(No. 668. Lima, Peru.) Fruit of *Passiflora*, common in the market at Lima."

36364. *PHYSALIS* sp.

"(No. 47. Arequipa, Peru.) A very good *Physalis*, grown in a garden at Arequipa and used for making preserves."

36365. *PIMPINELLA ANISUM* L.

Anise.

"(No. 305. Peru.) Anise seed grown by the Indians."

36366 to 36368. *PIPTADENIA* spp.

36366. "(No. 399. Oruro, Bolivia.)"

36367 and 36368. *PIPTADENIA CEBIL* Grisebach.

Cebil.

36367. "(No. 329. Cuzco, Peru.) Seeds, probably of some tropical tree. Native name *Huilca*. Obtained from an Indian medicine woman at Cuzco."

36368. "(No. 380. Oruro, Bolivia.) Probably a tropical tree. Obtained from an Indian medicine woman."

36369 and 36370. *PISUM SATIVUM* L.

Pea.

36369. "(No. 316. Peru.)"

36370. "(No. 620. Cuzco, Peru.) A variety of *Pisum* grown by the Indians near Cuzco."

36371. *PRUNUS SALICIFOLIA* H. B. K.

Black cherry.

"(No. 593. Cuzco, Peru.) *Capoilles*. This *Prunus* grows wild about 25 miles from Cuzco and at a lower altitude, perhaps 8,000 or 9,000 feet, and is a native species. The fruit is about as large as an Early Richmond cherry. Mr. Payne, an English farmer beyond Cuzco, expects to try it as a stock for the sweet cherry and believes it will enable him to grow the latter fruit in that part of Peru."

36372 to 36374. *PSIDIUM GUAJAVA* L.

Guava.

36372. "(No. 579. Arequipa, Peru.) A pear-shaped guava, $3\frac{1}{2}$ to 4 inches long."

36373. "(No. 658. Arequipa, Peru.) A large pear-shaped guava from Arequipa."

36374. "(No. 581. Arequipa, Peru.) A large guava, about 3 inches long and slightly pear shaped. Brought to the Arequipa market by the Indians. These trees sometimes reach a height of 20 feet in Peru."

36375. *RICINUS COMMUNIS* L.

Castor bean.

"(No. 314. Arequipa, Peru.) *Ygerilla*. Seeds obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained."

36283 to 36484—Continued.

- 36376.** *SAPINDUS SAPONARIA* L. **Soapberry.**
 "(No. 592. Oruro, Bolivia.)"
- 36377.** *RICINUS COMMUNIS* L. **Castor bean.**
 "(No. 315. Arequipa, Peru.) *Ygerilla*. Obtained from an Indian medicine woman at Arequipa, from whom no reliable information could be obtained."
- 36378.** *SAPINDUS SAPONARIA* L. **Soapberry.**
 "From Cuzco, Peru. Used in washing."
- 36379 to 36383.** *SOLANUM* spp.
- 36379.** "(No. 336. Sicuani, Peru.) Seeds of a wild species from near Sicuani."
- 36380.** "(No. 362. Oruro, Bolivia.) A wild tuber-bearing species of *Solanum*, found on the mountain above Oruro at an elevation of about 13,000 feet. It evidently grows only 8 or 10 inches high in its dry, rocky habitat, and the tubers found were about one-half inch in diameter."
- 36381.** "(No. 376. Quiquijana, Peru.) A wild species of *Solanum*. No tubers were found."
- 36382.** "(No. 580. Arequipa, Peru.) A wild *Solanum* from Arequipa, of no value except for its botanical interest."
- 36383.** "(No. 646. Oruro, Bolivia.) A wild *Solanum* from the mountain above Oruro at an elevation of 13,500 feet. It is not tuber bearing and is only of botanical interest."
- 36384.** *SOLANUM TUBEROSUM* L. **Potato.**
 "(No. 670. Arequipa, Peru.) Seeds from a field near Arequipa."
- 36385 and 36386.** *STIPA* sp. **Grass.**
- 36385.** "(No. 595a. Oruro, Bolivia.)"
- 36386.** "(No. 682. Tiahuanaco, Bolivia.)"
- 36387.** *TOLUIFERA* sp.
 "(No. 395. Oruro, Bolivia). Seed, probably of a tropical tree, obtained from an Indian woman."
- 36388 to 36390.** *TRITICUM* spp. **Wheat.**
- 36388.** "(No. 304. Peru.)"
- 36389.** "(No. 394. Oruro, Bolivia.)"
- 36390.** "(No. 396. Oruro, Bolivia.)"
- 36391.** *TROPAEOLUM* sp. **Nasturtium.**
 "(No. 353. La Paz, Bolivia.) This nasturtium grew wild on the mountain side above La Paz and was seen in other localities. The petals are deeply lacinate."
- 36392.** *TRITICUM AESTIVUM* L. **Wheat.**
 (*T. vulgare* Vill.)
 "(No. 398. Oruro, Bolivia.)"
- 36393.** *VICIA FABA* L. **Broad bean.**
 "(No. 342. Cuzco, Peru.) *Avas*. A variety grown about 12 miles from Cuzco and said to be good."
- 36394.** *ORMOSIA* sp.
 "(No. 365. Cuzco, Peru.) Large red seeds, probably of a tropical tree, obtained from an Indian medicine woman in Cuzco."

36283 to 36484—Continued.**36395 to 36484. PHASEOLUS spp.****Bean.**

"The following numbers are varieties of beans collected by Mr. W. F. Wight in various places during his South American trip. As found in the markets these beans are very badly mixed, one of the packets containing more than 20 distinct varieties. These varieties have been sorted out of the various numbered packets secured by Mr. Wight and each variety given a separate number. The sorting of the varieties has been done by Dr. D. N. Shoemaker, who has also furnished the descriptions." (*Skeels.*)

36395 to 36475. PHASEOLUS VULGARIS L.

36395. "No. 1. (Arequipa, Peru. April 22, 1913.) White bean, similar in shape to *Pea* bean, but variable in size. Selected from Wight's No. 284."

36396. "No. 2. (Concepcion, Chile.) *Caballeros*. White, kidney shaped. Selected from Wight's No. 78."

36397. "No. 3. (Arequipa, Peru. April 22, 1913.) White, with very light-yellow eye; resembles white *P. coccineus* in texture of skin. Selected from Wight's No. 235."

36398. "No. 4. (Panguipulli, Chile.) White, like *Pea* bean, but longer. Selected from Wight's No. 145."

36399. "No. 5. (Arequipa, Peru. April 22, 1913.) White, kidney shaped, resembling white *P. coccineus* in texture of skin. Selected from Wight's No. 281."

36400. "No. 6. (From Peru.) White."

36401. "No. 7. (Arequipa, Peru. April 22, 1913.) White, kidney shaped, much like No. 5 (S. P. I. No. 36399). Selected from Wight's No. 283."

36402. "No. 8. (Concepcion, Chile. February 10, 1913.) Very light yellow; size, shape, and pattern that of *Horticultural Pole*. Selected from Wight's No. 52."

36403. "No. 9. (Oruro, Bolivia.) White, round. Selected from Wight's No. 337."

36404. "No. 10. Selected from Wight's Nos. 675, 676, 677, and 678, from Arequipa, Peru, and No. 51, *Bueye*, from Concepcion, Chile."

36405. "No. 11. (*Avalitos*. Concepcion, Chile.) Brownish terra cotta, speckled with light yellow, and with darker eye. Selected from Wight's No. 71."

36406. "No. 12. (*Chincha*. Dr. Aguilar, Cuzco, Peru.) Light stippled ground, with light-yellow markings. Not uniform in size. Selected from Wight's No. 671."

36407. "No. 13. (*Azufrados*. Concepcion, Chile.) Coppery-yellow self. Selected from Wight's No. 76."

36408. "No. 14. (Dr. Aguilar, Cuzco, Peru.) Reddish yellow self. Selected from Wight's No. 673."

36409. "No. 15. (*Del Norte*. Dr. Aguilar, Cuzco, Peru.) Dun color self. Selected from Wight's No. 672."

36410. "No. 16. (*Avalitos*. Concepcion, Chile.) Buff ground, with markings from yellow to black. Uniform in size, shape, and pattern. Selected from Wight's No. 71."

36283 to 36484—Continued.

36411. "No. 17. (*Burros*. Concepcion, Chile.) Dark fawn, about the size of *Medium* beans. Selected from Wight's No. 74."
36412. "No. 18. (Concepcion, Chile.) Light olive. Selected from Wight's No. 72."
36413. "No. 19. (Oruro, Bolivia.) Light yellow, with darker eye. Selected from Wight's No. 389."
36414. "No. 20. (*Borito*. Talcahuano, Chile.) Golden bronze green, almost round. Selected from Wight's No. 259."
36415. "No. 21. (*Manteco*. Concepcion, Chile.) Yellow self. Uniform in shape but not in size. Selected from Wight's No. 75."
36416. "No. 22. (Panguipulli, Chile.) Buff self, with slightly darker eye. Selected from Wight's No. 144."
36417. "No. 23. (Arequipa, Peru.) Copper-orange self, straight kidney shape. Selected from Wight's No. 281."
36418. "No. 24. (Arequipa, Peru.) White ground, with reddish blotches. Selected from Wight's No. 282."
36419. "No. 25. (Concepcion, Chile.) White ground, half covered with dun, which is mostly covered with maroon blotches. Long, slightly curved. Selected from Wight's No. 50."
36420. "No. 26. (Concepcion, Chile.) White on one half, other end buff with purple stripes. Selected from Wight's No. 51."
36421. "No. 27. (Concepcion, Chile.) White ground, buff markings, small. Selected from Wight's No. 51."
36422. "No. 28. (Arequipa, Peru.) Selected from Wight's Nos. 675, 677, and 678. Half white, other half yellow buff, marked with deep purple stripes; large, kidney shaped."
36423. "No. 29. (Arequipa, Peru.) Selected from Wight's Nos. 282, 675, 677, 678, and 679. Half white, half red, even-margined pattern, long."
36424. "No. 30. Selected from Wight's Nos. 675, 676, 677, 678, 679, from Arequipa, Peru, and 357, from Oruro, Bolivia. White ground, mottled with reddish brown; large, flat."
36425. "No. 31. (Oruro, Bolivia.) Selected from Wight's Nos. 337, 344, 350, and 389. White ground, blotched with black and purple-brown; globular shape."
36426. "No. 32. (Oruro, Bolivia.) White ground with round red spots; flat. Selected from Wight's No. 350."
36427. "No. 33. (Oruro, Bolivia.) White stippled ground, with dark purple around eye, and splashed over half the bean. Selected from Wight's No. 337."
36428. "No. 34. (Oruro, Bolivia.) Yellowish stipple in smooth-margined pattern, overlaid with purplish stripe; long. Selected from Wight's No. 389."
36429. "No. 35. (Cuzco, Peru.) Selected from Wight's Nos. 357, 358, 373, and 377. White ground, spotted with dark reddish brown; flat, large."
36430. "No. 36. (Cuzco, Peru.) Selected from Wight's Nos. 357 and 361. White ground, spotted with black; large, long."
36431. "No. 37. (Cuzco, Peru.) Selected from Wight's Nos. 373, 377, and 383. Yellowish purple ground, striped with dark purple."

36283 to 36484—Continued.

- 36432.** "No. 33. Selected from Wight's Nos. 358, 377, and 383, from Cuzco, Peru, and No. 344, from Oruro, Bolivia. White ground with brown blotches overlaid with purple stripes; globular."
- 36433.** "No. 39. Selected from Wight's Nos. 337 and 350, from Oruro, Bolivia, No. 373, from Cuzco, Peru, and No. 677, from Arequipa, Peru. White ground blotched with reddish brown; flattened globular."
- 36434.** "No. 40. (Oruro, Bolivia.) Selected from Wight's Nos. 337, 350, and 389. Covered with purple splashes; round."
- 36435.** "No. 41. (Oruro, Bolivia.) Selected from Wight's Nos. 337 and 344. Yellowish purple ground, striped with dark purple and black; round."
- 36436.** "No. 42. (Oruro, Bolivia.) Yellowish ground, almost covered by purple to black blotches and stripes; round. Selected from Wight's No. 337."
- 36437.** "No. 43. Selected from Wight's No. 337, from Oruro, Bolivia, and No. 358, from Cuzco, Peru. Yellowish buff; small, round."
- 36438.** "No. 44. (Oruro, Bolivia.) Selected from Wight's Nos. 337 and 389. Dark brown; small, round."
- 36439.** "No. 45. Selected from Wight's Nos. 350 and 389, from Oruro, Bolivia, and Nos. 358 and 383, from Cuzco, Peru. Dark purple to black; small, round."
- 36440.** "No. 46. Selected from Wight's Nos. 350 and 389, from Oruro, Bolivia, and Nos. 338, 358, 373, 377, and 383, from Cuzco, Peru. Maroon; small, globular."
- 36441.** "No. 47. Selected from Wight's Nos. 338, 358, 373, 377, and 382, from Cuzco, Peru, and Nos. 337, 358, and 389, from Oruro, Bolivia. Dun colored, striped darker; small, round."
- 36442.** "No. 48. Selected from Wight's Nos. 337 and 389, from Oruro, Bolivia, and Nos. 333, 358, 373, 377, and 383, from Cuzco, Peru. Dun colored with purple blotches; small, round."
- 36443.** "No. 49. Selected from Wight's Nos. 282, 675, 676, 678, and 679, from Arequipa, Peru, and No. 389, from Oruro, Bolivia. Dun ground, finely stenciled and broadly striped with dark purple; large, straight."
- 36444.** "No. 50. Selected from Wight's Nos. 337 and 350, from Oruro, Bolivia, and No. 282, from Arequipa, Peru. Dun ground, black striped; long."
- 36445.** "No. 51. Selected from Wight's Nos. 675, 676, 677, 678, and 679, from Arequipa, Peru. Dun ground, dark purple stripes and blotches; long, square ended."
- 36446.** "No. 52. (Oruro, Bolivia.) Maroon, with broad white micropylar stripe; round. Selected from Wight's No. 337."
- 36447.** "No. 53. (Cuzco, Peru.) Selected from Wight's Nos. 358 and 383. Dun, with white micropylar stripes; small, round."
- 36448.** "No. 54. (Oruro, Bolivia.) Dun, with purple stripes and broad white micropylar stripes. Selected from Wight's No. 337."
- 36449.** "No. 55. (Oruro, Bolivia.) Selected from Wight's Nos. 337, 350, and 389. Drab with broad white micropylar stripe; large, straight, flat."

36283 to 36484—Continued.

- 36450.** "No. 56. Selected from Wight's No. 383, from Cuzco, Peru, and No. 389, from Oruro, Bolivia. Dark drab with broad light micropylar stripe; small, long."
- 36451.** "No. 57. Selected from Wight's Nos. 282, 675, 676, 677, and 678, from Arequipa, Peru, and Nos. 337 and 389, from Oruro, Bolivia. Bluish purple with light-dun micropylar stripe."
- 36452.** "No. 58. Selected from Wight's Nos. 282, 675, 676, and 678, from Arequipa, Peru, and Nos. 350 and 387, from Oruro, Bolivia. Purple-brown with broad micropylar stripe; large, long, flat, broad."
- 36453.** "No. 59. Selected from Wight's No. 146, from Panguipulli, Chile, and from No. 389, from Oruro, Bolivia. Dun self, slightly darker eye; long, straight."
- 36454.** "No. 60. (Panguipulli, Chile.) Purple-garnet self; long, straight, square end. Selected from Wight's No. 142."
- 36455.** "No. 61. (Panguipulli, Chile.) Dun self, with darker eye; long, square end. Selected from Wight's No. 143."
- 36456.** "No. 62. (Arequipa, Peru.) Dun, mottled with dark purple; very large, flat. Selected from Wight's No. 579."
- 36457.** "No. 63. (*Araucanos*. Concepcion, Chile.) Much like *Horticultural Pole*. Selected from Wight's No. 77."
- 36458.** "No. 64. Selected from Wight's No. 350, from Oruro, Bolivia, and No. 383, from Cuzco, Peru. White, with black stripe from hilum to to micropylar end."
- 36459.** "No. 65. Selected from Wight's Nos. 675 and 677, from Arequipa, Peru. White, with brown stripe lengthwise of the hilum; large, kidney shaped."
- 36460.** "No. 66. (Arequipa, Peru.) White, purple blotch at hilum, and light-dun stripe on micropylar end, black eye; large, round, square ends."
- 36461.** "No. 67. Selected from Wight's Nos. 677 and 678, from Arequipa, Peru, and Nos. 373 and 377, from Cuzco, Peru. Dun, with dark blotches; large."
- 36462.** "No. 68. Selected from Wight's Nos. 675, 677, and 679 from Arequipa, Peru, and Nos. 358 and 383, from Cuzco, Peru. Dun, with purplish markings; large."
- 36463.** "No. 69. Selected from Wight's No. 678, from Arequipa, Peru, and Nos. 350 and 389, from Oruro, Bolivia. Dun, striped purple; fairly large."
- 36464.** "No. 70. (Oruro, Bolivia.) Reddish chrome, size and pattern like *Kentucky Cutshorts*. Selected from Wight's No. 344."
- 36465.** "No. 71. (Concepcion, Chile.) Selected from Wight's Nos. 51 and 73. *Aliados*. Light dun, splashed olive; straight, round ends."
- 36466.** "No. 72. Selected from Wight's No. 73, from Concepcion, Chile, and No. 338, from Cuzco, Peru. Light, with reddish markings; small."
- 36467.** "No. 73. Selected from Wight's Nos. 675 and 677, from Arequipa, Peru, and Nos. 337, 344, and 350, from Oruro, Bolivia. Dark purple, almost self; long."
- 36468.** "No. 74. Selected from Wight's Nos. 387 and 389, from Oruro, Bolivia, and No. 377, from Cuzco, Peru."

36283 to 36484—Continued.

36469. "No. 75. Selected from Wight's No. 677, from Arequipa, Peru, and Nos. 337, 344, and 389, from Oruro, Bolivia. Dun; large."

36470. "No. 76. Selected from Wight's Nos. 337 and 389, from Oruro, Bolivia, No. 357, from Cuzco, Peru, and Nos. 51 and 73, from Concepcion, Chile. Yellow or white, finely mottled; roundish."

36471. "No. 86. Mixed, oval, a little larger than *Medium* beans; colors various, dark."

36472. "No. 87. Flat, short, light colored, about the size of *Medium* beans; mixed."

36473. "No. 88. Globular, a little smaller than *Marrows*, colors various, dark."

36474. "No. 89. Mixed. Dark-red self; short, rather flat; a little larger than *Medium* beans."

36475. "No. 90. Large, yellow ground, mottled; straight, square ends; mixed."

36473 to 36478. *PHASEOLUS COCCINEUS* L.

Bean.

36476. "No. 77. (Oruro, Bolivia.) White form of *Scarlet Runner*. Selected from Wight's No. 386."

36477. "No. 78. (Oruro, Bolivia.) *White Runner*. Selected from Wight's 388."

36478. "No. 79. (La Paz, Bolivia.) *White Runner*. Selected from Wight's No. 356."

36479 to 36484. *PHASEOLUS LUNATUS* L.

Lima bean.

36479. "No. 80. (Ica, Peru.) White; a thick form of ordinary flat large Lima, very large."

36480. "No. 81. (Oruro, Bolivia.) White; a very large flat Lima. Selected from Wight's No. 388."

36481. "No. 82. (Arequipa, Peru.) White; large flat Lima. Selected from Wight's No. 286."

36482. "No. 83. (La Paz, Bolivia.) Almost white, stippled; flat, of peculiar kidney shape. Selected from Wight's No. 356."

36483. "No. 84. (Oruro, Bolivia.) White, almost covered with black; kidney shaped, larger at one end. Selected from Wight's No. 385."

36484. "No. 85. (La Paz, Bolivia.) White, almost covered with red; kidney shaped, larger at one end."

36485. *AMYGDALUS PERSICA* L.

Peach.

(*Prunus persica* Stokes.)

From Kurram Valley, Northwest Frontier Province, India. Presented by Mr. Henry D. Baker, American consul, who secured them from Maj. G. J. Davis, commandant, Kurram Militia, Parachinar, Kurram Valley. Received October 11, 1913.

"The *Shalil* grows like a peach, which it much resembles, and has about the same blossom. The flesh is yellow and sweet, but it is not so juicy as that of a peach. Major Davis considers that it would be a particularly valuable fruit for cooking or canning, as the flesh, being harder than that of a peach, would probably not break so easily and could be more easily manipulated for such purposes. It grows at about 5,600 feet elevation. The only reference I can find to the *Shalil* in any book I have on India

is in the Imperial Gazetteer of the Northwest Province, wherein it states as regards the Kurram Valley: 'The climate varies. In winter even Lower Kurram is very cold and a bitter wind prevails, while in the summer it is hot and dry. Upper Kurram is never unpleasantly hot, even in summer, while in winter snow covers the ground for weeks. Wherever water is available for irrigation the soil is highly productive, but owing to the absence of a settled government and the internal feuds of the people, the cultivable area is not all under cultivation, and irrigation is carried on only by small channels constructed and maintained by a single hamlet or family. Apples, pears, grapes, cherries, pomegranates, peaches, and a fruit peculiar to the Kurram and Tirah known as *Shalil* also grows, and with improved communications fruit growing will probably become an important industry. Famine is unknown in Kurram.' (Baker.)

36486. PHOENICOPHORUM BORSIGIANUM (Koch) Stuntz. Palm.
(*Stevensonia grandifolia* Duncan.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanical Station. Received October 10, 1913.

"This noble palm, famous for its beauty, is one of a group of five confined exclusively to the Seychelles Islands and each representing a single species. The tree in its mature state is wholly destitute of spines, whereas in the young state the deep orange-red petioles are clothed with black needlelike spines 1 to 3 inches long, and the young leaves are orange beneath and mottled with orange-brown spots above. The difference between the young and mature plants is so great that a person unfamiliar with the palm would consider them as belonging to different species. The flower spike is from 3 to 6 feet in length, divided into numerous slender branches swollen at the base and densely covered above with yellow flowers, each about a quarter of an inch in diameter. The flowers are monœcious." (*Gardeners' Chronicle*, February 18, 1893, p. 201.)

36487. NEPHROSPERMA VAN-HOUTTEANA (Wendl.) Balf. f. Palm.

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanical Station. Received October 10, 1913.

36488. PUNICA GRANATUM L. Pomegranate.

From German East Africa. Presented by the Usumbwa Company, Nyembe-Bulungwa, Post Tabora. Received October 22, 1913.

Cuttings.

36489 to 36491.

From Tutuila, American Samoa. Presented by Commander C. D. Stearns, governor. Received October 14, 1913.

36489. CARICA PAPAYA L.

Papaya.

36490. COLUBRINA ASIATICA Brongn. 36491. IPOMOEA sp.

36492 to 36496. NICOTIANA TABACUM L. Tobacco.

From Klaten, Java. Presented by the director of the Tobacco Experiment Station, Klaten, at the request of the director, Department of Agriculture, Buitenzorg, Java. Received October 15, 1913.

Cigar-wrapper types grown under the following names:

36492. "No. 1. Kanari."

36495. "No. 4. Wonosobo."

36493. "No. 2. Y."

36496. "No. 5. Kedoe."

36494. "No. 3. E."

36497. GARCINIA OBLONGIFOLIA Champion.

From Hongkong, China. Presented by Mr. William J. Tutcher, Botanical and Forestry Department. Received October 22, 1913.

"A tree with leaves shortly stalked, oblong, narrowed at the base, $2\frac{1}{2}$ to 3 inches long, the upper ones almost sessile. The yellow flowers produced in May are terminal and unisexual, the males three to seven together and shortly pedunculate. Sepals 2 lines, petals nearly 5 lines long. Stamens consolidated into a solid mass, occupying the center of the flower. The females are solitary and rather smaller. It is common in the Happy Valley woods, Hongkong, but is not known to come from elsewhere. The foliage is nearly the same as that of *G. cambogia*, but the male pedicels are much shorter and the anthers more numerous." (*Bentham's Flora Hongkongensis*, p. 25.)

36498 to 36527. TRITICUM AESTIVUM L.**Wheat.**(*T. vulgare* Vill.)

From Tashkend, Turkestan. Presented by Dr. Richard Schroeder, Tashkend Agricultural Experiment Station. Received October 14, 1913.

"Our Turkestan spring wheats are often sown in the late fall or in the winter and do fairly well, though our winter is rather hard. They are sown on nonirrigated land and stand drought exceedingly well, better than durum. The most of our precipitation we get in the spring, maximum in March, the summer and fall being exceedingly dry, some years without a drop of rain, so I think that our spring wheat will not suit your Southern States, nor even your Central States, Kansas for instance, for they must suffer from rust in rainy summers. But in California and Utah, where they do not have summer rains, these wheats will probably be found of high value." (*Extract from Dr. Schroeder's letter, dated October 3/16, 1913.*)

36498. "No. 181. Spring."	36513. "No. 524. Winter."
36499. "No. 251. Spring."	36514. "No. 528. Winter."
36500. "No. 341. Spring."	36515. "No. 537. Spring."
36501. "No. 357. Spring."	36516. "No. 553. Winter."
36502. "No. 370. Spring."	36517. "No. 622. Winter."
36503. "No. 371. Spring."	36518. "No. 639. Winter."
36504. "No. 414. Winter."	36519. "No. 694. Spring."
36505. "No. 420. Spring."	36520. "No. 708. Spring."
36506. "No. 421. Spring."	36521. "No. 787. Winter."
36507. "No. 424. Winter."	36522. "No. 792. Winter."
36508. "No. 432. Winter."	36523. "No. 800. Winter."
36509. "No. 433. Spring."	36524. "No. 804. Winter."
36510. "No. 435. Winter."	36525. "No. 888. Winter."
36511. "No. 438. Winter."	36526. "No. 889. Winter."
36512. "No. 520. Winter."	36527. "No. 896. Winter."

36528. HIBISCUS WAIMEAE × (?).

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Agricultural Experiment Station. Received October 24, 1913.

"*Ruth Wilcox.* A very vigorous, freely branching shrub with good foliage, upright growth, and light-gray bark. Leaves cordate, crenate, blunt, $2\frac{3}{4}$ to $4\frac{1}{2}$ inches wide, 3 to 5 inches long, light green, shiny, pubescent on both sides, petiole $1\frac{1}{2}$ inches long. Flowers 6 inches wide, pure white, no eye, petals wide, column crimson toward the tip, 4 inches long, stigma scarlet, filaments crimson, bracts six to eight, greenish brown, peduncle 1 inch long. Flower opens at noon, lasts two days, has delicate perfume. Best white thus far bred. Self seeding.

"A hybrid between the varieties *May Damon* [described as itself a hybrid between two native varieties, *Kauai* white and *Beatrice*], and *Knudsen* white, one of the three horticultural forms of the native *Hibiscus waiameae*." (*Wilcox and Holt, Ornamental Hibiscus in Hawaii, Bul. 29, Hawaii Agricultural Experiment Station.*)

36529. ARBUTUS CANARIENSIS Duhamel.

Madronho.

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received October 23, 1913.

"The madronho is becoming very rare here, but it is still found in the mountain ravines. It will not stand frosts." (*Perez.*)

"It is one of the most beautiful shade trees that is grown around Naples and should be tested for park and street purposes in Florida and southern California. Its clean pink and green bark and dark-green foliage make it a most strikingly beautiful object." (*Fairchild.*)

36530. SPHENOSTYLIS STENOCARPA (Hochst.) Harms.

From Amani, German East Africa. Presented by Dr. A. Zinamer, director, Kaiserliches Biologische Landwirtschaftlichen Institut. Received October 13, 1913.

See S. P. I. No. 31194 for previous introduction and description.

36531. DIOSPYROS KAKI L. f.

Persimmon.

From Sibpur, near Calcutta, India. Presented by the Superintendent, Royal Botanic Gardens. Received October 20, 1913.

36532. ANNONA MURICATA L.

Soursop.

From Honolulu, Hawaii. Collected by Mr. R. A. Young, of the Bureau of Plant Industry. Received September 6, 1913.

"A seedling soursop producing fruits weighing up to 1½ pounds each. Collected July 28, 1913. On the authority of Mr. T. F. Sedwick, the quality may be said to be unusually fine. Fruit of this flavor would make a very delicious sherbet. The tree is in the yard of Mr. Frank Cooke, in the Kaimuki district of Honolulu." (*Young.*)

36533. ORYZA LONGISTAMINATA A. Chev. and Roehrich.

Perennial rice.

From Nogent-sur-Marne, France. Presented by the director, Jardin Colonial. Received October 24, 1913.

"Seeds of perennial rice discovered in French West Africa by M. Ammann, chief of the chemical service of this establishment."

A full discussion of this interesting variety is given in *La agriculture pratique des pays chauds*, vol. 11, pt. 1, pp. 89 to 94 and 265 to 278, and vol. 11, pt. 2, pp. 433 to 458 (1911).

36534. CUCUMIS MELO L.

Muskmelon.

From Leghorn, Italy. Presented by Mr. Leon Pöhm de Sauvanne, American vice consul. Received October 22, 1913.

"This melon has a cream-white flesh or pulp, is very aromatic and sweet, has a smooth skin, measures about 6½ by 8½ inches, and weighs from 4 to 5 pounds." (*De Sauvanne.*)

36535. BELLUCIA COSTARICENSIS Cogniaux. Papaturro agrio.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received October 27, 1913.

"Shrub with large flowers and yellow fruits of the size of a gooseberry, and with strongly pronounced taste, between sweet and sour. Known only in the valley of Diquis, and the name given it by Wercklé does not appear very appropriate." (*Pittier, Las Plantas Usuales de Costa Rica, 1908.*)

36536 to 36545.

From Petrograd, Russia. Presented by Mr. Raphael Zon, of the U. S. Forest Service, who secured them from Mr. W. A. Dubiansky, Imperial Botanic Garden, Petrograd. Received October 25, 1913.

36536 to 36540. CALLIGONUM spp.**36536. CALLIGONUM ARBORESCENS Litw.**

"Trans-Caspian Kara Kum."

Distribution.—A shrub about 10 feet high, found in the region of southwestern Asia east of the Caspian Sea. This species and the one following have proved excellent sand binders in Turkestan. (See S. P. I. Nos. 9583 and 9594.)

36537. CALLIGONUM CAPUT-MEDUSAE RUBICUNDUM Herder.

"Trans-Caspian Kara Kum."

36538. CALLIGONUM CAPUT-MEDUSAE Schrenk.

"Trans-Caspian Kara Kum."

36539. CALLIGONUM ERIPODUM Bunge.

"Trans-Caspian Kara Kum."

36540. CALLIGONUM SETOSUM Litw.

"Trans-Caspian Kara Kum."

36541. ELYMUS sp.

"A good fodder grass which stands a great deal of alkali in the soil, but requires some moisture." (*Zon.*)

36542 to 36544. ELAEAGNUS ANGUSTIFOLIA L. Oleaster.

36542. "Forma *spontanea* Litw. Stands alkali and sandy soil well." (*Zon.*)

36543. "Forma *sphaerocarpa* Litw. Buchar. It is not afraid of frosts; grows equally well on very alkaline and shifting sands. The fruit is less palatable than that of *E. angustifolia* forma *culta* or *E. angustifolia* *spontanea*." (*Zon.*)

36544. "Forma *culta* Litw. Trans-Caspian prairie, Buchar. In garden on sandy soils of the valley of the River Amu-Darya. Fairly palatable edible fruit." (*Zon.*)

36545. AELUROPUS LITTORALIS (Gouan) Parl.

"A splendid grass for sands. It yields hay of high quality; is not afraid of very heavy frosts." (*Zon.*)

36546 to 36548. AVENA SATIVA L. Oat.

From Petrograd, Russia. Presented by Mr. Basil Benzin, Department of Agriculture. Received February 12, 1913.

36546 to 36548—Continued.

36546. "(No. 20.) Local oats, unirrigated, from Vernoe district, Semiryetchensk Province. Crop 1912." (*Benzin.*)

"A commercial sample of a small yellow oat, probably of the Sixty-Day type (C. I. No. 750)." (*C. W. Warburton.*)

36547. "(No. 111.) Oats, from Pishpek district, Semiryetchensk Province. Crop 1912." (*Benzin.*)

"An ordinary commercial sample. Grain of the Sixty-Day type, but lighter in color (C. I. No. 716)." (*C. W. Warburton.*)

36548. "(No. 114.) Swedish Select oats, irrigated, from Tashkend district, Syr-Darya Province. Crop 1912." (*Benzin.*)

"Typical of the variety (C. I. No. 717)." (*C. W. Warburton.*)

36549. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Guar bean.

From Whittier, Cal. Presented by Mr. R. S. Woglum, of the Department of Agriculture. Received October 29, 1913.

"During the summer of 1911 I collected a few seeds of the Gawarfulli bean at Nagpur, Central Provinces, India. This seed was planted this spring in our garden here in Whittier and we secured about 30 plants." (*Woglum.*)

36550. PAHUDIA RHOMBOIDEA (Blanco) Prain. Tindalo.

From Lamac, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamac Experiment Station. Received November 1, 1913.

"A large forest tree, attaining a height of 25 meters. The tindalo is one of our most valuable timber trees and is not found outside of the Philippines. It would unquestionably succeed well in Porto Rico and Panama, but is too tender for Florida." (*Wester.*)

"The tindalo is a tree reaching a height of 25 to 30 meters [80 to 90 feet] and a diameter of 60 to 80 cm. [24 to 32 inches], occasionally up to 120 cm. [4 feet]. It is usually without buttresses and has a somewhat regular bole 12 to 15 meters [37 to 46 feet] in length. The crown, one-half the height of the tree, is broad spreading, base shaped, semiopen, and partly deciduous during the dry season. The tindalo has a wide distribution throughout the islands, but is not abundant. It is found scattered usually on dry, shallow, or rocky soil on the low ridges and hills along the coast. Less frequently it is scattered in the edges of the dipterocarp forests. The bark is about 10 mm. [two-fifths of an inch] in thickness, creamy yellow in color, and has an uneven surface, due to the saucerlike depressions made by the shedding of the outer layer. It is covered with numerous corky pustules, and sheds in scroll-shaped patterns. The inner bark is brownish yellow in color. The leaves are alternate, simple, compound, with three [sometimes four] pairs of leaflets. These are smooth with white bloom beneath, from $3\frac{1}{2}$ to 10 cm. [$1\frac{1}{2}$ to 4 inches] long and from 3 to 5 cm. [1 to 2 inches] wide. The sapwood is white to creamy brown; the heartwood is yellowish red, becoming very dark with age. It is heavy, hard, durable, not difficult to work, has a fine, usually straight grain, takes a beautiful finish, and is almost free of the defect of warping. Tindalo has the following uses: Fine furniture, cabinet making, fine interior finish (doors, floors, stairways, panels, etc.), railway ties, shipbuilding, and general construction purposes." (*Whitford, Principal Forest Trees of the Philippines, p. 39.*)

36551 to 36560. MEDICAGO SATIVA L.**Alfalfa.**

From Poona, India. Presented by Rao Sahib G. K. Kelkar, Extra Deputy Director of Agriculture. Received November 3, 1913.

Description by Mr. Gammie, Imperial Cotton Specialist, taken from Mr. Forster Main's letter dated April 4, 1913.

- "From botanical examination it seems that the specimens do not show practically any appreciable difference, the only slight differences which were noticed being the more or less hairy nature of the leaves, the prominent or obscure toothing of their margins, the greater or less emargination of their tips and the smaller or larger size of the same."

36551. "(No. 1.) Grown at Ganeshkhind Garden from seed obtained from Manavadar. Has small obovate-cuneate leaflets three-fourths to 1 inch long by one-fifth to one-fourth inch broad, hairy on the under surface, midrib, and nerves, with the apex emarginate and retuse."

36552. "(No. 2.) Grown at Ganeshkhind Garden from seed obtained from Rajkot. Has less hairy leaflets with less prominent teeth."

36553. "(No. 3.) Grown at Ganeshkhind Garden from seed obtained from Palitana No. 1. Teeth of leaflets more prominent."

36554. "(No. 4.) Grown at Ganeshkhind Garden from seed obtained from Palitana No. 2. More or less like Manavadar No. 1. (S. P. I. No. 36551.)"

36555. "(No. 5.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger. Less hairy, large leaflets $1\frac{1}{2}$ to $1\frac{1}{4}$ inches long by one-fourth to one-half inch, oblanceolate, less emarginate, teeth rather obscure."

36556. "(No. 6.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Umralla). Teeth of leaflets prominent, leaflets small, hairy, less emarginate. The flowers showed no difference."

36557. "(No. 7.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Godhra). Teeth of leaflets prominent, leaflets small, hairy, less emarginate."

36558. "(No. 8.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Botad). Leaflets small, teeth prominent."

36559. "(No. 9.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Kundla). Leaflets small, teeth prominent."

36560. "(No. 10.) From Junagar. A new sample for your trial."

36561. ROLLINIA ORTHOPETALA A. DC.

Seeds from S. P. I. No. 22512 grown at the Plant Introduction Field Station, Miami, Fla., in 1912. Received November 6, 1913.

"From its behavior at Miami this tree promises to be a success in south Florida. It should be tried on the edge of the Everglades. Mrs. Fairchild and I both found the fruit delicious." (*David Fairchild.*)

See S. P. I. No. 27579 for previous introduction and description and Plate I for an illustration of a fruiting branch of this tree.

36562. ANNONA CHERIMOLA × SQUAMOSA.

Grown at the Plant Introduction Field Station, Miami, Fla., from Garden No. 1803, tree B. Received November 3, 1913.

"A fruit resulting from the cross of S. P. I. No. 26731, *Annona cherimola*, ♀, and S. P. I. No. 26741, *Annona squamosa*, ♂. I made this cross in May, 1910. The work was done between five and six o'clock in the evening, as you know *squamosa* pollen is ripe at that time. The petals of the *cherimola* were forced open and the pollen dropped in." (*Simmonds.*)

36563 and 36564.

From Chang Chun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received October 25, 1913.

36563. *LESPEDEZA* sp.

36564. *MELILOTUS ALBA* Desr.

36565 and 36566. LINUM USITATISSIMUM L.

Flax.

From Bombay, Poona, India. Presented by Mr. William Burns, economic botanist. Received November 1, 1913.

36565. "From Punjab. Flax which is grown after the rice crop." (*Burns.*)

36566. "From the United Provinces, Jalaun district. Grown at the Orai farm. Flax which is grown after the rice crop." (*Burns.*)

36567 and 36568.

From Santa Cruz, Argentina. Presented by Mr. H. W. Reynard. Received November 7, 1913.

36567. *FABIANA IMBRICATA* Ruiz and Pavon. (?)

"*Matta verde*. Grows on mud flats and river valleys; is of a softer nature than the *Matta negra* and does not attain quite such a height, about 2 feet to 2 feet 6 inches." (*Reynard.*)

"An evergreen shrub of heathlike appearance, ultimately reaching 6 to 8 feet in diameter and in height; erect in habit when young, ultimately spreading. Branches downy, long, and tapered, densely furnished with short, slender twigs, from one-half to 2 inches long. These twigs are themselves completely covered with tiny, pointed, 3-angled leaves, one-twelfth inch long, and, in June, are each terminated by a solitary pure white flower. Corolla five-eighths to three-fourths inch long, tubular, but narrowing towards the base, with the rounded shallow lobes at the apex reflexed; calyx bell shaped, one-twelfth inch long.

"Native of Chile; introduced in 1838. This beautiful shrub is unfortunately rather tender, and at Kew, although it occasionally survives the winter, has never been a success in the open. In milder and more upland localities it is a shrub of great beauty, flowering freely and transforming each branch into a slender raceme of blossom. It likes a light soil, and can be increased easily by late summer cuttings in gentle heat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 549-550.*)

36568. *BERBERIS* sp.

Barberry.

"*Califata*. A prickly plant, very hardy, attains a height of about 5 feet, has a little black berry which is eaten by the natives of the country; grows in corners sheltered from the wind in little clumps of from 5 to 15 bushes, but occasionally one sees a bush standing alone on the high pampas." (*Reynard.*)

36569 and 36570.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 7, 1913.

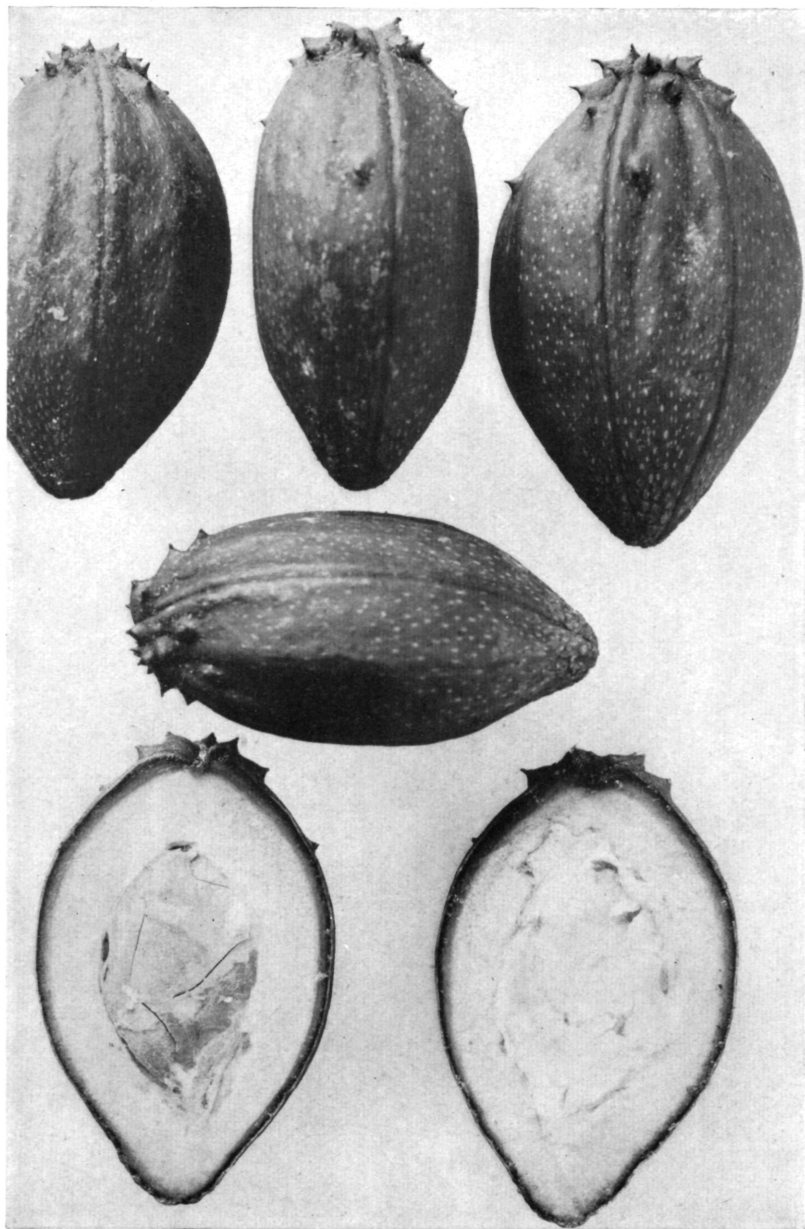
36569. *EUONYMUS* sp.

"(No. 1889a. Hsiao wu tai shan, Chihli Province, China. August 27, 1913.) A very small *Eunonymus*, somewhat like *E. radicans*, but of upright growth. Rare, found in a stony bank. Of value as a small lining shrub along pathways and shrubby beds." (*Meyer.*)



FRUITING BRANCH OF THE ROLLINIA (*ROLLINIA ORTHOPETALA* A. DC.). (S. P. I. No. 36561.)

A Brazilian fruit closely related to the cherimoya and sugar-apple. It is perhaps a more showy fruit than either, the carpels being tinged with orange, and certainly deserves the praise given it by Baker, Fischer, and others. Natural-size photograph (P10149FS), by E. L. Crandall, of fruit borne at the Miami Field Station by S. P. I. No. 22512, August 21, 1912.



THE TACACO, A COSTA RICAN VEGETABLE (*POLAKOWSKIA TACACO* PITTIER).

These fruits are borne on a rapidly growing vine resembling other cucurbit vines. They are picked green, boiled in water, and form a favorite addition to vegetable soups, or are pickled. It is a near relative of the chayote (*Chayote edulis*). Natural-size photograph (P6119FS), by E. L. Crandall, of S. P. I. No. 26245, November 19, 1909. (See S. P. I. No. 36592.)

36569 and 36570—Continued.**36570.** LILIUM sp.**Lily.**

“(No. 1033. Hsiao wu tai shan, Chihli Province, China. August 4, 1913.) A lily of vigorous growth, bearing orange-red flowers, which have dark spots on their petals. Cultivated in Tië ling temple. Of use as an ornamental garden perennial for the cooler sections of the United States; can stand considerable shade.” (Meyer.)

36571 and 36572. RUBUS sp.**Blackberry.**

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture, at the request of Mr. Carlos Wercklé. Received December 13, 1913.

36571. “Castille blackberry, famous on account of its extraordinary size and taste.” (Van der Laat.)

36572. “Stone blackberry, famous on account of its extraordinary size and taste.” (Van der Laat.)

36573. BACTRIS UTILIS Benth. and Hook.**Palm.**

From San Jose, Costa Rica. Presented by the Department of Agriculture, San Jose. Received December 16, 1913.

“By far the largest and best variety.”

“Near *Guilielma* (*Bactris*) *speciosa*, from which, however, it is easily distinguished. This species of palm grows in Costa Rica on the eastern slope in the luxuriant primeval forests at an altitude of from 2,500 to 4,000 feet. The mealy fruits, about the size and shape of a large pigeon's egg, have when cooked very much the taste of potatoes, and form in many places one of the principal foods among the Indians. At San Jose and Cartago I saw this fruit piled up in heaps in the market, whither it had been brought for sale by the Indians from Orosi. It is called by the inhabitants *Pechevaye*.” (Oersted, *Videnskabelige Meddelelser*, 1858, p. 46.)

36574. ALEURITES MONTANA (Lour.) Wils. Mu-yu (wood-oil) tree.

From Tak Hing, southern China. Presented by Rev. J. K. Robb, American Reformed Presbyterian Church. Received December 27, 1913.

“Seeds of a tree that is found in this vicinity. The natives tell me that the oil is extracted from the seeds, and even by their crude methods of operation the yield is as much as 25 per cent of the total weight. This seems rather large to me, though I must confess to complete ignorance on the subject.” (Robb.)

36575. GARCINIA MANGOSTANA L.**Mangosteen.**

From Kingston, Jamaica. Presented by the Department of Agriculture. Received November 4, 1913.

36576. SOJA MAX (L.) Piper.**Soy bean.**

(*Glycine hispida* Maxim.)

From Fakumen, Manchuria. Presented by Dr. S. A. Ellerbeck, Mukden Hospital, who secured them from Mr. F. W. S. O'Neill, Fakumen. Received November 1, 1913.

“A bean called *white eyebrow bean*. This is the nearest I can obtain to the bean you mention. It is said that this bean produces plenty of oil. The name seems to arise from the white edge from which the sprouts come.” (O'Neill.)

36577 to 36587. TRITICUM AESTIVUM L.**Wheat.***(Triticum vulgare Vill.)*

From Sydney, New South Wales, Australia. Presented by Mr. G. Valder, at the request of Mr. W. M. Carne, of the Department of Agriculture. Received November 7, 1913.

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| 36577. "Bathurst No. 2." | 36583. "Jonathan." |
| 36578. "Cedar." | 36584. "Wagga No. 19." |
| 36579. "Cleveland." | 36585. "Warren." |
| 36580. "Cowra No. 3." | 36586. "Rymer." |
| 36581. "Genoa." | 36587. "Thew." |
| 36582. "John Brown." | |

36588. BENZOIN sp.

From Chang Ning, Kiangsi, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received October 28, 1913.

"Seeds of a large shrub which grows on the hills here. The berries and leaves are very fragrant and are used by the Chinese as a flavoring for their food." (*Bousfield.*)

36589. CITRUS GRANDIS (L.) Osbeck.**Pomelo.**

Received from Mr. Robert A. Young, of the Bureau of Plant Industry, September 6, 1913.

"Seeds from pomelos estimated to be at least 6 inches in diameter, served on the S. S. *Manchuria* from Hongkong to San Francisco. The fruit was served broken into sections. The flesh was white and sweet, with scarcely any acidity, and was very agreeable to the taste. The texture was rather coarse. The steward said they came from Canton and were called *Canaloni* (?) *melons*." (*Young.*)

36590 to 36592.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received November 11, 1913.

36590 and 36591. LICANIA PLATYPUS (Hemsl.) Fritsch. Sansapote.

36590. "Seeds of the smaller sansapote from the Pacific coast. Large fruit with highly aromatic and sweet flesh; very good." (*Wercklé.*)

36591. "Seeds of the large sansapote from the Atlantic slope, at 500 meters altitude; fruit weighs up to 4 pounds; one of the best fruits, by many people preferred to *Achradelpha* (*Lucuma*) *mammosa*." (*Wercklé.*)

36592. POLAKOWSKIA TACACO Pittier. Tacaco.

"A cucurbitaceous plant, the fruit of which is used as a green vegetable. It is a near relative to the chayote, but the fruit is smaller, fusiform, set with stiff spines at the base, and of quite a distinct taste. It is one of the primitive foods of the native Indians of Costa Rica, where it grows wild in fresh, shady places of the temperate region, and its use as a vegetable has been readily adopted by the Spanish Costa Ricans. Nowadays the plant is at least semicultivated on the central plateau. To grow it, a whole mature fruit is set in a rich, loose leaf mold, with the spiny end up and almost showing at the surface. The vines spread on the ground or on low bushes or supports. The fruits, which are about 2½ inches long and 1½ inches broad, hang from short peduncles and are picked when still green. After taking away the basal spines, they are boiled in water either whole or cut into small pieces, or pickled, or made into preserves. They are also a favorite addition to the native vegetable soups." (*H. Pittier.*)

For previous introductions, see S. P. I. Nos. 26244 and 26245.

For an illustration of the fruit of this cucurbit, see Plate II.

36593 to 36595. COLOCASIA sp.**Dasheen.**

Grown at the Plant Introduction Field Station, Brooksville, Fla.

36593. "A selected strain of the Trinidad dasheen (or taro) in which the flesh, when baked or boiled, is dry and mealy, of good flavor, and creamy white in color. The large corms on exposure to the air for a time after cooking, however, may become slightly grayish in color. (Grown from a single hill selected from S. P. I. No. 15395 in 1911. The crop was tested for its edible qualities in 1912 and again in 1913. In the former year the quality was uniform. In the latter a number of plants produced tubers of quality differing from the above, though the bulk of the crop was uniform. The variation was quite possibly due to the accidental mixing of other tubers before planting.)" (*R. A. Young.*)

36594. "A selected strain of the Trinidad dasheen in which the flesh when cooked is mealy, slightly nutty in flavor, and grayish white in color. (The source of this selection is the same as for S. P. I. No. 36593.)" (*R. A. Young.*)

36595. "A selected strain of the Trinidad dasheen in which the flesh when baked or boiled is creamy white in color, moist, and of fair flavor. The flesh of the corms sometimes becomes slightly grayish a short time after cooking. (The source of this selection is the same as that of S. P. I. Nos. 36593 and 36594.) Mixed with the foregoing were some tubers of S. P. I. No. 36595, in which the flesh of the corms is grayish white, mealy, and slightly nutty when cooked." (*R. A. Young.*)

36596. PANAX QUINQUEFOLIUM L.**Ginseng.**

(*Aralia quinquefolia* Decne. and Planch.)

From Seoul, Chosen (Korea). Presented by Miss Katharine Wambold, through the American consul general. Received November 8, 1913.

"It is very difficult to grow the plants, the Koreans tell me. They start them in small masses of stones. It takes several years to get even small plants. September, I am told, is the proper time to buy seeds. However, it is becoming increasingly difficult to obtain them." (*Wambold.*)

36597. SOLANUM QUITOENSE Lamarck.

From Santander-Quilichao, Colombia. Presented by Mr. D. G. Prado. Received November 7, 1913.

"*Lulo.* A fruit resembling a tomato. The fruit, when ripe, is yellow, has a sour, pleasant taste, and is used to make cooling drinks. It lasts 8 or 10 days after cut, and in the States it may be cultivated with profit to supply the soda fountains with a fruit to make flavoring extracts. I believe it can be grown in Florida, California, and Texas." (*Prado.*)

36598. LAGENARIA VULGARIS Ser.**Gourd.**

From Lagos, Southern Nigeria. Presented by Mr. J. A. de Gage, King's College, Lagos, at the request of Mr. G. Regnard, Port Louis, Mauritius. Received November 7, 1913.

36599. JUGLANS AUSTRALIS Griseb.**Walnut.**

From Buenos Aires, Argentina. Presented by Mr. A. J. Zúbiaur, through Mr. W. F. Wight, of the Bureau of Plant Industry. Received November 10, 1913.

"Seeds secured from some locality in the north of Argentina. This species occurs from Tucuman northward to the Bolivian frontier, and possibly even beyond." (*Wight.*)

36600. LINUM USITATISSIMUM L.**Flax.**

From Bombay, Poona, India. Presented by Mr. William Burns, economic botanist. Received November 13, 1913.

"From Benares, United Provinces." (*Burns.*)

36601. MALUS sp.**Apple.**

From Tsingchowfu, Shantung, China. Presented by Rev. W. H. Hayes. Received November 6, 1913.

"*Lin-kin* apple. A species of crab apple which I found to make an admirable grafting stock. Seeds were secured from a perfectly ripe fruit which was grown in my garden from trees which I had set out for grafting purposes. It is not easy to get seed from the Chinese, as they almost always pull the fruit before it is ripe." (*Hayes.*)

36602. CASIMIROA EDULIS La Llave.**White sapote.**

From Pasadena, Cal. Presented by Mr. Knowles A. Ryerson. Received November 15, 1913.

"*Harvey*. Grown at Sierra Madre, Cal. It is the best variety growing in southern California at the present time. This particular tree is growing at the foot of the mountains in a soil which is pure, coarse, decomposed granite. It never receives irrigation of any description and but scant cultivation, yet bears enormous crops every year. The frost of last January (1913) caught a few of the blossoms only." (*Ryerson.*)

Distribution.—A tree found from the States of Sinaloa and Durango, in Mexico southeastward to Guatemala.

For an illustration of the fruit and leaves of the white sapote, see Plate III.

36603 to 36605.

From Honolulu, Hawaii. Presented by Mr. Chester J. Hunn, assistant horticulturist, Hawaii Agricultural Experiment Station. Received November 17, 1913.

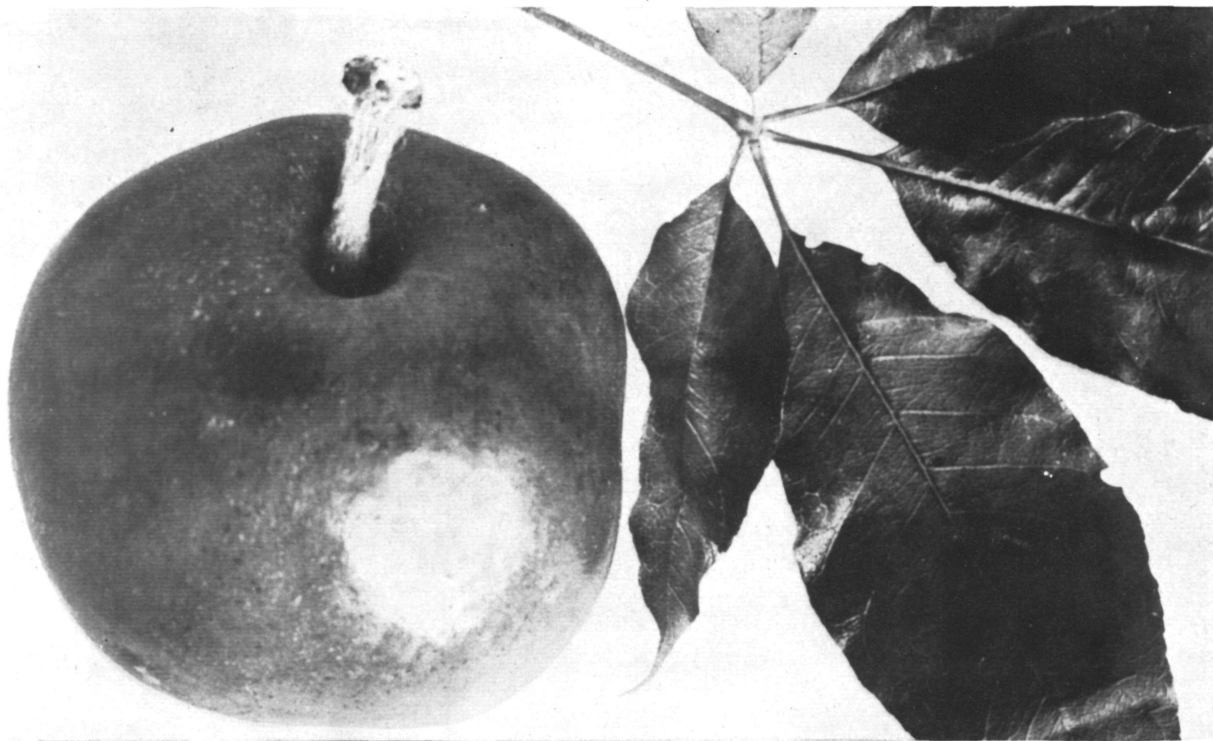
36603. PERSEA AMERICANA Miller.**Avocado.**

(*P. gratissima* Gaertn. f.)

(No. 149. Hawaii Agricultural Experiment Station.) "About 20 years ago Admiral Beardsley, leaving Guatemala for Hawaii, carried with him a number of avocados for consumption on the way. He saved two seeds, wrapping them in cotton-wool and packing them in ice. Arriving in Honolulu, he gave one seed to Judge Wiedeman and the other to Mrs. E. K. Wilder. The former was planted at 1402 Punahou Street, now occupied by the McDonald, and although both seeds grew, the *McDonald* is far superior in quality and blooms earlier.

"Form roundish to spherical; size medium to medium large; cavity small, shallow, and flaring; stem somewhat slender and very long, varying from 6 inches to 15 inches in length; surface undulating, very hard, coriaceous, and markedly pitted; color dark olive green to purple with small, very abundant, irregular-shaped yellowish dots; apex a mere dot, slightly depressed; skin very thick and woody, separating freely from the pulp; flesh yellow in color, running into green at the skin, fine grained, oily, and somewhat buttery, 75 per cent of fruit; seed fairly large, roundish, conical, just a trifle loose in the cavity; flavor rich and nutty. Season July to January.

"The tree is quite vigorous, but tends to grow upward rather than to branch out, possibly due to confinement. This 'pear' is especially noteworthy, since it will keep for a long time after being removed from the tree. Mr. G. P. Wilder reports that he has kept the fruit for 2½ weeks after removal from the tree. The tree carried fruit over through the blossoming period of the following season. Height 40 feet, spread 20 feet.

FRUIT AND LEAVES OF THE WHITE SAPOTE (*CASIMIROA EDULIS* LA LLAVE).

Many people become fond of the characteristic bitter aftertaste of this otherwise very sweet fruit. The tree is a vigorous grower and quite frost resistant and deserves to be better known in Florida and California. Natural-size photograph (P7177FS), by E. L. Crandall, of fruit from Miami, Fla., July, 1910. See S. P. I. No. 36602 for a description of the Harvey variety.



THE ROSA MANGO OF BAHIA, BRAZIL. (S. P. I. Nos. 36688 AND 36841.)

This is one of the commonest named varieties in Brazil. It is of a very striking rich rose-red color, has a medium-sized stone, and is said to be of good quality. It reproduces itself from seed, ripens in December, and appears to be a free fruiter. Natural-size photograph (P15389FS), by Dorsett, Shamel, and Popenoe, Bahia, Brazil, December 15, 1913.

36603 to 36605—Continued.

"Valuable as a late avocado. Its woody skin, which is really a shell, is in its favor for shipping." (*Higgins, Hunn, and Holt, Bulletin No. 25, Hawaii Agricultural Experiment Station, The Avocado in Hawaii, p. 43.*)

Cuttings.

36604. PERSEA AMERICANA Miller.**Avocado.**

(No. 1035. Hawaii Agricultural Experiment Station.) "The nutmeg avocado. Fruit from the original [McDonald] avocado tree of the Guatemala or 'hard-shelled' type was collected in December, 1907. A seedling grown from this seed was placed in the orchard on March 17, 1908. This tree came into bearing in December, 1911, four years from seed.

"Form roundish to spherical; size medium; cavity small, shallow, and flaring; stem short and inclined to be thick; surface undulating, very hard; coriaceous and markedly pitted; color greenish purple to black, with very abundant, irregular-shaped yellowish dots; apex a mere dot, slightly depressed; skin very thick and woody, separating fairly well from the pulp; flesh yellow in color, running into green at the skin, fine-grained, a trifle juicy, oily, and somewhat buttery, 68 per cent of the fruit; seed large, roundish, flattened at the base, fitting tightly in the cavity; flavor rich and nutty. Season late. This tree is quite vigorous and is pyramidal in shape. Height 15 feet, spread 8 feet." (*Hunn, in Annual Report of the Hawaii Agricultural Experiment Station, 1912, p. 38.*)

Cuttings.

36605. CARICA PAPAYA L.**Papaya.**

"No. 2762. A type of papaya which bears two forms of fruit, round and oval. Mr. Higgins, in the papaya bulletin, calls these two types the *pentandra* and *elongata*." (*Extract from C. J. Hunn's letter dated December 4, 1913.*)

"The fruit of this type which I tested was of the round form and, though yellow and fully ripe, was so firm that it could scarcely be dented with the fingers. The flesh was rather thin but of very good quality." (*R. A. Young.*)

36606. PLEIOGYNIUM SOLANDRI (Benth.) Engler.

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, director, Department of Agriculture and Stock. Received November 13, 1913.

"These seeds are from a tree growing here which has not fruited before for years." (*Bailey.*)

"A moderate-sized tree, the trunk occasionally acquiring a very great thickness. Timber soft when cut, though it afterwards becomes hard and tough. Diameter 24 to 36 inches, height 40 to 60 feet." (*Maiden, Useful Native Plants of Australia, p. 599.*)

36607. PRUNUS sp.**Plum.**

From Siberia. Presented by Mr. Ustin Gudjakoff, at the request of Mr. Frank N. Meyer. Received at the Plant Introduction Field Station, Chico, Cal., November 8, 1913.

"Yellow Ussurian plum, very hardy, and its fruits possess a fine characteristic aroma. Could be used in hybridization work to create perfectly hardy plums for cold regions." (*Extract from F. N. Meyer's letter, February 4, 1913.*)

36608. ALEURITES FORDII Hemsley.**Tung (wood-oil) tree.**

From China. Presented by Mr. J. L. Young, Chinese Agricultural Commissioner, Chicago, Ill. Received November 17, 1913.

"These nuts were gathered from the best oil-producing district in Szechwan Province. The trees are quite large, sometimes attaining a height of approximately 30 or more feet and a diameter of from 15 to 20 inches. The branches are spreading, the leaves are rather large, smooth, and more or less heart shaped. The tree thrives in many parts of China, but does best in the upper Yangtze Valley, and in some portions of the southern part of the country. The tree grew wild a few years back, when attempts were made to cultivate it. When cultivated, the kernels are planted in garden beds something like the nurseries in this country, and when the young plants become a foot and a half high, they are transplanted into a favorable location and soil about 20 feet apart each way, and the soil is kept well stirred between them until the trees come into bearing. Under favorable conditions the tree begins to bear at about three years, but in ordinary cases about four years are necessary to bring fruit." (*Young.*)

36609. *RUBUS* sp.

Raspberry.

From New York. Presented by Dr. Ira Ulman. Received November 18, 1913.

"This plant resulted from a series of crosses of every sort of promising berry, both of European and domestic variety, I could obtain from abroad, some 212 (if my memory serves me rightly), the remarkable feature of which is that in flavor it partakes of the *Rubus idaeus* quality, in growth characteristics totally unlike any sort I know of. The canes in spring grow 3 to 4 feet and come into full fruit June 15, which of itself is an unusual feature, on laterals quite like other sorts. There is a very heavy crop till August, then these canes begin to wither; meanwhile, terminal buds start, as do new canes. These grow up straight 6 feet or more, and now on the terminal of the cane flowers from 50 to 125 in number appear, and from this on to frost these canes are covered with buds, blossoms, and unripe fruit. Frost finds them covered as above described, and literally thousands are frozen. The plants sucker so freely that I have counted 50 to one plant." (*Ulman.*)

36610 to 36616.

From Dodoma, German East Africa. Presented by Mr. W. Sperling, Kaiserliche Bezirksamtman. Received November 13, 1913.

36610 to 36615. *HOLCUS SORGHUM* L.

Sorghum.

(*Sorghum vulgare* Pers.)

36610. "*Utwasimba*. Stems without sugar; grain suitable for making native beer and meal." (*Sperling.*)

"(C. I. 550.) Apparently a pink kafir with a rather slender 8-inch head, small pink seeds, and short black glumes." (*C. R. Ball.*)

36611. "*Ganvairi*. Stems give sugar; grain mostly used for native beer." (*Sperling.*)

"(C. I. 551.) A rather loose 10-inch head similar to *Planter* sorgo, but with medium-large, somewhat flattened white seeds and short brown glumes." (*C. R. Ball.*)

36612. "*Ndagumo*. Stems contain sugar; grain used in making meal and beer. Can also be eaten in a raw condition." (*Sperling.*)

"(C. I. 551.) A very compact oval-oblong pendent head with small yellowish-white seeds and short brownish-to-black glumes." (*C. R. Ball.*)

36613. "*Lugugu*. Edible stems; grain makes very good meal." (*Sperling.*)

"(C. I. 553.) Variety *roxburghii*. The typical lax panicle with open, yellow glumes and small yellowish white oval seeds." (*C. R. Ball.*)

36610 to 36616—Continued.

36614. "*Chiganzacha-Uwana*. Stems without sugar; grain gives good meal and beer." (*Sperling*.)

"(C. I. 554.) Variety *roxburghii*. Typical lax panicle with black, open glumes and large white seeds." (*C. R. Ball*.)

36615. "*Utwewampela*. Sugar-containing stems; grain used for flour and beer manufacture." (*Sperling*.)

36616. *Pennisetum glaucum* (L.) R. Br.
(*P. typhoides* Rich.)

Pearl millet.

36617. ACTINIDIA ARGUTA (S. and Z.) Planch.

From Fusan, Chosen (Korea). Presented by Mr. George H. Winn. Received November 14, 1913.

"A vine which bears very delicious fruits, and we enjoy sauce or preserves made of it very much. It closely resembles the guava of southern California in taste and consistency." (*Winn*.)

36618 to 36621. EUCALYPTUS spp.

Received from the Forest Service, Washington, D. C., November 19, 1913.

36618 and 36619. *Eucalyptus crebra* Mueller.

Iron-bark.

36618. From Los Angeles, Cal. "This iron-bark is usually a slender tree of pleasing aspect, growing about 100 feet high and 2 to 3 feet in diameter. The trunk is commonly straight and even in size. According to Maiden, Sir William Macarthur pronounced it 'the most picturesque of the different species of eucalypts called iron-bark.' The bark, like that of other iron-barks, is rough and persistent. It is harder, darker, and more deeply furrowed than the bark of either *Eucalyptus paniculata* or *Eucalyptus siderophloia*, approaching closely to *Eucalyptus sideroxylon* in these respects. The wood is reddish, with inlocked fibers. The branchlets are slender and drooping, presenting with the foliage a pleasing appearance. The leaves are narrow, equally green on the two surfaces, and quite thin; veins and oil dots not conspicuous. The flowers are very small, in clusters of 3 to 7, usually occurring in panicles. The seed cases are very small, goblet shaped or cup shaped, with minute valves. The narrow-leaved iron-bark endures a greater variety of climatic conditions than do the other iron-barks. It is the only one of the group that will endure the climate of the dry, hot interior valleys of the Southwest. At Fresno, Cal., it grows vigorously, and young trees have grown well at the experiment station farm near Phoenix, Ariz. It endures minimum temperatures of 18° to 20° F. and maximum temperatures of 110° to 118°. It is said to be content with poor soil. Judging by experience with the species thus far, it ought to grow in most valley and hillside situations in the Southwest. On account of the wood being so hard, tough, and elastic, the timber is useful for a great variety of purposes. It is one of the highly valued timber trees of Australia. The wood is durable under ground, and is consequently much used for posts, railway ties, and piles. It is also useful for bridge material, for wagon making, and for a great variety of technic purposes." (*McClatchie, Bureau of Forestry Bulletin No. 35, Eucalypts Cultivated in the United States, 1902, p. 59.*)

36619. From Australia. Received August, 1910. The same species as S. P. I. No. 36618, but the seed received direct from Australia and not from California.

36618 to 36621—Continued.**36620. EUCALYPTUS GUNNII** Hook. f.

From Australia. Received August, 1910. "The tree is usually not a tall one, but in some situations in Australia it is said to rise to a height of 250 feet. No trees growing in the Southwest, however, give promise of attaining a great height, though some of them are already 60 feet high. The trees are sometimes crooked and irregular in growth. In alpine regions they are said to be mere shrubs. The bark of the trunk is usually rough and brownish, and is continually flaking off, leaving the outer part smooth. The branches are usually smoother. The foliage is denser and darker than that of many eucalypts, frequently being confined to the ends of the branches, however. The leaves of the young trees are roundish, and opposite on the stem, and those of the adult tree are scattered and lance shaped. They are usually shiny and more or less stiff. The flowers are of medium size and the seed cases usually nearly top shaped. This species grows well near the coast and for some distance inland. It is a very hardy species, and, since in Australia it grows to an elevation of 4,000 to 5,000 feet, it ought to succeed in elevated regions of the Southwest. It endures fairly well the summer heat of the interior valleys, and during winter grows thriftily, even though the temperature fall to 20° F. each night. The tree does not furnish an especially useful timber. When it grows straight it is used by artisans for many purposes, and it also makes a fair fuel. It is a very promising species as a forest cover for mountain situations not subject to high summer temperatures. The sap of the alpine form of the tree is said to be used by the aborigines of Australia for making a kind of cider." (*McClatchie, Bureau of Forestry Bulletin No. 35, p. 64.*)

36621. EUCALYPTUS STUARTIANA Mueller.

From Australia. "The trees of this species never attain a very great size, but they make a comparatively rapid growth during the first 10 years, in some cases reaching a trunk diameter of 1 foot and a height of 30 to 40 feet during that period. The tree usually grows quite erect, with a somewhat stocky appearance. The bark of the trunk and main branches is rough and more or less fibrous. It is of a grayish-brown color outside and is salmon colored next the wood. The leaves of the young seedlings and of young suckers are opposite on the stem, and roundish or lance shaped, usually having a distinct bloom on the surface. The later leaves are scattered, lance shaped, or sickle shaped, shiny, and equally dark green on the two surfaces. When crushed they give forth a pleasant odor, somewhat resembling that of apples. The flowers are of medium size, usually in compact clusters of three to eight. The deciduous covering of the flower buds is cone shaped. The seed cases are rather small, and are commonly nearly top shaped. The species thrives at and near the coast, but does not do well in the dry, hot valleys of the interior. It endures minimum temperatures of 10° to 18° F., and it therefore may be planted in higher latitudes and at greater elevations than most species. Upon account of its resistance to frost, this eucalypt is useful for a forest cover, for wind-breaks, and for shade in ravines and on fairly moist hillsides and mountains where, on account of too heavy winter frosts, other species would not thrive. The tree furnishes a timber that is hard, but, not being straight grained, is somewhat difficult to split. It is useful for fence posts and for fuel. According to Baron von Mueller, it is employed to some extent for furniture manufacture in Australia." (*McClatchie, Bureau Forestry Bulletin No. 35, p. 81.*)

36622. TRITICUM AESTIVUM L.**Wheat.***(T. vulgare Vill.)*

From Bogliasco, Italy. Presented by Dr. F. Franceschi. Received November 17, 1913.

"This is *Gentile rosso* (pale red) wheat. Among the varieties of grain cultivated most extensively in Tuscany the one named *Gentile rosso* stands out as typical. This seems to correspond to the *Triticum hybernium aristis carens spica*, or red grained, a variety of the broad species founded by Linnæus. The name *Gentile rosso* is not general in Tuscany, but this grain is known in various regions under various names, which causes confusion frequently. It is also called '*red calbigia*,' '*Sicilian calbigia*,' '*German calbigia*,' etc. These names refer in all cases to a grain having the following characteristics: With long spike unarmed or furnished with short rudimental remains [of awns], especially toward the top of the spike; with glumes slightly reddish; with medium-sized grains, lengthened, with deep median indentation, and brownish red integument (clear tobacco color); with straw rather large, robust, whitish. The *Gentile rosso* has medium development, good stooling, earliness of maturity, and all the good characters of high productivity." (*Translated from Grano da Seme Gentile Rosso, Amministrazione A. e M. di Frassineto, p. 5.*)

36623. PERSEA BORBONIA (L.) Spreng.*(P. carolinensis Nees.)*

From New Orleans, La. Procured through Mr. Sam Marshall, superintendent, Audubon Park. Received November 7, 1913.

"A large tree with bark broken into flat ridges; leaf blades elliptic-oblong, 5 to 15 cm. long, often acuminate at both ends, bright green and lustrous above, glaucescent and finely reticulated beneath; sepals ascending, the inner ovate, 2 to 3 times longer than the outer, acutish; fruits obovoid or globose-obovoid, 1 to 1.5 cm. long, dark blue or nearly black, lustrous." (*Small, Flora of the Southeastern United States.*)

To be grown for hybridization purposes and for possible stocks for the avocado. Its slow growth may dwarf the avocado and its hardness make it of value at the northern limit of avocado growing. (*Fairchild.*)

36624 and 36625.

From Brazil. Presented by Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, who received them from Mr. Murdo McKenzie, Sao Paulo, Brazil. Received November 19, 1913.

36624. SORGHASTRUM STIPOIDES (H. B. K.) Nash.**Jaragua grass.***(Chrysopogon avenaceus Benth.)*

"Makes a big stand of hay and is of succulent growth." (*Melvin.*)

For previous introduction, see S. P. I. No. 34699.

36625. MELINIS MINUTIFLORA Beauv.**Molasses grass.**

"It does not grow upright but more like a vine." (*Melvin.*)

For previous introduction, see S. P. I. No. 36051.

36626. BERBERIS HETEROPHYLLA Jussieu.**Barberry.**

From Chubut, Argentina. Collected by Mr. J. R. Pemberton, Buenos Aires, Argentina. Received November 17, 1913.

"An edible species of *Berberis*, occurring everywhere in the foothills of the Cordilleras. These seeds were collected at a latitude of 43° S. The fruits are blue in color and are about three-eighths of an inch in diameter. They are of sweet flavor, resembling Muscat grapes, and the juice is so blue that it stains the mouth like huckle-

berries. Its local name is *califata*, and Mr. Pemberton believes it will make an excellent hedge plant, growing about 4 feet high. It is extremely productive, and Mr. Pemberton has often sat down near bushes of these *califatas* and made a meal of these blue berries. This species should thrive in the Puget Sound region and along the coast of California, and possibly in the South Atlantic coast region. It should be tested also as far north as Philadelphia." (*Fairchild.*)

Distribution.—A low shrub found in southern Chile and southward to the Straits of Magellan.

36627. LILIUM sp.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University.
Received November 18, 1913.

"*Pah Woh.* The leaves have a thin skin over them; this is peeled off and the fleshy part is cooked in water. It should be planted in light soil and carefully cultivated. It, like the *San Yah* [S. P. I. No. 36629], is considered as very healthful, and the two are often sold together." (*Gee.*)

Bulbs.

36628. CARICA PAPAYA L.

Papaya.

From Colombo, Ceylon. Presented by the American consul, Colombo. Received November 28, 1913.

36629. DIOSCOREA SATIVA L.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University.
Received November 18, 1913.

"*San Yah* [*Shan yao*]. This is grown in light clay soil and is used much as the sweet potato. It is used a great deal as food in the fall and is thought to have very decidedly beneficial effects upon one's health. It may also be used in soups with meat." (*Gee.*)

36630. LINUM USITATISSIMUM L.

Flax.

From Geneva, Idaho. Procured from Mr. F. W. Boehme. Received November 20, 1913.

A variety adapted to high altitudes. Procured for experimental purposes by the Office of Cereal Investigations.

36631. DIOSPYROS KAKI L. f.

Persimmon.

From Washington, D. C. Received, through Mr. S. A. Jones, from a tree growing on the grounds of Mr. Theodore Barnes, November 25, 1913.

"This tree is about 7 years of age and passed through a temperature of 14° below zero in 1911 with but slight injury." (*Peter Bisset.*)

Scions.

36632. ANNONA DIVERSIFOLIA Safford.

Ilama.

From Tlatlaya, District of Sultepec, State of Mexico, Mexico. Presented by Mr. William Brockway. Received November 22, 1913.

"Seeds of the red-fleshed cherimoya. The natives here do not call this species either an anona or cherimoya; they call it *Ilama*." (*Brockway.*)

36633. CARICA PAPAYA L.

Papaya.

From Costa Rica. Presented by Mr. A. M. Hicks, Chicago, Ill. Received November 24, 1913.

"Fruits especially large and fine; as large as three or four ordinary ones." (*Hicks.*)

36634 to 36638.

Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 27, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe, unless otherwise stated.

36634 to 36337. CITRUS spp.**36634. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Tangerine.**

"(No. 27. Bahia, Brazil, November 28, 1913.) Tangerine. Twelve bud sticks of the *laranja cravo*, or tangerine, from select tree No. 5, in Dr. Fortunato da Silva's grove, Cabulla. For trial in California and Florida."

Bud sticks.

36635. CITRUS SINENSIS (L.) Osbeck. Orange.

"(No. 35. Bahia, Brazil, December 4, 1913.) Navel-orange bud sticks from plat 1, tree 8-6, grove of Col. Frederico da Costa, Matatu. One of the older trees, about 15 years of age; height 18 feet; spread 20 feet; circumference of trunk $23\frac{1}{2}$ inches; headed 11 inches from the ground; 4 main branches; dense foliage; dark-green color. There were no variations in the type of fruit observed. Navel very small. Very little mottle-leaf and very little gummosis. Very few and very small dead branches. This tree is one of the best types of navel oranges in the section of the grove in which plat 1 is located. There were 171 June-crop fruits and 8 December crop, making a total of 179. Should be tried in California for an improved type of navel orange."

36636. CITRUS AURANTIUM L. Bitter orange.

"(No. 23. Rio de Janeiro, Brazil, November 3, 1913.) Bud wood of the *laranja da terra*, from Shr. A. G. Fontes' ranch, Banca Velha, near Rio de Janeiro. This variety is most highly esteemed as a stock. The trees grow to large size, are very thorny, and show great vigor of growth. The leaves are distinguished by large winged petioles, an inch across. The fruits at this time are small, about one-half inch in diameter. The farm superintendent at Fontes' ranch says: 'This variety is a very fine stock for *Selecta*, *Pera*, tangerine, and other commercial varieties.' Trees of this variety should be tried in California for seed production for stocks. It should be given a very careful trial in all citrus districts in the United States for stock purposes."

36637. CITRUS SINENSIS (L.) Osbeck. Orange.

"(No. 37. Bahia, Brazil, December 4, 1913.) Navel orange from plat 2, tree 5-1, Col. Frederico da Costa's grove, Matatu. Height of tree 13 feet; spread 16 feet; height of head $11\frac{1}{2}$ inches; number of main branches 3. Foliage dense and dark green. There were 85 June-crop fruits and 250 of the December crop, making a total of 335 fruits, evenly distributed through the tree. Navel very small and mostly rudimentary. Very little mottle-leaf or gum disease. Very little dead wood; small branches only. Tree about 8 years old and in very healthy and vigorous condition. Should be tried in California for an improved type of navel orange."

Bud sticks.

36638. ROSA LAEVIGATA Michx. Rose.

"(No. 25. Rio de Janeiro, Brazil, November 4, 1913.) A climbing shrub, reaching to the tops of large trees in a wild state; its stems armed with hooked spines. Leaves three-foliolate, brilliantly glossy green, and quite smooth; leaflets shortly stalked, oval or ovate, simply toothed, $1\frac{1}{2}$ to 4 inches long, half as wide, of thick, firm texture. Flowers 3 to 6 inches

36634 to 36638—Continued.

across, pure white, fragrant, solitary, and borne on a very bristly stalk; sepals stout, 1 inch or more long, with leafy tips more or less bristly. Fruit red, three-fourths inch wide, somewhat longer, thickly set with bristles one-sixth inch long, the sepals persisting at the top for a long time.

"Native of China, but long naturalized in the southern United States, and first named in 1803 from specimens collected in Georgia by Pursh, the American botanist. How it reached America from China does not appear to be known, but it was cultivated in Georgia in 1780. Afterwards it received a multitude of names, the best known of which was '*sinica*.' Perhaps the most beautiful of all single wild roses when seen at its best, it is, unfortunately, too tender for the open air except in such places as Cornwall. Elsewhere it can only succeed in exceptionally sheltered sunny corners. A cross between this species and some other rose (perhaps a form of *indica*) is called '*Anemone*.' This is hardy on a wall, and bears several large, lovely, blush-colored flowers in a cluster." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 432.*)

36639. HOLCUS SORGHUM L.**Sorghum.**

(*Sorghum vulgare* Pers.)

From Khartum, Egyptian Sudan. Presented by the Director of Agriculture and Forests. Received October 11, 1913.

"*Dura sufa*, which was obtained from the White Nile Province."

36640 to 36642.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received November 22, 1913.

36640. CAYAPONIA sp.

"From Paraguay. With pretty, ornamental fruits." (*Buysman.*)

36641. COFFEA sp.

"From Rhodesia. Can perhaps be tried and crossed with other species." (*Buysman.*)

36642. IPOMOEA sp.

"From Argentina. With large rose flowers. (This species Kew can not trace.)" (*Buysman.*)

36643 to 36652. SOJA MAX (L.) Piper.**Soy bean.**

(*Glycine hispida* Maxim.)

From Newchwang, Manchuria. Presented by Mr. George F. Bickford, vice consul. Received November 24, 1913.

Quoted notes by Mr. Bickford.

36643. "Large black beans, *Ta hei tou*. From Hsin Min-fu."

36644. "Large, round, black bean, *Ta lieh hei*. From near Hsin Min-fu."

36645. "Small black beans, *Hsiao heo tou*. From Hsin Min-fu."

36646. "Green soy beans, *Ching tou*. From Chang Chun, north of Mukden."

36647. "White eyebrow soy bean of the Fakumen meadow land."

36648. "White eyebrow soy bean, *Pei mei*. From Sze Ping Kai, northeast of Mukden."

36649. "Golden yellow soy beans, *Chin hwang tou*. From north of Mukden."

36650. "Yellow soy bean, *Hwang tou*. From Liao River valley."

36643 to 36652—Continued.

36651. "Golden round soy bean, *Chin yuan* or *Chin yuan tou*. From north of Mukden."

36652. "Yellow soy bean, *Yuan tou*. From Kung Chuling, south of Harbin. Round."

36653. SOJA MAX (L.) Piper.**Soy bean.***(Glycine hispida* Max.)

From Peh tuan lin tza, northern Manchuria. Presented by Mr. N. Kristiansen, at the request of Dr. S. A. Ellerbeck, Mukden Hospital. Received November 29, 1913.

"Manchurian bean, from Heilung chiang, northern Manchuria." (*Kristiansen*.)

36654. CITRUS LIMONIA Osbeck.**Lemon.**

From Barberton, Transvaal, South Africa. Procured from Harris & Todd. Received December 3, 1913.

"My brother-in-law spent several years at Barberton, in the Transvaal. He tells me that a neighbor has several wonderful lemon trees, which he calls 'Spanish lemon.' He says that the fruit is large, contains about a pint of juice, and the trees are very prolific, so much so that they break down if not propped. The fruit is almost seedless, with a thin, smooth skin; strongly acid." (*A. D. Shamel*.)

"Your description of the tree and fruit is quite correct (not the pint of juice). We have grown the fruit here 7 inches long and 4 inches through. They come fairly true to seed, but the majority are not so good as the variety kept true by grafting." (*Harris & Todd*.)

Bud sticks.

36655. PENNISETUM GLAUCUM (L.) R. Br.**Pearl millet.***(P. typhoideum* Rich.)

From Nyassaland, Africa. Presented by Mr. T. J. Treffry, assistant agriculturist, Government farm, Port Herald. Received December 3, 1913.

"Pearl millet, grown here; weight per acre about 8 hundredweight; planted in clumps about 3 feet apart each way. It is grown largely as a native food crop in the lower elevations and along the banks of the Zambezi." (*Treffry*.)

36656 to 36658. SOLANUM sp.**Potato.**

From Oruro, Bolivia. Presented by Mr. C. N. Mitchell, through Mr. W. F. Wight, of the Bureau of Plant Industry. Received December 3, 1913.

"Potatoes that have been handed to me by one of the natives here. From the region of Huailla-Marca, in the Province of Carangas, Bolivia, in the department of Oruro. These are not wild potatoes, but a kind which he recommends as suitable for your purposes." (*Mitchell*.)

Tubers.

36656. "(No. 2.) Color brown and shape oblong." (*Mitchell*.)

36657. "(No. 3.) Lead color. Name *Ajahui*." (*Mitchell*.)

36658. (No notes.)

36659. CARICA PAPAYA L.**Papaya.**

From Barberton, Transvaal, South Africa. Procured from Harris & Todd. Received December 3, 1913.

36660. CUCUMIS MELO L.**Muskmelon.**

From Constantinople, Turkey. Presented by Mr. D. A. Davis, general secretary, Young Men's Christian Association. Received December 2, 1913.

"Seeds of a very delicious kind of muskmelon which we have in abundance in the early summer. They are oblong, with a smooth, yellow, very thin rind. The melons are very juicy." (Davis.)

36661. COUTAREA HEXANDRA (Jacq.) K. Schum.

(*C. speciosa* Aubl.)

From Puerto Bertoni, Paraguay. Presented by Mr. Guillermo F. Bertoni, Estacion Agronomica. Received December 3, 1913.

"*Quina de Pernambuco*. A pretty little tree which reaches a height of nearly 5 meters (17 feet) in good soil; in poor soil it attains a height of 2 to 3 meters (6 to 10 feet). As a medicinal plant its properties are similar to the Cinchona, and it is much used in Paraguay and Brazil. Besides its medicinal qualities, it is a pretty, ornamental plant, of good appearance, not very leafy, but with symmetrical branches. It loses its leaves in the winter, and in the spring, when it begins to bud, it is covered with pretty yellow flowers with a sweet perfume. It is originally from the wooded region of Paraguay and Brazil and is found frequently in stony soil on the high banks of rivers and ravines. It is a plant of the warm regions, but it resists cold fairly well. It stands a minimum temperature of 3 to 5° below zero C. (25° F.) perfectly, and it is quite probable that it could resist a lower temperature." (Bertoni.)

36662 to 36675.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., December 15 and 22, 1913.

Quoted notes by Mr. Meyer.

36662. JUGLANS REGIA SINENSIS C. DC.**Walnut.**

"(No. 1890a. Ying tau ko, Chihli Province, China. September 12, 1913.) A large variety of Chinese walnut, coming from an elevated locality, which, however, is much sheltered by mountains. To be tried especially in the lower Rocky Mountain valleys."

36663. JUGLANS REGIA SINENSIS C. DC.**Walnut.**

"(No. 1891a. Peking, China. October 15, 1913.) A large variety of Chinese walnut, coming from the mountains west of Peking. For trial in the lower Rocky Mountain valleys."

36664. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z.**Wild peach.**

(*Prunus davidiana* Franch.)

"(No. 1892a. Peking, China. September, 1913.) About 1,500 pounds of wild-peach stones collected from cultivated trees in various parts of Chihli Province, China. As there is a great deal of variation among these seeds they may be graded according to size, the larger ones to be used as stocks for vigorously growing stone fruits, like peaches, apricots, and certain plums, while the smaller ones can be used as stocks for small, slow-growing stone fruits, as bush berries, sand cherries, dwarf plums, and almonds. A goodly portion of these seeds should also be devoted to testing against various diseases our stone fruits are suffering from, with the object of finding out whether they will be less susceptible to such diseases when grafted on this remarkably healthy wild peach."

36665. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z.**Wild peach.**

(*Prunus davidiana* Franch.)

"(No. 1894a. Peking, China. July 25, 1913.) A very vigorously growing form of wild peach tree found in the well-trampled courtyard of the Chinese

36662 to 36675—Continued.

inn in Peking. Said to be a hybrid. The trunk, 5 feet above the ground, measures 5 feet 6 inches in circumference. Chinese name *Mau tau shu*, meaning 'hairy peach tree.' Not to be used for stock, but for seed-bearing purposes."

36666. *CASTANEA MOLLISSIMA* Blume.

Chestnut.

"(No. 1893a. Peking, China. October 9 to 15, 1913.) About 250 pounds of Chinese chestnuts, said to come from the Pang shan region to the northeast of Peking.

"This North China chestnut has no value as a lumber tree, being of a low-branching open-headed growth, while the tree does not grow tall, specimens over 40 feet in height being rare. It seems, however, much more resistant to the bark-fungus disease than the American chestnut, and it might be utilized in certain hybridization experiments to combine the good qualities of both the American and the Chinese parents into one tree. This chestnut loves a well-drained, decomposed granite soil, preferably at the foot of hills or of mountains; it also seems quite averse to strong winds and thrives best in well-sheltered valleys. In its native localities it is but little cultivated, the peasants being content to plant a few trees here and there along the bases of hills and on sloping fields, and the trees in general look much thriftier when close to rocks and boulders than when seen on fairly level fields. From the nature of the tree and the climate in which it grows one might conclude that sheltered valleys in the foothill section of the Rocky Mountain region will probably suit this chestnut better than any other section in the United States, and some serious attempts should be made to establish it in these regions as a hardy nut-bearing tree."

36667. *ZEА MAYS* L.

Corn.

"(No. 1895a. Peking, China. September 29, 1913.) A variety of flint maize, said to be of dwarf growth and of very early ripening habits, occupying the ground only from 8 to 10 weeks. Chinese name *To kwei boun tze*, meaning 'earliest of all maize.'

36668. *ZEА MAYS* L.

Corn.

"(No. 1896a. Hwai-lai, Chihli Province, China. July 30, 1913.) A dwarf-growing variety of white flint maize, of early ripening habits. Fit for regions with short growing seasons."

36669. *ZEА MAYS* L.

Corn.

"(No. 1897a. Shih-men, Chihli Province, China. August 3, 1913.) An early-ripening variety of yellow-seeded flint maize, said to be of dwarf growth. Fit for regions with short growing seasons."

36670. *HOLCUS SORGHUM* L.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 1898a. Hwai-lai, Chihli Province, China. July 30, 1913.) A variety of sorghum with reddish brown seeds borne in dense heads; growing not higher than 3 to 4 feet. Of value in regions with short growing seasons. Chinese name *Wu ta lang kaoliang*, meaning 'Tom Thumb sorghum.'

36671. *HOLCUS SORGHUM* L.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 1899a. Tan hwa, Chihli Province, China. September 1, 1913.) A dwarf variety of sorghum with large, dense heads and reddish brown seeds. Fit for regions having short growing seasons."

36662 to 36675—Continued.**36672. HOLCUS SORGHUM L.****Sorghum.***(Sorghum vulgare Pers.)*

“(No. 1900a. Tan hwa, Chihli Province, China. September 1, 1913.) A dwarf variety of sorghum with large, dense heads and white grains. Fit for regions having short growing seasons.”

36673. CHAETOCLOA ITALICA (L.) Scribner.**Millet.***(Setaria italica Beauv.)*

“(No. 1901a. Tan hwa, Chihli Province, China. September 1, 1913.) A short-season variety of bird's millet having dense ears. Chinese name *Hsiao mi tze*. Fit for regions having short growing seasons.”

36674. PANICUM MILIACEUM L.**Proso.**

“(No. 1902a. Tan hwa, Chihli Province, China. September 1, 1913.) A variety of proso of low growth, early ripening habits, and big yield. Fit for regions having short growing seasons. Chinese name *Huang mi*.”

36675. AVENA NUDA Hoejer.**Oat.**

“(No. 1903a. Ta shiang yang, Chihli Province, China. August 1, 1913.) A good variety of hull-less oats, much cultivated in the higher mountain regions of northern China. A coarse flour is made from it, which is eaten in the form of noodles, dumplings, and cakes. Chinese name *Yu mei*. Especially worth trying in the intermountain sections of the United States. May be of great value to oatmeal manufacturers.”

36676. PHOENIX DACTYLIFERA L.**Date.**

From Egypt. Brought over by Prof. S. C. Mason, of the Bureau of Plant Industry, who received it as a present from Sheik Abbes Mohammed Ahmed, Elsheikh Issa, Kenh, Egypt, November 1, 1913.

Mosque. “As the Arabic name, rendered ‘The Date by the Land,’ referring to its being a seedling tree growing by the border of a cultivated field, is an awkward one, I prefer to name this the *Mosque* date, as half of the fruit and offshoots of the original tree had been vowed to his mosque by the owner. The fruit is slightly softer than semidry and inclined to be a bit sticky. It is of medium size, yellow, ripening to amber brown, thin skinned, the flesh very rich and sugary, the seed small. I consider that it has no superior as a packing date among all Egyptian varieties.” (*Mason.*)

Offshoot.

36677 and 36678.

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 28, 1913.

36677. COLOCASIA sp.

“(No. 1036. Peking, China. November 3, 1913.) A dry-land taro, or dash-een, cultivated in North China. The Chinese call the large main corms ‘males,’ and these are considered much coarser than the cormlets, which are called ‘females.’ The latter are especially appreciated when served boiled and steamed hot with molten sugar over them. Chinese name *Uto* or *Yu tao*.” (*Meyer.*)

“This variety is similar to those previously received from Japan and North China and is of a quality greatly inferior to some of those from warmer regions.” (*R. A. Young.*)

36678. LILIUM sp.**Lily.**

“(No. 1040. November 3, 1913.) A Chinese lily, said to come from southern China. The scales are eaten boiled in soup, sweetened with honey or sugar, and this is considered a very fine dish. Chinese name *Pai gho*.” (*Meyer.*)

36679. OLEA VERRUCOSA (R. and S.) Link.**Wild olive.**

From Wellington, Cape Province. Presented by Mr. C. W. Mally, entomologist. Department of Agriculture, Cape Town. Cape of Good Hope. Received December 5, 1913.

"These were gathered at Wellington, Cape Province." (*Mally.*)

For previous introduction and description. see S. P. I. No. 9559.

36680 to 36686. HOLCUS SORGHUM L.**Sorghum.**(*Sorghum vulgare* Pers.)

From Victoria, Kamerun. Presented by Dr. Karl Ludwigs, director of the Experiment Station, at the request of the governor. Received December 2, 1913.

Quoted notes by Dr. Ludwigs.

36680. "No. 1. *Wuteguineakorn*. Native name *Mckossie*. Sample from Joko."

36681. "No. 2. *Fullahkorn*. Native name *Bakoa*. Sample from Joko."

36682. "No. 3. *Tikarkorn*. Native name *Mfonghuya*. Sample from Joko."

36683. "No. 4. *Andjiki* or *Teleri*. Sample from Ngaundere."

36684. "No. 5. *Djolomri*. Sample from Ngaundere."

36685. "No. 6. *Daneri*. Sample from Ngaundere."

36686. "No. 7. *Angom*. Sample from Ngaundere."

36687. PERSEA AMERICANA Miller.**Avocado.**(*Persea gratissima* Gaertn. f.)

From Lagas, Mexico. Presented by Mr. Theodore C. Hamm, American consul, Durango, Mexico. These seeds were procured at the suggestion of Hon. Albert S. Burleson, Postmaster General. Received December 6, 1913.

"The fruits of the avocado, or aguacate, as it is locally called, grown in the Lajas district. After some little search and inquiry, aguacates were found which had been brought in from the very district named in the letter of the Agricultural Explorer in Charge [near the Indian village of Lagas in western Mexico. This village is described as being located on a small plateau of 4,000 or 5,000 feet elevation, near the Chico River, about 175 miles southwest of the city of Durango, and something like 100 miles from the coast]. The aguacate grows extensively throughout southern and southwestern Durango, and the fruit is highly prized locally. It is used chiefly in salads and as a substitute for butter. Large quantities are sold in the Durango market at prices ranging from 3 to 6 centavos (1½ to 3 cents, American currency) each." (*Hamm.*)

36688 to 36715.

Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 4 and 27, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36688. MANGIFERA INDICA L.**Mango.**

"(No. 1. Rio de Janeiro, Brazil. October 25, 1913.) Bud sticks of the *Rosa* mango, from the nursery of Eickhoff. Carneiro Leão & C. This variety is said originally to have come from Bahia. The fruit is of good size, in shape very similar to the *Alfonso* of Bombay, the left shoulder more prominent than the right and the apex slightly beaked. The color is a bright golden yellow, with a red cheek. The flesh is said to be so free from fiber that it can be eaten with

36688 to 36715—Continued.

a spoon, and the flavor is said to be excellent. Its season here is December. It bears good crops here, in spite of a fungus which attacks the flower spikes."

See S. P. I. No. 36841 for another introduction and Plate IV for an illustration of the fruit of this mango.

36689. CITRUS SINENSIS (L.) Osbeck.**Orange.**

"(No. 38. Bahia, Brazil. December 4, 1913.) Navel orange from plat 2, tree 6-1, Col. Frederico da Costa's grove, Matatu. Tree 13 feet high, 15 feet spread, trunk 18½ inches in circumference. Foliage dense and dark green. On it were 44 June-crop fruits and 327 of the December crop, making a total of 371 fruits. The fruits are very uniform and show little or no variation in type. Fruits very evenly distributed all through the tree. Navel very small in size. Very little mottle-leaf and very few small dead branches. Tree 8 years old. This tree is a very promising type of navel and should be given a thorough trial in California for an improved type of navel orange. The fruits are the best in quality in all respects of any of this variety yet tested here."

Bud sticks.

36690. MANGIFERA INDICA L.**Mango.**

"(No. 3. Rio de Janeiro, Brazil. October 25, 1913.) Bud sticks of the *Augusta* mango, from the nursery of Eickhoff, Carneiro Leão & C. This variety, like *Carlota*, is not considered as good as *Itamaraca*, though of larger size. Its season is December."

36691. CITRUS SINENSIS (L.) Osbeck.**Orange.**

"(No. 39. Bahia, Brazil. December 4, 1913.) Navel orange, plat 2, tree 11-1, Col. Frederico da Costa's grove, Matatu. Tree 11 feet high; 13 feet spread; circumference of trunk 13¾ inches; headed 16 inches from the ground. Foliage very dense; dark green in color. On it were 50 June fruits and 59 of the December crop, making a total of 109 fruits. In addition, we found many flowers, fruits just set, and very small, medium, and large fruits on this tree. The fruiting habit of this tree seems to tend toward production all the year round. For this reason this type should be tried in California with a view to securing a type which will fruit during a longer period than the Washington navel."

36692. CITRUS SINENSIS (L.) Osbeck.**Orange.**

"(No. 40. Bahia, Brazil. December 4, 1913.) Navel orange from plat 2, tree 8-4, Col. Frederico da Costa's grove, Matatu. Tree 13 feet high, spread 18 feet, circumference of trunk 20½ inches. Foliage very dense and dark green. On it were 262 June-crop fruits and 21 December-crop fruits; the latter, in this case, will probably not ripen until March or April, or even later. The entire crop of this tree could, without exception, be included in the June crop. This very great difference in habit of fruiting from neighboring trees led us to secure bud sticks for propagation, in the hope of securing a type of navel which will fruit in California at a different season from existing types. Very little gum disease or mottle-leaf and very few small dead branches. Tree 8 years old and in very healthy and vigorous condition."

For an illustration showing the manner of growth of the navel-orange tree and the ultimate size which it attains at Bahia, Brazil, see Plate V.

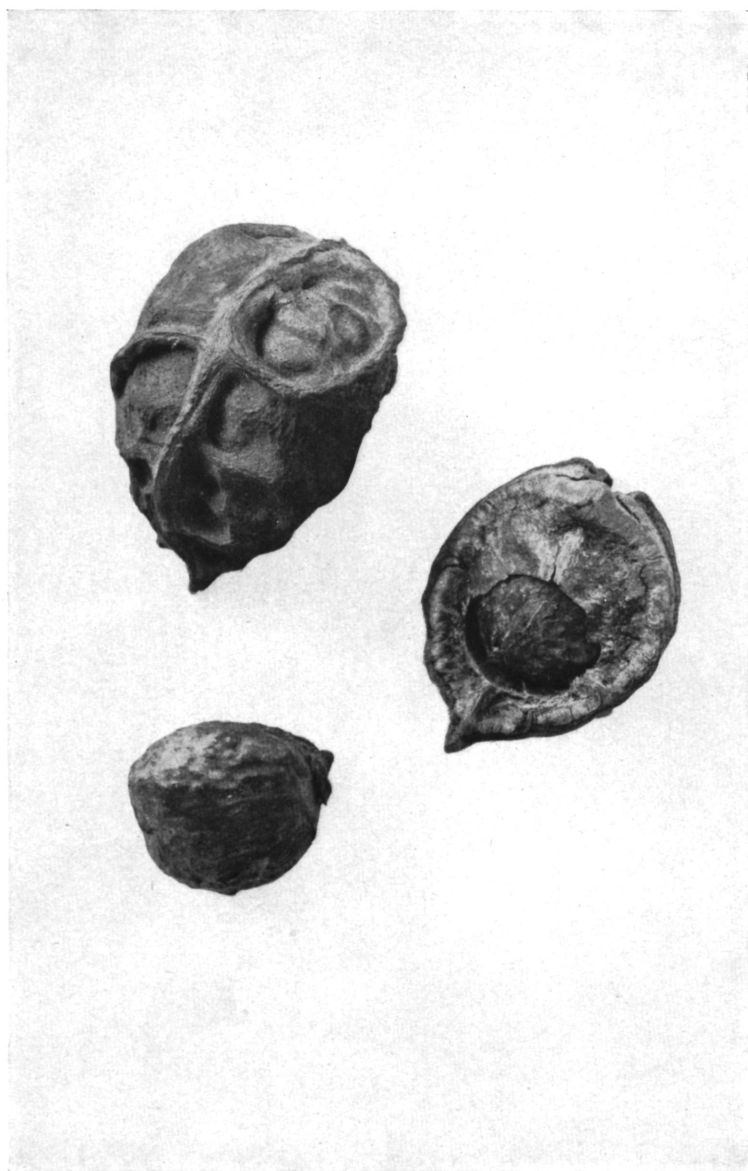
36693. ACROCOMIA SCLEROCARPA Mart.**Palm.**

"(No. 21. Rio de Janeiro, Brazil. November 4, 1913.) Fruits of a Brazilian palm, sold in the market here. The outer shell is removed and the firm, white flesh surrounding the seed is eaten."



AN OLD NAVEL-ORANGE TREE IN AN ORCHARD AT BAHIA, BRAZIL.

This illustration shows the ultimate height and size which navel-orange trees attain in this region. This orchard of Col. Barretto's at Cabulla is probably the oldest in Bahia. It was planted over 40 years ago and is still productive. Mr. A. D. Shamel, of the Brazilian Exploring Expedition, is shown at the right. Photograph (P14501FS), by Dorsett, Shamel, and Popenoe, December 13, 1913. (See S. P. I. No. 36692.



FRUIT OF THE MU-YU, THE SOUTH CHINESE WOOD-OIL TREE (*Aleurites MONTANA* (LOUR.) WILS.). (S. P. I. No. 36897.)

A single seed and portions of a dried fruit, showing the characteristic ridges of the outer shell of the fruit, called by the southern Chinese the Mu-yu. This is a more tropical species than the Tung-yu (wood-oil) tree (*A. fordii*), but its oil is probably quite as valuable. Natural-size photograph (P13746FS), by E. L. Crandall, December, 1913.

36688 to 36715—Continued.**36694. CITRUS AURANTIUM L.****Bitter orange.**

"(No. 13. Rio de Janeiro, Brazil. October 30, 1913.) *Laranja da terra*. Bud sticks from the Catramby ranch. Banca Velha, near Rio de Janeiro. From a large, vigorous, and healthy tree. Should be propagated and fruited for trial as stocks in both California and Florida."

36695. HIBISCUS MUTABILIS L.

"(No. 24a. Bahia, Brazil. November 12, 1913.) Seeds of a beautiful malvaceous shrub found in a garden near Barra, in the outskirts of the city. The plant is 15 or 18 feet high, with large, entire, light-green leaves, resembling those of the abutilon. The flowers are 4 inches in diameter, double; the color a beautiful rose pink. If not already grown in Florida, this plant is well worthy of a trial."

36696. MORUS ALBA L.**Mulberry.**

"(No. 17. Rio de Janeiro, Brazil. November 1, 1913.) Cuttings of a mulberry growing on the property of Shr. José Elias Esteres, Rua Sao Gonçalo, in Nictheroy, across the bay from Rio de Janeiro. This appears to be the same variety as the one grown at the Catramby ranch, Porta d'Agua. We sampled a preserve made from the fruits of Shr. Catramby's tree, and it struck us as being different from the mulberries grown in the United States and of very good flavor. The fruit appears to be rather small, but the seeds are also small. It may prove of value for the manufacture of jams and preserves."

36697. CARICA PAPAYA L.**Papaya.**

"(No. 27a. Bahia, Brazil. November 27, 1913.) Seeds of the large-fruited papaya, called here *mamão da Índia*. The specimen from which these seeds were taken measured $11\frac{1}{4}$ inches in length and $5\frac{3}{4}$ inches in width at its broadest point. The flesh was $1\frac{1}{4}$ inches thick, bright orange color, and of rich, agreeable flavor, practically free from musky odor. This type is sometimes propagated by cuttings, according to Dr. Argollo Ferrão, in order to perpetuate choice strains. The fruits are prepared for eating by making four or five shallow incisions from base to apex and allowing the milky juice to run out; after standing for a day or two they are ready for the table. Should be grown in southern Florida, in connection with the papaya breeding work."

36698. CITRUS GRANDIS (L.) Osbeck.**Pomelo.**

"(No. 1a. Bridgetown, Barbados, British West Indies. October 10, 1913.) Grapefruit, purchased in the town of Bridgetown from one of the native women. The fruit cut contained 51 seeds; globular shape, smooth skin, dull ivory-white color; $12\frac{1}{2}$ inches in circumference; flesh tender, no core, fairly juicy, good flavor; badly stained with black-scale smut. Its seedy character prohibits it from being of any special use in the United States unless as a stock for other citrus fruits. Twenty-four cents was paid for 12 fruits."

36699. ZEA MAYS L.**Corn.**

"(No. 2a. Barbados. October 10, 1913.) Yellow flint corn, 14 rows, 38 kernels in a row, dry and sound; evidence of corn earworm attacks at end of cob but not in kernels; ears tightly inclosed by a heavy husk, which extends 1 to 2 inches beyond the end of the ear. Stalks about $4\frac{1}{2}$ feet high, frequently two ears to the stalk. Mr. Shamel's estimate of the yield from the field where the sample was secured is 40 bushels per acre. Hills 4 by 4 feet; hand cultivation; dark, rich soil about 2 feet deep on coral rock. Seed corn dried in the husk on the ridges of houses and in trees. Secured on a return trip to St. John's Church. Corn usually planted from April to June, harvested from October to December."

36688 to 36715—Continued.

At this time (October 10, 1913) 25 to 30 houses were seen, on the comb or ridge of which were from 100 to 300 ears in the husk saved for seed. The ears were tied together by plaited outside husks, one ear on one side of the ridge and one on the other. In the trees the ears were tied in the same way and thrown across the limbs 15 to 20 feet from the ground. We saw the entire stalks fed to cattle, on compost heaps. On a trip of 30 miles we saw fully 400 acres of corn. Mr. Shamel says, 'This appears to be an almost perfect meal corn, equal to what we have in the United States.'

36700. ANNONA MURICATA L.**Soursop.**

"(No. 3a. Bridgetown, Barbados, British West Indies. October 10, 1913.) Seeds saved from a fruit purchased on the street. The fruit measured 9½ inches long and 15½ inches in circumference. It is oblong in shape and of a slightly greenish color; taste subacid; quality very good. For trial in southern Florida and in southern California."

36701. CITRUS SINENSIS (L.) Osbeck.**Orange.**

"(No. 4a. Rio de Janeiro, Brazil. October 4, 1913.) Seeds from small or, rather, medium, somewhat oblong seedling oranges served on the table of the Hotel International. The fruit is golden yellow; flesh bright golden yellow; good quality, quite juicy; skin thin; two to eight or more seeds. It might be well to grow a few to try out in California and Florida."

36702. MYRCIARIA CAULIFLORA (Mart.) Berg.**Jaboticaba.**

"(No. 5a. Rio de Janeiro, Brazil. October 24, 1913.) Among the fruit trees cultivated in gardens about Rio de Janeiro the jaboticaba is one of the commonest, and certainly one of the most beautiful. The largest trees are 30 to 40 feet in height and fully 40 feet in spread, with dense, dome-shaped heads of light-green foliage. The individual leaves vary in size according to the variety, some being 3 inches while others are not more than 1 inch in length; oblong-lanceolate in form, glossy, light green in color, usually pink in the young stage. The trunk of the tree is often very large, one specimen that we measured being 80 inches in circumference at the base, and it usually branches close to the ground. The bark is smooth, grayish brown in color, reminding one of the bark of the guava and other myrtaceous fruits.

"The name *jaboticaba* is a Tupi word, spelled by some authorities *jabuticaba*; this name is applied only to the fruit, the suffix '*eira*' being added to signify the tree, making the word *jaboticabeira*, or 'jaboticaba tree.' The name is usually pronounced here at Rio de Janeiro as though spelled ja-bu-ti-ca-ba, with the accent on the fourth syllable.

"The tree flowers here in May and June, and the fruit ripens in October and November. As signified by the specific name, *cauliflora*, the fruits are produced on the old wood, and we have seen many trees whose trunks were literally covered with fruits down to within 2 or 3 feet of the ground. The fruiting is not confined, however, to the large wood, but extends clear out to the ends of the smallest branches; the fruits are sessile or nearly so, and a tree covered with them from the ground to the ends of the small limbs presents a rather unusual appearance, to say the least.

"Four varieties are offered by the nurserymen here, but do not seem to be recognized by the people in the rural districts. They come from different parts of Brazil, and probably not more than one or two of them are in general cultivation here. Since they are supposed to come true from seed, it is quite possible that one or more of them may be entirely different species. Their names are *Sao Paulo*, *Murta*, *Corôa*, and *Branca*; the variety *Sao Paulo* may be

36688 to 36715—Continued

Myrciaria jaboticaba Berg, which, according to Barbosa Rodrigues, is commonly known as *jaboticaba de Sao Paulo*. Its foliage is much larger than the common *jaboticaba* which grows around Rio de Janeiro. *Murta* is said to be a large-fruited variety, but we have seen only young plants of it. *Corôa* we saw in fruit at a local nursery, and it seems to be the common local variety, which is described farther on. *Branca* (white) is a little-known, small-fruited variety.

"The fruits seen in the market here vary greatly in size, but otherwise seem to be about alike. A good specimen is an inch and a half in diameter, round or nearly so, and dark maroon-purple in color, greatly resembling in appearance some of the grapes of the *rotundifolia* type. This resemblance extends to the internal characteristics of the fruit as well, the texture of the flesh, its color and flavor, as well as the seeds, suggesting a grape more than any other temperate fruit. The skin is thick and very tough; it is broken by squeezing the fruit with the thumb and finger, when the pulp slides out into the mouth and the skin is discarded. The pulp is translucent, very juicy, and of a subacid, pleasant flavor, with a rather peculiar tang, which one is not sure to like at first, but which is very agreeable as soon as one becomes accustomed to it. The seeds, one to four in number, are rather large and adhere closely to the pulp; the boys here seem to swallow them, but this may not be a very desirable proceeding from a physiological standpoint. The Brazilians seem almost passionately fond of this fruit, especially the children, who spend hours at a time under the trees hunting for the ripe fruits and then working them off with a long pole if they are where they can not be reached.

"Following is a pomological description of the fruit as purchased in the Rio de Janeiro market and as seen growing in gardens around the city: General form slightly oblate to very broadly pyriform, with a majority of the specimens round or very nearly so; cross section regularly round; length three-fourths to 1½ inches, breadth three-fourths to 1½ inches; base of fruit in some cases slightly extended, in others slightly flattened; apex usually slightly flattened, with a small disk and vestiges of the four sepals; surface smooth, somewhat glossy to very glossy, color purplish maroon to maroon-purple when fully ripe; skin one-sixteenth inch thick, tough and leathery, and not easily broken, but separating readily from the flesh, which comes out in a body when the skin is broken; flesh translucent, whitish, jellylike in consistency, full of juice; flavor vinous, with a peculiar tang of its own; seeds normally four, but one to three sometimes abortive. Three seems to be the commonest number, but two is also common, and a few have been seen with five. Shape of seed oval to almost round, flattened laterally, three-eighths to one-half inch long, one-eighth inch thick; seed coats very thin. Practically no cultivation is given the trees we have seen, and we have heard of no other way of propagating them than by seed."

36703. *AMYGDALUS PERSICA* L.

Peach.

(*Prunus persica* Stokes.)

"(No. 6a. Rio de Janeiro, Brazil. October 24, 1913.) One hundred and eighty seeds from small, inferior, but somewhat peculiar peaches purchased in the market. This peach is of a rather dirty green color, the flesh white, sometimes slightly tinged with red at the stone. The quality is poor, and there is little juice. Ninety per cent or more were infested with maggots. We have not seen the trees upon which peaches of this kind grow. They may be used for stocks or possibly for breeding."

36704. *SOLANUM ACULEATISSIMUM* Jacquin.

"(No. 8a. Rio de Janeiro, Brazil. October 23, 1913.) Five fruits secured along the roadside of the Tijuca Drive. They are from 1 inch to 1½ inches in

36688 to 36715—Continued.

diameter and bright red in color. The under sides of the leaves and the branches are quite thickly covered with rather long, sharp thorns. May prove valuable as an ornamental or for breeding."

36705. GREVILLEA BANKSII R. Brown.

"(No. 9a. Rio de Janeiro, Brazil. October 27, 1913.) In foliage this species greatly resembles its congener, *Grevillea robusta*, but its habit of growth is entirely different and its flowers much finer. The trees in the Rio de Janeiro Botanic Garden, from which these seeds were taken, are about 18 feet in height, broad topped, and rather open in growth. The bark is rough, and ashy brown in color. The wood is brittle. The leaves are 6 to 8 inches long, 5 to 6 inches wide, deeply divided, dull green on the upper side and silvery beneath. The flowers, which are borne on spikes 3 to 5 inches long, are a beautiful rose-red in color. May prove of value as an ornamental tree in Florida and southern California."

36706. HELICTERES OVATA Lamarck.

"(No. 10a. Rio de Janeiro, Brazil. October 27, 1913.) A sterculiaceae shrub growing in the Botanic Garden here, somewhat resembling an abutilon in general appearance. Leaves heart shaped, about 4 inches in breadth and 5 inches in length, lanate, bright green in color. The chief interest of this plant lies in its seed pods, which are about the size of almonds and twisted spirally. Should be tried in Florida and California."

36707. CITRUS AURANTIUM L.**Bitter orange.**

"(No. 11a. Rio de Janeiro, Brazil. October 29, 1913.) *Laranja da terra*. Seeds of the bitter orange, or *laranja da terra*, from Shr. Catramby's ranch at Porta d'Agua, a suburb of Rio de Janeiro. For trial in Florida and California as a stock for other citrus fruits, for which purpose it is used here."

36708. SCHINUS TEREBINTHIFOLIUS Raddi.

"(No. 28a. Bahia, Brazil. November 27, 1913.) Seeds of a handsome tree which grows wild along the roadsides here. It greatly resembles the species grown in California under the name of *Schinus terebinthifolius*, and may, in fact, prove to be the same thing. The leaves are deep rich green in color, the leaflets larger and less numerous than in *S. molle*. The berries are borne in rather compact clusters and are bright crimson in color. The tree is of different habit from *S. molle*, and is occasionally used as a hedge plant to good effect. It should be grown in south Florida and southern California."

36709. MYRCIARIA CAULIFLORA (Mart.) Berg.**Jaboticaba.**

"(No. 13a. Rio de Janeiro, Brazil. October 28, 1913. *Jaboticaba*, or *jabuticaba*. Seeds from selected large fruits out of the same lot as No. 5a (S. P. I. No. 36702). The fruits from which these seeds were taken were all an inch or more in diameter, and in most cases contained four seeds each."

36710. ZEA MAYS L.**Corn.**

"(No. 14a. Rio de Janeiro, Brazil. October 30, 1913.) *Catete* variety, grown on the Catramby ranch, Porta d'Agua, near Rio de Janeiro. Field about 20 acres, growing on bottom land and planted in rows 3½ feet apart, the hills checked about 3½ feet apart. Stalks about 8 feet high. Ears about 3 feet from the ground. Ears in silk at this time, usually one ear to the stalk. Cultivated by hand hoeing. Soil rich and black. The crop was planted about August 1 and will be ripe in January. The ranchman says that this is the only variety that does well in this vicinity. He says it can be planted at any time of the year and grows equally well at all times. The two sample ears are nubbins left

36688 to 36715—Continued.

over from the last crop, the ears in the field being 8 to 10 inches long, yellow flint, 12 and 14 rows. The kernels are hard, with a large proportion of horny endosperm and a large germ. Should be tried in Florida and other Southern States."

36711. ZEA MAYS L.

Corn.

"(No. 15a. Rio de Janeiro, Brazil. October 30, 1913.) Red Peruvian corn purchased in a seed store here. Kernels very large, starchy."

36712. ZEA MAYS L.

Corn.

"(No. 16a. Rio de Janeiro, Brazil. October 30, 1913.) White Peruvian corn purchased in a seed store here. Kernels very large, starchy."

36713. EUGENIA TOMENTOSA Cambess.

Cabelluda.

"(No. 17a. Rio de Janeiro, Brazil. October 30, 1913.) The *cabelluda*, a myrtaceous fruit, native of Brazil. The tree is very handsome, with oblong, lanceolate, glossy leaves. The fruits are slightly less than an inch in diameter, oblate in form, orange yellow, the surface covered with a soft down, whence the name *cabelluda*, or hairy. The seeds are very large, one or two to a fruit, and leave but little room for the juicy pulp. The flavor is very peculiar, subacid, with the tang possessed by many of the eugenias. On the whole, the fruit is not one which would be likely to become very popular, but it is well worthy of a trial by those in Florida and California who are interested in rare fruits. From Shr. Catramby's garden at Porta d'Agua, near Rio de Janeiro, and at Nictheroy.

"This myrtaceous fruit, although a native of the State of Rio de Janeiro, is not commonly cultivated in gardens around the city, so far as we have seen. While an occasional tree is seen here and there, it can not compare in popularity with the jaboticaba or the pitanga, two allied fruits also native to this region. When well grown, the tree is very handsome, and would be of value as an ornamental alone. It reaches a height of 20 to 30 feet, with a broad, dome-shaped head of foliage. The leaves are 2 to 4 inches in length and about 1 inch in breadth, oblong-lanceolate, bright green and slightly tomentose above, dull green and tomentose below.

"The name *cabelluda* is the feminine of the Portuguese adjective *cabelludo*, and has reference to the downy tomentum present on both the leaves and the fruits. The tree flowers in June, and the fruits, which ripen in October and November, are sessile and produced on the small branches in great profusion. In general appearance the fruit somewhat resembles a gooseberry. The largest specimens are slightly under 1 inch in diameter, round or nearly so, the skin firm and thick. To eat the fruit one merely places it against his lips, squeezes it until the skin breaks and the seeds with the pulp surrounding them slide into his mouth. The pulp is rather scanty, but is juicy and of pleasant flavor, similar to the wild May-apple of the United States (*Podophyllum peltatum*). The large seeds are surrounded with short, coarse fibers, something on the order of the fibers surrounding the mango seed.

"The *cabelluda* is said to be tender and suitable only for culture in tropical countries, but it may prove to be adapted to southern Florida, and possibly to southern California as well. Both on account of its value as a fruit and its ornamental appearance it should be given a thorough trial in these regions.

"A pomological description of the fruit, as seen in various gardens around Rio de Janeiro, is as follows: General form round or slightly oblate; cross section round; length about three-fourths inch; width about three-fourths inch; base rounded; apex rounded, crowned by a small disk; surface smooth, downy, color

36688 to 36715—Continued.

golden yellow, with faint longitudinal lines under the skin, giving a ribbed appearance; skin thick and very tough, separating readily from the pulp, rather acid in taste; pulp translucent, yellowish white, aromatic, juicy, scanty in quantity; flavor subacid, suggesting the wild mandrake, or May-apple; agreeable when fully ripe; seeds one to two, surrounded by short fibers, elliptical to oval in form, slightly compressed, about three-eighths of an inch in length."

36714. CASSIA GRANDIS L. f.

"(No. 18a. Rio de Janeiro, Brazil. November 1, 1913.) Seeds of a large leguminous tree producing handsome pink and yellow flowers. Its seed pods are over a foot in length, plump, and very hard. The specimen from which these seeds were secured was growing by the roadside in Nictheroy, across the bay from Rio de Janeiro."

36715. CARAPA GUIANENSIS Aublet.**Andiroba.**

"(No. 20a. Rio de Janeiro, Brazil. November 3, 1913.) *Andiroba*. An Amazonian tree belonging to the Meliaceæ, used to good effect in the Rio de Janeiro Botanic Garden as an avenue tree. It grows to a height of 50 feet or thereabouts and has compound leaves $1\frac{1}{2}$ feet in length, the individual leaflets 3 or 4 inches long, obtuse, and dark green in color. The fruits are the size of a baseball, russet brown on the exterior, thick shelled, dividing into four sections when ripe and exposing the large, brown seeds, somewhat similar in shape and appearance to chestnuts. Should be tried as an ornamental tree in southern Florida and southern California."

36716. PANAX QUINQUEFOLIUM L.**Ginseng.**

(*Aralia quinquefolia* Decne. and Planch.)

From Seoul, Chosen (Korea). Presented by Mr. George H. Scidmore, consul general. Received December 10, 1913.

36717. AMYGDALUS PERSICA L.**Peach.**

(*Prunus persica* Stokes.)

From Chosen (Korea). Presented by Mr. Alfred Welhaven, Unsan, Chosen. Received December 8, 1913.

"Peach bud wood from Pying Yang, where the best blood-red peaches grow." (Welhaven.)

36718 to 36810.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 23, 1913.

Quoted notes by Mr. Meyer.

36718. PRUNUS TRILOBA Lindl.**Plum.**

"(No. 1904a. Peking, China. July 23, 1913.) Collected from cultivated shrubs in the grounds of the German legation at Peking. A flowering plum much cultivated in gardens in North China in a great many varieties. The color of its flowers ranges from pale pink to a dark violet-rose, while as regards size, degrees of doubleness, profusion, difference in time of opening, and in lasting qualities, a very great variation exists."

36719. PRUNUS TRILOBA Lindl.**Plum.**

"(No. 1905a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) Collected from wild shrubs on the north slopes of mountains, at elevations of

36718 to 36810—Continued.

5,000 to 6,000 feet, where this flowering plum occurs in extensive thickets. May be of great botanical interest as the genuine wild type of a shrub which is extensively cultivated by the Chinese."

36720. PRUNUS TRILOBA Lindl. Plum.

"(No. 1906a. Near Shih-men, Chihli Province, China. August 3, 1913.) A large-fruited variety of flowering plum found growing in a loess cliff. Although sour and hard, it may be of value in hybridization experiments, for this wild plum seems very hardy and drought resistant."

36721. PRUNUS HUMILIS Bunge. Plum.

"(No. 1907a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A wild, shrubby plum, not growing higher than 1 to 3 feet. Of value as a small shrub in rockeries and possibly as a factor in hybridization experiments. Chinese name *Noo li*, meaning 'ground plum.' This same species was sent in formerly under S. P. I. Nos. 20076, 20085, 20086, 20087, 20088, and 20342."

36722. PRUNUS sp. Plum.

"(No. 1908a. Near Nankou, Chihli Province, China. July 28, 1913.) Collected from very low shrubs on very stony places. A wild, shrubby plum, not growing higher than 1 to 3 feet. Of value as a small shrub in rockeries and possibly as a factor in hybridization experiments. Chinese name *Noo li*, meaning 'ground plum.'"

36723. PRUNUS PADUS L. Cherry.

"(No. 1909a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A bird cherry found in the mountains at elevations of 6,000 to 9,000 feet. Of tall, shrubby growth and very fruitful. Of value as a very hardy ornamental park and garden shrub for the colder sections of the United States.

"In Siberia the people eat the little cherries after they have been dried and pounded up with the stones, kernel and all, as stuffing in little cakes, and they taste quite aromatic."

36724. AMYGDALUS PERSICA L. Peach.
(*Prunus persica* Stokes.)

"(No. 1910a. Kalgan, Chihli Province, China. September 5, 1913.) A small but hardy peach cultivated in sheltered localities in the northern parts of Chihli Province. To be tested in the regions north of the peach belt proper."

36725. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. Wild peach.
(*Prunus davidiana* Franch.)

"(No. 1911a. Peking, China. September 18, 1913.) Some exceptionally large stones selected from among No. 1892a (S. P. I. No. 36664). To be planted for seed-bearing purposes in a locality congenial for this purpose."

36726. CORYLUS sp. Hazelnut.

"(No. 1912a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A wild hazelnut of good quality, growing in dense thickets on the north slopes of mountains at elevations of 5,000 to 7,000 feet. The nuts grow in clusters and are surrounded individually by large, fringed involucre. Of value as a nut-bearing shrub for the cooler sections of the United States."

36727. CORYLUS sp. Hazelnut.

"(No. 1913a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A wild hazelnut, occurring on the mountain sides at elevations of 5,000 to 9,000 feet. The nuts grow in clusters and are inclosed individually in long, beaklike involucre, which are covered with spiny hairs that easily find lodging between

36718 to 36810—Continued.

one's fingers and cause stinging sensations. Of value as a park shrub for the cooler sections of the United States."

36728. *LARIX DAHURICA* Turcz.

Siberian larch.

"(No. 1914a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A larch found at elevations of 5,000 to 10,000 feet in sheltered localities, growing up into a stately timber tree, but where exposed to winds and in the higher elevations remaining shrublike. Of value possibly as an ornamental park tree for the cooler sections of the United States. Chinese name *Tsai shu*."

36729. *PICEA OBOVATA* Ledeb.

Spruce.

"(No. 1915a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) An ornamental blue spruce found on mountain slopes at elevations between 4,000 and 9,000 feet. Of value as an ornamental park and garden evergreen for the dry and cool sections of the United States. Apparently a slow grower."

36730. *SORBUS* sp.

Mountain ash.

"(No. 1916a. Hsiao Wu tai shan, Chihli Province, China. August 8, 1913.) A very ornamental rowan, found on the north side of mountain slopes at elevations of 5,000 to 7,000 feet. Mostly seen in the form of a tall shrub with many branches. Bears a multitude of umbels of orange-red berries. Of value as a hardy ornamental park and garden shrub for the cooler sections of the United States."

36731. *OSTRYOPSIS DAVIDIANA* Decaisne.

"(No. 1917a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A spreading shrub, growing to a height of 3 to 5 feet, very much resembling the hazelnut in habit and looks. Of value as a cover plant for banks and stony places. Said to be pretty when in flower."

36732. *VIBURNUM OPULUS* L.

"(No. 1918a. Hsiao Wu tai shan, Chihli Province, China. August 22, 1913.) A snowball bearing brilliant carmine-red berries in autumn. Of value as an ornamental shrub for the cooler sections of the United States."

36733. *ACANTHOPANAX* sp.

"(No. 1919a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A spiny shrub, met with in mountain ravines at elevations of 7,000 to 9,000 feet. Of value as a park shrub for the cooler sections of the United States."

36734. *ACANTHOPANAX* sp.

"(No. 1920a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A spiny shrub of more slender and open growth than the preceding, No. 1919a (S. P. I. No. 36733). Met with in mountain ravines at elevations of 7,000 to 9,000 feet. Of value as a park shrub for the cooler sections of the United States."

36735. *RHAMNUS* sp.

"(No. 1921a. Ying tau ko, Chihli Province, China. September 12, 1913.) A *Rhamnus* of dense growth, having small foliage and bearing large jet-black berries. This shrub does not grow tall, but is densely branched and assumes well-rounded forms when not mutilated. Of value as a garden and park shrub and as material for medium-sized hedges, especially for the drier sections of the United States."

36736. *BERBERIS AMURENSIS* Rupr. (?).

Barberry.

"(No. 1923a. Hsiao Wu tai shan, Chihli Province, China. August 20, 1913.) A barberry of tall, gaunt growth, with large but very sparse foliage. Found

36718 to 36810—Continued.

among other scrub growth on stony mountain sides at elevations of 5,000 to 6,000 feet."

36737. BERBERIS CHINENSIS Poir.**Barberry.**

"(No. 1924a. Hsiao Wu tai shan, Chihli Province, China. August 28, 1913.) A barberry of low growth, 1 to 3 feet high, found between boulders and rocks at elevations of 4,000 to 6,000 feet. Becomes very showy toward the end of the summer, when its berries, which are produced in great abundance, assume a bright coral-red color. Of value as an ornamental low shrub for rockeries and on stony places in the cooler sections of the United States."

36738. COTONEASTER sp.

"(No. 1925a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A bush found on the north slopes of mountains at elevations of 5,000 to 6,000 feet. Of tall, expanding growth, ornamental in the fall with its multitude of soft red berries. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36739. COTONEASTER MOUPINENSIS Franch.

"(No. 1926a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A Cotoneaster growing into a tall shrub, having rather large, glossy leaves and bearing oval, blackish berries. Found on stony mountain slopes at elevations of 5,000 to 6,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36740. COTONEASTER sp.

"(No. 1927a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A Cotoneaster of medium-tall growth. Leaves oval-round, tomentose beneath; berries depressed, of dark-violet color. Rare. One specimen found on a peaty place at an elevation of over 8,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36741. CORNUS sp.

"(No. 1928a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A shrub growing to a height of 8 feet, well branched and of expanding growth. Leaves large, slightly hirsute underneath; berries borne in masses, turning bluish black when ripe. Found at elevations of 5,000 to 6,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36742. CORNUS sp.

"(No. 1929a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A shrub growing to a height of 8 feet; well branched and of expanding growth. Leaves and fruits quite hirsute; berries borne in masses, turning bluish black when ripe. Found at elevations of 5,000 to 6,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36743. HIPPOPHAË RHAMNOIDES L.**Sea buckthorn.**

"(No. 1930a. Hsiao Wu tai shan, Chihli Province, China. August 28, 1913.) The sea buckthorn, which occurs along the seashore of northwestern Europe and throughout the higher parts of Asia. Of value as a hedge plant for the colder semiarid sections of the United States. Chinese name *Ta tzu ku chen*."

36744. SAMBUCUS RACEMOSA L.**Elder.**

"(No. 1931a. Hsiao Wu tai shan, Chihli Province, China. August 5, 1913.) An elder growing into a medium-sized bush, bearing scarlet berries; is contented with poor, rocky soils. Of value as an ornamental park shrub for the cooler sections of the United States."

36718 to 36810—Continued

36745. *SAMBUCUS WILLIAMSII* Hance. (?) **Elder.**

“(No. 1932a. Near Shih men, Chihli Province, China. August 2, 1913.) An elder found mostly along the roadsides, generally cut back every winter for fuel. Of value for bank-binding purposes in semiarid sections. Chinese name *Wong pa tiao*.”

36746. *CARAGANA* sp.

“(No. 1933a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A *Caragana* found growing in rocks and on dry places, reaching a height of only 2 to 3 feet. Of value as a lining shrub along pathways or for use as division lines between blocks of nursery stock. Especially fit for the colder sections of the United States.”

36747. *COLUTEA* sp.

“(No. 1934a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A shrub of small dimensions, found in loess cliffs. Rare. Of use for bank-binding purposes in semiarid sections.”

36748. *LONICERA* sp. **Honeysuckle.**

“(No. 1935a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A bush honeysuckle of large growth and of decidedly ornamental habit. Leaves large, dark green, against which the bright-red berries stand out beautifully. These berries are borne in pairs on long, erect peduncles. Of value as an ornamental shrub for the cooler sections of the United States.”

36749. *LONICERA* sp. **Honeysuckle.**

“(No. 1936a. Hsiao Wu tai shan, Chihli Province, China. August 14, 1913.) A bush honeysuckle of dwarf, sturdy growth, assuming characteristic outlines when not disturbed. Leaves small, round-elliptical, of light-green color, with buttressed veins underneath near the petiole; berries comparatively large, solitary, sessile, of opaque red color. This dwarf shrub is met with at elevations of 5,000 to 9,000 feet. Of value as an ornamental shrub for the cooler sections of the United States.”

36750. *LONICERA* sp. **Honeysuckle.**

“(No. 1937a. Hsiao Wu tai shan, Chihli Province, China. August 13, 1913.) A bush honeysuckle of tall, rather open growth. Leaves large; these and the young branches quite shiny. Berries large, oval, orange-red, inclosed in large involucre, often two together. This shrub inhabits shady places in the high mountain regions. Of value as an ornamental shrub for the cooler sections of the United States.”

36751. *LONICERA* sp. **Honeysuckle.**

“(No. 1938a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A shrubby honeysuckle of spreading habits found on somewhat peaty soils at high elevations. The berries, of which two are grown into one, are borne on long peduncles, usually hidden by the glossy willowlike foliage. Of value as a ground cover on moist and peaty places in the colder sections of the United States.”

36752. *LONICERA CAERULEA* L. **Honeysuckle.**

“(No. 1939a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A bush honeysuckle found on moist and peaty places at high altitudes. Bears a multitude of large dark-blue berries, which are inedible when raw. Of value as a ground cover on moist and peaty places in the colder sections of the United States.”

36718 to 36810—Continued.**36753. VITIS AMURENSIS Ruprecht.****Grape.**

“(No. 1940a. Hsiao Wu tai shan, Chihli Province, China. August 26, 1913.) A very hardy grape, found at elevations of over 5,000 feet. The fruits, though small, are edible. This species may be further developed and may also be used in hybridization experiments in trying to produce hardier grapes. Possesses value as an arbor and porch cover vine. For the colder sections of the United States.”

36754. AMPELOPSIS ACONITIFOLIA Bunge.

“(No. 1941a. Hsiao Wu tai shan, Chihli Province, China. August 28, 1913.) A wild vine crawling over stony places. Of value as a porch and arbor vine, especially for the drier parts of the United States. Chinese name *Pa shan ghu*. Seeds from cultivated plants were sent formerly under S. P. I. Nos. 17938 and 17939.”

36755. SCHIZANDRA CHINENSIS (Turcz.) Baillon.

“(No. 1942a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A trailing vine of small growth, found between boulders and rocks. Leaves not unlike those of *Actinidia kolomikta*; berries in small clusters, red, sour. Of use as a small porch and trellis vine for the colder sections of the United States.”

Distribution.—The Provinces of Chihli, Kiangsu, and Shensi in China, and in Japan.

36756. RIBES sp.**Gooseberry.**

“(No. 1943a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A wild gooseberry found between rocks and boulders in the mountains at altitudes of 5,000 to 7,000 feet. Very well armed, even the berries themselves being covered with large spines. Of value possibly in hybridization experiments, trying to produce mildew-resistant varieties. Chinese name *Tzu li*, meaning ‘prickly pear.’”

36757. DUCHESNEA INDICA (Andrews) Focke.**Yellow strawberry.***(Fragaria indica Andr.)*

“(No. 1944a. Hsiao Wu tai shan, Chihli Province, China. August 13, 1913.) A wild strawberry found on the north slopes of mountains and in alpine meadows at elevations of 6,000 to 9,000 feet. Fruits fairly large, of beautiful carmine-red color, of slightly elongated shape, with the seeds deeply embedded. Of use possibly in hybridization experiments. Chinese name *Tee ren tze*. This is the first time I have seen wild strawberries in North China.”

36758. RUBUS sp.

“(No. 1945a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A red-fruited, herbaceous bramble of nontrailing habits, growing only from 6 to 10 inches high, found on shaded places in the higher mountains at elevations of 7,000 to 10,000 feet. The fruits are quite large and juicy, though the seeds are too conspicuous and too bony. May be of value as a new garden fruit for the cooler parts of the United States. Chinese name *Lu tieh to*.”

36759. RUBUS sp.

“(No. 1946a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A red-fruited, low-growing herbaceous bramble, almost like the preceding number, 1945a (S. P. I. No. 36758), but with smaller fruits and less perceptible seeds, found in semishady places at altitudes of 5,000 to 7,000 feet. May be of value as a new garden fruit for the cooler parts of the United States.”

36718 to 36810—Continued.

36760. INCARVILLEA SINENSIS Lam.

“(No. 1947a. Near Fangshan, Chihli Province, China. July 31, 1913.) An ornamental biennial, having large carmine-rose colored flowers arranged on long spikes. Of value as a garden plant for the drier sections of the United States. A well-drained soil, not too rich, seems to suit it best. Through selection this plant possibly might be made an annual. Chinese name *Hong la pa tsui yang hua*.”

36761. LIGULARIA sp.

“(No. 1948a. Hsiao Wu tai shan, Chihli Province, China. August 12, 1913.) A large-leaved Ligularia, growing between rocks and boulders along running watercourses. Flowers yellow, borne in flat, divided racemes. Of value as an ornamental herbaceous perennial along water expanses in parks, especially in the cooler sections of the United States. Collected at elevations of 5,000 to 7,000 feet.”

36762. LIGULARIA SIBIRICA (L.) Cass.

“(No. 1949a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A large-leaved Ligularia, found growing between rocks and boulders along watercourses and on moist places at altitudes of 7,000 to 11,000 feet. Of value as an ornamental herbaceous perennial along water expanses in parks, especially in the cooler sections of the United States.”

36763. SCUTELLARIA sp.

“(No. 1950a. Hwai lai, Chihli Province, China. July 30, 1913.) A species of skullcap bearing large racemes of deep-blue flowers. The plants love stony situations and are of dwarf growth. Of value as a rocky plant for the cooler sections of the United States.”

36764. LYCHNIS CORONATA Thunberg.

“(No. 1951a. Hsiao Wu tai shan, Chihli Province, China. August 20, 1913.) A perennial Lychnis with brick-red flowers, found among scrub growth on gentle mountain slopes. Of value possibly as a showy plant for the hardy border.”

36765. IRIS ENSATA Thunberg.

Iris.

“(No. 1952a. Kalgan, Chihli Province, China. September 5, 1913.) A vigorously growing strain of *Iris ensata*, grown in gardens around Kalgan, where the leaves are used as an ever ready and handy garden tying material. Of special value for the drier sections of the United States for the above purposes and as a lining plant along paths and roads. Chinese name *Tsiao ma lien*.”

36766. ASPARAGUS DAURICUS Fisch.

Asparagus.

“(No. 1953a. Peking, China. September 27, 1913.) An asparagus found growing wild on the city wall of Peking. Of erect growth. The young shoots are collected by the Chinese and eaten boiled as a vegetable. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions.”

36767. ASPARAGUS sp.

Asparagus.

“(No. 1954a. Fengtai, near Peking, China. September 10, 1913.) A wild erect-growing asparagus, found on a sandy bank. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions.”

36768. ASPARAGUS sp.

Asparagus.

“(No. 1955a. Near Hui yau pu, Chihli Province, China. September 2, 1913.) A wild upright-growing asparagus, found in a loess bank. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions.”

36718 to 36810—Continued.

36769. ASPARAGUS TRICHOPHYLLUS FLEXUOSUS Trautv. **Asparagus.**

“(No. 1956a. Nankou, Chihli Province, China. July 28, 1913.) A wild asparagus found on a clayey ridge. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions. An ornamental garden plant, especially for the drier sections of the United States. The branches of this species of asparagus are bent in a peculiar zigzag manner.”

36770. BRASSICA OLERACEA CAULO-RAPA DC. **Kohl-rabi.**

“(No. 1957a. Kalgan, Chihli Province, China. September 5, 1913.) A very large variety of kohl-rabi, weighing when fresh 16 pounds. This variety thrives especially well in the vicinity of Kalgan, where occasionally specimens are obtained weighing up to 25 pounds. The official Chinese name of this variety is *Man ching p'yi liang*, meaning ‘globular kohl-rabi.’”

36771. RAPHANUS SATIVUS L. **Radish.**

“(No. 1958a. Hwai lai, Chihli Province, China. July 29, 1913.) A Chinese winter radish, said to be of good flavor. There are red and green ones among this lot of seeds. Chinese name *Tsui loba*. See former notes for uses and for cultivation (S. P. I. No. 31697).”

36772. RAPHANUS SATIVUS L. **Radish.**

“(No. 1959a. Hwai lai, Chihli Province, China. July 29, 1913.) A long, white, autumn radish, said to be of good quality. Chinese name *Pai loba*.”

36773. BETA VULGARIS L. **Chard.**

“(No. 1960a. Hwai lai, Chihli Province, China. July 29, 1913.) A Chinese variety of Swiss chard, called *Tien ts'ai* or *Ching da*. The fleshy midribs are used fried in oil, either alone or with meat. Able to withstand a fair amount of alkali in the soil.”

36774. CAPSICUM ANNUUM L. **Red pepper.**

“(No. 1961a. Kalgan, China. September 5, 1913.) A large, fleshy variety of chili pepper, used scalded with meats. Chinese name *Sze ssu la tze*, meaning ‘persimmon pepper.’ As the soil around Kalgan is quite alkaline and the climate semiarid, this and the following varieties of pepper may thrive well in those parts of the United States where similar conditions are experienced.”

36775. CAPSICUM ANNUUM L. **Red pepper.**

“(No. 1962a. Kalgan, China. September 5, 1913.) A medium-large pepper, more pungent than the preceding number, 1961a (S. P. I. No. 36774), but used in similar culinary ways. Chinese name *La tze*.”

36776. CAPSICUM ANNUUM L. **Red pepper.**

“(No. 1963a. Kalgan, China. September 5, 1913.) A beautiful elongated variety of chili pepper, mostly dried and kept for winter uses. Chinese name *Chang la tze*, meaning ‘long pepper.’”

36777. CAPSICUM ANNUUM L. **Red pepper.**

“(No. 1964a. Kalgan, China. September 5, 1913.) A long, slender variety of chili pepper, quite pungent; used as a condiment; also dried for winter use. Chinese name *Hsien la tze*, meaning ‘thread pepper.’”

36778. CUCURBITA MAXIMA Duch. **Squash.**

“(No. 1965a. Kalgan, China. September 5, 1913.) A large, ribbed winter squash of yellow color with green blotches. Chinese name *Hsi ghu lu*, meaning ‘western squash.’ Of value especially for the semiarid sections of the United States. Stands a fair amount of alkali.”

36718 to 36810—Continued.

36779. CUCURBITA MAXIMA Duch.**Squash.**

“(No. 1966a. Hwai lai, Chihli Province, China. July 29, 1913.) An edible squash or gourd, used stewed, as a vegetable. Chinese name *Yu kua*. Of value especially for the semiarid sections of the United States.”

36780. NICOTIANA RUSTICA L.**Tobacco.**

“(No. 1967a. Tie ling tze temple, Hsiao Wu tai shan, Chihli Province, China. August 25, 1913.) A coarse variety of tobacco cultivated in the temple garden, at an elevation of 5,000 feet. Chinese name *Hsiao yea yen*. For nicotine-content tests.”

36781. BRASSICA PEKINENSIS (Lour.) Skeels.**Cabbage.**

“(No. 1968a. Kalgan, China. September 5, 1913.) A Chinese early winter cabbage having light-yellow heart leaves. Called *Huang ya pai ts'ai*. For cultural information, see former notes on the Chinese cabbage (S. P. I. No. 36113).”

36782. BRASSICA CHINENSIS Just.**Cabbage.**

“(No. 1969a. Kalgan, China. September 5, 1913.) A Chinese summer cabbage having heavy white midribs, which are cut in inch-long pieces and eaten fried, either alone or with meat, or boiled in a soup made from dried shrimps, giving all these dishes a very appetizing flavor. Chinese name *Chiang ghan pai ts'ai*.”

36783. BRASSICA PEKINENSIS (Lour.) Skeels.**Cabbage.**

“(No. 1970a. Hwai lai, Chihli Province, China. July 29, 1913.) A large variety of winter cabbage, said to be of good quality. Chinese name *Tung pai ts'ai*, meaning ‘winter cabbage.’”

36784. MEDICAGO RUTHENICA (L.) Trautv.**Alfalfa.**

“(No. 1971a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A wild alfalfa of spreading and semiascending growth; found in all sorts of open spaces. Flowers of dark yellowish color, pods short and flat, borne in little clusters, springing open and scattering their seeds when ripe. On very dry and exposed places the plants make but small growth, but where found in moist places and between grasses they supply quite a mass of herbage, which is eagerly eaten by all grazing animals. This alfalfa is found at elevations of 2,000 to 8,000 feet, making a much more abundant growth in the higher mountain regions than on the lower plains. Of decided value as a forage plant on ranges and grazing grounds. Might be found valuable enough even to be grown in congenial localities for hay and for green fodder. Chinese name *Ye mu shu*, meaning ‘wild alfalfa.’”

36785. SOJA MAX (L.) Piper.**Soy bean.**

“(No. 1972a. Peking, China. September 29, 1913.) The original wild soy bean, which occurs in North China here and there in hedges, copses, between shrubbery, and between reeds (*Phragmites communis*) on the drier places, where it turns itself around any support available. The beans are blackish and very small and are inclosed in small pods, which are quite hairy, though looking typically like some of the smaller cultivated varieties of soy beans. The poorest of the Chinese eat the young pods when boiled, but the plant at large is considered a weed and is gathered only when large quantities are found, in which case it is fed to domestic animals as a fodder. Of value possibly as a fodder plant when sown out among erect-growing vegetation, like barnyard millet, Johnson grass, and corn. Chinese name *Mau doh*, meaning ‘hairy bean.’”

36718 to 36810—Continued.

36786. *VICIA* sp.

Vetch.

“(No. 1973a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A vetch of tall growth, making much herbage, found among scrub. Of value possibly as a forage plant for the cooler sections of the United States.”

36787. *VICIA* sp.

Vetch.

“(No. 1974a. Hsiao Wu tai shan, Chihli Province, China. August 12, 1913.) A vetch of tall growth, but producing less herbage than the preceding number, 1973a (S. P. I. No. 36786); found at an elevation of 6,000 feet. Of value possibly as a forage plant for the cooler sections of the United States.”

36788. *GERANIUM* sp.

Crane's-bill.

“(No. 1975a. Near Pau an tchou, Chihli Province, China. September 3, 1913.) A biennial crane's-bill found here and there on the banks of ditches; produces an immense mass of herbage, which is eagerly eaten by horses, mules, and donkeys. Probably valuable enough to be grown as a forage supply, especially in the western United States, and more specifically as a winter crop in the Pacific coast region. Sow out in late summer or early fall.”

36789. *ERODIUM* sp.

Crane's-bill.

“(No. 1976a. Near Hui yau pu, Chihli Province, China. September 2, 1913.) Found on sandy and pebbly places, producing much herbage, especially when the nights become cool. Is eagerly browsed by all domestic animals. Apparently identical with No. 1884a (S. P. I. No. 36117). These remarks therefore apply to it also.”

36790. *ASTRAGALUS* sp.

“(No. 1977a. Near Tan hwa, Chihli Province, China. September 2, 1913.) Found on dry loess banks; has but scanty foliage, but produces a mass of fine stems, which bear slender racemes of bluish white or white flowers. Of value possibly as a soil binder in semiarid regions, and perhaps for forage purposes.”

36791. *STIPA* sp.

“(No. 1978a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A bunch-grass found on clayey ridges. The leaves and stalks are very tough and the latter are used to make strong brooms. Might possibly be of value in the manufacturing of strong paper, and could be grown in the cooler parts of the semiarid belt in the United States. Chinese name *Tchi tchi*.”

36792. *AGROPYRON* sp.

“(No. 1979a. Hsiao Wu tai shan, Chihli Province, China. August 27, 1913.) A vigorously growing grass, found in shaded places at altitudes of 5,000 to 8,000 feet. Of use possibly for grazing purposes.”

36793. *ELYMUS DAHURICUS* Turcz.

“(No. 1980a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A tall grass with heavy, erect stems, found on fertile flats in the mountains at elevations of 7,000 to 9,000 feet. Of use possibly for grazing purposes.”

36794. *ELYMUS SIBIRICUS* L.

“(No. 1981a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A tall grass with heavy, overhanging heads, found in great masses on fertile flats in the higher mountain regions at altitudes of 6,000 to 9,000 feet. Of value possibly for grazing purposes.”

36718 to 36810—Continued.**36795. HOLCUS SORGHUM L.****Sorghum.***(Sorghum vulgare Pers.)*

“(No. 1982a. Near San kia tien, Chihli Province, China. September 11, 1913.) A tall-growing white-seeded variety of sorghum, often producing several heads as side shoots. Its productivity, however, is not as great as the varieties that bear only one panicle.”

36796. CHAETOCHELOA ITALICA (L.) Scribner.**Millet.***(Setaria italica Beauv.)*

“(No. 1983a. Kalgan, China. September 5, 1913.) A prolific variety of bird millet grown on the somewhat alkaline soils around Kalgan. Chinese name *San pien huang goo tze*, meaning ‘thrice-changing yellow small millet.’”

36797. ARTEMISIA sp.**Wormwood.**

“(No. 1984a. Peking, China. October 18, 1913.) A biennial wormwood, occurring as a weed in all sorts of dry waste places. The Chinese utilize this plant as a stock to graft chrysanthemums upon and claim that the chrysanthemums thus grafted are earlier, need less water and no manure, are more easily lifted and transplanted, and in general require far less care than when on their own roots. To obtain the best results, the Chinese sow the seed in late summer in well-drained beds. The seeds germinate quickly, but the plants make very little growth during the autumn and winter. When spring comes, however, they develop with great vigor, and in June they have well-formed stems. The Chinese then cut off the main stem an inch or so from the ground and graft a chrysanthemum scion upon it by the ordinary cleft-graft method. No wax is used, but only a small strip of fiber, while the plants are shaded during the first days. The stock and the scion soon unite and continue to grow vigorously. On very strongly developed specimens of the stock the main branches are often used to insert on every one a different variety of chrysanthemum or to train a beautiful ‘standard’ tree of it, and some of such specimens are fully as good as the plants seen at home exhibitions of chrysanthemums. This previously described method of grafting chrysanthemums might prove to be valuable for the sections of the United States where the summers are somewhat too short or the nights too cool to rear the plants successfully out of doors, like, for instance, the more elevated parts of the Rocky Mountain States.

“Care has to be taken to water the plants sparingly when lifted and planted in flower pots. The Chinese name of this *Artemisia* is *Ghau tze*.”

36798. THLADIANTHA DUBIA Bunge.

“(No. 1985a. Peking, China. October 7, 1913.) An ornamental perennial cucurbit, with scarlet fruits the size of small hens’ eggs. Chinese name *Tze kua*.”

36799. SCHIZONOTUS SORBIFOLIUS (L.) Lindl.*(Spiraea sorbifolia L.)*

“(No. 1986a. Peking, China. October 11, 1913.) A variety of the ordinary sorbus-leaved spiraea, which grows well in Peking, thriving even in well-trampled inner courtyards, where soil conditions certainly are unfavorable to plant growth. Remains in flower, more or less, from the end of June until the end of September. Of value especially as an attractive shrub for back yards in our cities and as a garden shrub for semiarid sections of the United States. Sow out on peaty soil and keep in a shady place.”

36718 to 36810—Continued.

36800. NITRARIA SCHOBERI L.

"(No. 1987a. Near Tientsin, China. July 16, 1913.) A densely branching hardy shrub of spreading habits. Has small bluish green leaves and bears small berries, which change from light green through red into a violet black. Found growing on strongly alkaline flats. Of value possibly as a soil and sand reclaimer for alkali regions. Collected and presented by Mrs. Mary Clemens, wife of the Rev. Joseph Clemens, chaplain to the 15th Regiment, United States Infantry, at Tientsin, China. Received on October 19, 1913."

36801. CRATAEGUS PINNATIFIDA Bunge.

Hawthorn.

"(No. 1988a. Peking, China. October 8, 1913.) A large-fruited variety of Chinese edible haw; for selection and for stocks. See previous introduction, No. 1841a (S. P. I. No. 35641)."

36802. PYRUS sp.

Pear.

"(No. 1989a. Peking, China. October 8, 1913.) A very small pear of russet color, with a long peduncle. Becomes quite soft and mushy after having been kept in a room for a couple of weeks; quite different from the small variety of *Pyrus sinensis*, which remains hard and shriveled up. Obtained at a fruit stand in Peking; probably collected from wild trees."

36803. MALUS sp.

Crab apple.

"(No. 1990a. Peking, China. October 8, 1913.) A Chinese crab apple, the size of a large cherry, of dark-purple color; of fine flavor when made into a compote. Apparently very hardy and of value for the semiarid sections of the United States when grafted on the Siberian *Malus baccata*, which is very drought resistant. Chinese name *Ghae tang kuo*."

36804. PRUNUS SALICINA Lindl.

Plum.

"(No. 1991a. Kalgan, China. September 8, 1913.) A variety of plum of wine-red color and said to be as large as an apple, coming from Yu tchan, western Chihli Province, China. Obtained from its collector, Mr. Rusted, of the British American Tobacco Co., at Kalgan. Of value possibly for the cooler sections of the United States."

36805. AMYGDALUS PERSICA L.

Peach.

(Prunus persica Stokes.)

"(No. 1992a. Peking, China. October 15, 1913.) A peculiar pointed variety of winter peach of white color. Flesh hard, but sweet; skin covered with a dense, felty down, which can be scraped off and looks like short wool."

36806. AMYGDALUS PERSICA L.

Peach.

(Prunus persica Stokes.)

"(No. 1993a. Kalgan, China. September 8, 1913.) A very large variety of clingstone peach, coming late in the season; of good quality, though not very sweet. Probably imported from Shantung Province."

36807. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z.

Wild peach.

(Prunus davidiana Franch.)

"(No. 1994a. Peking, China. October 23, 1913.) A variety of the *davidiana* peach, of fastigate growth, trees becoming 50 to 60 feet high. Of value as an appropriate tree for cemeteries and other places where some dignity of outline is required. Suitable especially for the drier sections of the United States. As pyramidal trees in general do not come true from seed, only a small percentage of the trees from these seeds may be expected to be of a correct columnar shape, while the bigger part will be all sorts of intermediate types."

36718 to 36810—Continued.**36808. DIOSPYROS LOTUS L.****Persimmon.**

“(No. 1995a. Peking, China. October 22 to 29, 1913.) Twenty thousand seeds of the wild persimmon from North China; to be used as stocks for cultivated varieties of persimmons, especially for the drier parts of the United States.”

36809. SOJA MAX (L.) Piper.**Soy bean.***(Glycine hispida Maxim.)*

“(No. 1996a. Peking, China. October 30, 1913.) A rare, brown and black striped variety of soy bean, used roasted as a delicacy. Very wholesome, apparently, and worthy of trial by the American public. Could be slightly salted and buttered and sold like pop corn and peanuts. Chinese name of this bean *Ghu pee doh*, meaning ‘tiger-skin bean.’”

36810. ALBIZZIA JULIBRISSIN Durazz.**Silk tree.**

“(No. 1997a. Peking, China. October 24, 1913.) The so-called silk tree, a beautiful little tree with feathery foliage and delicate rosy flowers, which are borne in large masses. Withstands drought, dry heat, and a fair amount of alkali quite successfully, and thrives to perfection in the rather uncongenial climate of North China. Of value as an ornamental garden and park tree, especially for the sections of the United States where the summers are dry and hot and the winters not too severe. Produces an especially fine effect when planted in a row or in a scattered group in some prominent place. Can also be used as a shade-giving tree on tea plantations, as is being done at Chakva, near Batoum, in the Caucasus, where by this method the picking season is considerably extended. This North China form may possibly be harder than the types at present cultivated in America, as suggested by Prof. Sargent, director of the Arnold Arboretum.”

36811 to 36813.

From the Sudan. Presented by Gov. H. W. Jackson, of Merowe, Dongola Province, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received December 9, 1913.

Quoted notes by Prof. Mason.

36811 and 36812. ALLIUM CEPA L.**Onion.**

“From northern Amalad, Amer Island, near the fourth cataract of the Nile. Taken from the ground in May and early June (our Sacaton and Texas dates of harvest), they are now (September 21) about as hard as baseballs. They are not mild flavored by any means, and an onion with such keeping qualities in this intense heat is surely a find. These people sow the seed in beds in October or November, and transplant to the growing beds in February. I think the Imperial Valley, Yuma, and Indio would be the correct places to try out this seed.”

36811. “Dongola onion, red.” **36812.** “Dongola onion, white.”

“There are three quite distinct types, but a round one with a pure white color and of medium size is regarded as the best.”

36813. DODONAEA VISCOSA (L.) Jacq.

“Seed of a plant received from the gardens of the governor at Merowe. A very interesting hedge plant, which is beautifully dense and green, responds to the shears perfectly, and when taken in hand early makes a perfectly compact wall clear to the ground. This shrub was found at Erkowit, near Suakin, in the hill country of the Sudan, under conditions which suggested that it might be native there, but its presence was probably due to some remote importation,

36811 to 36813—Continued.

as this species is pretty generally distributed throughout the tropical world. The shrub is called *tattas* by the natives. The governor is not sure whether it will endure any degree of frost, but thinks it may. The seedling plants form a rather deep taproot and must be transplanted with some care on that account. This is one of the most perfect tropical hedge plants I have ever seen."

36814. ARTEMISIA MARITIMA L.**Wormseed.**

From Russia. Presented by Mr. John H. Grout, American consul at Odessa. Received November 29, 1913.

"In only one part of the country (Tashkend) was I able to secure the seed, and there it was in the hands of one firm. This firm has a small plantation a long distance away, where the seed is raised in small quantities.

"Russian pharmacists obtain their supplies of the flower buds from central Asia, where on some of the dry hillsides the plants grow in great profusion and without any sort of cultivation. There it is richest in the volatile oil and in santonin, for which it is valued. The same variety of plant is also found in parts of Persia and Asia Minor and, I believe, also in places in Hungary. It seems to thrive best in semiarid climates with a superabundance of sunshine and a certain brackishness of soil. It would doubtless grow well in some parts of the southwestern portion of the United States on calcareous loess and on the outskirts of salt marshes. Whether a plant which grows wild in other places and only needs to be collected could be grown with great profit in the United States may be open to doubt." (*Grout, extracts from letters dated April 14 and November 8, 1913.*)

"*Artemisia maritima* L., is a very variable species, and two varieties which are known as *A. Cina* Berg and Schmidt, and *A. pauciflora* Weber are usually regarded as the source of the so-called Levant wormseed, or santonica, of the Pharmacopoeia. The commercial supply of santonica comes largely from Turkestan, but the harvests of three successive years, 1909 to 1911, proving a failure, considerable interest has been aroused in the possibility of producing this drug in other countries." (*W. W. Stockberger.*)

36815 to 36817.

From American Samoa. Presented by Commander C. D. Stearns, Governor of Samoa. Received December 10, 1913.

36815. MANGIFERA INDICA L.**Mango.**

"Mango seeds taken from fruits grown in these islands." (*Stearns.*)

36816. DIOSCOREA sp.

Tuber.

36817. PERSEA AMERICANA Miller.**Avocado.**

(*Persea gratissima* Gaertn. f.)

"Seeds taken from fruits grown in these islands." (*Stearns.*)

36818 to 36828. PHOENIX DACTYLIFERA L.**Date.**

From Dongola, Sudan, Africa. Offshoots collected by Prof. S. C. Mason, of the Bureau of Plant Industry. Received December 17, 1913.

Quoted notes by Prof. Mason.

"It is generally acknowledged that the four date varieties of importance in this Province were originally brought up the river from the Sukkot district, a very inaccessible region between the second and third cataracts of the Nile, now included, for administrative purposes, in Halfa Province, with the capital at Wadi Halfa. John Lewis Burkhardt, in his account of his travels in Nubia in 1813, mentions the excel-

lence of the dates of Sukkot and says that the merchants of Merowe brought commodities in exchange for them, their own country having but few dates and those of bad quality. Dongola Province is now the great date-producing region, and the people are alive to the value of the offshoots and are planting every one they can get, offering none for sale. The great source of supply is the Sukkot country, already mentioned, where the industry has declined from the going out of the young men and on account of the difficulties of transportation. The three important varieties recognized in both districts are *Barakawi*, *Gondeila*, and *Bentamoda*."

36818. "*Bentamoda*. No. 1. The find which is worth the whole journey is the *Bentamoda*, a Sukkot variety which is very rare. A man of consequence may have two or three trees. The gift of an offshoot to a friend is a mark of distinction. I was at once told by both Governor Jackson and his head gardener that one could not by any means go out and buy a stock of these. I really think the *Bentamoda* variety ranks with the *Deglet Noor* and *Menakher*. The stone is small and clean, and the fruit has the appearance and flavor to give it a place in the first rank. It was learned from the Omda of Aswan that the *Bartamoda*, or *Sukkota*, of which a few trees may be found near Aswan, is identical with this variety, the first name being a modification of *Bentamoda* and the second given in reference to the district from which the offshoots were obtained. Aaronsohn secured a few offshoots under the name 'Bartamoda' in 1911."

36819. "*Bentamoda*. No. 2."

36823. "*Bentamoda*. No. 6."

36820. "*Bentamoda*. No. 3."

36824. "*Bentamoda*. No. 7."

36821. "*Bentamoda*. No. 4."

36825. "*Bentamoda*. No. 13."

36822. "*Bentamoda*. No. 5."

36826. "*Barakawi* is the great food staple and export date and is said to reach Cairo under the name *Ibrimu*, though there may be a distinct variety of this name. It is 2½ inches long or longer, narrow, tapering from base to apex; dull purplish red; it dries bone hard, but is sweet and of a wheaty flavor; said to resist the weevil and to keep two or three years. The people say that these dates put in a tightly closed vessel of water a day or two become as good as fresh dates and that the water makes a very pleasant drink. Governor Jackson informs me that this date is much sought as a food supply by pilgrims journeying to Mecca, on account of its excellent carrying and keeping qualities."

36827. "The *Gondeila* (as these people have it), or *Jendila*, is an oblong or oval, blocky date, antimony yellow (Ridgway, xv), ripening to a chestnut brown. It is a semidry date as it ripens, but exposed to the sun for two hours each day it is made quite dry. It must, however, be carefully guarded against weevils. It reaches Cairo only on special orders or as presents. It is one of the varieties offered to guests as a sweet. When sold, an ardeb of 320 pounds brings here about 154 piasters (a piaster is about 5 cents). This variety is worth importing and is common enough, so that a fair supply can probably be obtained."

36828. "*Kulma*. A very soft, sticky date when first mature, but becomes firmer when cured in the sun. The fruit is 2¼ to 2¾ inches long and 1¼ to 1½ inches broad; dull yellow, ripening to a rather dull, unattractive brown. The skin is a bit thick and the flesh soft and rich, but with a lot of tough rag. It is a date worth trial, but not equal to the *Bentamoda*, though reminding one in a way of the *Tafilett*. The people explained that this variety should never be planted on land near a river bank, but well inland, in a dry situation. Then the fruit cures without spoiling."

For full notes on these date varieties, see "Dates of Egypt and the Sudan," by S. C. Mason, Bulletin No. 271, U. S. Department of Agriculture, 1915.

36829 to 36840.

From Pying Yang, Chosen (Korea). Presented by Mr. Charles L. Phillips, Presbyterian Mission. Received December 10, 1913.

Quoted notes by Mr. Phillips.

36829 to 36837. SOJA MAX (L.) Piper.

Soy bean.

(*Glycine hispida* Maxim.)

"The soy bean in Korea is usually sown in the fields with millet. In the early spring, after the millet has reached the height of 2 or 3 inches, the beans are dropped in between the hills of the grain, all of which is sown in rows and cultivated with the Korean ox plow. Beans of this kind produce best in heavy clay soil rather than in light, stony ground. These beans serve as food for man and beast and are used most extensively throughout this whole northern country. For man, bread and cake are baked with these beans, a sloppy cereal dish is cooked, and, of course, everywhere soy is made. Especially with the yellow varieties, bean sprouts are grown during the winter, which furnish a fresh vegetable dish for the people at a time when green things are scarce. The beans are put in an earthen dish and daily sprinkled with water and kept in the warm living room of the house, where they are quickly sprouted and send long shoots out from the dish. These sprouts are a great relish. They are boiled and eaten with rice and millet. For fodder, the beans are fed in the pod to the cattle and horses, but in cold weather are most often boiled and fed as a hot mash."

36829. "No. 1. Yellow. This is the most common of all soy beans in Korea."

36830. "No. 2. Small yellow." **36831.** "No. 3. Black."

36832. "No. 4. Green. These beans are also roasted and popped like our pop corn or like roasted chestnuts. A great favorite among the Korean children."

36833. "No. 5. Brown. Rarely grown in northern Korea."

36834. "No. 6. Brown and black."

36835. "No. 7. Black and yellow."

36836. "No. 8. Mottled green and black."

36837. "No. 9. Black with white spots. Called sometimes in this province 'widowers' beans."

36838 to 36840. PHASEOLUS ANGULARIS (Willd.) W. F. Wight.

Adzuki bean.

36838. "Gray mottled. Long pods, with seven or eight beans in one pod. Used extensively in northern Korea. Boiled and eaten as a cereal. Planted with millet; yields best in heavy loamy soil."

36839. "Yellow. Long pods, with seven or eight beans in one pod. Used extensively in northern Korea. Boiled and eaten as a cereal. Planted with millet; yields best in heavy, loamy soil."

36840. "Red. Soap is made from this variety."

36841 to 36845.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 18, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36841. MANGIFERA INDICA L.**Mango.**

"(No. 26. November 20, 1913.) Bud wood of the variety called *Manga da Rosa*, or *Rose mango*, from the orchard of Dr. Miguel de Teive e Argollo, at Roma, on the outskirts of Bahia.

"*Manga da Rosa* is one of the commonest named varieties of the mango, both here and at Rio de Janeiro. The name seems to be applied to seedling trees in many cases. On investigation we find that the seed is polyembryonic, which leads to the belief that the variety may in reality be a seedling race or type, like the No. 11 of the West Indies and Florida, and like this race maintain its characteristics, even when grown from seed.

"The fruits of this variety are of good size and ripen here in December and January. At the present time they are almost full grown. The form is somewhat similar to that of the No. 11 mango, broad at the base, with the stem inserted to one side, making the left shoulder full and high, while the right shoulder is falling. The apex is rather pointed, with a rather prominent beak about one-half inch above the longitudinal center of the fruit. Both cheeks are distinctly compressed and are overspread with rich rose-red, a very attractive and striking color. The seed is medium in size and those we have examined contained from five to eight embryos. The flavor and quality are said to be very good, and the trees seem to be carrying better crops of fruit than in the case of other varieties. This mango should be given a thorough trial in Florida, both to determine its value as a fruit and to throw more light on the fruiting habits of the polyembryonic mangos, which seem to be an especially promising class."

See S. P. I. No. 36688 for a previous introduction and Plate IV for an illustration of the fruit of this mango.

36842. BAUHINIA sp.

"(No. 22a. November 9, 1913.) Seeds collected from a tree growing on the Rua Victoria, near No. 61. This small tree, 18 to 20 feet high, bears very pretty light-pink flowers and long, brownish pods. It is seen quite often in the yards here in the city. It is possible that this species is already in the United States. It should be propagated and tried, as it might prove quite distinct."

36843. OPERCULINA TUBEROSA (L.) Meissn.

"(No. 23a. November 9, 1913.) Seeds of a supposed *Ipomoea*. An old gate and posts near 71 Rua Victoria are covered with a strong-growing woody vine that has been almost completely killed, on account of street-improvement work. The seed pods, which are very large and characteristic of those of our morning-glories, contain from one to four, rarely five, large velvety black seeds. A leaf of which we made a rough pencil sketch is 7 lobed. We were unable to find a flower. For propagation and test in California and Florida."

36844. CARICA PAPAYA L.**Papaya.**

"(No. 25a. November 12, 1913.) Seeds of an interesting variety of the *mamão*, or papaya, obtained in the market at Bahia. The fruit is oblate in form, 4 inches long, and 5 inches wide. It would be an ideal size for shipping. The quality is good, but the seed cavity is rather large. Should be tried in southern Florida."

36841 to 36845—Continued.**36845. CUCUMIS MELO L.****Muskmelon.**

“(No. 26a. November 12, 1913.) Seeds of a large melon grown at Joazeiro, on the Sao Francisco River, 250 miles inland from Bahia. This melon is 10 inches long and 5 inches in diameter, straw colored, and heavily ribbed. The flesh is light salmon color, with a pronounced musky flavor; of fair quality. It might prove of value in parts of the arid Southwest.”

36846 to 36848. SOJA MAX (L.) Piper.**Soy bean.***(Glycine hispida Maxim.)*

From Dalny, Manchuria. Presented by Mr. Albert W. Pontius, American consul.
Received December 10, 1913.

“A large variety of beans is grown in Manchuria, and together with their resultants, bean cake and bean oil, they constitute by far the most valuable item in the export trade of the three provinces. In the month of April they are sown by hand in drills and the crop is ripe in September; but as regards the beans of commerce there is an exception, namely, the small green bean known as *Lu tou* (*Phaseolus aureus* Roxb.), which ripens as early as July and can be sown again in that month and gathered early in October. The Chinese distinguish the beans of commerce by their colors. At the end of March or beginning of April the ground fertilizer (night soil and animal manure) is spread over the fields in the furrows in which the previous season's beans were cultivated. The soil in the old ridges is then turned with the ordinary shallow native plow, the new ridges being formed where the fertilizer has been spread. The ground is broken with a wooden roller drawn by a mule, the tops of the ridges being partly leveled. A line marker is then used on the leveled ridges, this implement marking a shallow trench, preparing the ground for seeding purposes.

“The planting of beans in Manchuria takes place during the month of April. The seeding is effected in two manners, the beans being sown in light furrows or in finger holes placed uniformly apart. The former method is quite simple and requires no explanation; in the use of the latter method, the finger holes are about 9 inches apart, four or five seeds being dropped in each hole. The amount of seed used differs in the various districts, a higher altitude requiring a proportionately larger quantity of seed. The following shows the different quantities of seed used in the varying latitudinal districts of Manchuria: Liaotung Peninsula (district south of Tashihchiao), from thirty to forty-five hundredths of a bushel per acre; Mukden, Tiehling, and Kaiyuan, from forty-five to sixty hundredths of a bushel per acre; Kirin, from sixty-five to eighty hundredths of a bushel per acre; Heilungchiang, eighty hundredths of a bushel or more per acre. The first breaking and weeding of the soil takes place from six to ten days after seeding and when the sprouts are from 3 to 4 inches in length. Weeding is subsequently effected during intervals of four or five days (every ten days in northern Manchuria). Native hoes and rakes are used for weeding, the ground being broken with a wooden plow drawn by a horse or mule. The period of harvesting is from the latter part of September to the beginning of October, the bean plants being cut close to the roots, a stone roller or wooden flail being used in hulling. The average crops per acre by districts are estimated as follows: In southeast Manchuria and the coast of the Yellow Sea the yield is from 10 to 15 bushels per acre; in the Liao River valley, Changtu, Kaiyua, Tiehling, and Mukden the yield is from 40 to 50 bushels per acre; at Kirin the yield is from 24 to 26 bushels per acre; and in Heilungchiang (Amur district) the yield is from 17 to 22 bushels per acre.” (*Pontius.*)

36846. “Yellow bean. *Pai mei*, ‘white eyebrow,’ from the white scar on the saddle, or point of attachment to the pod. This variety is highly prized for the quantity of oil or fat which it contains. Shipped from Fanchiatun station, near Changchun, south Manchuria.” (*Pontius.*)

36846 to 36848—Continued.

36847. "Yellow bean. *Hei chi*, 'black belly,' from the dark-brown scar on the saddle. This variety is highly prized for the quality of oil or fat which it contains. Shipped from Kinchou station, leased territory." (*Pontius*.)

36848. "Green bean. *Ching tou*. This variety is said to yield more legumin in the manufacture of bean curd than the yellow bean, but the quality is inferior. It is also boiled and used as food." (*Pontius*.)

36849 and 36850. LINUM USITATISSIMUM L.**Flax.**

From Smyrna, Asia Minor. Presented by Mr. John W. Dye, American vice consul general. Received December 13, 1913.

36849. "The annual production of flaxseed in the Province of Smyrna is estimated at 280,000 to 300,000 pounds, the greater part of which is exported to France, Germany, and Italy. The price averages about 4 to 5 cents per pound." (*Dye*.)

36850. "A small sample of a grade of flaxseed grown on the island of Crete which appears on this market and is held at the same price as that from Asia Minor." (*Dye*.)

36851. LINUM USITATISSIMUM L.**Flax.**

From Pskoff, Russia. Presented by Malcolm & Co. Received December 16, 1913.

36852 to 36861.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 17, 1913.

Quoted notes by Mr. Meyer.

36852 to 36854. ZIZIPHUS JUJUBA Miller.
(*Ziziphus sativa* Gaertner.)

Jujube.

36852. "(No. 1041. Peking, China. November 7, 1913.) A variety of jujube with large, round-oblong fruits of a dark mahogany-brown color; meat somewhat juicy and quite sweet. Trees of rather small growth and quite spiny. Cultivated in Peking gardens under the name *Ta tsao*, meaning 'big jujube.'"

36853. "(No. 1042. Peking, China. November 8, 1913.) A variety of jujube bearing rather small fruits of roundish shape and of a red-brown color; meat very sweet. Trees grow to be large, with heavy trunks and few spines. Produces more fruit when ringed annually. Cultivated in Peking gardens under the name *Hsiao tsao*, meaning 'small jujube.'"

36854. "(No. 1043. Peking, China. November 9, 1913.) A jujube bearing large fruits of elongated shape, tapering toward the end; color a rich reddish brown. Of sweet taste; meat firm; of rather good keeping qualities. Trees of tall growth with few branches; foliage very large. Cultivated in Peking gardens under the name *Yu tsao*, meaning 'tooth jujube,' on account of the tapering shape of the fruits."

36855. VIBURNUM PLICATUM Thunberg.

"(No. 1998a. Hsiao Wu tai shan, Chihli Province, China. August 30, 1913.) A shrub of medium dimensions, found on stony mountain slopes. Bears in early summer many umbels of whitish flowers, followed by berries which change from green to red and when ripe to black. The foliage is quite green and dense, the leaves somewhat undulated. Of value as a hardy ornamental drought-resisting shrub for the colder regions of the United States."

36852 to 36861—Continued.**36856. RIBES sp.****Currant.**

“(No. 1999a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A currant of tall, open growth found on northern mountain slopes at elevations of 7,000 to 10,000 feet. Berries red, small, sour, and not juicy.”

36857 to 36859. ROSA sp.**Rose.**

36857. “(No. 2000a. Hsiao Wu tai shan, Chihli Province, China. August 24, 1913.) A very tall and vigorously growing wild rose, found among tall scrub on mountain slopes. Of value as a stock for cultivated roses for the colder sections of the United States.”

36858. “(No. 2001a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A wild rose of low, bushy growth found on stony mountain sides. Of use possibly for stony and pebbly places in wild gardens.”

36859. “(No. 2002a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A wild rose of low growth and spreading habit, each stalk standing separately; found in semishady places at elevations of 7,000 to 10,000 feet. Of use possibly beneath trees as an open ground cover, especially for the colder sections of the United States.”

36860. HEMEROCALIS sp.**Day lily.**

“(No. 2003a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A low-growing liliaceous plant with linear leaves, found on open, rocky places at altitudes of 5,000 to 7,000 feet. Of value possibly as a hardy perennial for the colder sections of the United States.

36861. PHASEOLUS VULGARIS L.**Bean.**

“(No. 2004a. Hsiao Wu tai shan, Chihli Province, China. August 30, 1913.) A good variety of garden bean cultivated in a temple garden at an elevation of 5,000 feet. Of value apparently as a garden vegetable for the cooler sections of the United States.”

6862 and 36863. CUCUMIS MELO L.**Muskmelon.**

From Spalato, Dalmatia, Austria-Hungary. Presented by Mr. William T. Forbes, Worcester, Mass. Received December 6, 1913.

36862. “Seeds of a muskmelon served at the Grand Bellevue Hotel. Melons nearly spherical, 9 inches in diameter; flesh 3 inches thick and seed opening 3 inches. Sweet; flesh green; tastes like pineapple.” (*Forbes.*)

36863. “Seeds of a muskmelon served at the Grand Bellevue Hotel. Melons 9 inches in diameter; very sweet; green flesh; pineapple taste; very fine.” (*Forbes.*)

6864. BELLUCIA sp.**Papaturro.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture, San Jose. Received December 9, 1913.

“A small tree, with fruit which to my taste is one of the best; flowers large and eautiful; very fragrant; for hot climates, deep, fresh alluvial land; grows principally n the banks of creeks.” (*Wercklé.*)

6865. JUGLANS CINEREA X REGIA.**Walnut.**

From Jamaica Plain, Mass. Presented by Mr. John G. Jack, East Walpole, Mass. Received December 22, 1913.

"From the Eben Bacon estate, Prince Street, Jamaica Plain, Mass. A large tree with the aspect of a butternut (*J. cinerea*) but closer, less deeply furrowed bark. Leave of few large leaflets. Nuts much like *J. cinerea*, but shell less sharply rough and husk not glandular pubescent. Trunk about 4 feet in diameter at 2 feet from ground, a 4 feet from ground dividing into three large limbs." (*Jack.*)

"A large widespreading specimen with a trunk diameter of 4 feet 3 inches about 2 feet above the surface of the ground and just below the point where it divides into three large limbs, standing in the grounds of Mr. Eben Bacon, of Jamaica Plain. This tree is supposed to have been planted between 50 and 60 years ago." (*Garden and Forest*, No. 349, October 31, 1894.)

36866 to 36887.

From Pango Pango, Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received December 10, 1913.

36866. ADENANTHERA PAVONINA L.

Coral bean tree

"A handsome deciduous tree with spreading branches and bipinnate leaves bearing pods of glossy, scarlet, biconvex seeds. Pinnæ two to six pairs; leaflet 6 to 12 pairs, oval, obtuse, glabrous; flowers in racemes, numerous, small, white and yellow mixed, fragrant; calyx 4 to 5 toothed; stamens 8 to 10; pods linear somewhat curved, bivalved, 10 to 12 seeded.

"The tree is a native of the East Indies, where the jewelers use the seed for weights, each weighing almost exactly 4 grains. The heartwood of the large trees is of a deep-red color. It is hard and durable and in India is sometimes used as a substitute for red sandalwood. It yields a dye which the Brahmirs of India use for marking their foreheads. It has long been growing in Guam and is pretty well distributed over the island. Its vernacular name, *kolale* is an imitation of 'corales' (coral beads), and is likewise applied to the small seeded *Abrus abrus*." (*W. E. Safford, Useful Plants of Guam.*)

36867. BARRINGTONIA ASIATICA (L.) Kurz.

Fütu

"*Fütu*. A moderate-sized tree; cuts light but grows brown by exposure. The wood is curly, brittle, and soft; it is quite light and is used for canoes; it is not a valuable wood for general use, though much esteemed by the natives on account of the ease with which it is worked. The fruit is reduced to powder and used to stupefy fish in a method of fishing called *Seu*. The leaves are large and lustrous, like magnolia foliage, and the flowers are very beautiful. (*Stearns.*)

36868. BARRINGTONIA SAMOENSIS A. Gray.

"*Falaga*."

Distribution.—A tree whose protruding red-stamened flowers are borne in racemes 2 feet long. Found in Samoa and on the adjacent islands.

36869. BIXA ORELLANA L.

Annatto tree

"*Loa*. A small tree, bearing prickly capsules containing seeds surrounded by red pulp, which yields the well-known annatto of commerce. Leaves cordate ovate, acuminate entire or angular, smooth on both surfaces.

"Annatto is prepared by macerating the pods in boiling water, removing the seeds, and leaving the pulp to settle. The water is then poured off, and the residuum, which is of a bright-yellow or orange color, is used as a dyestuff. In Guam it is sometimes put in soup and rice. The Caroline Islanders use it to paint their bodies, together with turmeric. It is sometimes used in the same way by the Samoans.

"The chief uses to which annatto is applied are for dyeing silk and cotton orange yellow and for coloring cheese and butter. The color imparted to fabrics, however, is not lasting." (*W. E. Safford, Useful Plants of Guam.*)

36866 to 36887—Continued.

36870. CANAVALI sp.

"Fue-lopa."

36871. CLERODENDRUM AMICORUM Seem.

"Mamalupe."

Distribution.—A white-flowered shrub, often 15 feet tall, found in Samoa and on the adjacent islands.

36872. CRASSINA ELEGANS (Jacq.) Kuntze.

(Zinnia elegans Jacq.)

"Makerika."

36873. DIOSCOREA sp.

Yam.

"Soi, a species of yam."

36874. GYNOPOGON BRACTEOLOSA (Rich.) Schumann.

(Alyxia bracteolosa Rich.)

"Nau, or Laumaile."

36875. INDIGOFERA sp.

"Fue. This is one of the many varieties of creeping plants. This one in particular is a kind of shrub." (Stearns.)

36876. LEUCAENA GLAUCA (L.) Benth.

"Lopa. Another of the lopa species." (Stearns.)

36877. MABA ELLIPTICA Forster.

Maba.

"A shrub of 6 feet or more, or a moderate-sized tree, or sometimes a lofty tree; branches slender, cinereous, terete, rather rough; shoots hairy, glabrescent; leaves elliptical or oblong-lanceolate, obtuse at the apex, cuneate at base, glabrescent, subcoriaceous, $1\frac{1}{2}$ to $4\frac{1}{2}$ inches long by three-fourths to $1\frac{3}{8}$ inches wide. Petioles one-tenth to one-fifth inch long. The fruit is fleshy, pedunculate, crowded, greenish, ellipsoidal, scarcely 1 inch long by one-half inch thick, pubescent or nearly glabrous, two or three celled; seeds triquetrous. This plant is called *Maba* by the natives in the Friendly Islands, and *Kiharàpat* in Java, and *Anúme* in the Navigator's Islands. It is eaten by the children and flowers in June or July and in January or February. When young, it is difficult to distinguish from *M. rufa*, and approaches also in appearance *M. buxifolia*." (Hiern, *Monograph of Ebenaceæ*, in *Transactions of the Cambridge Philosophical Society*, vol. 12, pt. 1, p. 122, 1873.)

36878 and 36879. MEIBOMIA UMBELLATA (L.) Kuntze. Bush tick trefoil.
(*Desmodium umbellatum* DC.)

"*Lala*. A shrub 1 to 2 meters high, growing on the sea beach, with densely downy young branches, 3-foliate leaves, and axillary umbels of whitish papilionaceous flowers. Branches terete; petioles 2.5 cm. or less long, slightly furrowed; leaflets subcoriaceous with raised costate veins, green and glabrous above, thinly gray-canescens or nearly glabrescent beneath, end leaflet larger than side ones, roundish, or broad-oblong, 5 to 7.5 cm. long; umbels 6 to 12 flowered; pedicels short, unequal; calyx 4 mm. long, densely silky, 4-parted, 2-bracted; bracts minute, deciduous; standard of corolla obovate, keel blunt; stamens monadelphous; pod jointed, 3.5 to 5 cm. long, the joints 3 to 5, thick, glabrescent or silky, indented at both sutures.

"A strand shrub of wide tropical distribution. Common near the beach in Guam, Samoa, Fiji, and the Malay Archipelago. In Samoa it is used for perches for pet fruit pigeons. The Guam name means 'lizard's bush.'" (W. E. Safford, *Useful Plants of Guam*.)

36886 to 36887—Continued.

36880. MORINDA CITRIFOLIA L.

Nona

"This plant, called *ladda* or *lada* by the natives of Guam, has seeds of unusual interest. Their buoyancy is insured by a distinct air cell. They are frequently found in the drift of tropical shores, and experiments have been made which demonstrate the great length of time they will float in salt water." (*W. E. Safford, Useful Plants of Guam.*)

Distribution.—A small tree, cultivated as well as wild, in the warmer part of India and in Ceylon; also found on the islands eastward to Australia.

36881. MYRISTICA INUTILIS Rich.

Nutmeg

"*Atone*; a tree." (*Stearns.*)

36882. PARINARI LAURINUM A. Gray.

Ifi-ifi

"*Ifi-ifi*. A large tree which bears a round, very hard fruit; it is used by the natives mixed with coconut oil to make a thick paste for the hair. Very common in Samoa." (*Stearns.*)

36883 and 36884. STYLOMA PACIFICA (Seem. and Wendl.) O. F. Cook.

(*Pritchardia pacifica* Seem. and Wendl.)

"*Niu-piu*; the fan palm." (*Stearns.*)

36885. SCLERIA POLYCARPA Böckeler.

"*Selesele*; species of sedge." (*Stearns.*)

36886. CEIBA PENTANDRA (L.) Gaertner.

Kapol

(*Eriodendron anfractuosum* DC.)

"*Vavæ*; tree cotton."

36887. COLOCASIA sp.

Tuber.

36888. MYRCIARIA CAULIFLORA (Mart.) Berg.

Jaboticaba

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 2, 1913.

"(No. 32a. December 5, 1913.) Two hundred and thirty-eight seeds of the jaboticaba, from specimens purchased in the Bahia market. The variety (or species) seen to be distinct from either of those sent in from Rio de Janeiro, the seeds being slightly larger, less compressed, and the cotyledons white instead of pinkish. The majority of the fruits contain only one seed, but two are found in some instances. The fruit average over an inch in diameter. The color is deep purplish maroon. We find the jaboticaba when fully ripe to be of an exceedingly agreeable flavor. This fruit certainly worthy of a thorough trial in southern Florida and southern California. (*Dorsett, Shamel, and Popenoe.*)

36889 to 36896.

From Tientsin, China. Presented by Dr. Yamei Kin, Pei-Yang Woman's Medical School and Hospital. Received December 27, 1913.

36889 to 36895. ZEA MAYS L.

Corn

36889. "No. 1. Two ears of the red *mi pang tze*, an early variety called *chen chu*, 'pearl,' on account of its small size. From Yutien district in Chihli Province." (*Kin.*)

36890. "No. 1. One ear of a white variety of the *mi pang tze*. From Yutien district in Chihli Province." (*Kin.*)

36889 to 36896—Continued.

36891. "No. 1. Another variety of the early *mi pang tze*, called the *ma ya*, 'horse teeth,' on account of its shape and size." (*Kin.*)

36892. "No. 2. *Mi pang tze* from the Shali ho district, which is not far from Peking. Also from Chihli Province." (*Kin.*)

36893. "No. 2. *Mi pang tze* of a late variety from the Yutien district, Chihli Province." (*Kin.*)

36894. "Loose corn from package No. 1. From Yutien district, Chihli Province."

36895. "Loose corn from package No. 2. From the Shali district."

36896. SESAMUM ORIENTALE L.

Sesame.

"From Yutien district, Chihli Province. Seed of the best sesame of this district, which is noted for its good sesame oil.

"The sesame seed is very small and needs to be thinly sown in rows, so that between the plants there will be a hand's span of space, and the rows should be wide enough apart to permit an animal to pass, to draw the harrow, as they say in China. It is what I should judge to be about 2 feet. It is important to allow space enough, or it will not make a good strong growth. The little bagful is sufficient for a mu [about one-sixth acre] of ground. It does not need much moisture, doing best in such soil as is good for maize, and needs only about the same amount of manure. It is particular in that it will not bear at all if any other kind of plant is put in between the rows. You know the Chinese are great on mixing a row of beans or something small between the kaoliang or maize.

"This sesame should grow to be about the height of a man, say 5 feet, more or less, depending on the vigor of growth. When the leaves at the bottom of the stalk begins to turn yellow it should be gathered and tied into bundles and stood up straight till such time as the pods, as they say, 'open their mouths'; then, picking the stalks up, shake them upside down into a flat basket, when the seeds will readily fall out. If it is desired to let the seed ripen fully on the stalk before gathering, one must put a flat basket under the stalk and shake the stalk, or else the seeds will largely be lost, as they fall out readily once the pods dehisce.

"In making the oil, the process is not by the ordinary method of pressure. but as follows: First, the seed must be lightly roasted to a brown color, but not burned, or else the oil will be bitter. The heat makes the oil give out a peculiar nutty odor. It is lightly ground in a small mortar till it is like a coarse meal, and then it is stirred in a bowl with a wooden stick, adding a little water when it becomes a very sticky mass and the whole adheres together like a lump of dough. Adding more water at this stage, while constantly stirring, drives out the oil, which appears in the bowl separate from the sticky mass. The first lot of water produces the best oil, and successive additions produce oil that is thinner and thinner, and finally the mass falls apart, when there is no more oil to be obtained. The residue is used for fertilizer. It is excellent for potted plants, being clean and quick in action, though it does not last as long as some other kinds of fertilizer, according to my limited experience. I asked why they did not press the oil as with peanuts, etc., and the reply was that it would be wasting so much oil, for the Chinese have only the primitive stone mills, and they would require a large amount of seed to begin with and much would adhere to the stones, so that it would be lost. It is considered the finest oil for cooking purposes, and what I have tried certainly has yielded good results. But it requires to be fresh, and perch, doughnuts, etc., things that require to

36889 to 36896—Continued.

be fried in deep oil, are delicious, superior to those fried in the fine qualities of pure light-green olive oil that I have seen. The seeds roasted lightly over a fire in an ordinary saucepan are often added to cakes, somewhat like the poppy seeds the Germans are so fond of over their various breads and rolls, and often some of the fancy rice dishes are made with a mixture of the sesame seed. It is used largely to sprinkle over the sticks of barley sugar sold on the streets, performing the double office of powder to keep the candy from sticking together and adding a nutty flavor, which enriches the candy." (*Kin.*)

36897 to 36899.

From Hongkong, China. Presented by Mr. W. J. Tutchter, superintendent, Botanical and Forestry Department. Received December 27, 1913.

36897. ALEURITES MONTANA (Lour.) Wils. **Mu-yu (wood-oil) tree.**

"*Mu-yu*. The three species of Aleurites, *fordii* Hemsl., *montana* (Lour.) Wils., and *cordata* R. Br., from very early times have been almost hopelessly confused. The first mention of the *Mu-yu shu* (literally, wood-oil tree), *A. montana* (Lour.) Wils., occurs in Lamarck's *Encyclopédie Méthodique Botanique*, where, under the name *Dryandra oleifera*, the fruit of this tree is described, in conjunction with the flowers and foliage of *A. cordata* R. Br. He [Lamarck] states that it is called *Mou-yeou* by the Chinese and that it was cultivated in the Jardin du Roi, at l'Isle de France. The Jesuit missionary, Loureiro, a Portuguese, established himself at Canton in 1779, and for three years investigated the flora of that region. He secured specimens of the *Mu-yu shu*, and in his *Flora Cochinchinensis*, page 518 (1790), describes it as *Vernicia montana*, and his specific name, being the oldest valid name, must stand. Subsequent authors have given other names to this tree, and several of them, notably Mueller Arg. (in *De Candolle's Prodrum*, vol. xv, pt. 2, p. 724, 1866), continued the confusion begun by Lamarck (*loc. cit.*).

"As a cultivated tree, *A. montana* occurs in the subtropical parts of south-eastern China, from the province of Fokien southward to Tonkin, and is also undoubtedly a native of these regions. It requires, without question, a subtropical climate and a more abundant rainfall than its more northern relative, *A. fordii*. In the central part of the Fokien Province, both *Mu-yu* and *Tung-yu* trees occur, according to Dunn (Report of the Botanical and Forestry Department, Hongkong, 1905, p. 117), and are known colloquially as *Hwa-tung* and *Guong-tung*, respectively. The *Hwa-tung*, to quote Dunn, 'is the most valued, because all the flowers of the majority of the trees produce fruit from which the oil is made, while in the second kind a few flowers only in each cluster are perfect, quite 80 per cent being male flowers.' This statement is not borne out by specimens before me, including some collected in Fokien by Dunn. The inflorescences might almost be classed into male and female, but there is nothing to indicate whether or not they came from the same or different trees. From the herbarium material one might reasonably assume that the tree was nearly dioecious, yet in all probability it is monoecious, as in other species of the family, but with a strong tendency to have the male and female flowers collected in different inflorescence of the same tree.

"The *Mu-yu* tree in size, habit, foliage, and general appearance (but not in the flowers and fruits) closely resembles the *Tung-yu* tree (*A. fordii* Hemsl.). The flowers are borne in a terminal corymb or a raceme on shoots of the current season's growth after the leaves have fully expanded. The 'male' inflorescence is many flowered, much branched, corymbose, 15 to 20 cm. long, and 20 to 30 cm. (1 cm. equals 0.3937 inch) broad. The 'female' inflorescence is

36897 to 36899—Continued.

relatively few flowered, racemose, and 8 to 12 cm. long. The fruit is markedly distinct, being egg shaped, 5 to 6 cm. long, 4 to 4.5 cm. wide, pointed at the summit and flattened at the base, with three longitudinal and many traverse, much-raised ridges; the interior part of the fruit (mesocarp) is thick and woody and incloses (usually) three compressed, broadly obovoid seeds, each about 3 cm. long by 2.5 cm. broad, and warty on the outside. When ripe, the fruit opens from the base upwards into three parts and the seeds can then be readily extracted. Since the fruit is comparatively thick and quite woody, it is not easily rotted by fermentation, as is the case in that of the *Tung-yu* tree.

"As will be shown later, the exports of oil from this tree are small, and it is quite impossible to cite chemical analyses that apply solely to the *mu-yu*, the product of *A. montana*. In all probability *Mu-yu* has been investigated by chemists, but, owing to the botanical confusion that has existed down to the present, it has not been clearly distinguished from *Tung-yu* or from the Japanese wood-oil. It is therefore very desirable that both the kernels which yield this *Mu-yu* and the commercial product itself be examined by chemists, and its constants, etc., definitely established. In order to avoid any possible error, a sample of the fruit should be obtained and the seeds extracted in the laboratory." (*E. H. Wilson, in the Bulletin of the Imperial Institute, vol. 11, no. 3, July to September, 1913.*)

For an illustration of the seed and fruit of the *Mu-yu* wood-oil tree, see Plate VI.

36898. GARCINIA OBLONGIFOLIA Champion.

"A native of Hongkong. This is a strong-growing creeper, which produces an edible fruit of a very pleasant, slightly acid taste." (*Tutcher.*)

36899. POUPARTIA AXILLARIS (Roxb.) King and Prain.

(*Poupartia fordii* Hemsl.)

"A tree about 30 feet high in its native habitat in Hongkong. It has fruit of an acid taste, rather bigger than a damson." (*Tutcher.*)

36900. PANAX QUINQUEFOLIUM L.

Ginseng.

(*Aralia quinquefolia* Decne. and Planch.)

From Songdo, Chosen (Korea). Presented by Mr. Alfred Welhaven, Unsan, Chosen. Received December 26, 1913.

"This seed was secured at Songdo, Chosen, the home of ginseng cultivation, and I hope the seed will prove all that is claimed for it. The ginseng from Songdo is the best in the world, according to the prices paid for it by the Chinese, who are the chief consumers of ginseng. I have secured this seed from a Korean gentleman living in Songdo, and he says the seed is first class and will surely give results if properly taken care of. His instructions are to keep the seed in damp sand." (*Welhaven.*)

36901 to 36905. SOJA MAX (L.) Piper.

Soy bean.

(*Glycine hispida* Maxim.)

From Peking, China. Presented by Mr. John McGregor Gibb, Peking University. Received December 26, 1913.

Quoted notes by Mr. Gibb.

36901. "Iron pod."

36904. "Big, white eyed."

36902. "Small golden flower."

36905. "White flower, short stalks."

36903. "The yellow four in a pod."

36906 to 36912.

From Dalny, Manchuria. Presented by Mr. Albert W. Pontius, American consul.
Received December 26, 1913.

Quoted notes by Mr. Pontius.

36906. SOJA MAX (L.) Piper. Soy bean.
(*Glycine hispida* Maxim.)

"Black soy bean. Shipped from Suchiatun station."

36907. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Adzuki bean.

"Small black bean. Shipped from Changchun station."

36908. VIGNA SINENSIS (Torner) Savi. Cowpea.

"Small bean. Chinese name *Changtou*; Japanese name *Uzura-mame*.
Shipped from Sanshihlipao, near Kinchou."

36909. PHASEOLUS AUREUS Roxb. Mung bean.

"Small green bean. Shipped from Yingchengtsu (in the Dairen district)."

36910 to 36912. PHASEOLUS ANGULARIS (Willd.) W. F. Wight.
Adzuki bean.

36910. "Small red bean. Shipped from Changchun station."

36911. "Small red-spotted bean. Shipped from Changchun station."

36912. "Small white bean. Shipped from Sunshu station."

36913 to 36924.

Presented by Mr. Lewis S. Palen, Harbin, Manchuria. Received December 29, 1913.

Quoted notes by Mr. Palen.

36913. CUCURBITA MAXIMA Duch. Squash.

36914 to 36919. SOJA MAX (L.) Piper. Soy bean.
(*Glycine hispida* Maxim.)

36914. "(From Tsitsikhar, Manchuria. November 5, 1913.) Yellow. White-eyebrow variety, *Ta pai mei*. This bean is used for oil, bean curd, sauces, and bean sprouts. This sample is from about 100 miles east of this neighborhood. This variety is found mostly west of Kai-yuan and Tiehling on the South Manchuria Railway. The estimated yield is from 936 to 2,574 pounds per acre, and the price roughly estimated at 46 cents gold per bushel of 60 pounds on the market."

36915. "(No. 2. Changchun, Manchuria. November 1, 1913.) Yellow. Golden, round variety, *Chin yuan tou*. This bean is used for oil, bean curd, sauces, and bean sprouts. It is the variety most generally found scattered all over the bean districts of Manchuria. The estimated yield is from 936 to 2,574 pounds per acre, and the price is roughly estimated at 46 cents gold per bushel of 60 pounds on the market. The Chinese are most casual in their estimates of yields."

36916. "(No. 3. Kirin, Manchuria. November 1, 1913.) Large green variety, *Ta ching tou*. A bean with green epidermis and green interior. The percentage of oil is less than that of the yellow. Used as bean curd, and as bean sprouts boiled with vegetables. The estimated yield is from 936 to 2,574 pounds per acre and the price slightly less than that of the yellow; roughly, 3 per cent."

36917. "(No. 3. Changchun, Manchuria.) Small green. Green epidermis and yellow interior."

36913 to 36924—Continued.

36918. "(No. 4. Changchun, Manchuria. November 1, 1913.) Large black variety, *Ta wu tou*. The oil equals about 75 per cent of that from the yellow. Mostly fed to horses and cattle. In some places officials prohibit the use for oil, in fear of the cost of feed being too greatly enhanced. It grows best and is much used on wet and marshy lands, where the yellow and green varieties will not do well. The yield is about the same as that of the yellow. The price is from 1 to 2 per cent higher than the yellow, owing to the Japanese demand at Dalny. The Chinese do not know the reason why it is preferred to the yellow."

36919. "(No. 5. Tsitsikhar, Manchuria. November 5, 1913.) Flat, black variety, *Pien wu tou*. The oil equals about 75 per cent of that from the yellow. Mostly fed to horses and cattle. In some places officials prohibit the use for oil, in fear of the cost of feed being too greatly enhanced. The sample probably comes from about 100 miles to the northeast of here. It will do well in very wet ground. The price is estimated at about 50 cents gold per bushel of 60 pounds on the Tsitsikhar market, which is slightly lower than the price of the yellow."

36920. *PHASEOLUS AUREUS* Roxb.

Mung bean.

"(No. 6. Changchun, Manchuria. November 1, 1913.) Green beans, *Lu tou tze*. Boiled with rice, when it is supposed by the Chinese to have a laxative effect; used also in making vermicelli. Quite generally found throughout bean districts. The yield, roughly estimated, is 1,700 pounds. The retail price in the Changchun market is 65 cents gold per bushel of 60 pounds."

36921 to 36923. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight.

Adzuki bean.

"Used boiled with kaoliang, corn, and other grains. The beans are first put in the kettle and cooked some time before the grains are added. Used also for white vermicelli. Although earlier than the yellow, green, and black soy beans, these small beans are said to be more confined to the southern districts. I can not vouch for this. The yield, roughly estimated, is 1,500 to 2,000 pounds. The price is slightly lower than that of sample No. 6 [S. P. I. No. 36920], say 5 per cent."

36921. "(No. 7. Changchun, Manchuria.) Small red bean, *Hung hsiao tou*."

36922. "(No. 8. Changchun, Manchuria.) Small gray mottled bean, *Li hsiao tou*."

36923. "(No. 9. Changchun, Manchuria.) Small white bean, *Pai hsiao tou*."

36924. *PHASEOLUS VULGARIS* L.

Kidney bean.

"(No. 10. Changchun, Manchuria.) *Su cheng tou*. Earliest of all varieties. Boiled like our Boston beans. Often planted as a catch crop where the green and yellow beans failed."

36925. QUERCUS SUBER L.

Cork oak.

From Gibraltar, Spain. Presented by Mr. R. L. Sprague, American consul. Received December 22, 1913.

"Spanish cork-oak acorns gathered in the woods in the vicinity of Gaucin, which is considered the best cork-producing region." (*Sprague*.)

36926. ASPARAGUS LUCIDUS Lindley.**Asparagus.**

From Taihoku, Formosa, Japan. Presented by the Bureau of Productive Industries, Government of Formosa. Received December 26, 1913.

"This is a scrambling plant of the most vivid green, forming an entangled mass many feet in length when cultivated in the greenhouse, but in its natural state not even a foot high. It is a native of Macao, whence it was received by the Duke of Northumberland, with whom it has produced little green flowers at Lyon. It is nearly allied to *A. falcatus*, from which it differs in its smaller solitary leaves and in the flowers not growing in racemes." (*Edwards's Botanical Register, 1844, Misc., p. 29, No. 36.*)

36927 to 36929.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 27, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36927. Cocos coronata Martius.**Nicuri palm.**

"(No. 29a. November 28, 1913.) Seeds of the nicuri palm, a species common in the region around the city of Bahia. It grows to a height of 20 or 30 feet and is usually somewhat scraggly in appearance, on account of the leaves being whipped and torn by the wind. The old leaf bases usually adhere to the trunk and are arranged spirally, giving a curious twisted appearance to the palm. The leaves are glaucous, and when well grown are very graceful, though not as feathery as *Cocos plumosa* and others of that type. In the interior of Bahia State this palm is very abundant, according to Dr. Argollo Ferrão, and goats feed on the fruits. The hard shell of the seed incloses a kernel which is fed to chickens and is sometimes eaten by the people themselves. The leaves are used as thatch and for making brooms, carpets, and hats; the nicuri hat is commonly worn by the natives in the rural districts around Bahia, and is sold in the markets at from 200 or 300 reis to 1 milreis (7 to 35 cents) each, according to quality. The plant is of slow growth. A wild orchid, called here wild vanilla, commonly grows on its trunk. It should be tried in Florida and California. These seeds were obtained at Shr. Pedro da Costa's place in Matatu, a suburb of Bahia."

36928. CANNA sp.**Canna.**

"(No. 30a. November 28, 1913.) Seeds of a wild canna which grows along the roadsides in the suburbs of Bahia. Its flowers are scarlet; the petals are narrow; the plant grows 3 to 4 feet high. For hybridization."

36929. EUGENIA UNIFLORA L.**Pitanga.**

"(No. 31a. November 29, 1913.) Seeds of the *pitanga* from select fruits produced at the country home of Dr. Fortunato da Silva in Cabulla, a suburb of Bahia. These fruits were chosen because of their unusually large size and handsome appearance. Should be tested in California and Florida as a selected strain of this interesting fruit. The *pitanga* is extensively used here as a hedge plant, and appeals to us as being unusually good for this purpose. The fruit is esteemed by the natives, especially when made into jelly or preserves. *Pitanga* sherbet is also popular in Bahia and is served in the cafés. Since the plant is already known in California and Florida under the name of 'Surinam cherry,' a description of this fruit is not necessary."

36930. CARICA PAPAYA L.**Papaya.**

From Brooksville, Fla. Grown at the Plant Introduction Field Station, Brooksville. Received December 30, 1913.

Seed of original plant given to Mr. Gomme by Mr. A. F. Spawn, late of Kissimmee, Fla. Seed supposed to be of Porto Rican origin. "We have two trees fruiting in the garden here, and they have withstood the cold these two seasons so far. The fruit appeals to me more than the Texas and Mexican varieties, being a little larger and sweeter; in fact, it is one of the best flavored papayas I have ever eaten. They make excellent preserves when cooked with lemon and a small quantity of apple." (*Gomme.*)

36931 to 36933.

From Elim, German Southwest Africa. Presented by the Finnish Mission. Received December 26, 1913.

36931. PENNISETUM GLAUCUM (L.) R. Brown.**Pearl millet.**(*Pennisetum typhoideum* Rich.)

"Omahangu."

36932. HOLCUS SORGHUM L.**Sorghum.**(*Sorghum vulgare* Pers.)

"Native name 'Iilja.' Red seeded."

36933. VIGNA SINENSIS (Torner) Savi.**Cowpea.**

"Omakunde, native pea."

36934. CYPHOMANDRA BETACEA (Cav.) Sendt.**Tree tomato.**

From La Guayra, Venezuela. Presented by Mr. Thomas W. Voetter, American consul. Received December 30, 1913.

"*Tomate extranjero.* Seeds of a fruit growing wild on the mountains near La Guayra. The accounts of the nature of the plant are conflicting, some stating that it is a tree about the size of a coffee tree; others that it is an annual and small. It is comparatively scarce. The fruit seems to be a species of tomato. It is about 3 inches long, with a diameter about half that. It is ovoid in shape, with a very firm and smooth skin, red in color, glossy, and of very attractive appearance. The flesh is firm and nearly fills the fruit, the seeds being relatively few in number and comparatively hard. The consistence, structure, and flavor of the flesh are very like a tomato. It preserves well. This plant is said not to be a native of Venezuela, and the names given, *Tomate extranjero* and *Tomate français*, would indicate the same." (*Voetter.*)

36935 and 36936. HOLCUS SORGHUM L.**Sorghum.**(*Sorghum vulgare* Pers.)

From Carignan, Ardennes, France. Purchased from Denaiffe & Fils. Received December 30, 1913.

36935. Black.**36936. White.**

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