

Issued May, 1923.

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



INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION  
DURING THE PERIOD FROM OCTOBER 1  
TO DECEMBER 31, 1920.

(No. 65; Nos. 51358 to 52305.)



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
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# INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM OCTO- BER 1 TO DECEMBER 31, 1920 (NO. 65; NOS. 51358 TO 52305).

## INTRODUCTORY STATEMENT.

During the autumn of 1920, the period covered by this inventory, Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture, was in Colombia and Ecuador, and his carefully selected plants comprise certain species heretofore unknown in North America. Those from the cool highlands may prove to be difficult to grow in this country because of their being accustomed to continual cool, foggy weather which at no time becomes cold enough to freeze. From Bogota he sends in the mountain papaya, *Carica candamarcensis* (No. 51389), which already seems to have proved its adaptability to the climate of San Diego, Calif.; *Cyclanthera pedata* (No. 51390), a new cucurbitaceous vegetable; a red-fruited passion vine, *Tacsonia* sp. (No. 51392); the capulin, *Prunus serotina* (No. 51393), a large-fruited wild cherry; the naranjilla, *Solanum quitense* (No. 51394), with bright orange fruits like the tomato but with a leathery skin; a glossy yellow pepper, *Capsicum annuum* (No. 51396); and the curuba, *Tacsonia mollissima* (No. 51399), a large passion fruit, one of the most popular fruits of Bogota.

Mr. Popenoe's successful introduction of the Colombian blackberry, *Rubus macrocarpus* (Nos. 51401 and 51706), of El Penon, which has fruits more than 2 inches in length and is possibly the largest fruited species of all blackberries, should awaken the activities of the plant breeder and lead to crossing and selection work on a considerable scale to produce, if possible, larger and finer forms for the market.

Two new barberries, *Berberis rigidifolia* (No. 51787) and *B. quin-duensis* (No. 51795), from an elevation of 9,000 feet in Colombia; a new holly, *Ilex* sp. (No. 51788), from the same region; and a crimson-flowered climber, *Mutisia clematis* (No. 51789), with flowers like small dahlias, are four of his finds.

The magnificent flowering tree, *Brownea grandiceps* (No. 51796), with flame-scarlet flowers in compact clusters; the canelo tree, *Drimys winteri* (No. 51797), with clusters of large white flowers; a species of *Carica* (No. 52299), with small fruits which are of a deep rich crimson color and very attractive but with whitish flesh, having an applelike scent; and a rapid-growing tree (No. 52304) from the Cauca Valley, which is worthy of trial as a street tree in southern Florida, are other results of his explorations.

The appreciation which the spring-flowering trees inspire nowadays should make Mr. Popenoe's flor de mico tree, *Phyllocarpus septentrionalis* (No. 51409), which flowers in January and February with a mass of crimson-scarlet blooms, a popular street or park tree in Florida. His wild Bogota strawberry, *Fragaria vesca* (No. 51564), may be valuable for breeding purposes; his chocho, *Lupinus cruckshanksii* (No. 51566), a 6-foot treelike lupine with varicolored flowers, is well worth growing, he believes. His two rare species of Tacsonia, *T. manicata* (No. 51567) and *T. pinnatistipula* (No. 51568), will add new material for the breeding of this neglected group of fruting vines; and the wild blackberry, *Rubus bogotensis* (No. 51569), from the sabana of Bogota, may be useful for breeding purposes.

Descriptions of the valuable plants collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture attached to the Smithsonian expedition, in his explorations in East Africa, continue to appear. Among them are many valuable things, including the doum palm, *Hyphaene thebaica* (No. 51440), distinguished as the only branching palm known. This species thrives in southern Florida and, since it is a beautiful landscape species, deserves to be widely planted there. A juniper, *Juniperus procera* (No. 51442), from the escarpment above the Rift Valley; a large, coarse grass, *Panicum quadrifarium* (No. 51446), from the banks of the Uaso Nyiro River; the beautiful liano (No. 51461), with clusters of deep reddish colored fruit, from the high forest region near Meru; a desert grass, *Cenchrus* sp. (No. 51488), with burlike seed, possibly valuable for our desert country; a Cotoneaster, *C. simonsi* (No. 51493), used for hedges in Nairobi; a large wild olive, *Olea chrysophylla* (No. 51519), from the highlands; a wild blackberry, *Rubus* sp. (No. 51535), of good flavor; a wild red raspberry, *Rubus* sp. (No. 51536), the Telfaria, *T. pedata* (No. 51542), a remarkable cucurbit bearing immense fruits which are filled with large edible seeds the size of a large almond; a new clover, *Trifolium* sp. (No. 51543), from Kenia Province; and *Trifolium tembense* (No. 51545) from the uplands of the same province, which thrives in very wet soil, are among the host of interesting things found by him. The extensive collections made during the last part of his African trip and including his stay in Uganda and the Anglo-Egyptian Sudan are comprised in his descriptions for Nos. 51898 to 52267. His collection of sorghums, beans, forage grasses, millets, cucumbers, cotton, etc., includes wild-growing forms as well as those cultivated by the agricultural tribes through whose land he traveled and can not fail to be of real value to the many research workers who are studying these important staple crops and are hunting for new characters to incorporate into our own highly developed varieties.

Doctor Shantz traveled more than 9,000 miles through the eastern portion of Africa from Cape Colony through to Egypt, and his more than 1,500 collections made through this vast territory and noted in this and the four preceding inventories include many introductions of great potential value for American agriculture. A map (Fig. 1) has been prepared, showing the region covered by his explorations.



FIG. 1.—Map of South and East Africa, showing the route taken by Dr. H. L. Shants in his Cape-to-Cairo agricultural exploration trip during the years 1919 and 1920.

Joseph F. Rock, a contributor to these inventories for several years and at one time a collaborator of the Office of Foreign Seed and Plant Introduction while collecting in India, in this inventory begins to describe his first collections made as an agricultural explorer of the United States Department of Agriculture. His first expedition to Siam and Burma was made for the special purpose of procuring authentic living material of those species of forest trees from the seeds of which is obtained the chaulmoogra oil used in the cure of leprosy. In connection with his main object he picked up a number of new and valuable plants, which are described in this inventory. The goa bean, *Botor tetragonoloba* (No. 51765), cultivated in the Malay Peninsula, he declares is a delicious vegetable, better than green string beans, and since it has fruited in Brooksville, Fla., it deserves study by truck growers in the South. *Coleus rotundifolius* (No. 51768), a species of mint, he reports is grown for its tubers in the Malay Peninsula. It will produce tubers from cuttings in five months, but when planted as tubers refuses to produce new ones the first year. *Flacourtia rukam* (No. 51772), from Bangkok, he finds is a handsome new fruiting tree, producing fruits the size of a large cherry. *Mangifera odorata* (No. 51774), with very strong-smelling fruits, which he found at Bangkok, may furnish a better stock for the mango than the mango seedlings themselves. *Artocarpus champeden* (No. 51804), related to the jack fruit, according to Mr. Rock is preferred to it by the Malays. The Siamese chaulmoogra tree is specifically *Hydnocarpus anthelminthica* (No. 51773.)

From the Belgian Kongo, Father Vanderyst sends in a native legume, *Sphenostylis stenocarpa* (No. 51365), which forms edible tubers and is cultivated by the natives of German East Africa. These tubers have a flavor similar to that of potatoes, according to Doctor Zimmermann, the botanist who was stationed for years on Mount Kilimanjaro.

*Populus charkowiensis* (No. 51381), said to be one of the fastest growing of all poplars and a hybrid between the pyramidal poplar and the black poplar, has been procured from Orleans, France.

Fresh cassava roots as a starchy vegetable are beginning to make their appearance in southern Florida, but as yet their use is too little appreciated. The cassava is an enormous food producer and has the advantage over corn that its roots store themselves, so to speak, in the soil and do not need to be gathered at any definite time. Mr. Krauss has shown how certain Hawaiian varieties, *Manihot esculenta* (Nos. 51358 and 51359), respond remarkably to fertilizers and can be made to yield as much as 10 tons an acre.

The tulda bamboo has been so successful wherever it has grown in central Florida that another Bengal species, *Bambos balcooa* (No. 51361), said to be taller even and stouter than the tulda, should have an unusual interest to the growing group of people who are cultivating bamboos.

A tropical plum, *Prunus bokhariensis* (No. 51743), from the United Provinces of India, which, according to Mr. Rockey, who sends it, is a sweet-fruited variety, might have great value for the Southern States.

From Darwin, Northern Territory, Australia, Mr. Allen sends in *Andropogon bombycinus* (No. 51792), a species which grows in drifting sands and will endure much heat and drought.

The guar of India ought to be given unusual attention, and four new varieties, *Cyamopsis tetragonoloba* (Nos. 51598 to 59601), used as a vegetable, should be thoroughly tried because of the drought resistance of the species.

*Vitex cuneata* (No. 51604), with leaves larger than the horse-chestnut and large, highly scented flowers, may prove valuable as a shade tree in the South.

*Ribes longeracemosum* (No. 51617), from the mountains of western China, bears large black fruits in racemes  $1\frac{1}{2}$  feet long, and ought to be useful to plant breeders. If it proves resistant to the white-pine blister rust, for which black currants generally are hosts, it might be the beginning point of a race of long-clustered black currants.

Doctor Pittier has sent in a new cultivated fruit tree, the guayabo pesjua (No. 51626), an undescribed *Myrciaria*, which bears fruits that are favorites among the Venezuelans and should have a chance of succeeding in Florida.

Cuttings of *Pyrus malifolia* (No. 51702) have been procured from the Museum of Natural History in Paris. This is a supposed hybrid with leaves resembling those of the apple.

The guisquil de papa, *Chayota edulis* (No. 51704), is a perfectly smooth skinned white chayote, which when cooked is unusually smooth in texture and reported to be of a better flavor than the common kind. It should be widely tested wherever the chayote will grow.

Leonard Coates, of Morgan Hill, Calif., has been using the seeds of a hybrid peach-almond (No. 51705) as a stock and strongly recommends it as making double the growth of the ordinary peach.

The director of the plant-breeding station in Buitenzorg, Java, has sent a remarkable collection of palm seeds (Nos. 51707 to 51726 and 51733 to 51739) and seeds of screw pines or *Pandanus* (Nos. 51727 to 51732) for trial in Florida, where both palms and screw pines thrive remarkably well and are beginning to be of very great landscape importance.

The Turkish hazel, *Corylus colurna* (Nos. 51779 and 51780), of which Mr. Dunbar has a beautiful specimen in the park in Rochester, N. Y., unlike our hazel, is a good-sized tree, attaining when mature 60 feet in height. Its nuts, although smaller than the cobnut or commercial filbert, compare favorably with the wild American hazelnuts. This hazel will probably make a good nut tree for roadside planting in the Northern States.

The *Mimusops kauki* (No. 51820), which grows on the islands scattered around the Straits Settlements region, bears fruits resembling dates in shape which are of unusual value to the natives, who dry them and keep them for seasons of scarcity. Perhaps it would grow on the Florida keys.

The guada, *Trichosanthes anguina* (Nos. 51824 to 51827), is a rapid-growing cucurbit from the Solomon Islands which within a few months from the time of planting produces as much as 25 pounds of fruit. These are 3 to 6 feet long, range from orange to green in color, and weigh as much as 2 pounds apiece. When sliced and served with a French dressing they are said to be quite a luxury. They may serve as a substitute for cucumbers in the South.

Thomas Brown, of Egypt, sends a remarkable collection of *Crotalaria*s (Nos. 51832 to 51842), promising cover crops and humus-producing plants, for trial in California and Florida.

The Madrid Botanic Garden has furnished a valuable collection of the forage legume, lotus, embracing 14 species (Nos. 51856 to 51869) collected in Europe and Africa.

Through John Dunbar, of Rochester, N. Y., we have received for propagation material of what is probably the most satisfactory of all the poplars and one of the few large-leaved exotic trees that can be recommended for general planting in the Northern States, *Populus maximowiczii* (No. 51877). It grows 3 to 5 feet a year for the first eight years under conditions where the Norway maple will grow only 6 to 24 inches and the red and pin oak 12 to 30 inches. A tree at the Arnold Arboretum is now 20 years old and 35 feet tall.

There is a variety of sulla, *Hedysarum coronarium* (Nos. 51888 and 51889), occurring on the little island of Gozo (one of the Malta group), which matures earlier than the ordinary sort of this remarkable forage crop; it seems worth testing in the South where the ordinary sulla has not been a success, since it is caught by the fall frosts.

*Paulownia fortunei* (No. 52268), a Formosan flowering tree related to *Paulownia imperialis* but with whitish spotted flowers, has wintered in Washington successfully. Possibly it will prove a desirable ornamental park tree for the Southern States.

A. C. Hartless, of Seharunpur, sends in seeds of a tree of the caper family, *Crataeva religiosa* (No. 52286), the fruits of which are mixed with mortar to form strong cement. Just how it increases the strength of the cement is not clear.

To those interested in tropical persimmons, *Diospyros peregrina* (No. 52288), with fruits 2 inches across, may be useful.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by H. C. Skeels, and the descriptive and botanical notes arranged by G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript of this inventory has been prepared by Miss Esther A. Celander and Miss Patty T. Newbold.

DAVID FAIRCHILD,  
*Agricultural Explorer in Charge.*

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,  
*Washington, D. C., March 18, 1922.*

## INVENTORY.<sup>1</sup>

### 51358 to 51360. *MANIHOT ESCULENTA* Crantz. Euphorbiaceæ. **Cassava.** (*M. utilis* Pohl.)

From Haiku, Maui County, Hawaii. Cuttings presented by F. G. Krauss, superintendent of agricultural extension, Hawaii Agricultural Experiment Station, through J. M. Westgate, agronomist in charge, Honolulu. Received October 1, 1920. Quoted notes by Mr. Krauss.

"The cassava was grown on rough pineapple land, without fertilization and little or no cultivation (aside from the initial plowing under of the old pineapple stumps and one cross-plowing) to test its adaptability as a rotation crop. Harvested at the end of 15 months, on June 15, at the Haiku substation for the first test and at the close of a growing period of 18 months on four one-sixth-acre plats for the second test."

51358. "*Sweet white* (early maturing) culinary variety. First test: Clean roots per acre, 3,360 pounds. Second test: Check rows (no treatment), average of four plats, roots per acre, 3,129 pounds. Fertilized with 500 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 6,258 pounds. Fertilized with 1,000 pounds of phosphates (half super and half reverted), roots per acre, 7,712 pounds."

51359. "*Bitter red* (late maturing) stock-feed variety. First test: Clean roots per acre, 24,360 pounds. Second test: Check rows (no treatment), average of four plats, roots per acre, 10,918 pounds. Fertilized with 500 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 17,976 pounds. Fertilized with 1,000 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 20,962 pounds. Starch recovered, 18 per cent."

51360. "*Martin's Intermediate* variety. First test: Clean roots per acre, 7,014 pounds. Second test: Check rows (on treatment), average of four plats, roots per acre, 4,326. Fertilized with 500 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 6,920 pounds. Fertilized with 1,000 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 11,802 pounds."

### 51361. *BAMBOS BALCOOA* Roxb. Poaceæ. **Bamboo.**

From Lucknow, Oudh, India. Seeds presented by H. J. Davies, superintendent, Government Horticultural Gardens, through W. Bembower, Allahabad Agricultural Institute. Received October 1, 1920.

The large and characteristic bamboo of the Bengal villages, native to the plains of the eastern side of India, extending from Bengal into Assam and Cachar. It differs chiefly from *Bambos tulda* in its larger leaves, which are not pubescent

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

and are possessed of distinct transverse veins. The joints of the rachis are short and glabrous. The plant has stems often 50 to 70 feet in height, stouter and taller than in *B. tulda*. *B. balcooa* is the best Bengal species for building, scaffolding, and other works which require both size and strength. Long immersion in water tends to make the timber firmer and proof against the attacks of the *Bostrychus* borer. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 39.*)

**51362. HYDNOCARPUS WIGIITIANA Blume. Flacourtiaceae.**

From Calcutta, India. Seeds presented by Harold R. Foss, American consul in charge. Received October 4, 1920.

A common tree of the western peninsula from the Konkan along the coast ranges of India. The seeds yield by expression, or by boiling in water, about 44 per cent of a tasteless, odorless, sherry-yellow oil which is chiefly used as a lamp oil in Goa. The seed has long been employed by the natives of the western coast ranges as a domestic remedy in cases of skin disease and as a dressing for wounds and ulcers. The oil is now used as an ingredient in a mixture for similar uses. Used internally in doses of 15 minims to 2 drachms, the oil has given satisfactory results as a substitute for the more expensive chaulmoogra oil in the treatment of leprosy. It is also used in the same way to treat secondary syphilis and chronic rheumatism. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 308.*)

**51363. ALLIUM SATIVUM L. Liliaceae. Garlic.**

From Shanghai, China. Sets presented by D. MacGregor, Superintendent of Parks, through Edwin S. Cunningham, American consul general. Received October 5, 1920.

"Sets of the best commercial varieties of garlic." (*Cunningham.*)

**51364 and 51365.**

From Kisantu, Belgian Kongo. Presented by Father Hyacinthe Vanderyst. Received October 7, 1920.

**51364. CACARA EROSA (L.) KUNTZE. Fabaceae. Yam bean.**  
(*Pachyrhizus angulatus* Rich.)

"A twining, wiry stemmed plant with large tuberous roots, occasionally grown in the West Indies. It has also been tested in Florida and has proved to be quite successful at Miami. Its roots, which are sometimes very large, contain much starch." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 47146.

**51365. SPHENOSTYLIS STENOCARPA (Hochst.) HARMIS. Fabaceae.**

"This legume forms edible tubers and is cultivated by the natives in German East Africa. The flavor of these tubers is similar to that of potatoes." (*Dr. A. Zimmermann.*)

For previous introduction, see S. P. I. No. 31194.

**51366. ARALIA CACHEMIRICA Decaisne. Araliaceae.**

From Rochester, N. Y. Plants presented by John Dunbar, assistant superintendent, Department of Parks. Received October 8, 1920.

This close relative of the udo (*Aralia cordata*) is found in temperate regions of the Himalayas in Sikkim and Kashmir, India, where it forms a lax shrub 5 to 10 feet in height. The leaflets of this species are said to have hairy upper surfaces, while those of the udo are glabrous. Also, the leaves of this species are quinately compound, while those of the udo are ternately or quinately decompound. The umbels of flowers are borne in panicles up to a foot in length. (Adapted from *Hooker, Flora of British India, vol. 2, p. 722*, and *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 344.*)

**51367. CARICA PAPAYA L. Papayaceae. Papaya.**

From Swatow, Kwangtung, China. Seeds presented by Arthur H. Page. Received October 8, 1920.

"I am sending you a few seeds of my commonest papayas." (*Page.*)

For previous introduction, see S. P. I. No. 47586.

**51368 to 51370.**

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received October 15, 1920. Quoted notes by Doctor Proschowsky.

51368. *ASCLEPIAS CURASSAVICA* L. Asclepiadaceæ. Milkweed.

"A small shrub with showy orange flowers, hardy here."

A subtropical perennial, native to the West Indies, with stems 2 or 3 feet in height and deep-green lanceolate leaves. The scarlet and saffron colored flowers are borne in upright umbels. (Adapted from *Edward's Botanical Register, vol. 1, pl. 81.*)

51369. *EUPATORIUM* sp. Asteraceæ.

"A large bush or small tree bearing feathery white flowers in great abundance nearly the whole year."

Received as *E. morrisii* Vis., a name which first appeared in a garden list without description. Apparently a description of the plant has never been published.

51370. *MIMOSA GLOMERATA* Forsk. Mimosaceæ.

"A perennial herbaceous plant whose stems die down in winter. It develops long, leafy shoots in spring, of which farm animals are very fond. It is quite spineless and very drought resistant, having a long tap-root, so that it may be of value as a forage plant for dry climates."

For previous introduction, see S. P. I. 34044.

**51371 to 51373. *CYAMOPSIS TETRAGONOLOBA* (L.) Taub. Fabaceæ.  
(*C. psoraloides* DC.) Guar.**

From Poona, Bombay Presidency, India. Seeds presented by Dr. William Burns, economic botanist, Poona Agricultural College. Received October 15, 1920.

"An erect East Indian leguminous annual with long, straight stems bearing an enormous number of pods, each containing about seven pale, angular seeds. The plant grows 3 to 6 feet in height and in India is cultivated both for green forage and for the seed, which is used mainly for feeding cattle but also for human food. Guar may be grown anywhere in this country where cowpeas succeed and is more drought resistant than any other annual legume. It may be utilized as hay, pasturage, or silage." (*C. V. Piper.*)

The following varieties were received:

51371. *Pardeshi.* 51373. *Sotiya.*

51372. *Makhaniya.*

For previous introduction, see S. P. I. No. 49902.

**51374 to 51376.**

From Medellin, Colombia. Seeds presented by W. O. Wolcott. Received October 19, 1920.

51374. *ANNONA MURICATA* L. Annonaceæ. Soursop.

"The soursop, known in Spanish-speaking countries as the guanábana, is unexcelled for sherbets and refreshing drinks. The fruit is oblong, sometimes weighs 4 or 5 pounds, and has white flesh with a rich, aromatic flavor. The tree is tropical in its requirements and in the United States can be grown only in the southern part of Florida." (*Wilson Popnoe.*)

For previous introduction, see S. P. I. No. 47874.

51375 and 51376. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"I have a new kind of castor-bean which is twice the size of the ordinary kind; it is like a large Lima bean and is said to yield more oil than the ordinary bean." (*Wolcott.*)

51375. A. Seeds light gray overlaid with red markings.

51376. B. Seeds light gray overlaid with dark-brown markings.

**51377 and 51378. ANANAS SATIVUS** Schult. f. Bromeliaceæ. **Pineapple.**

From Pago Pago, American Samoa. Offshoots presented by Hon. Warren J. Terhune, governor. Received October 20, 1920.

"Offshoots of a very fine variety of Samoan pineapple." (*L. W. Cartwright, private secretary to the governor.*)

**51379. PHLEUM PRATENSE** L. Poaceæ. **Timothy.**

From Sydney, New South Wales. Seeds presented by George Valder, undersecretary and director, Department of Agriculture. Received October 20, 1920.

Seeds of locally grown timothy, introduced for the use of the Office of Forage-Crop Investigations.

"Grows on poor sandy soil; harvested in January, 1920." (*Valder.*)

**51380. PYRUS** sp. Malaceæ. **Pear.**

From Chico, Calif. Seeds collected by Galloway, Wight, and Allanson at the Plant Introduction Field Station. Received October 4, 1920.

These were removed from a collection of 125 different pears, mostly of Chinese varieties or hybrids, which were sent to Washington from Chico station. The seeds are to be planted and grown for the purpose of producing material of possible value as natural hybrids; also material for breeding purposes and for stock.

**51381. POPULUS CHARKOWIENSIS** Schroed. Salicaceæ. **Poplar.**

From Orleans, France. Cuttings purchased from Léon Chenault & Son. Received November 29, 1920.

This is said to be the fastest growing poplar known; it is very hardy and has very light wood. It is considered a hybrid between *P. pyramidalis* and *P. nigra*. (Adapted from *Mitteilungen der Deutschen Dendrologischen Gesellschaft, No. 28, p. 143.*)

**51382 to 51386. AVENA SATIVA** L. Poaceæ. **Oats.**

From Madrid, Spain. Seeds presented by Guillermo Quintanilla, director, Escuela Especial de Ingenieros Agronomos, through Ely E. Palmer, American consul. Received November 23, 1920. Quoted notes by Sr. Quintanilla.

**51382.** "*Adanero*, from Avila Province."

**51383.** "*Avena gris*, from Soria Province."

**51384.** "*Palacios de Goda*, from Avila Province."

**51385.** "*Avena blanca*, from Soria Province."

**51386.** "*Flores de Avila*, from Avila Province."

**51387. COLOCASIA ESCULENTA** (L.) Schott. Araceæ. **Taro.**

From Yencheng, Kiangsu, China. Tubers presented by Rev. Hugh W. White, American Presbyterian Mission, South. Received December 10, 1920.

"This community is using the taro largely as a food article, answering somewhat to our potato, and we ourselves have discovered a method of preparation which makes it a most palatable dish." (*White.*)

"The tubers of this variety when cooked by boiling (early in December) were very moist and rather lacking in flavor, but the texture was smooth and other methods of preparation should make it more agreeable to the American palate. Judging from an earlier introduction [S. P. I. No. 34520] of this taro, the corn is mealy and otherwise of good quality." (*R. A. Young.*)

**51388. XANTHOSOMA SAGITTAEFOLIUM (L.) Schott. Araceæ.****Yautia.**

From Coban, Alta Vera Paz, Guatemala. Tubers presented by Harry Johnson. Received October 12, 1920.

"The *Kesh-camote*, purchased in the market place, Coban. These appear to be very good examples of the common variety seen about here. Those grown at Chama are as a rule smaller. They are usually sold boiled and peeled, to be eaten out of hand, by the Indians. The custom of cooking the various native vegetables and selling them by portion is evidently an old one, as it is everywhere apparent." (Johnson.)

"The tuber of the *Kesh-camote* received is a white-fleshed yautia of very good quality. It is short and thick and about 5 ounces in weight." (R. A. Young.)

**51389 to 51395.**

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October 13, 1920. Quoted notes by Mr. Popenoe.

**51389. CARICA CANDAMARCENSIS** Hook. f. Papayaceæ.

"(No. 456a. September 20, 1920.) *Papaya*. Evidently this hardy species, which is common in gardens on the mesa or plateau of Bogota, goes by the same name as the papaya of the lowlands, the true *Carica papaya*, although the two species are quite distinct in the character of their fruit.

"*Carica candamarcensis* is sufficiently hardy to be grown in many parts of southern California, and I believe it worth establishing in that State. I have grown it myself at Altadena, but unfortunately the plants were all of one sex, and I never had any fruit.

"In general appearance the species greatly resembles *C. papaya*, except that it is somewhat smaller in its leaves and fruits. It grows to about 20 feet in height. The fruits are the size of a large lemon, or about 4 inches long, elliptic in form and deeply ribbed. They are deep yellow or orange when ripe and very aromatic—quite a contrast in this respect to the true papaya. The flesh is scarcely half an inch thick, and the seed cavity is filled with seeds and the arils which surround them. The fruit is not eaten out of hand but is cooked in sirup, to make a very good dulce."

For previous introduction, see S. P. I. No. 49473.

A fruiting tree of this species is shown in Plate I.

**51390. CYCLANTHERA PEDATA (L.) Schrad. Cucurbitaceæ.**

"(No. 458a. September 20, 1920.) A cucurbit commonly sold in the market of Bogota and falsely called *pepino* (cucumber), since it is not eaten as a salad, like the cucumber, but is served relleno or stuffed with forcemeat and baked, as are sweet peppers in the North. It is long and slender, tapering to a point at the apex; about 5 inches long, light green, with a hollow cavity in the center."

For previous introduction, see S. P. I. No. 29330.

Fruits of this vine are shown in Plate II.

**51391. LAVATERA ASSURGENTIFLORA** Kellogg. Malvaceæ.

"(No. 455a. September 20, 1920.) *Malvisco*. A malvaceous shrub cultivated in dooryards at Nemocon, north of Bogota, at an altitude of about 8,600 feet. The plant reaches about 8 feet in height, is half woody and bushy in habit. The flowers are about 2 inches broad, somewhat like hollyhocks in form, and purplish red."

**51392. TACSONIA** sp. Passifloraceæ.

"(No. 461a. September 20, 1920.) *Curuba*. This is a somewhat rare species with red fruits (wherein it differs from the common *curuba* of this region). Also, I believe the plant is somewhat more decorative than the common species, the flowers being of a livelier shade of pink.

## 51389 to 51395—Continued.

The fruits are 2 to 4 inches long, somewhat more slender toward the base than near the apex, and greenish crimson when ripe. In quality they are perhaps not so good as those of the common *curuba* or *curuba de Castilla*. The plant is a climber, reaching, perhaps, 15 or 20 feet."

For previous introduction, see S. P. I. No. 42032.

**51393. PRUNUS SEROTINA Ehrh. Amygdalaceæ.****Napulin.**

"(No. 460a. September 20, 1920.) *Cereza*. The wild cherry of the Andes, which appears to be about the same as the cereza of Guatemala and southern Mexico. The tree, which is common on the plateau of Bogota, grows to about 40 feet in height and is stout. The leaves are long and slender, and the white flowers are borne in racemes up to 6 inches long. The fruits are half an inch or more in diameter, oblate, dark maroon, and of pleasant but not pronounced flavor."

For previous introduction, see S. P. I. 44885.

**51394. SOLANUM QUITOENSE Lam. Solanaceæ.****Naranjilla.**

"(No. 459a. September 20, 1920.) *Lulu*. A solanaceous plant, probably a shrub, bearing broadly ovoid to round, bright-orange fruits about 2 inches in diameter. These have a leathery skin, inclosing peculiarly translucent greenish flesh and many small flattened seeds. The flavor is subacid and somewhat aromatic; the fruit is used to make a refreshing drink, or it is sometimes eaten out of hand."

For previous introduction, see S. P. I. No. 47951.

**51395. DESFONTAINEA SPLENDENS Humb. and Bonpl. Loganiaceæ.**

"(No. 462a. September 20, 1920.) A shrub from the mountains above Fusagasuga, at 9,400 feet altitude. It is broad and compact in habit, reaching to about 5 feet in height. Its leaves resemble those of the holly in form and character, but are of a lighter shade of green. The flowers are tubular, about an inch long, red below and yellow at the mouth. The plant is an attractive one, and is recommended for trial as an ornamental."

**51396 to 51403.**

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October 4, 1920. Quoted notes by Mr. Popenoe.

**51396. CAPSICUM ANNUM L. Solanaceæ.****Pepper.**

"(No. 450a. September 11, 1920.) Seeds of *aji*, a yellow pepper from the Bogota market. It is somewhat conical in form, about 2 inches long, rich glossy yellow, and has fairly thick flesh. It is not so piquant as the small chilies, but more so than the sweet peppers."

**51397. OXALIS TUBEROSA Molina. Oxalidaceæ.**

"(No. 447. September 11, 1920.) Tubers of *hibia*, one of the favorite root crops of the Indians, by whom it has been cultivated since pre-Columbian times. It has the disadvantage (for the North) that it requires nearly a year to reach maturity, and as it is not very hardy, it will probably not be possible to cultivate it in the northern United States. It likes a cool climate, soft rich soil, and abundant moisture."

For previous introduction, see S. P. I. No. 46659.

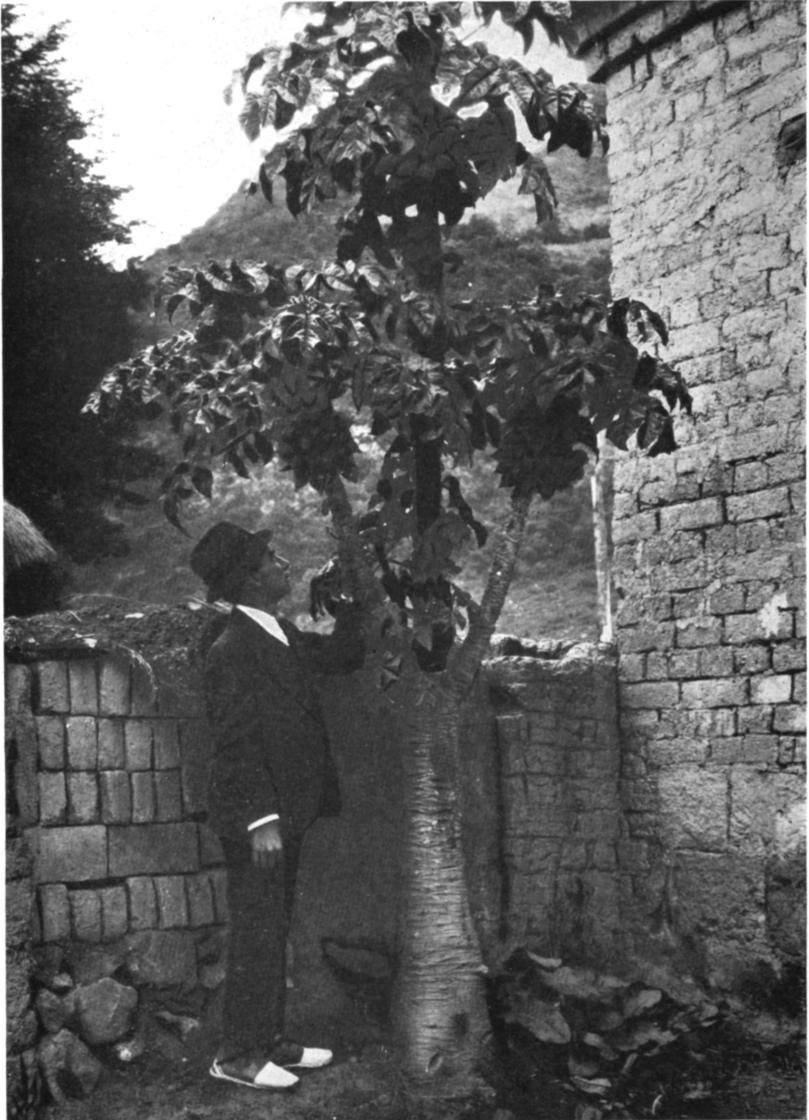
**51398. PASSIFLORA LIGULARIS Juss. Passifloraceæ. Sweet granadilla.**

"(No. 452a. September 11, 1920.) Seeds of the *granadilla*, commonly cultivated in the highlands of Cundinamarca up to 6,500 feet altitude. The fruit is oval to nearly round, nearly 3 inches long, brown, and somewhat spotted on the surface, with a brittle shell inclosing flattened black seeds surrounded by translucent, juicy, whitish pulp of pleasant, subacid, slightly aromatic flavor. It is perhaps not quite so good as the *granadilla* of Guatemala."

For previous introduction, see S. P. I. No. 49146.

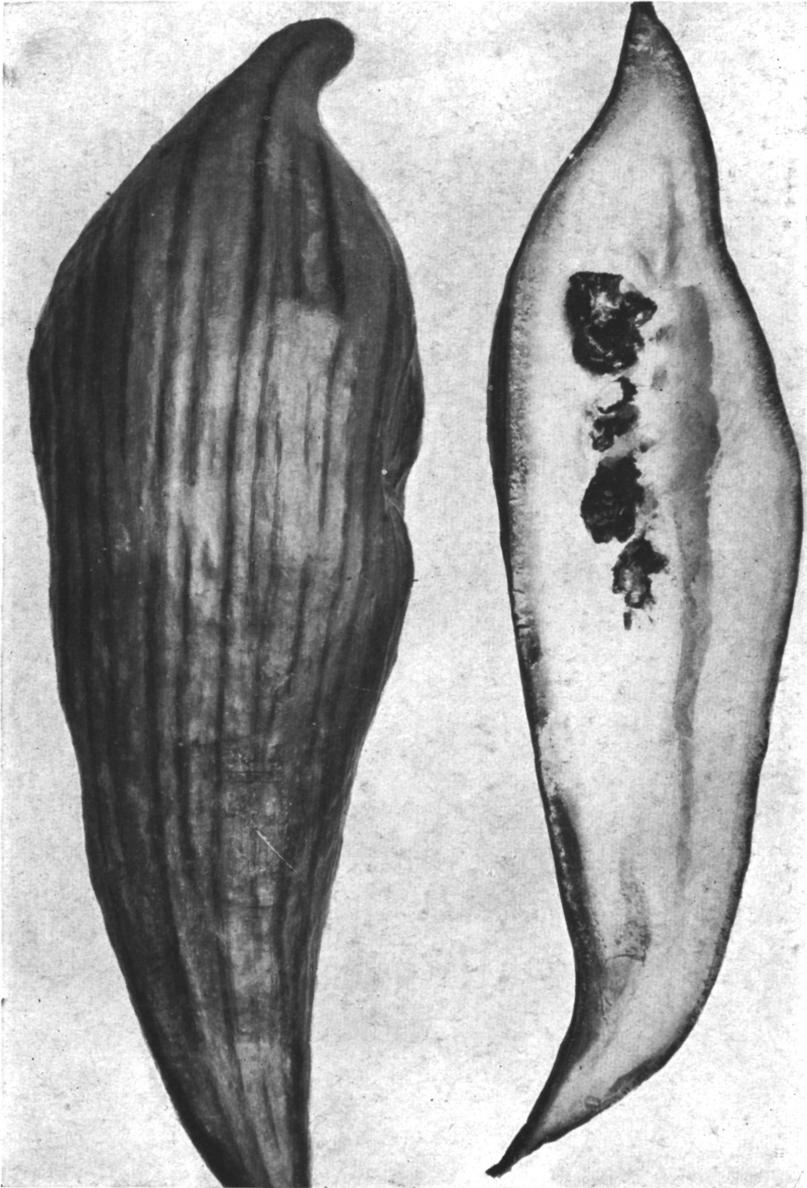
**51399. TACSONIA MOLLISSIMA H. B. K.**

"(No. 449a. September 11, 1920.) Seeds of the *curuba*, or *curuba de Castilla*. This species is more commonly cultivated on the mesa of Bogota than any of the several others whose fruits are also known as



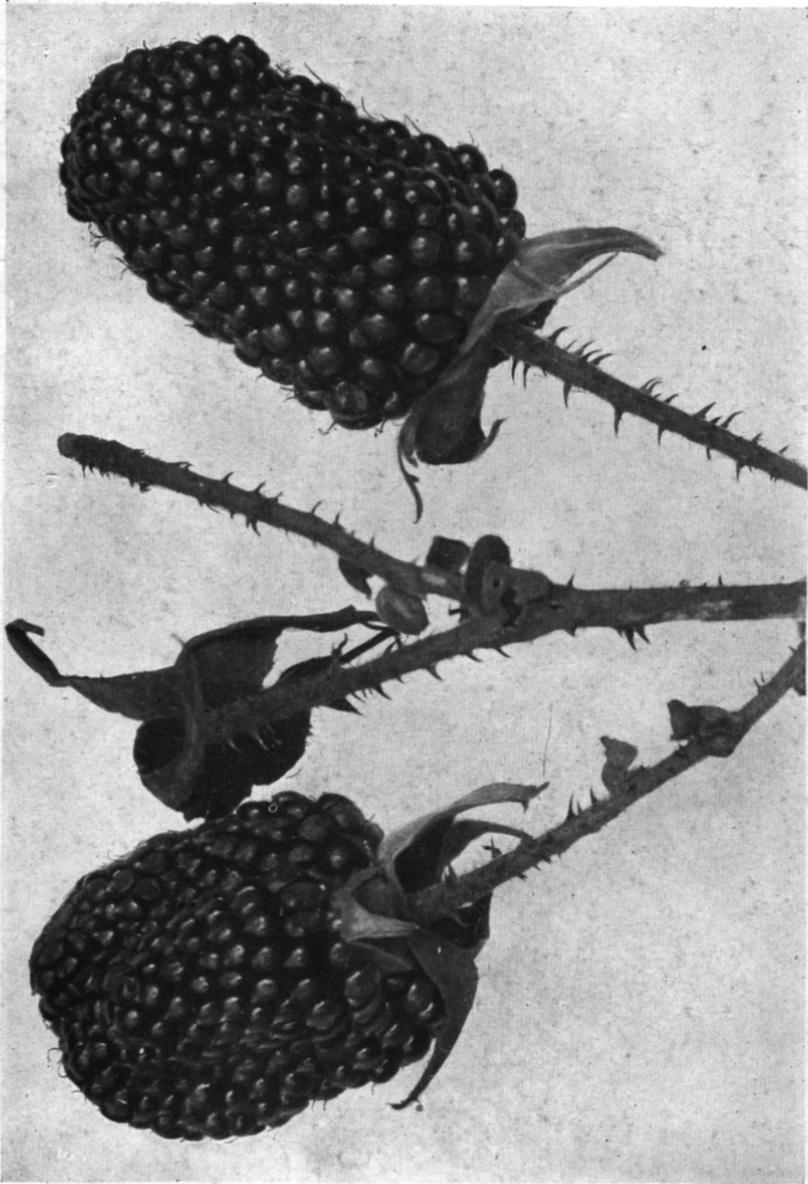
THE MOUNTAIN PAPAYA IN FULL BEARING. ((*CARICA CANDAMARCENSIS* HOOK, F.; S. P. I. No. 51389.)

A few trees of this species have been grown in California, and Mr. Popenoe believes that it is worth establishing in that State. The tree is hardier than the papaya and may serve as a factor in breeding hardier strains of that delicious fruit. The deep-yellow or orange fruits of the mountain papaya are about the size of a large lemon and are very aromatic; cooked in sirup, they make an excellent dulce. (Photographed by Wilson Popenoe, Nemocon, Colombia, September 8, 1920; P18016FS.)



A NEW VEGETABLE FROM COLOMBIA. (*CYCLANTHERA PEDATA* (L.) SCHRAD.;  
S. P. I. No. 51390.)

Commonly sold in the markets of Bogota under the misleading name of "pepino," this vegetable, borne on a vine like the cucumber, is said by Mr. Popenoe to be served stuffed with chopped meat and baked, as are sweet peppers in the North. It is not eaten as a salad like the true pepino (*Solanum muricatum*). (Photographed, natural size, by Wilson Popenoe, Bogota, Colombia, August 26, 1920; P18035FS.)



**THE GIANT COLOMBIAN BERRY. (RUBUS MACROCARPUS BENTH.; S. P. I. No. 51401.)**

These berries, which are here shown natural size, are possibly the largest fruited of all known blackberries; and their introduction by Mr. Popenoe should stimulate work in selecting and crossing to produce, if possible, larger and finer forms of blackberries for American markets. (Photographed by Wilson Popenoe, El Penon, Colombia, October 16, 1920; P18152FS.)



**A MAGNIFICENT FLOWERING TREE FROM EASTERN GUATEMALA. (PHYLLOCARPUS SEPTENTRIONALIS DONN.-SMITH; S. P. I. No. 51409.)**

This tree, the *flor de mico*, as it is called in Guatemala, may be compared with the royal poinciana when in bloom, though the individual flowers are smaller than in that species. The great masses and deeper scarlet color more than compensate for their smaller size, however; and since the tree is semideciduous at flowering time, the general effect is even more brilliant than that of the poinciana. It flowers in January and February. (Photographed by Wilson Popenoe, El Barranquillo, Guatemala, January 29, 1920; P17718FS.)

## 51396 to 51403—Continued.

*curuba*. The vine is not quite so ornamental as that of some other species, but the fruit is considered one of the best. It is slender oblong-oval, 2 to 4 inches long, and slightly more than an inch thick, with a thin, leathery pericarp (not brittle, as in most other species) inclosing many black seeds, each surrounded by an orange-colored, juicy aril. The flavor is sprightly and aromatic. While much eaten out of hand, the fruit is perhaps best when prepared in the form of *creme de curuba* or when made into an ice. Certainly the *curuba* is one of the most popular fruits in Bogota."

For previous introduction, see S. P. I. No. 43766.

51400. *PHYSALIS PERUVIANA* L. Solanaceae.

Poha.

"(No. 451a. September 11, 1920.) Seeds of *uchuba*, a form of the ground cherry, or husk cherry, cultivated in the Colombian highlands. The plant reaches about 4 feet in height, and the fruits are oval to nearly round, up to an inch in length, deep yellow when fully ripe, and much esteemed for making dulces, or preserves."

For previous introduction, see S. P. I. No. 48181.

51401. *RUBUS MACROCARPUS* Benth. Rosaceae.

Colombian berry.

"(No. 446a. September 11, 1920.) Seeds of the *mora*. This is the giant Colombian blackberry, first called to our attention by Frank M. Chapman, of the American Museum of Natural History, and last year introduced into the United States, on a very limited scale, through the efforts of Frederick L. Rockwood, of Bogota. It is a remarkable berry and one which will be of great interest, I believe, to North American horticulturists.

"Frank M. Chapman, M. T. Dawe, and others have spoken of this species as the *mora de Castilla*. This name is, indeed, sometimes applied to it, but it is given to various species of *Rubus* as well, the term 'de Castilla' being applied to a great many products of the country, signifying that they are of good quality (everything good being supposed to emanate in colonial days from Castile or Spain). Many of the natives with whom I have talked know the species simply as *mora*. Since it is not greatly like our northern berries I suggest that it be called the *Colombian berry* instead of the giant blackberry, thus honoring the land of its origin.

"The species seems limited to regions of very particular climatic conditions; I have seen it only at altitudes of 8,500 to 9,500 feet, in moist mountain meadows on the outer edge of the mesa or plateau of Bogota, where the clouds drift up from the valley and keep the plants bathed almost constantly in mist. It grows among brush and large ferns, its coarse canes reaching to about 10 feet in height and often recurving somewhat. The leaves, which are trifoliate, are large and coarse. The flowers are produced singly at the ends of stalks 3 to 5 inches long, half a dozen or more of them arising from the summit of a single cane. The flowers are rosy purple and nearly an inch in diameter.

"The berries, which ripen principally from October to December in the region where I have studied the plant (El Penon, between Sibate and Fusagasuga), are variable in form, some being heart shaped and compressed on two sides, others ovoid, and still others oblong. The largest are about 2 inches in length. The individual drupelets are large, and each contains a hard, slender, oblong seed; the torus or receptacle is large and extends well into the center of the fruit; when ripe it separates readily from the drupelets and can be removed before the fruit is eaten. The color of the ripe berry is deep maroon-red. It is juicy and of pleasant flavor, not distinctly resembling the blackberry in this particular. It is used mainly for preserving or making dulces and is frequently seen in the Bogota markets, where it is much in demand and commands a good price."

Plate III shows two fruits (natural size) of this species.

51402. *RUBUS* sp. Rosaceae.

Blackberry.

"(No. 453a. September 11, 1920.) Seeds of *mora*, a fine large blackberry from the Bogota market. The fruits are 1½ inches long, thick in proportion to their length, and of good flavor and quality. The species grows wild not far from Bogota."

## 51396 to 51403—Continued.

51403. *ULLUCUS TUBEROSUS* Caldas. Basellaceae.

"(No. 448. September 11, 1920.) Tubers of the *chugua*. Like the *hibia* (*Oxalis tuberosa*), the *chugua* is one of the root crops which has been cultivated by the Indians of the Andes since prehistoric times. The plant is a slender creeper, making stems 2 or 3 feet in length which trail over the ground. It matures in about six months and may be planted (there in Colombia) at any season of the year. The tubers resemble in form small potatoes, but are rosy red or light yellowish green. They are oval and rarely over 3 inches long.

"Like the *hibia* and *cubio*, the *chugua* is usually eaten after boiling with meat or it forms one of the ingredients of a vegetable stew. It likes a light soil and plenty of moisture."

For previous introduction, see S. P. I. No. 41196.

## 51404 to 51414.

From the city of Guatemala, Guatemala. Seeds forwarded by H. W. Goforth, American consul, at the request of Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October 14, 1920. Quoted notes by Mr. Popenoe unless otherwise stated.

51404. *ANNONA DIVERSIFOLIA* Safford. Annonaceae. **Ilama.**

"A small tree with thin, membranaceous foliage and large, conoid, or broadly ovoid fruits about 6 inches long. The edible pulp is cream colored or rose tinted, inclosing hard, smooth, nutlike seeds. The tree is native to southern Mexico and has been introduced into southern Florida." (*W. E. Safford.*)

For previous introduction, see S. P. I. No. 46781.

51405. *BYBESONIMA SPICATA* (Cav.) DC. Malpighiaceae.

"*Nance*; flower red and yellow."

51406. *ENTEROLOBIUM CYCLOCARPUM* (Jacq.) Griseb. Mimosaceae.

"*Guanacaste*; white flowers."

One of the most beautiful and one of the largest trees of the Pacific region of tropical America, where it grows to an altitude of 900 meters. The trunk sometimes becomes a meter in diameter. The compound leaves close up during the night, and the pods are twisted into a short spiral. The leaves and pods are much relished by cattle. (Adapted from *Pittier, Plantas Usuales de Costa Rica, p. 98.*)

For previous introduction, see S. P. I. No. 44746.

51407. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceae.

"*Guayacan*; purple flowered."

"A small tree, sometimes 30 feet high, with a gnarled and twisted trunk, slender branches, and small, delicate leaves. In February or March the tree comes into flower and is then a mass of lavender purple; it remains in bloom several weeks. The wood is exceedingly hard and is of value for cabinet purposes. The heartwood is a rich brown, while the sapwood is light yellow; both take a fine polish. The tree thrives in a warm climate with little rain."

For previous introduction, see S. P. I. No. 47900.

51408. *ZIZIPHUS* sp. Rhamnaceae.

"*Cerezo*; white flowered."

51409. *PHYLLOCARPUS SEPTENTRIONALIS* Donn-Smith. Cæsalpiniaceae.

"*Flor de mico*; red flowers."

"A magnificent flowering tree found in sandy loam in eastern Guatemala, at 1,500 to 2,000 feet altitude. It is of broad, spreading habit 40 or 50 feet high, with light-green compound leaves. In January and February the tree is a mass of crimson-scarlet flowers, which are borne in small clusters and are each about an inch broad."

For previous introduction, see S. P. I. No. 44775.

A tree of this species is shown in Plate IV.

**51404 to 51414—Continued.**51410. *SAPINDUS SAPONARIA* L. Sapindaceæ.

"Jaboncillo; white flowers."

51411. (Undetermined.)

"Chaparron; yellow flowers."

51412. (Undetermined.)

"Cabritos; yellow flowers."

51413. (Undetermined.)

"Canjuriol; white flowers."

51414. (Undetermined.)

[No label.]

**51415 to 51418.**

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States of Department of Agriculture. Received October 27, 1920. Quoted notes by Mr. Popenoe.

51415. *HORDEUM DISTICHON NUDEM* L. Poaceæ. Naked barley.

"(No. 464a. September 22, 1920.) *Perlada* (pearl) barley, grown upon the mesa, or sabana (plain), of Bogota, at an altitude of approximately 8,500 feet."

For previous introduction, see S. P. I. No. 41162.

51416 and 51417. *SOLANUM TUBEROSUM* L. Solanaceæ. Potato.

51416. "(No. 465. September 22, 1920.) Tubers of one of the principal varieties sold in the Bogota market. The tubers are compressed or flattened, nearly smooth, and light brown; a good variety."

51417. "(No. 466. September 22, 1920.) Tubers of one of the common potatoes of the Bogota market, and grown nearby in the Andes. The tubers are round, rather irregularly so, as a rule, with shallow eyes and they are mottled dull maroon and whitish brown."

51418. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.  
(*T. vulgare* Vill.)

"(No. 463a. September 22, 1920.) *Pocho* wheat. A variety cultivated on the mesa (sabana) of Bogota at an altitude of about 8,500 feet."

**51419. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.**

From Buitenzorg, Java. Tubers presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received November 16, 1920.

"*Talus belang*. A taro having slightly yellowish flesh and a distinctive flavor. The leaf stem is pale green, streaked with bronze: the blade is marbled light and dark green." (*R. A. Young*.)

For previous introduction, see S. P. I. No. 20954.

**51420. SORBUS DOMESTICA L. Malaceæ. Service tree.**

From Boston, Mass. Seeds seized on board ship by the Federal Horticultural Board. Received October 28, 1920.

Variety *pyriformis*. This variety has pear-shaped fruits about 1½ inches long and 1½ inches in diameter.

**51421 and 51422. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.**  
(*Sechium edule* Swartz.)

From Coban, Alta Vera Paz, Guatemala. Fruits presented by Harry Johnson. Received October 5, 1920.

51421. White variety.

51422. Green variety.

"*Perulero*. The green variety is very much scarcer than the white and is perhaps better." (*Johnson*.)

- 51423. PHLEUM PRATENSE L. Poaceæ. Timothy.**  
 From Copenhagen, Denmark. Seeds presented by Axel Lange, curator, Botanic Garden. Received October 12, 1920.  
 "These seeds are partly from plants grown in our garden and partly from wild plants." (*Lange*.)
- 51424. CHAMAEDOREA sp. Phœnicaceæ. Pacaya.**  
 From Coban, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received October 18, 1920.  
 "Seeds of the *pacaya*." (*Johnson*.)  
 For previous introduction, see S. P. I. No. 49325.
- 51425. CANARIUM LUZONICUM (Blume) A. Gray. Balsameaceæ.**  
 From Manila, Philippine Islands. Seeds presented by A. Hernandez, director, Bureau of Agriculture. Received October 18, 1920.  
 "Seeds of *pisa*. The tree grows wild in the Philippines and is now under cultivation." (*Hernandez*.)  
 This tree is the source of the brea blanca of commerce. The stone of the fruit contains an oily endosperm which is very palatable.  
 For previous introduction, see S. P. I. No. 47205.
- 51426. DIOSCOREA LATIFOLIA Benth. Dioscoreaceæ. Acom.**  
 From Nicaragua. Tuber presented by Dr. Luis Sequeira, Bluefields. Received October 19, 1920.  
 "*Papa cariba*, or 'Carib potato,' which grows wild in this country. The vines bear twice a year, and the tubers are eaten in the same way as the Irish potato. This vine bears from 20 to 50 tubers, chiefly kidney shaped, and weighing from 6 ounces to 1½ pounds." (*Sequeira*.)  
 This yam appears to be of the same kind as the *caissara*, or "turkey-liver yam," previously received from Brazil. (See S. P. I. No. 47564.) The tubers are aerial.
- 51427. PISUM SATIVUM L. Fabaceæ. Garden pea.**  
 From New York City. Seeds presented by J. W. Pincus. Received October 19, 1920.  
 "A variety of pea developed by Doctor Mausholt, an excellent breeder, who resides in the Province of Groningen, Netherlands." (*Pincus*.)
- 51428 to 51463.**  
 From Kenya, Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 10, 1920. Quoted notes by Doctor Shantz.
- 51428. ACACIA sp. Mimosaceæ.**  
 "(No. 1029. Uaso Nyiro River, Kenya Province. June 15, 1920.) A low spreading form, very abundant in desert sections."
- 51429. CALOTROPIS PROCERA Ait. Asclepiadaceæ.**  
 "(No. 1017. Merile, Nyanza Province. June 30, 1920.) A very large plant with inflated pods 6 inches or more long. It grows along the sandy banks of dry rivers."
- 51430. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.**  
 "(No. 1174. Nairobi, Ukamba Province. July 7, 1920.) The *gosh* melon."
- 51431. COFFEA sp. Rubiaceæ. Coffee.**  
 "(No. 1136. Kabete, Ukamba Province. June 26, 1920.) *Nandi* coffee, a wild coffee from the Nandi forest. It has small branches, much smaller than those of *Blue Mountain*, and a peculiar chicorylike flavor. It can not be pruned to advantage."

## 51428 to 51463—Continued.

51432. *DIGITARIA ABYSSINICA* (Hochst.) Stapf. Poaceæ. Grass.

"(No. 1149. Escarpment, Ukamba Province. July 4, 1920.) A very small grass with a habit similar to that of kikuyu grass (*Pennisetum clandestinum*). It is closely grazed by stock."

51433. *DOLICHOS LABLAB* L. Fabaceæ. Hyacinth bean.

"(No. 987. Meru, Kenia Province. May 21, 1920.) A flat black bean with a large white hilum; obtained in market. This bean is extensively grown by the Kikuyus."

For previous introduction, see S. P. I. No. 47978.

51434. *ELICHRYSUM* sp. Asteraceæ.

"(No. 1163. Kijabe, Ukamba Province. July 5, 1920.) A small yellow straw flower."

51435. *GLADIOLUS* sp. Iridaceæ. Gladiolus.

"(No. 1087. Fort Hall, Kenia Province. June 17, 1920.) Has a red flower with yellow on the lower side; the petals are very large at times."

51436. *HIBISCUS* sp. Malvaceæ.

"Purple or lavender."

Pods of hibiscus included in a shipment sent from Nairobi; without a number or data.

51437. *HIBISCUS* sp. Malvaceæ.

"(No. 1157. Kijabe, Ukamba Province. July 5, 1920.) A small white-flowered type; an attractive shrub."

51438. *HIBISCUS* sp. Malvaceæ.

"(No. 1168a. Nairobi, Ukamba Province. July 7, 1920.) From the Botanic Garden; a rather unattractive plant with a large pretty flower."

51439. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 1098. Fort Hall, Kenia Province. June 17, 1920.) A lot of seed collected between Fort Hall and Nairobi."

51440. *HYPHAENE THEBAICA* (L.) Mart. Phœnicaceæ. Doum palm.

"(No. 1028. Uaso Nyiro River, Kenia Province. June 15, 1920.)"

The doum palm is distributed from Upper Egypt to Central Africa and is usually not more than 25 feet in height; in old trees the stem is sometimes forked three or four times. The fruits, which are borne in long clusters, from 1 to 200 in a cluster, are yellowish brown and beautifully colored. In East Africa they are eaten by elephants and by natives and whites, especially in times of shortage of other foods. In Upper Egypt they form part of the food of the poorest classes, the part eaten being the fibrous mealy husk, which tastes much like gingerbread but is of a rather dry and husky nature. The hard, tough wood is used for making various domestic utensils. (Adapted from *Lindley and Moore, Treasury of Botany, vol. 2, p. 612.*)

For previous introduction, see S. P. I. No. 47402.

For an illustration showing the doum palm in its native habitat, see Plate V.

51441. *INULA* sp. Asteraceæ.

"(No. 1166. Kijabe, Ukamba Province. July 5, 1920.) A large blue-flowered plant, reminding one of *Centaurea*."

51442. *JUNIPERUS PROCERA* Hochst. Pinaceæ. Juniper.

"(No. 1162. Kijabe, Ukamba Province. July 5, 1920. Herb. No. 880.) A prominent forest tree along the escarpment above the Rift Valley. Probably the Abyssinian juniper."

51443. *LINUM USITATISSIMUM* L. Linaceæ.

Flax.

"(No. 1169. Nairobi, Ukamba Province. July 7, 1920.) *Dutch Child*, imported from Yorkshire; 1919 crop."

51444 and 51445. *ORYZA SATIVA* L. Poaceæ.

Rice.

51444. "(No. 1170. Nairobi, Ukamba Province. July 7, 1920.) Mountain rice, from India."

51445. "(No. 1172. Nairobi, Ukamba Province. July 7, 1920.) Mountain rice (*Mazeras*)."

## 51428 to 51463—Continued.

51446. PANICUM QUADRIFARIUM Hochst. Poaceæ. Grass.  
 "(No. 1021. Uaso Nyiro River. June 14, 1920.) A large, coarse grass resembling Chaetochloa, abundant along the river bank."  
 A stoloniferous grass which thrives in marshy places, 1 to 2 meters in height, with dense foliage at the base. (Adapted from *Chioyenda, Etiopia, Osservazione Botaniche*, p. 70.)
- 51447 and 51448. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. Pearl millet.  
 (*P. typhoideum* Rich.)
51447. "(No. 990. Meru, Kenia Province. May 25, 1920.) One of the most prominent crops of this region; it is flailed and winnowed and constitutes the chief food of the natives."  
 For previous introduction, see S. P. I. No. 49702.
51448. "(No. 1014. Meru, Kenia Province. June 16, 1920.) The chief crop of this section."
- 51449 and 51450. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.
51449. "(No. 1051. Meru, Kenia Province. June 16, 1920.) A bean with a white stripe, grown by the Kikuyus."
51450. "(No. 1118. Nairobi, Ukamba Province. June 24, 1920.) *Rose-coco* beans from the Kilbos Experiment Farm."
51451. PHOENIX RECLINATA Jacq. Phœnicaceæ. Palm.  
 "(No. 1002. Near Meru, Kenia Province. June 12, 1920.) A most attractive palm, growing in the canyons near Meru."  
 A hardy ornamental palm, not very tall but often reclining. The sweet coating of the drupaceous fruit is edible. This palm is distributed throughout tropical Africa. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 259.)  
 For previous introduction, see S. P. I. No. 23424.
51452. PISUM SATIVUM L. Fabaceæ. Garden pea.  
 "(No. 1049. Meru, Kenia Province. June 16, 1920.) Peas from the market; these are grown by the Kikuyus."
- 51453 and 51454. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.
51453. "(No. 989. Meru, Kenia Province. May 25, 1920.) Similar to No. 988 [S. P. I. No. 51532] but larger. This large form is very abundant in the mountain country, where the plants are tree-like, 10 to 15 feet high."
51454. "(No. 1165. Kijabe, Ukamba Province. July 5, 1920.) This was growing wild on the escarpment of the Rift Valley."
51455. SAMANEA SAMAN (Jacq.) Merr. Mimosaceæ.  
 (*Pithecolobium saman* Benth.)  
 "(No. 1171. Nairobi, Ukamba Province. July 7, 1920.)"  
 A large spreading tree, 15 to 20 meters high, native to Central America, but widely distributed throughout the Tropics as an ornamental and shade tree; the horizontal branches are extremely long. The wood is not very hard, but the heartwood is of a handsome red color, taking a fine polish. The pods are eagerly eaten by cattle. (Adapted from *Cook and Collins, Economic Plants of Porto Rico*, p. 220.)  
 For previous introduction, see S. P. I. No. 38654.
51456. SESAMUM ORIENTALE L. Pedaliaceæ. Sesame  
 "(No. 1173. Nairobi, Ukamba Province. July 7, 1920.) *Black til*."
51457. VERNONTIA sp. Asteraceæ.  
 "(No. 1151. Kijabe, Ukamba Province. July 5, 1920.) A beautiful Vernonia-like bush."
- 51458 to 51460. ZEA MAYS L. Poaceæ. Corn
51458. "(No. 986. Meru, Kenia Province. May 26, 1920.) Native grown corn from the market."
51459. "(No. 1086. Fort Hall, Kenia Province. June 17, 1920.) The type grown here in the high country."
51460. "(No. 1139. Kabete, Ukamba Province. June 26, 1920.) A hybrid corn known as 'Fort Hall.'"

## 51428 to 51463—Continued.

51461. (Undetermined.)

"(No. 996. Near Meru, Kenia Province. June 12, 1920.) *Liano*; beautiful clusters of deep reddish velvetlike fruits about the size of a small grape. This is one of the most showy plants of the high forest region; it is not edible, but is exceptionally ornamental."

51462. (Undetermined.)

"(No. 1013. Meru, Kenia Province. June 15, 1920.) *Maret* (in Somali); a small tree with a yellow sweetish fruit said to be good food. The fruit is about three-eighths of an inch long and roundish."

51463. *DISSOTIS EXIMIA* (Sond.) Hook. f. Melastomaceæ.

"(No. 1071. En route from Chuka to Embu, Kenia Province. June 16, 1920.) A very attractive plant with purple flowers. It grows well in the bracken area about Kenia."

## 51464 to 51479.

From Siam and China. Plants presented by G. Weidman Groff. Received October 16, 1920. Quoted notes by Mr. Groff unless otherwise specified.

51464. *DURIO ZIBETHINUS* Murray. Bombacaceæ.

Durian.

"Durian seedlings from Siam."

"In the Malay Archipelago where it is native the durian becomes a large tree, with leathery leaves 6 to 7 inches long and oval fruits from 6 to 8 inches in length. The fruit is five valved, and within each compartment are several seeds surrounded by clear, pale-brown, custard-like pulp of strong gaseous odor and rich bland taste. As remarked by Doctor Paludanus: 'The fruit seems at first to smell like rotten onions, but immediately after tasting it is preferred to all other food.' The durian is tropical in its requirements and should be quite at home in many places in the West Indies. It is ordinarily propagated by seeds, although P. J. Wester has shown that it can be budded." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 45179.

51465. *GARCINIA MANGOSTANA* L. Clusiaceæ.

Mangosteen.

"Sent from Siam by Dr. Y. S. Sanitwongse."

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a thick, smooth rind, rich red-purple in color, which, when cut out, exposes the white segments lying loose in the cup. The cut surface of the rind is a most delicate pink. The separate segments are whitish and covered with a delicate network of fibers. The texture of the pulp resembles that of the plum, and the flavor is indescribably delicious." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 47120.

51466 to 51472. *LITCHI CHINENSIS* Sonner. Sapindaceæ.

Lychee.

(*Nephelium litchi* Cambess.)

"The lychee has been cultivated for at least 2,000 years in southern Asia, where millions are familiar with it. The tree grows ultimately to a height of 35 or 40 feet, forming a broad round-topped crown well supplied with glossy light-green foliage. The fruits, borne in loose clusters of 2 or 3 to 20, have been likened to strawberries in appearance. When ripe they are deep pink, becoming dull brown as the fruit dries. The flavor is subacid, suggestive of the Muscat grape. It should be possible to produce lychees commercially in southwestern Florida, where there is relative freedom from frost and where the soils are deep and moist." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 48214.

51466. "No. 401.G."

51469. "No. 409.A."

51467. "No. 402.S."

51470. "No. 410.G."

51468. "No. 408.7."

51471. "No. 421.6."

51472. "No. 455.1. Mountain lychee seedlings for stock."

## 51464 to 51479—Continued.

51473. *NEPHELIUM LAPPACEUM* L. Sapindaceæ. Rambutan.

"Rambutan seedlings from Siam."

"The rambutan grows in nearly every garden in Singapore and Penang, and its fruit is one of the most delicious of the region, resembling the lychee in character. The tree becomes 35 or 40 feet high, with compound dark-green leaves, and the fruits, which are produced in clusters of 10 or 12, are oval, about 2 inches long, and covered with soft spines about half an inch long. They are crimson, but sometimes greenish, yellowish, or orange-yellow. The outer covering is easily torn off, exposing the white translucent flesh, which is somewhat acidulous in flavor, suggesting the grape. In climatic requirements the rambutan is strictly tropical." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 47231.

51474. *NEPHELIUM* sp. Sapindaceæ.

"From Cochin China."

51475. *ORYZA SATIVA* L. Poaceæ.

Rice.

"Wild rice from China."

51476 to 51478. *PHYLLOSTACHYS PUBESCENS* Houzeau. Poaceæ.

(*P. mitis* A. and C. Rivière.)

Bamboo.

"This is the largest hardy species of bamboo in Japan, growing to a height of 50 feet and producing, not uncommonly, culms over 6 inches in diameter. The culms are gently curved shortly after leaving the ground, and the sheaths are light brown, marked with dark amber-brown blotches and round dots and covered with bristles. This is the great edible bamboo of China and Japan." (*David Fairchild*.)

51476. "No. 901. Edible bamboo from China."

51477. "No. 902. Edible bamboo from China."

51478. "No. 903. Edible bamboo from China."

For previous introduction, see S. P. I. No. 47370.

51479. *SALAKKA* sp. Phœnicaceæ.

"Edible palm from Siam."

51480 to 51482. *COFFEA* spp. Rubiaceæ.

Coffee.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, director, Agricultural Experiment Station. Received October 23, 1920.

51480. *COFFEA ARABICA* L.

"Seeds of Arabian coffee grown in Porto Rico." (*May*.)

51481. *COFFEA LAURENTII* Wildem.

(*C. robusta* Hort.)

A white-flowered shrub, native to Belgian Kongo, with oval dark-green leaves up to a foot in length, and shortly elliptic two-seeded fruits. The roundish seeds are sometimes nearly half an inch long. (Adapted from *Actes du Premier Congrès International de Botanique, 1900, p. 234*.)

51482. *COFFEA LIBERICA* Bull.

This species is native to West Africa and forms a taller and stronger plant than *C. arabica*, having also larger leaves and berries. It is said to show greater resistance to disease than *C. arabica*. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 491*.)

For previous introduction, see S. P. I. No. 31976.

## 51483 to 51544.

From East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 7, 1920. Numbered October, 1920. Quoted notes by Doctor Shantz.

51483. *ABUTILON* sp. Malvaceæ.

"(No. 1037. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small yellow-flowered bush resembling a hibiscus."

## 51483 to 51544—Continued.

51484. ACACIA sp. Mimosaceæ.

"(No. 993. Kauru, Nyanza Province, Kenia. June 11, 1920.) A flat-topped acacia with spiral pods; the principal tree of the lower land and drainage courses."

51485. ACACIA sp. Mimosaceæ.

"(No. 1019. Merile, Nyanza Province, Kenia. June 13, 1920.) A flat-topped acacia with spiral pods; abundant in this desert section."

51486. AESCHYNOMENE TELEKII Schweinf. Fabaceæ.

"(No. 1146. Nairobi, Ukamba Province, Kenia. July 3, 1920.) A very small bush with mimosalike foliage, common in this high country. The pods break up into segments of one seed each."

51487. AMARANTHUS CAUDATUS L. Amaranthaceæ. **Amaranth.**

"(No. 1088. Kagi, between Embu and Fort Hall, Kenia Province, Kenia. June 17, 1920.) An amaranth used like spinach, especially when young."

51488. CENCHRUS sp. Poaceæ. **Grass.**

"(No. 1022. Uaso Nyiro River, Kenia. June 15, 1920.) A desert grass with a burlike seed; may be valuable for our desert country."

51489. GYNANDROPSIS PENTAPHYLLA (L.) DC. Capparidaceæ.

"(No. 1000. Meru, Kenia Province, Kenia. June 12, 1920.) A white cleomelike plant, abundant at Meru, where it grows on the lawn."

51490. COFFEA sp. Rubiaceæ. **Coffee.**

"(No. 1135. Kabete, Ukamba Province, Kenia. June 26, 1920.) A few seeds of *Bluc Mountain* coffee, the best type grown here."

51491. COMBRETUM sp. Combretaceæ.

"(No. 1034. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) From near the river; a true desert tree."

51492. CORIANDRUM SATIVUM L. Apiaceæ. **Coriander.**

"(No. 1115. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Coriander seed from the experimental farm at Kibos."

51493. COTONEASTER SIMONSI Baker. Malaceæ.

"(No. 1142. Nairobi, Ukamba Province, Kenia. July 3, 1920.) This plant forms a beautiful hedge."

For previous introduction, see S. P. I. No. 35128.

51494. CROTALARIA sp. Fabaceæ.

"(No. 1035. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small bush in the grassland."

51495. CROTALARIA sp.

"(No. 1043. Uaso Nyiro River, Kenia. June 25, 1920.) A small yellow-flowered form."

51496. DACTYLOCTENIUM AEGYPTIUM (L.) Richter. Poaceæ. **Grass.**  
(*Eleusine aegyptiaca* Desf.)

"(No. 1024. Uaso Nyiro River, Kenia. June 15, 1920.) From Archer's Post (Uaso Nyiro River). Grows near water and also pushes out into the desert."

51497. DOLICHOS LABLAB L. Fabaceæ. **Hyacinth bean.**

"(No. 1050. Meru, Kenia Province, Kenia. June 16, 1920.) Black beans from the market; grown by the Kikuyu natives."

For previous introduction, see S. P. I. No. 47979.

51498. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

"(No. 1123. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Wimbi from the experimental farm at Kibos."

For previous introduction, see S. P. I. No. 48456.

51499. FRAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. **Teff.**

"(No. 1128. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Teff from the farm at Kabete."

For previous introduction, see S. P. I. No. 48815.

## 51483 to 51544—Continued.

- 51500 and 51501. *ERAGROSTIS SUPERBA* Peyr. Poaceæ. Grass.  
 51500. "(No. 1030. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A grass with broad compressed spikelets, about 3 feet tall. Abundant in the upper grass zone."  
 For previous introduction, see S. P. I. No. 46806.
51501. "(No. 1099. Fort Hall, Kenia Province, Kenia. June 17, 1920.) A grass with very broad spikes. Abundant in places."
51502. *ERIGERON* sp. Asteraceæ.  
 "(No. 1152. Kijabe, Ukamba Province, Kenia. July 5, 1920.) An asterlike perennial which is very attractive and should be useful as a border plant. It resembles *Aster ericooides* but is much taller."
51503. *CALLISTEMON CITRINA* (Curtis) Skeels. Myrtaceæ.  
 "(No. 1143. Nairobi, Ukamba Province, Kenia. July 3, 1920.) A common ornamental tree with the habit of a conifer. It holds its seed pods for several years."
51504. *GOSSYPIUM* sp. Malvaceæ. Kidney cotton.  
 "(No. 1080. En route from Embu to Fort Hall, Kenia Province, Kenia. June 27, 1920.) Seed from a large plant. Cotton is seldom seen in this section."
51505. *GOSSYPIUM* sp. Malvaceæ. Cotton.  
 "(No. 1138. Kabete, Ukamba Province, Kenia. June 26, 1920.) *Caravonica* cotton from a perennial plant. The bolls resemble somewhat those of Egyptian cotton."
51506. *HIBISCUS* sp. Malvaceæ.  
 Three pods, without notes, included with the shipment from Nairobi.
51507. *HIBISCUS* sp.  
 "(No. 1089. Fort Hall, Kenia Province, Kenia. June 17, 1920.) Has most attractive small red or vermilion flowers about half an inch in diameter."
51508. *HIBISCUS* sp.  
 "(No. 1131. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Collected near Thika; has large, dark-purple flowers."
51509. *HOLCUS SORGIUM* L. Poaceæ. Sorghum.  
 (*Sorghum vulgare* Pers.)  
 "(No. 1137. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the farm at Kabete."
51510. *IMPATIENS* sp. Impatiaceæ.  
 "(No. 1168. Kijabe, Ukamba Province, Kenia. July 5, 1920.) Wild along the banks of streams."
51511. *INDIGOFERA* sp. Fabaceæ.  
 "(No. 1045. Uaso Nyiro River, Kenia. June 25, 1920.) A tall leguminous plant with very small pods."
51512. *IPOMOEA* sp. Convolvulaceæ. Morning-glory.  
 "(No. 1011. Meru, Kenia Province, Kenia. June 15, 1920.) May be an introduced form."
51513. *IPOMOEA HARDWICKII* (Spreng.) Hemsl. Convolvulaceæ.  
 (*I. calycina* Benth.) Morning-glory.  
 "(No. 1052. Meru, Kenia Province, Kenia. June 16, 1920.) Growing on a fence; may be an introduced form."
51514. *LEPTOCHLOA* sp. Poaceæ. Grass.  
 "(No. 957. Moshi, Tanganyika Territory. April 15, 1920.) A grass which looks soft and palatable. It is one of the first of the native grasses to come into flower."
51515. *LINUM USITATISSIMUM* L. Linaceæ. Flax.  
 "(No. 1116. Nairobi, Ukamba Province, Kenia. June 24, 1920.) White flax from the experimental farm at Kilbos."

## 51483 to 51544—Continued.

- 51516.** *LUPINUS* sp. Fabaceæ. Lupine.  
“(No. 959. Moshi, Tanganyika Territory. April 15, 1920.) An important element of the vegetation; has a large root.”
- 51517.** *MELOTHRIA* sp. Cucurbitaceæ.  
“(No. 1039. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small red cucumber, should be similar to No. 436 [S. P. I. No. 49700].”
- 51518.** *MUSA ENSETE* Gmel. Musaceæ. Banana.  
“(No. 985. En route from Muzambi to Meru, Kenia Province, Kenia. May 21, 1920.) The most beautiful plant of the mountain ravines.”  
For previous introduction, see S. P. I. No. 35236.
- 51519.** *OLEA CHRYSOPHYLLA* Lam. Oleaceæ.  
“(No. 1161. Kijabe, Ukamba Province, Kenia. July 5, 1920.) The wild olive of the highlands of East Africa; a rather large tree.”  
For previous introduction, see S. P. I. No. 42834.
- 51520 to 51524.** *ORYZA SATIVA* L. Poaceæ. Rice.
- 51520.** “(No. 1111. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *M'bale*, from Labaki.”
- 51521.** “(No. 1112. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Kisuke*, from the Charra region.”
- 51522.** “(No. 1113. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Abula*, from the Charra region.”
- 51523.** “(No. 1121. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the experiment station, Kibos.”
- 51524.** “(No. 1122. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the experiment station, Kibos.”
- 51525.** *PANICUM GEMINATUM* Forsk. Poaceæ. Grass.  
“(No. 1020. Uaso Nyiro River, Kenia. June 14, 1920.) A fine river grass.”
- 51526.** *PENNISSETUM* sp. Poaceæ. Grass.  
“(No. 998. Uaso Nyiro River, Kenia. June 12, 1920.) A plumelike grass very abundant in the desert section, just between the acacia-tall grass and the acacia-short grass region. It is a very promising looking grass.”
- 51527.** *PENNISSETUM* sp. Poaceæ. Grass.  
“(No. 1041. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A timothylike grass, rather tall and blanched. An important grass on dark 'cotton' soil.”
- 51528.** *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.  
“(No. 1130. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Red beans grown by the natives in the Meru district and sold in the Nairobi market.”
- 51529.** *CLITORIA TERNATEA* L. Fabaceæ.  
“(No. 1009. Meru, Kenia Province, Kenia. June 12, 1920.) A small vine with small seeds from the desert near the Uaso Nyiro River.”
- 51530.** *PHYSALIS PERUVIANA* L. Solanaceæ. Poha.  
“(No. 1132. Nairobi, Ukamba Province, Kenia. June 25, 1920.) The Cape gooseberry, one of the most valuable plants of East Africa and South Africa for making jam; it has a very tart taste.”  
For previous introduction, see S. P. I. No. 48181.
- 51531.** *RHUS* sp. Anacardiaceæ.  
“(No. 1072. En route from Chuka to Embu, Kenia Province, Kenia. June 16, 1920.) A small tree, very ornamental when heavily loaded with fruits. The fruits are light green, turning red, and resemble chokecherries.”

## 51483 to 51544—Continued.

- 51532 to 51534. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.
51532. "(No. 988. Meru, Kenia Province, Kenia. May 26, 1920.) From the market; used by the Kikuyus to make a red mud paste for hair dressing and for decorating their bodies and clothing."
51533. "(No. 1015. Meru, Kenia Province, Kenia. June 16, 1920.) Castor-beans grown at Meru."
51534. "(No. 1124. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Castor-beans from the experimental farm at Kibos."
51535. *RUBUS* sp. Rosaceæ. Blackberry.  
 "(No. 1073. En route from Chuka to Embu, Kenia Province, Kenia. June 16, 1920.) The only blackberry seen in Africa. The fruit is a little reddish, but it appears to be a true wild blackberry, with a fairly good flavor."
51536. *RUBUS* sp. Rosaceæ. Raspberry.  
 "(No. 1100. Fort Hall, Kenia Province, Kenia. June 17, 1920.) A red raspberry of fair flavor."
51537. *SENECIO* sp. Asteraceæ.  
 "(No. 1154. Kijabe, Ukamba Province, Kenia. July 5, 1920.) A tall yellow-flowered vine with very fleshy leaves; the vine covers low trees."
51538. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame.  
 "(No. 1117. Nairobi, Ukamba Province, Kenia. June 24, 1920.) *Sim-sim*. From the experimental farm at Kibos."
51539. *SESBAN* sp. Fabaceæ.  
 "(No. 1058. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920.) A long-podded leguminous plant with the pods and petioles armed with stinging hairs. Seeds very small."
51540. *SIDA* sp. Malvaceæ.  
 "(No. 1033. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) Beautiful white flowers  $1\frac{1}{2}$  inches in diameter. The hibiscus and its allies are the most prominent wild flowers of east-central Africa."
51541. *SOLANUM WRIGHTII* Benth. Solanaceæ.  
 "(No. 1141. Nairobi, Ukamba Province, Kenia. July 3, 1920.) This species here forms a fine ornamental tree. One tree planted in 1915 is now 15 feet high, with fine clusters of purple flowers, which are very attractive."
51542. *TELFAIRIA PEDATA* (J. E. Smith) Hook. Cucurbitaceæ.  
 "(No. 1133. Nairobi, Ukamba Province, Kenia. June 25, 1920.)" A vigorous climbing vine, native to the coast of Zanzibar, which is said to bear an enormous fruit up to 3 feet in length, always green in color. The fruit is divided into five cells, each filled with a dense, fleshy, very oily pulp. This pulp incloses seeds about an inch in diameter, a quarter of an inch thick, and very rich in oil, with a taste something like that of the butternut. The native name in Zanzibar is *koume*. The female flowers are very small, but the male flowers are about 2 inches long and purplish and are borne in racemes. (Adapted from note by Doctor Shantz and from *Curtis's Botanical Magazine*, pl. 2751.)  
 For previous introduction, see S. P. I. No. 45923.
51543. *TRIFOLIUM* sp. Fabaceæ. Clover.  
 "(No. 1038. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A *Trifolium* from the Themeda zone below the forest along the stream."
51544. *VERNONIA* sp. Asteraceæ.  
 "(No. 1036. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small bush in the grassland below the forest zone."

**51545. TRIFOLIUM TEMBENSE** Fres. Fabaceæ. **Clover.**

From Kenia. Material collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 20, 1920.

"(No. 1175. Near Uplands, Kikuyu, Kenia; altitude 7,678 feet. July 9, 1920.) A clover with small heads; forms large patches in very wet soil." (Shantz.)

**51546 to 51555.**

From Kenia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 7, 1920. Numbered October, 1920. Quoted notes by Doctor Shantz.

**51546.** (Undetermined.)

"(No. 994. Merile, Nyanza Province, Kenia. June 12, 1920.) One of the principal desert shrubs; about 6 feet high, resembling a buttonbush."

**51547.** (Undetermined.)

"(No. 1012. Meru, Kenia Province, Kenia. June 15, 1920.) *Myrah* in the Somali language; also called 'Somali food.' A desert shrub 6 to 8 feet high, not spiny, with small leaves. The fruit consists of four orange carpels, each covered with a thin sweet pulp."

**51548.** (Undetermined.) Fabaceæ.

"(No. 1046. Uaso Nyiro River, Kenia. June 15, 1920.) A leguminous plant with a two-seeded pod."

**51549.** (Undetermined.) Fabaceæ.

"(No. 1048. Uaso Nyiro River, Kenia. June 15, 1920.) A tall leguminous plant."

**51550.** (Undetermined.)

"(No. 1059. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920.) A small upright velvet bean."

**51551.** *Cordia holstii* Gurke. Boraginaceæ.

"(No. 1074. Embu, Kenia Province, Kenia. June 17, 1920.) A catalpalike tree very abundant in this high country, where it is the principal park tree. It is of good shape, with broad leaves, and often covered with very delicate white flowers."

**51552.** (Undetermined.)

"(No. 1144. Nairobi, Ukamba Province, Kenia. July 3, 1920.) A large evergreen tree with trumpet-shaped upright flowers with five alternate stamens and a purple mottled throat. It bears quantities of fruits filled with seeds."

**51553.** *Pentas zanzibarica* (Klotzsch) Vatke. Rubiaceæ.

"(No. 1147. Escarpment, Ukamba Province, Kenia. July 4, 1920.) A very handsome Senecolike vine with very fleshy large waxy leaves and a large cluster of yellow flowers."

**51554.** *Erlangea marginata* (O. and H.) Moore. Asteraceæ.

"(No. 1156. Kijabe, Ukamba Province, Kenia. July 5, 1920.) An especially attractive plant with very large flowers."

**51555.** (Undetermined.)

"(No. 1167. Kijabe, Ukamba Province, Kenia. July 5, 1920.) Wild along banks of streams."

**51556 to 51571.**

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 1, 1920. Quoted notes by Mr. Popenoe.

**51556.** *Cereus hexagonus* (L.) Mill. Cactaceæ. **Cactus.**

"(No. 472. October 8, 1920.) Cuttings of a columnar cactus about 10 feet high, cultivated in a garden at Guaduas, Cundinamarca, at an altitude of about 3,300 feet."

Introduced for the systematic investigations of Dr. J. N. Rose, of the United States National Herbarium.

## 51556 to 51571—Continued.

51557. *CYCLANTHERA PEDATA* (L.) Schrad. Cucurbitaceæ.

"(No. 470a. October 8, 1920.) Seeds of a cucurbit commonly sold in the Bogota market."

For previous introduction, see S. P. I. No. 51390.

51558. *DURANTA REPENS* L. Verbenaceæ.

"(No. 482a. October 8, 1920.) Seeds of a shrub about 10 feet high, common around the edges of the mesa (sabana) of Bogota. It has small graceful racemes of light-blue flowers, followed by large golden berries. It resembles the *Duranta plumieri* cultivated in Florida and California, but apparently has larger fruits."

51559. *EPIPHYLLUM OXYPETALUM* (DC.) Haw. Cactaceæ. Cactus.

"(No. 474. October 8, 1920.) Cuttings of a shrubby plant of the Phyllocactus type about 8 feet high, cultivated in the patio of the Hotel del Valle, Guaduas, Cundinamarca, at 3,300 feet altitude."

Introduced for the systematic investigations of Dr. J. N. Rose, of the United States National Herbarium.

51560. *EPIPHYLLUM PHYLLANTHOIDES* (DC.) Sweet. Cactaceæ. Cactus.

"(No. 475. October 8, 1920.) Cuttings of a small plant with slender columnar stems reaching to about 2 feet in height; cultivated as a pot plant in the patio of the Hotel Gonzalez, Facatativa, Cundinamarca, at about 8,600 feet altitude."

Introduced for the systematic investigations of Dr. J. N. Rose, of the United States National Herbarium.

51561. *EPIPHYLLUM* sp. Cactaceæ. Cactus.

"(No. 471. October 8, 1920.) Cuttings of a broad-stemmed flowering cactus of the Phyllocactus type, cultivated as a pot plant in the Hotel Gonzalez, at Facatativa, at about 8,600 feet altitude."

Introduced for the systematic investigations of Dr. J. N. Rose, of the United States National Herbarium.

51562. *EUGENIA* sp. Myrtaceæ.

"(No. 479a. October 8, 1920.) Seeds of *arrayan*; many different myrtaceous shrubs are known under this name in tropical America. This particular one grows upon the edge of the sabana, near Facatativa, at altitudes of 8,500 to 9,500 feet. It is an exceedingly handsome arborescent shrub, with deep-green, almost glossy foliage and a great abundance of round fruits not quite half an inch in diameter, which change from green through yellow to orange-scarlet as they ripen. The fruits are edible, but of little value."

51563. *FRAGARIA CHILOENSIS* (L.) Duchesne. Rosaceæ. Strawberry.

"(No. 467a. October 8, 1920.) Seeds of *fruta de Chile*, often abbreviated to *fruta chil*. This is one of the cultivated strawberries of the Bogota region, quite distinct in character from the common wild strawberry (locally called *Fragaria vesca*).

"The fruit is about an inch long, slender obovate in outline, with rather few and large seeds and light-pink flesh of excellent aroma and flavor. It is a form of rather distinct character and should be of interest to those engaged in strawberry breeding. It may be mentioned that cultivated strawberries are rare in Bogota. I have seen this form only once."

For previous introduction, see S. P. I. No. 46613.

51564. *FRAGARIA VESCA* L. Rosaceæ. Strawberry.

"(No. 485a. October 8, 1920.) Seeds of *fresa*, the common wild strawberry, found around the edges of the sabana of Bogota, principally at altitudes of 7,000 to 8,000 feet. The fruits are nearly round, rarely over an inch in diameter, with numerous very small seeds. In quality they are fairly good; sometimes they are dry and rather bitter, but ordinarily are juicy and of very pleasant flavor."

For previous introduction, see S. P. I. No. 43997.

## 51556 to 51571—Continued.

51565. *HYLOCEREUS UNDATUS* (Haw.) Britt. and Rose. Cactaceæ.

Cactus.

"(No. 473. October 8, 1920.) Cuttings of the *pitahaya*; several plants go under this name in Cundinamarca. This one, which comes from La Esperanza, altitude about 4,100 feet, appears to be the commonest species. The fruit is edible and is brought to the Bogota market. The plant was found climbing over a large rock in a coffee plantation."

Introduced for the systematic investigations of Dr. J. N. Rose, of the United States National Herbarium.

51566. *LUPINUS CRUCKSHANKSII* Hook. Fabaceæ.

Lupine.

"(No. 477a. October 8, 1920.) Seeds of *chocho*, from a dooryard on the road between Facatativa and Alban, Cundinamarca, at an altitude of about 8,800 feet. Several species of lupine are known in Cundinamarca under this common name. The one represented by these seeds is a handsome half-woody shrub, a favorite garden plant on the sabana of Bogota. It reaches a height of about 6 feet and is usually broad and bushy in habit. Above the attractive foliage rise numerous spikes of varicolored, pealike flowers. The predominant colors are blue, lilac, white, and yellow.

"To my mind this is a plant well worth cultivating in the United States. In California and Florida it will probably grow as a perennial; elsewhere possibly as an annual."

For previous introduction, see S. P. I. No. 46057.

51567. *TACSONIA MANICATA* Juss. Passifloraceæ.

"(No. 486a. October 8, 1920.) Seeds of *curuba de Indio*. This is one of the several species cultivated for their fruit on the sabana of Bogota. It is not, as a fruit, as good as the *curuba de Castilla*, but I suspect that the vine is somewhat more ornamental. The oblong green fruits are about 3 inches long, with smaller seeds than the *curuba de Castilla*, and the pulp is not so highly flavored."

For previous introduction, see S. P. I. No. 35113.

51568. *TACSONIA PINNATISTIPULA* (Cav.) Juss. Passifloraceæ.

"(No. 468a. October 8, 1920.) Seeds of *gulupa*, from Nemocon, Cundinamarca. Both in flower and fruit it greatly resembles the *curubas*, though from an economic standpoint it is not so valuable as some of the latter. It is a climber, with attractive, deep-green, deeply-lobed leaves, flowers 2 inches broad and of a livelier pink color than those of the common *curuba*, and round fruits, 2 inches thick, greenish yellow when ripe. The pericarp or outer shell is thicker and more brittle than that of the *curubas*, resembling in this respect the edible-fruited *Passifloras*. The white juicy pulp is rather insipid, so that I can not recommend the fruit very highly for eating. It should be worth cultivation as an ornamental."

For previous introduction, see S. P. I. No. 33814.

51569. *RUBUS BOGOTENSIS* H. B. K. Rosaceæ.

Blackberry.

"(No. 483a. October 8, 1920.) Seeds of *mora de piedra*, a blackberry common around the edges of the sabana of Bogota, at altitudes of 8,500 to 9,500 feet. The plant is a very vigorous grower, the canes reaching a length of about 10 feet; they are semierect. The flowers are purplish pink. The fruits, borne in rather large clusters, are about an inch in diameter, nearly round, and are characterized by the large size of the individual drupelets and the relatively small number of the latter which compose the fruit. The color is almost black, the flavor very agreeable, but the seeds are large and hard."

51570. *GAULTHERIA PUBIFLORA* Blake. Ericaceæ.

"(No. 481a. October 8, 1920.) Seeds of an attractive shrub, growing to about 5 feet in height, found in the mountains near Facatativa at altitudes of 9,000 feet and more. It has small white flowers followed by a profusion of white berries, which render it very ornamental. It will probably want a cool, moist climate for best results."

## 51556 to 51571—Continued.

51571. *MONNINA PARVIFLORA* H. B. K. Polygalaceæ.

"(No. 484a. October 8, 1920.) Seeds of a small, half-shrubby plant found near the roadside at Zipacon, Cundinamarca, at an altitude of about 8,000 feet. It bears pretty blue flowers which are followed by oval, deep-blue, glossy berries nearly half an inch long."

## 51572 to 51588.

From Kenia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 20, 1920. Quoted notes by Doctor Shantz.

51572. *CAPPARIS* sp. Capparidaceæ.

"(No. 1190. Kisumu, Nyanza Province. July 11, 1920.) A plant called 'sula' by the natives. The red fruits are eaten by birds."

51573. *CASSIA OCCIDENTALIS* L. Cæsalpiniaceæ.

"(No. 1188. Kisumu, Nyanza Province. July 11, 1920.) A yellow-flowered leguminous plant resembling *Glycyrrhiza* in habit."

A glabrous, ill-smelling weed, up to 3 feet high, with short, closely crowded, axillary racemes of yellow flowers; of wide distribution in the Tropics. The seeds, sometimes called "negro coffee," are used in some parts of the world as a substitute for coffee. (Adapted from *Safford, Useful Plants of Guam, p. 218.*)

For previous introduction, see S. P. I. No. 42830.

51574. *CROTALARIA* sp. Fabaceæ.

"(No. 1185. Kisumu, Nyanza Province. July 11, 1920.) A small hairy podded type."

51575. *CUCUMIS* sp. Cucurbitaceæ.

"(No. 1178. Kikuyu, Ukamba Province. July 9, 1920.) A small melon or gourd which smells delicious but is very bitter. It is of a light greenish lemon color with indistinct greenish stripes and has warts on the surface."

51576. *HIBISCUS* sp. Malvaceæ.

"(No. 1195. Kisumu, Nyanza Province. July 11, 1920.) A hibiscus with yellow flowers 2 inches in diameter."

51577 to 51581. *HOLCUS SORGHUM* L. Poaceæ.

**Sorghum**

(*Sorghum vulgare* Pers.)

51577. "(No. 1181. Fort Ternan, Nyanza Province. July 10, 1920.) A small type 3 to 5 feet tall."

51578. "(No. 1182. Koru, Nyanza Province. July 10, 1920.) A small type growing along the track."

51579. "(No. 1197. Kisumu, Nyanza Province. July 11, 1920.) Dense, dark wine-colored head and gooseneck."

51580. "(No. 1198. Kisumu, Nyanza Province. July 11, 1920.) An open, red-tan head with very heavy fruits."

51581. "(No. 1199. Kisumu, Nyanza Province. July 11, 1920.) A long white head."

For an illustration of sorghums Nos. 51579 to 51581, see Plate VI.

51582. *LEONOTIS* sp. Menthaceæ.

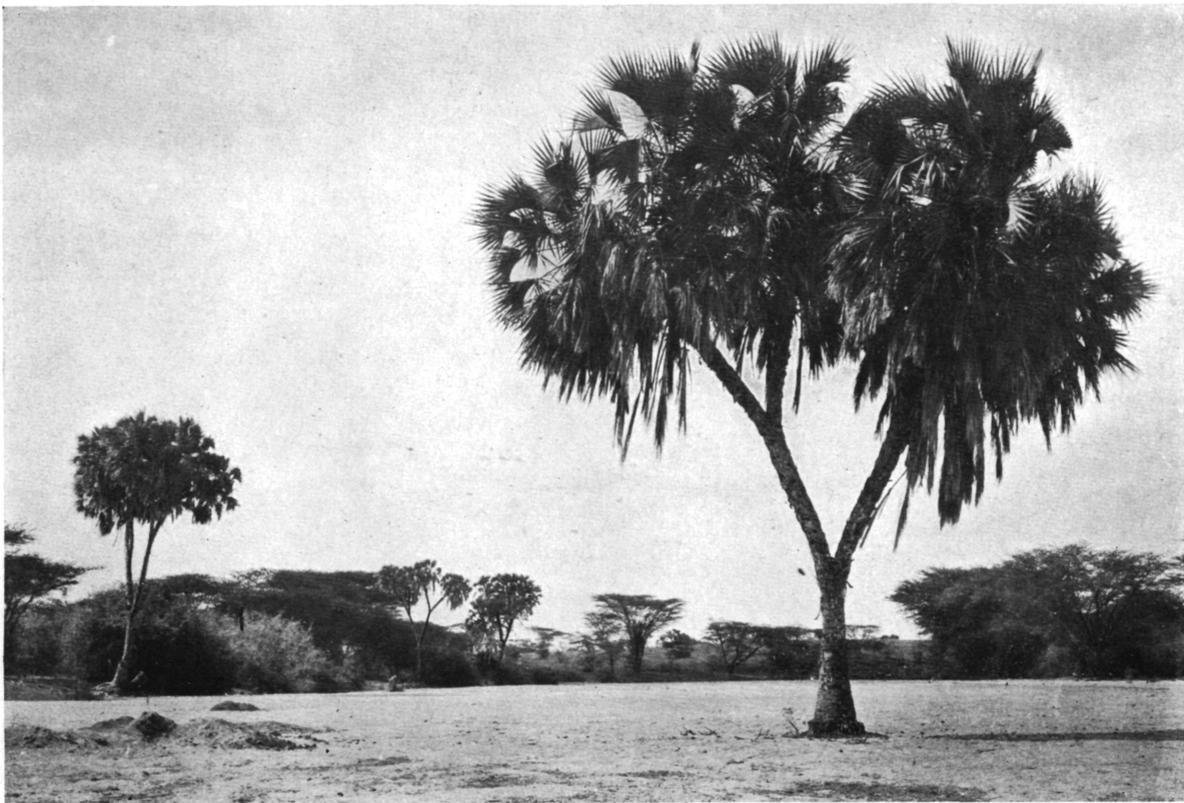
"(No. 1192. Kisumu, Nyanza Province. July 11, 1920.) A strikingly beautiful plant with orange-colored flowers; abundant in central Africa."

51583. *MEDICAGO HISPIDA DENTICULATA* (Willd.) Urban. Fabaceæ.

**Bur clover.**

"(No. 1179. Elmenteita, Naivasha Province. July 9, 1920.) A small bur clover which grows on very dry soil."

For previous introduction, see S. P. I. No. 48522.



THE DOUM PALM AT HOME. (HYPHAENE THEBAICA (L.) MART.; S. P. I. NO. 51440.)

The doum palm is one of several closely allied forms that make up the genus *Hyphaene*, which includes the only branching palms known. It thrives in southern Florida and deserves to be widely planted there because of its beauty for landscape-gardening purposes. (Photographed by Dr. H. L. Shantz, Kauro, Kenia Colony, British East Africa, June 26, 1920; P38512FS.)



**NATIVE SORGHUMS GROWN BY THE AGRICULTURAL RACES OF KENIA COLONY, BRITISH EAST AFRICA. (HOLCUS SORGHUM L.; S. P. I. NOS. 51579 TO 51581 AND 51953 TO 51957.)**

The commercial value to our farmers of the feterita sorghum (No. 19517) introduced from the Sudan in 1906 is said to be \$16,200,000, and the Red Amber and Honey sorghums from the same general region are said to be worth \$2,000,000 a year. One of the principal objects of the expedition of Dr. H. L. Shantz to East Africa was to procure all the varieties possible of these great grain and forage crops which are cultivated by the agricultural races of that region. He obtained many varieties of sorghums, the heads of a few of which are here shown. The goose-necked type at the left is a dark wine-colored head (No. 51579). Following, in order, are a reddish tan head with very heavy grains (No. 51580), a long white semioopen head (No. 51581), a medium red (No. 51953), a spreading white kafirlike type (No. 51954), a reddish tan (No. 51955), a light tan (No. 51956), and a very dark reddish type (No. 51957). (Photographed by Dr. H. L. Shantz, Kisuma, Nyanza Province, Kenia Colony, July 11, 1920; P38713FS.)

## 51572 to 51588—Continued.

51584. PENNISETUM SCHIMPERI A. Rich. Poaceæ. Grass.

"(No. 1180. Nakuru, Naivasha Province. July 10, 1920.) A coarse foxtail grass, not especially good. It stands up above the more palatable grasses."

A densely caespitose grass, found mostly in dry places; the stems become more than 4 feet tall. The natives consider this a very good forage for stock in general. The leaves yield a fiber which is used for making very stout cord. (Adapted from *Chiovenda, Etiopia, Osservazione Botaniche*, p. 66.)

51585. SENECIO sp. Asteraceæ.

"(No. 1196. Kisumu, Nyanza Province. July 11, 1920.) An orange-flowered rayless composite."

51586. TECOMA STANS (L.) JUSS. Bignoniaceæ. Yellow tecoma.

"(No. 1183. Kisumu, Nyanza Province. July 11, 1920.) One of the most prominent street trees in East Africa."

A shrub or tree, cultivated in tropical regions for the sake of the terminal panicles of large yellow flowers and the large compound leaves.

For previous introduction, see S. P. I. No. 49873.

51587. OCIMUM SUAVE Willd. Menthaceæ.

"(No. 1193. Kisumu, Nyanza Province. July 11, 1920.) A small, white-flowered mint."

51588. (Undetermined.)

"(No. 1191. Kisumu, Nyanza Province. July 11, 1920.) A small yellow fruit which is very sweet; it may not be edible."

## 51589 to 51593. SACCHARUM OFFICINARUM L. Poaceæ.

## Sugar cane.

From Sydney, New South Wales. Seeds presented by Edw. W. Knox, general manager, Colonial Sugar-Refining Co. Received October 21, 1920. Quoted notes by Mr. Knox.

"Seed collected by our manager of Macknade Mill, Herbert River, Queensland."

51589. "*Badila*. A New Guinea variety of high yield and sweetness, stout growth, and sound constitution."

51590. "*H. Q. 426*. A seedling grown by us in Queensland, of high yield and sweetness, medium thickness, early maturing, medium constitution."

51591. "*1900 seedling*. A Mauritius seedling of high yield and sweetness, medium thickness, early maturing, medium constitution."

51592. "*7 R. 428*. A seedling grown by us in Fiji; high yield, medium quality; suits medium to poor soils."

51593. "*Goru*. A New Guinea variety, of high yield, fair sweetness, and medium constitution."

## 51594 to 51597.

From British East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 25, 1920. Quoted notes by Doctor Shantz.

51594. HARPACHNE SCHIMPERI Hochst. Poaceæ. Grass.  
(*Eragrostis schimperii* Benth.)

"(No. 1210. Kisumu, Nyanza Province. July 11, 1920.) A small grass, very abundant; characteristic of the desert country."

A stout annual grass, native to Abyssinia, with dense caespitose stems up to a foot high and narrow leaves up to 6 inches in length. The lax, secund spikes are from 1 to 3 inches long. (Adapted from *Hooker, Icones Plantarum*, vol. 4, pl. 1371.)

## 51594 to 51597—Continued.

51595. *MELOTHRIA* sp. Cucurbitaceæ.

“(No. 1215. Port Bell, Buganda Province, Uganda. July 13, 1920.) A small, shiny yellow, cucumberlike plant.”

51596. *THUNBERGIA* sp. Acanthaceæ.

“(No. 1222. Jinja, Eastern Province, Uganda. July 13, 1920.) A trumpet-flower vine with red and orange colored flowers.”

51597. *TRICHOLAENA ROSEA* Nees. Poaceæ.

Natal grass.

“(No. 1218. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Natal grass.”

51598 to 51601. *CYAMOPSIS TETRAGONOLOBA* (L.) Taub. Fabaceæ.  
*(C. psoraloides* DC.) **Guar.**

From the Bombay Presidency, India. Seeds presented by Dr. Bhimbhai M. Desai, Deputy Director of Agriculture, Surat, Gujarat. Received October 27, 1920.

“An East Indian annual legume with long straight stems bearing an enormous number of pods which do not open at maturity. The plant is usually 3 or 4 feet high, and each pod contains about seven pale, angular seeds. In India the plant is grown both for green forage and for the seeds, which are used mainly to fatten cattle, but also as human food. The green pods are also used as a vegetable in the same manner as string beans.

“Guar may be grown in any part of the country where cowpeas succeed and is more drought resistant than any other annual legume. It may be utilized as hay, pasturage, or silage.” (*C. V. Piper.*)

The following varieties of guar:

51598. *Deshi.*51600. *Rozi.*51599. *Pardeshi.*51601. *Sotia.*

“The *Deshi* guar is used for cattle feed only, while the other three varieties are used for green-vegetable purposes.” (*Desai.*)

For previous introduction, see S. P. I. No. 49864.

51602 and 51603. *DATURA METEL FASTUOSA* (L.) Safford. Solanaceæ.

From the island of Guam. Seeds presented by Glen Briggs, agronomist, Agricultural Experiment Station. Received October 29, 1920. Quoted notes by Mr. Briggs.

An ornamental herbaceous annual, common throughout India and the East Indies, varying in height from 2 to 6 feet. It has entire or deeply toothed leaves about 6 inches long and flowers 7 inches or more in length, varying in color from white to lavender or rose. The plant is propagated by cuttings. (Adapted from *The Garden*, vol. 46, p. 225.)

51602. “Double white-flowered variety, very scarce.”

51603. “Double purple-flowered variety.”

For previous introduction, see S. P. I. No. 47671.

51604. *VITEX CUNEATA* Thonn. Verbenaceæ.

From Kaduna, Northern Provinces, Nigeria. Seeds presented by the director, Department of Agriculture. Received November 2, 1920.

“*Ngalibi.* A tree with dark-gray bark and leaves; not unlike though somewhat larger than the horse-chestnut, which it resembles also in the shape of its strong-smelling flowers. Ink is prepared from its bark, and its black fruit is used for food.” (*Schultze, The Sultanate of Bornu*, p. 97.)

51605. *MANGIFERA INDICA* L. Anacardiaceæ. **Mango.**

From Port of Spain, Trinidad, British West Indies. Budwood presented by John F. Waby, acting curator, Department of Agriculture. Received November 2, 1920.

“This was grown at the St. Clair Experiment Station, Trinidad.” (*Waby.*)

“*Pere Louis.* Size small; form roundish oblong, reniform, swollen at the nak (stigmatic point); nak 2.5 centimeters above the apex; surface greenish

yellow to deep yellow, with a suggestion of red; lenticels small, numerous, brownish; bloom bluish white; skin medium thick; seed large; fiber rather abundant, fine; flesh yellow, tender, and juicy; quality good, moderately vigorous. Monoembryonic. Season, July." (*Wester, Bulletin No. 18, Bureau of Agriculture, Philippine Islands, p. 27.*)

### 51606. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ.

From San Jose, Costa Rica. Fruits presented by Otón Jimenez, Department of Botany, National Museum. Received November 3, 1920.

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, beset with stiff spines at the base, and has a quite different flavor. It is one of the primitive foods of the natives of Costa Rica, where it grows wild in moist, shady places of the temperate region, and its use as a vegetable has readily been adopted by the Spanish Costa Ricans. The fruits, about 2½ inches long and 1½ inches broad, hang from short stems and are picked while still green. After removing the basal spines they are boiled in water, or pickled, or made into preserves. They are also a favorite addition to the native soups. (Adapted from note of Pittier under S. P. I. No. 26244.)

"The kinds which are cultivated contain very little fiber. They are used in many ways, as greens, pickled, as dessert, as a vegetable, etc., and in any one of these ways are very popular with us, and rightly so, I believe. The most common way consists in cooking the entire fruit with the leaves. When cooked, the skin comes off easily, and by pressing with the thumb and finger the seed comes out easily; all that remains, with the exception of a little fiber, is eaten." (*Jimenez.*)

### 51607 to 51612.

From Salisbury, Rhodesia, Africa. Seeds presented by H. G. Mundy, agriculturist and botanist, Department of Agriculture. Received November 4, 1920. Quoted notes by Mr. Mundy, except as otherwise stated.

51607. CANAVALI ENSIFORME (L.) DC. Fabaceæ. Jack bean.

"*Gotani* bean."

"The jack bean is a native of the West Indies and the adjacent mainland and is a bushy, semierect annual with coarse stems, thickish leaves, purplish flowers, and hard, white pods, 9 to 14 inches long, each containing 10 to 14 white seeds. Usually the roots are well tuberized, and the plant will withstand much drought. It is remarkably free from insects and fungous diseases. It is valuable as forage and as a cover crop or for green manure." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 49259.

51608. DOLICHOS LABLAB L. Fabaceæ. Hyacinth bean.

"Woodforde's dolichos bean; also known as the *Painted Lady* bean."

For previous introduction, see S. P. I. No. 47978.

51609 to 51611. HOLCUS SORGHUM L. Poaceæ. Sorghum.  
(*Sorghum vulgare* Pers.)

51609. "*Jiba* Kafir corn."

51610. "*M'bele*; native variety of Kafir corn."

51611. "Birdproof Kafir corn."

51612. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Fabaceæ.

"White stringless velvet bean."

"This has now been cultivated in Florida and other Southern States for several years. It requires about the same length of time to mature as the Florida velvet bean (*Stizolobium deeringianum* Bort) or is perhaps slightly earlier. It is, however, much more prolific in seed production and is therefore likely to come into prominent use. It also has the advantage over the Florida velvet bean in being wholly devoid of stinging hairs." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 46449.

**51613 and 51614.**

From Los Angeles, Calif. Seeds presented by Dr. P. D. Barnhart. Received November 4, 1920. Quoted notes by Doctor Barnhart.

**51613.** *DICENTRA CHRYSANTHIA* Walp. Papaveraceæ.

"Our yellow-flowered bleeding heart. It grows at an altitude of 2,500 feet in the Coast Range Mountains."

A glaucous perennial with stiff, coarse, leafy stems 2 to 3 feet high and bipinnate leaves a foot or more in length. The yellow flowers, about half an inch long, are borne in large racemose panicles. In California, where it is native, it is sometimes called "golden eardrops." (Adapted from *Jepson, Flora of Western Middle California, p. 210.*)

**51614.** *MYRCIARIA EDULIS* (Vell.) Skeels. Myrtaceæ.

(*Eugenia edulis* Vell.)

"Of fine flavor, but too seedy to be of commercial value. It is a very prolific bearer and evergreen."

The *cambuca*, a native of the State of Rio de Janeiro, Brazil, is commonly cultivated in that country for its fruit. The tree bears the fruits both on the small limbs and on the trunk. These fruits are oblate, about 1½ inches long, with smooth orange skin, and the flesh is divided into two portions. The firm outer flesh is about a quarter of an inch thick, leathery and very acid, while the inner flesh, which constitutes the edible part of the fruit, is soft, translucent and jellylike, and subacid in flavor. It is highly esteemed by the Brazilians.

For previous introduction, see S. P. I. No. 37829.

**51615. RUBUS MACROPHYLLUS** Weihe and Nees. Rosaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received November 5, 1920.

"From St. Martin, Alpes Maritimes, France, at an altitude of about 4,000 feet. The fruit is acid and about seven-eighths of an inch in diameter." (*Trabut.*)

This is a very variable shrub, native to the British Isles. It has arching, very prickly stems, quinate or ternate usually hairy leaves, and panicles of pinkish or white flowers. (Adapted from *Sowerby, English Botany, vol. 3, p. 177.*)

**51616. FRAGARIA NILGERRENSIS** Schlecht. Rosaceæ. **Strawberry.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received November 6, 1920.

This vigorous and hardy strawberry was introduced from China under the direction of Maurice de Vilmorin and is remarkable for its tufted habit, hairy foliage, its small white flowers, and especially for its small, insipid, white hairy fruits. (Adapted from *Journal Société Nationale d'Horticulture, vol. 21, p. 189.*)

**51617. RIBES LONGERACEMOSUM** Franch. Grossulariaceæ.

From Elstree, Hertfordshire, England. Cuttings presented by Vicary Gibbs, Aldenham House. Received November 10, 1920.

"This species, found in the mountains of western China, bears large black fruits of good flavor, in racemes a foot and a half long." (*Wilson, A Naturalist in Western China, vol. 2, p. 31.*)

For previous introduction, see S. P. I. No. 40458.

Introduced for experiments to determine the resistance of currants to the white-pine blister rust.

**51618 to 51622. HOLCUS SORGHUM** L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Surat, Gujarat, India. Seeds presented by Bhimbhai M. Desai, Deputy Director of Agriculture. Received November 11, 1920.

Sweet sorghums introduced for the Office of Sugar-Plant Investigations.

**51618.** *Hundi Jowar.*

**51621.** *Sundhia Jowar.*

**51619.** *Nilwa Jowar.*

**51622.** *Utavli Jowar.*

**51620.** *Red (Ratalio) Jowar.*

**51623. PROTEA ARGENTEA L. Proteaceæ.***(Leucadendron argenteum R. Br.)*

From South Africa. Seeds received through the Federal Horticultural Board. Received November 11, 1920.

The *witteboom*, or *silver-leaf pine*, is a beautiful tree found native only in the immediate vicinity of Cape Town, Cape Province, where it grows up to 50 feet in height. The numerous white silky leaves, which are lanceolate and up to 7 inches long, are now an article of commerce, being used for curios, mats, book-marks, etc.; when dry they take ink or paint and are then sold with texts or small scenes depicted on them. (Adapted from *Sim, Forests and Forest Flora of Cape Colony*, p. 294.)

For previous introduction, see S. P. I. No. 41420.

**51624. PHLEUM PRATENSE L. Poaceæ.****Timothy.**

From Ayr, Ayrshire, Scotland. Seeds purchased from McGill & Smith (Ltd.). Received November 15, 1920.

"Scotch timothy seed." (*McGill & Smith.*)

Locally grown seed introduced for timothy-breeding investigations.

**51625 and 51626.**

From Caracas, Venezuela. Seeds presented by Henry Pittier. Received November 16, 1920.

**51625. EUGENIA sp. Myrtaceæ.**

Sent without notes from Caracas.

**51626. MYRCIARIA sp. Myrtaceæ.**

"*Guayabo pesjua*. This is a small tree with a spreading, depressed crown. The flowers are small, white, with a four-celled ovary; the fruits are globose, slightly depressed, 2.5 to 4 centimeters long, with dark-purple smooth skin, a white, sweet-acidulate mesocarp, and one to four seeds. It is a great favorite with the natives and often cultivated. In fact, I have seen it only under cultivation, although I am assured it also grows wild around Valencia." (*Pittier.*)

**51627 to 51658.**

From East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 9, 1920. Quoted notes by Dr. Shantz.

**51627. ACACIA sp. Mimosaceæ.**

"(No. 1108. Lasamis, Nyanza Province, Kenia. June 13, 1920.) An acacia."

**51628. AMOMUM sp. Zinziberaceæ.**

"(No. 1003. Near Meru, Kenia Province, Kenia. June 12, 1920.) A plant with beautiful foliage which branches like that of *Alpinia*. The deep reddish purple fruit is partly hidden by the chocolate-colored bracts and is borne in clusters. The fruit, which is quite peppery, is eaten by the natives."

**51629. AMOMUM sp. Zinziberaceæ.**

"(No. 1004. Near Meru, Kenia Province, Kenia. June 12, 1920.) Similar to the preceding, but the fruits are more clustered, the bracts are not visible, and the fruit is not eaten, so far as I know; the fruits are very ornamental."

**51630. ANDROPOGON INSCULPTUS Hochst. Poaceæ.****Grass.**

"(No. 1075. Embu, Kenia Province, Kenia. June 17, 1922.) A grass with a forked head, abundant in this section, especially lower down, toward Fort Hall."

For previous introduction, see S. P. I. No. 32447.

**51631. AVENA STERILIS L. Poaceæ.****Oats.**

"(No. 1125. Nairubi, Ukamba Province, Kenia. June 24, 1920.) Black oats from the farm at Kabete."

For previous introduction, see S. P. I. No. 49568.

## 51627 to 51658—Continued.

51632. *CASSIA DIDYMOBOTRYA* Fres. Cæsalpiniaceæ.

"(No. 1010. En route from Meru to Embu, Kenia Province, Kenia. June 12, 1920.) A beautiful shrub, abundant in this section and cultivated in Belgian Kongo. It blooms and seeds abundantly."

For previous introduction, see S. P. I. No. 43649.

51633. *CROTALARIA* sp. Fabaceæ.

"(No. 1031. En route from the Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) About 6 feet tall, with large pods and yellow flowers."

51634. *CROTALARIA* sp. Fabaceæ.

"(No. 1047. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) About 6 feet tall; from the zone below the forest."

51635. *DIGITARIA NODOSA* Parl. Poaceæ.

Grass.

"(No. 1042. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) From the short-grass area."

51636. *ERAGROSTIS* sp. Poaceæ.

Grass.

"(No. 850. Ngano Ngano, Urundi. March 17, 1920.) Abundant as a semiruderal."

51637. *ERYTHRINA* sp. Fabaceæ.

Grass.

"(No. 1064. Chuka, Kenia Province, Kenia. June 16, 1920.) Red bean tree, a prominent wild tree in the forest here; it is wild over much of central Africa and is used as an ornamental in many places."

51638. *GUIZOTIA ABYSSINICA* (L. f.) Cass. Asteraceæ.

"(No. 1126. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the farm at Kabete."

An annual, up to 8 feet high, native to Abyssinia. It has narrow opposite leaves, showy yellow flower heads, and black, shiny seeds. It is cultivated in Abyssinia for the oil contained in the seeds. (Adapted from *Chiovenda, Etiopia, Osservazione Botaniche*, p. 27.)

For previous introduction, see S. P. I. No. 44789.

51639. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"(No. 999. Uaso Nyiro River, Kenia Province, Kenia. June 12, 1920.) A large leafless (at flowering time) Ipomoea with large purple flowers. It makes a very attractive desert shrub."

51640. *MOMORDICA TRIFOLIOLATA* Hook. f. Cucurbitaceæ.

"(No. 997. Meru, Kenia Province, Kenia. June 12, 1920.) A cucumberlike fruit with ribbed outer surface; reddish yellow inside, with very red seeds surrounded by edible pulp."

51641. *MOMORDICA SCHIMPERIANA* Naud. Cucurbitaceæ.

"(No. 1007. Meru, Kenia Province, Kenia. June 12, 1920.) A cucumber with protuberances on the surface. The seeds are covered with red pulp; eaten by the natives."

51642 to 51644. *ORYZA SATIVA* L. Poaceæ.

Rice.

51642. "(No. 1110. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Senna*, from Witu."

51643. "(No. 1114. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Fine*, from the Charra region."

51644. "(No. 1120. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the experiment station at Kibos."

51645. *PAPPOPHORUM ABYSSINICUM* Hochst. Poaceæ.

Grass.

"(No. 995. Merile, Nyanza Province, Kenia. June 12, 1920.) Not especially abundant, but occasional in the dry desert country."

An annual caespitose grass with erect stems 2 to 4 feet high and linear leaves. (Adapted from *Flora*, vol. 38, p. 202.)

51646. *PASPALUM DILATATUM* Poir. Poaceæ.

Grass.

"(No. 1137. Kabete, Ukamba Province, Kenia. June 26, 1920.) One of the most successful introduced plants in this section."

## 51627 to 51658—Continued.

"This grass has long been introduced in the Southern States, where it is widely distributed. It is a valuable grass for pasturage, particularly on rich land, and not infrequently is cut for hay. It goes very commonly under the name of Dallis grass, but is sometimes called water grass and not infrequently simply *paspalum*. The grass is a native of Argentina, but is now extensively cultivated in Australia, New Zealand, South Africa, and in general throughout the Tropics." (*Piper.*)

For previous introduction, see S. P. I. No. 35068.

51647. *PENNISETUM* sp. Poaceæ. Grass.

"(No. 1001. Uaso Nyiro River, Kenia Province, Kenia. June 12, 1920.) A desert grass which grows just on the desert side of the Themedra grassland."

51648. *PENNISETUM* *CILIARE* (L.) Link. Poaceæ. Grass.

"(No. 1023. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) A promising grass for desert regions, in which it is quite abundant."

51649. *PHASEOLUS* *VULGARIS* L. Fabaceæ. Common bean.

"(No. 1129. Nairobi, Ukamba Province, Kenia. June 24, 1920.) The 'rose-coco' bean, produced in four months at the farm at Kabete."

51650. *PHASEOLUS* sp. Fabaceæ.

"(No. 1008. Meru, Kenia Province, Kenia. June 12, 1920.) A small-seeded small vine near the Uaso Nyiro River."

51651. *RICINUS* *COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"(No. 1119. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Castor-beans from the experimental station at Kibos."

51652. *SPOROBOLUS* sp. Poaceæ. Grass.

"(No. 1025. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) A fine pasture grass."

51653. *VERNONIA* sp. Asteraceæ.

"(No. 1057. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920.) Very ornamental because of its unusually large flowers."

51654. (Undetermined.)

"(No. 1016. Meru, Kenia Province, Kenia. June 16, 1920.) A vine, abundant here, which may be a morning-glory."

51655. (Undetermined.)

"(No. 1017. Lasamis, Nyanza Province, Kenia. June 30, 1920.) A shrub with thick oval leaves and flowers resembling those of the passion flower, with many white stamens. The ripe fruit is reddish or yellowish and filled with seeds. It is eaten in the same manner as chilies and much prized. It has a sharp peppery smell and a sharp pleasant taste and would probably be very useful in making highly seasoned dishes, such as chowchow."

51656. (Undetermined.)

"(No. 1054. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920. An ampelopsislike vine with a brick-red grapelike single-seeded fruit and rather fleshy leaves. It is common throughout central Africa."

51657. (Undetermined.)

"(No. 1107. Lasamis, Nyanza Province, Kenia. June 13, 1920.) A small evergreen tree found along dry river beds. It looks like a *Buxus* and is called 'wild coffee.'"

51658. *PENTZIA* *INCANA* (Thunb.) Kuntze. Asteraceæ. Karroo bush.

"(No. 1134. Nairobi, Ukamba Province, Kenia. June 25, 1920.) The *karroo* bush does well here, although the climate is cool and comparatively damp. This indicates that the *karroo* bush might do well in both desert and humid regions."

**51659. PLACUS BALSAMIFER (L.) Baill. Asteraceæ.**  
(*Blumea balsamifera* DC.)

From Kuala Lumpur, Federated Malay States. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 13, 1920.

"A large plant from which the Chinese make camphor; grows here in waste land." (*Rock.*)

For previous introduction, see S. P. I. No. 51036.

**51660 to 51667. CAPSICUM ANNUM L. Solanaceæ. Red pepper.**

From Paramaribo, Dutch Guiana. Seeds presented by the director, Department of Agriculture. Received October 15, 1920. Quoted notes by the director.

"Seeds of various varieties of pepper brought to market here."

51660. "*Agi-olna nem.*"

51664. "*Montjie rood.*"

51661. "*Alatta.*"

51665. "*Papegaai.*"

51662. "*Madame Jeannette gell.*"

51666. "*Prasoro or Kateo misie.*"

51663. "*Montjie gell.*"

51667. "*Salm.*"

**51668. GYNOCARDIA ODORATA R. Br. Flacourtiaceæ.**

From Calcutta, Bengal, India. Seeds purchased from Smith, Stanistreet & Co. (Ltd.), through James A. Smith, American consul general. Received November 1, 1920.

A moderate-sized evergreen tree, native to northwestern India from Sikkim eastward to Rangoon, Burma. It bears round, hard fruits on the stem and main branches; these are used for fish poison. The seeds were long supposed to be the source of chaulmoogra oil; the true source was discovered in 1899 to be *Taraktogenos kurzii*.

For previous introduction, see S. P. I. No. 49636.

**51669 to 51695.**

From Wageningen, Netherlands. Seeds presented by C. J. Hessing, botanist, Instituut voor Veredeling van Landbouwgewassen. Received November 3, 1920. Quoted notes by Mr. Hessing.

51669 to 51676. *PHLEUM PRATENSE* L. Poaceæ.

Timothy.

51669. "No. 1. Cultivated timothy, Holland."

51670. "No. 2. Wild timothy growing near Wageningen."

51671. "No. 3. Cultivated timothy, Holland."

51672. "No. 4. High-growing timothy, own culture."

51673. "No. 5. A geniculate variety from Holland."

51674. "No. 6. Wild, growing near Alkmaar."

51675. "No. 7. Wild, growing in light clay near Zutphen."

51676. "No. 8. Wild, from Switzerland."

51677 to 51682. *SECALE CEREALE* L. Poaceæ.

Rye.

51677. "No. 8. *Petkusser* × *Krüger.*"

51678. "No. 9. *Krüger.*"

51679. "No. 10. From Zealand Island, Denmark."

51680. "No. 11. *Buhlendorfer.*"

51681. "No. 12. *Klooster.*"

51682. "No. 13. *Petkusser.*"

51683 to 51695. *TRITICUM AESTIVUM* L. Poaceæ.  
(*T. vulgare* Vill.)

Common wheat.

51683. "No. 1. *Millioen III B.*"

51684. "No. 2. *Imperial.*"

51685. "No. 3. *Concurrent.*"

51686. "No. 4. *Matador.*"

51687. "No. 5. *Essex.*"

## 51669 to 51695—Continued.

51688. "No. 6. *Geldersche Ris*."  
 51689. "No. 7. From Zealand Island, Denmark."  
 51690. "No. 14. *Imperial II D*."  
 51691. "No. 15. *Millioen II*."  
 51692. "No. 16. *Batauwe*."  
 51693. "No. 17. *Millioen IV*."  
 51694. "No. 18. *Squarehead*."  
 51695. "No. 19. *Wilhelmina*."

**51696. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ. Guar.**  
 (*C. psoraloides* DC.)

From St. Thomas Mount, Madras, India. Seeds presented by G. A. D. Stuart, Director of Agriculture. Received November 16, 1920.

An erect East Indian annual, 3 to 6 feet high, bearing an enormous number of pods which are used as a vegetable like string beans. The plant can be grown for forage, hay, and silage in any part of the country where the cowpea succeeds, and is more drought resistant than any other annual legume.

For previous introduction, see S. P. I. No. 49902.

**51697. SOLANUM sp. Solanaceæ. Wild potato.**

From Bogota, Colombia. Tubers presented by Hermano Apolinar-Maria, Institute de la Salle. Received November 16, 1920.

"Tubers of a wild potato from the Páramos de Quasca, growing at an altitude of 3,100 meters." (*Apolinar-Maria*.)

**51698. PISTACIA LENTISCUS L. Anacardiaceæ.**

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received November 16, 1920.

"A very ornamental bush or small tree which will grow in the very driest positions—for instance, in a fissure of a vertical rock. The wood of this plant is very strong and can be used for making excellent handles for pickaxes and such tools which have to resist heavy wear." (*Proschowsky*.)

A small tree which is found along the coast of the Mediterranean Sea, where it forms a bushy thicket. The evergreen, pinnate, shining leaves exhale a strong aromatic odor when bruised. The tree is particularly ornamental when in flower; the pistillate flowers are purplish green, and the bright purple, very small staminate flowers are clustered in the axils of the leaves. The fruits are the size of lentils and are black when ripe. They are eaten by the natives. The fruits contain an edible, green oil, which is preferred by the Turks to olive oil. In Tunis this oil is largely used for lighting. (Adapted from *Bulletin Société Horticole Tunisie*, vol. 14, p. 69.)

For previous introduction, see S. P. I. No. 9426.

**51699. ANACARDIUM OCCIDENTALE L. Anacardiaceæ. Cashew.**

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic N. Goding, American consul general. Received November 18, 1920.

"Seeds of the *marañón*, which grows wild in the coastal region of this country. The pear-shaped fruit is about 3 inches long; one variety is bright shining yellow, the other bright shining red. The taste is mildly acid and rather pleasant." (*Goding*.)

**51700. PARTHENIUM ARGENTATUM A. Gray. Asteraceæ. Guayule.**

From Marfa, Tex. Plants presented by R. A. Epperson. Received November 18, 1920.

The guayule is a spreading, much-branched shrub, rarely as much as 3 feet in height, with small greenish, silvery gray leaves and a profusion of small yellow flowers borne in loose clusters on slender stems. The shrub is

native to a comparatively small area in southwestern Texas and northern Mexico.

Unlike most other rubber-producing plants, the bark of the guayule contains no latex, the rubber being in the cellular tissue of the epidermis and to a certain extent in the branches and leaves. The dried plants are ground, and the rubber is extracted by one of several chemical processes. Although guayule rubber is not of the highest grade, it has a possible future, because the plant will grow in semiarid regions, it does not suffer from light frosts after passing the seedling stage, and the plants may be gathered throughout the year. (Adapted from *Commerce Reports No. 149, June 26, 1918.*)

For previous introduction, see S. P. I. No. 47955.

**51701. PHASEOLUS VULGARIS L. Fabacæ. Common bean.**

From Santa Ines, Chile. Seeds presented by A. Fernandez, through Salvador Izquierdo. Received November 22, 1920.

Chilean bean.

For previous introduction, see S. P. I. No. 51198.

**51702. PYRUS MALIFOLIA Spach. Malacææ. Pear.**

From Paris, France. Cuttings presented by Prof. D. Bois, Museum d'histoire Naturelle. Received November 23, 1920.

A handsome tree which is a hybrid of doubtful origin, possibly a seedling from *P. auricularis*; the original specimen, 30 feet high, grew in Paris. The leaves are roundish oval, nearly always cordate at the base, and the flowers are 1 to 1½ inches across. The fruit is broadly turbinate, about 2 inches long, and deep yellow when ripe.

For previous introduction, see S. P. I. No. 44048.

**51703. ASIMINA TRILOBA (L.) Dunal. Annonacææ. Papaw.**

From McConnellsville, Ohio. Budwood presented by H. D. Tennent. Received November 26, 1920.

"The largest late sort of which I know and the mildest in flavor when in best condition." (*Tennent.*)

"Fruit large and of excellent quality." (*David Fairchild.*)

**51704. CHAYOTA EDULIS Jacq. Cucurbitacææ. Chayote.**

(*Sechium edule* Swartz.)

From Antigua, Guatemala. Fruits presented by W. Cameron Townsend, through Herndon W. Goforth, American vice consul, city of Guatemala. Received November 29, 1920.

"*Guisquil de papa.* The very best variety which has yet come under the range of my observations is the *guisquil de papa* (potato chayote) of Antigua. This is a broadly obovoid fruit about 4 inches in length, plump, perfectly smooth on the surface (though with brownish cracks when fully ripe), and of a dull ivory-white color. This variety is unusually mealy and is of much better flavor than most others. It is, to my mind, the one which should be disseminated most widely in the United States." (*Wilson Popenoe.*)

**51705. AMYGDALUS COMMUNIS × PERSICA. Amygdalacææ. Peach-almond hybrid.**

From Morgan Hill, Calif. Seeds presented by Leonard Coates. Received December 6, 1920.

"A peach-almond hybrid which, Mr. Coates says, bears fruits looking in their early stages like green peaches, but in early September the flesh begins to split open and expose the almondlike pit. He has tried this as a stock and finds that it produces the branching roots of a peach but is more vigorous than any other stock. He guarantees that these seeds will make double the growth of the ordinary peach seeds in the nursery row. This hybrid was procured by Mr. Coates from a man living near Los Gatos." (*David Fairchild.*)

**51706. RUBUS MACROCARPUS Benth. Rosaceæ. Colombian berry.**

From Bogota, Colombia. Plants collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 16, 1920.

"(No. 495. Bogota, Colombia. October 14, 1920. Herb. No. 1108.) The giant Colombian blackberry, from El Penon, near Sibate, Cundinamarca, Colombia."

For previous description, see S. P. I. No. 51401.

**51707 to 51739.**

From Buitenzorg, Java. Seeds presented by the director, Plant-Breeding Station. Received October 26, 1920.

**51707. BENTINCKIA NICOBARICA (Kurz) Beccari. Phœnicaceæ. Palm.**

An elegant little palm with a habit resembling that of a *Kentia*; its native home is the Nicobar Islands, Indian Ocean. The pinnate, irregularly divided fronds are large and spreading, and the branched spadix bears small purplish berries. (Adapted from *Revue Horticole*, vol. 68, p. 249.)

For previous introduction, see S. P. I. No. 7569.

**51708. CALAMUS SCIPIONUM Lour. Phœnicaceæ. Rattan palm.**  
(*Daemonorops fissus* Blume.)

The typical form of this rattan is 40 to 60 feet in height, with alternate, pinnatisect leaves 4 or 5 feet long; the male spadix is 20 feet long and the female 10 feet, and the small ovoid fruits are about one-third of an inch in diameter. This rattan is native to Malaysia, where the canes are employed for making furniture, etc., for which purpose it is especially suitable because of the ease with which it splits. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 89, and *Hooker, Flora of British India*, vol. 6, p. 461.)

**51709. CARYOTA MITIS Lour. Phœnicaceæ. Palm.**

A Malayan palm about 20 feet high with a straight cylindrical trunk 4 inches or more in diameter and bipinnate leaves 4 to 9 feet in length. The palm is also found in the island of Reunion, where the natives extract a fiber from it and also utilize the wool found in the axils of the leaves as a textile. (Adapted from *Grisard and Vanden-Berghe, Les Palmiers Utiles*, p. 43.)

For previous introduction, see S. P. I. No. 51128.

**51710. CARYOTA RUMPHIANA Mart. Phœnicaceæ. Palm.**

An East Indian palm about the size of the coconut palm, with a smooth trunk and graceful bipinnate leaves composed of segments with truncate jagged tips. From the central pith of the bark a sago is prepared which is eaten in times of scarcity. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 106.)

**51711. CHRYSALIDOCARPUS LUCUBENSIS Beccari. Phœnicaceæ. Palm.**

A rather tall palm from the island of Nossi Be, Madagascar, with elongate pinnate fronds composed of rigid swordlike segments up to 3 feet in length. The obovate fruits are about half an inch long. (Adapted from *Engler, Botanische Jahrbücher*, vol. 38, *Beiblatt* 87, p. 35.)

**51712. DAEMONOROPS TRICHOUS Miquel. Phœnicaceæ. Palm.**

A rattan from the island of Billiton, East Indies, where it inhabits both the lowlands and the highlands. The stems are about an inch thick, indented at the nodes, with internodes up to 8 inches in length. The upper surface of the stem is gray, and the stems are very hard to split. It is known as "rotan nanga" by the natives; so far as is known it is not used. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 99.)

**51713. DAMMARA ALBA Rumph. Pinaceæ.**  
(*Agathis loranthifolia* Salisb.)

A handsome tree growing to 100 feet in height, with a trunk 8 feet in diameter, straight and branchless for two-thirds its length. It is of great commercial importance on account of its yield of the transparent dammar

## 51707 to 51739—Continued.

resin, extensively used for varnish. It is a native of the East Indian Archipelago and mainland. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 161.)

For previous introduction, see S. P. I. No. 51129.

51714. *DRYMOPHLOEUS AMBIGUUS* Beccari. Phœnicaceæ. Palm.

A small spineless palm, less than 8 feet high, native to New Guinea, with pinnate fronds about 4½ feet long and fleshy ovoid fruits nearly an inch in length. (Adapted from *Beccari, Malesia*, vol. 1, p. 42.)

51715. *DRYMOPHLOEUS PROPINQUUS* Beccari. Phœnicaceæ. Palm.

A rather small palm, native to New Guinea, with a stem up to 2½ meters high and 2 centimeters thick. The leaves, about 1½ meters long, are irregularly pinnate, with pinnae about 30 centimeters long. (Adapted from *Beccari, Malesia*, vol. 1, p. 43.)

For previous introduction, see S. P. I. No. 49532.

51716. *DRYMOPHLOEUS* sp. Phœnicaceæ. Palm.

Received as *Actinophloeus macarthurii*, for which a place of publication has not yet been found. The species of *Actinophloeus* are now generally referred to *Drymophloeus*.

51717. *DRYMOPHLOEUS* sp. Phœnicaceæ. Palm.

Received as *Actinophloeus sandariana*, for which a place of publication has not yet been found. The species of *Actinophloeus* are now generally referred to *Drymophloeus*.

51718. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. Oil palm.

The oil palm is native to the western coast of Africa, but has become distributed throughout the Tropics. The palm becomes 16 to 20 meters in height and bears fruits of the size and form of a plum, yellow or brownish at maturity, according to the variety.

These fruits, a thousand or more of which are borne upon one raceme, have a hard, woody endocarp surrounded by a fibrous, fleshy pulp, which contains a large percentage of oil. The seed contains an oleaginous kernel which is exported to Europe under the name *palmiste*, or palm-nut oil. The orange-colored oil from the pulp is known simply as palm oil, and this is seen in Europe only in the solid state and is used in making soap. The other oil, which is white, is used in making very fine soaps. (Adapted from *Capus and Bois, Les Produits Coloniaux*, p. 294.)

For previous introduction, see S. P. I. No. 48633.

51719. *EUTERPE ACUMINATA* (Willd.) Wendl. Phœnicaceæ. Palm.  
(*Oenocarpus utilis* Klotzch.)

A graceful spineless palm from tropical South America, with a trunk 36 feet tall, terminated by about 10 pinnate fronds 7 or 8 feet long. The black, roundish fruits are fleshy and about half an inch in diameter. (Adapted from *Linnaea*, vol. 20, p. 447.)

51720. *LATANIA COMMERSONII* Gmel. Phœnicaceæ. Palm.

A palm from the island of Mauritius which reaches a height of 30 to 40 feet, with lightly spiny, fan-shaped leaves marked with red in young trees. The leaves are used by the natives in making fans, hats, mats, etc. (Adapted from *Grisard and Vanden-Berghe, Les Palmiers Utiles*, p. 103.)

For previous introduction, see S. P. I. No. 45960.

51721. *LATANIA LODDIGESII* Mart. Phœnicaceæ. Palm.

A very robust palm, native to Mauritius, up to 50 feet in height. The hairy leafstalks are 3 to 4 feet long, and the blades of the whitish fan-shaped leaves are 3 to 5 feet in length. This species is cultivated throughout the Tropics and when young makes a very decorative pot plant. (Adapted from *Rock, Ornamental Plants of Hawaii*, p. 33.)

51722. *LATANIA VERSCHAFFELTHII* Lem. Phœnicaceæ. Palm.

A palm 40 feet in height with densely tomentose petioles 5 to 8 feet long, spiny on the young plants. The pale-green leaves are about 5 feet in diameter, with divisions 2½ feet long and 2 inches wide. This palm grows abundantly on the island of Rodriguez, east of Mauritius. (Adapted from *Gardeners' Chronicle, third series*, vol. 31, p. 140.)

## 51707 to 51739—Continued.

51723. *LICUALA RUMPHII* Blume. Phœnicaceæ. Palm.

A rather showy dwarf fan palm grown for its peculiar habit and hand-some foliage. The slender stem bears a crown of long-petioled roundish leaves, 3 feet or more in diameter, with 12 to 15 segments. The simply branched spadix, 4 or 5 feet long, bears the small ellipsoid fruits. Native to Celebes and Borneo. (Adapted from *Blume, Rumphia, vol. 2, p. 41.*)

51724. *MARTINEZIA EROSA* Linden. Phœnicaceæ. Palm.

A rather small South American palm, covered throughout with long needlelike spines. The pinnate leaves consist of a few pairs of narrowish leaflets at the base with a pair of broader ones at the apex, which is truncate and ragged. (Adapted from *Gardeners' Chronicle, 1872, p. 1296.*)

51725. *NINGA SCHEFFERIANA* Beccari. Phœnicaceæ. Palm.

A graceful spineless rather small Malayan palm with long-stemmed pinnate leaves and ellipsoid fruits about an inch in length. (Adapted from *Annales, Jardin Botanique de Buitenzorg, vol. 2, p. 84.*)

51726. *ONCOSPERMA FILAMENTOSUM* Blume. Phœnicaceæ. Palm.

An elegant palm with a trunk 30 to 40 feet high, distinctly annulate and armed, and with a thick, graceful crown. The pinnate leaves are 10 to 12 feet long, with pinnæ about a foot in length. This palm is common on the borders of the paddy swamps in the Malay Peninsula. (Adapted from *Calcutta Journal of Natural History, vol. 5, p. 464.*)

For previous introduction, see S. P. I. No. 49548.

51727. *PANDANUS ATROCARPUS* Griffith. Pandanaceæ. Screw pine.

A tree 40 to 60 feet high and about 6 inches in diameter, with linear acuminate dark-green leaves 20 feet long and 4 inches wide. The fragrant white spikes are 4 to 6 inches long and the fruits an inch long. The leaves are used for making coverings for carts, for screens, hats, etc. (Adapted from *Ridley, Materials for a Flora of the Malayan Peninsula, pt. 2, p. 230.*)

51728. *PANDANUS FURCATUS* Roxb. Pandanaceæ. Screw pine.

One of the most ornamental of the screw pines, attaining a height of about 5 meters, with dark-green, linear, spiny leaves, 3 or 4 or more meters long, gracefully arching and somewhat spirally arranged. The whitish gray inflorescence emits a very agreeable odor. Native to the East Indies. (Adapted from *Revue Horticole, vol. 51, p. 290.*)

For previous introduction, see S. P. I. No. 39652.

51729. *PANDANUS LABYRINTHICUS* Kurz. Pandanaceæ. Screw pine.

A shrub 15 to 20 feet high, with erect-spreading branches, and a slender, warty trunk which sends out stiltlike, intricate aerial roots. The somewhat leathery linear leaves, 4 to 6 feet long, are shining above, with the margins and midribs densely spiny with curving white spines. The drupes are shining olive green, becoming golden. Native to the East Indies. (Adapted from *Miquel, Annales Musei Botanici Lugduno-Batavi, vol. 2, p. 53.*)

51730. *PANDANUS POLYCEPHALUS* Lam. Pandanaceæ. Screw pine.

An East Indian screw pine with leaves about 3 feet long and 2 inches wide. The natives eat the young snow-white leaves, which are tender and sweet, and also the unopened flower heads. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië, vol. 1, p. 29.*)

51731. *PANDANUS TECTORIUS* Parkins. Pandanaceæ. Screw pine.

A small tree with a trunk which usually begins to branch very low, the branches bending nearly to the ground; the leaves are long, sword-shaped, armed with spines on the margins and keel, and of great textile strength. The tree is native to Oceanica and was introduced into Guam probably at a very early date. In the latter place the natives plant this species in hedges, where it serves the double purpose of a fence and a source of material for cordage, mats, hats, and bags. (Adapted from *Safford, Useful Plants of Guam, p. 344.*)

For previous introduction, see S. P. I. No. 51138.

## 51707 to 51739—Continued.

51732. *PANDANUS VANDERMEESCHII* Balf. f. Pandanaceæ. Screw pine.

This screw pine is from the island of Mauritius and becomes 15 feet or more in height, with two side branches extending to about 8 feet from the main trunk. The stiff suberect leaves are 2 or 3 feet long, with strong, red spines. The triangular-round fruits are borne on the side branches and are about 9 inches long. (Adapted from *Gardeners' Chronicle, third series, vol. 18, p. 237.*)

For previous introduction, see S. P. I. No. 9726.

51733 and 51734. *PHOENIX RECLINATA* Jacq. Phœnicaceæ. Palm.

A bushy or arborescent palm found native in the coastal districts of South Africa, where it sometimes becomes as much as 40 feet in height. The reclinate pinnate leaves are 6 to 9 feet long, with 30 to 50 pairs of leaflets. The elongate berries, about half an inch long, are yellowish when ripe, with a sweetish pulp. (Adapted from *Marloth, Flora of South Africa, vol. 4, p. 49.*)

51733. A form with large seeds, over an inch long.

51734. A form with seeds only half an inch long.

For previous introduction, see S. P. I. No. 23424.

51735. *PINANGA KUHLII* Blume. Phœnicaceæ. Palm.

A stout, rapid-growing palm, native to the lower altitudes of western Java, becoming 16 to 25 feet high, with annulate stems 2 inches in diameter, reddish when young, and beautiful terminal fronds with pinnate blades 4 feet long and half as wide. This is one of the hardiest species of *Pinanga* known. (Adapted from *Gardeners' Chronicle, third series, vol. 31, p. 97.*)

For previous introduction, see S. P. I. No. 49554.

51736. *PTYCHANDRA GLAUCA* Scheff. Phœnicaceæ. Palm.

A rather small East Indian palm with a slender trunk and very graceful pinnate fronds up to 12 feet in length; the longest pinne are 2½ feet. The spadix, borne at right angles to the trunk, is 3 feet long, with a reddish covering at the base, and the fruits are round and reddish. (Adapted from *Annales du Jardin Botanique de Buitenzorg, vol. 1, p. 160.*)

51737. *RHOPALOBLASTE HEXANDRA* Scheff. Phœnicaceæ. Palm.

A slender East Indian palm of medium height, with somewhat drooping pinnate fronds 3 or 4 feet long, composed of a large number of lanceolate pinne diminishing in size toward the summit and base of the frond. (Adapted from *Annales du Jardin Botanique de Buitenzorg, vol. 1, p. 156.*)

51738. *SEAFORTHIA ELEGANS* R. Br. Phœnicaceæ. Palm.

An elegant palm, native to the southern coast of Australia and the neighboring islands. It becomes 30 feet in height, with dark-green pinnate fronds up to 15 feet in length, and bears small oval berries which are fibrous in texture. (Adapted from *Flore des Serres, vol. 20, p. 93.*)

For previous introduction, see S. P. I. No. 38540.

51739. *TILMIA CARYOTAEFOLIA* (H. B. K.) O. F. Cook. Phœnicaceæ.  
(*Martinezia caryotaefolia* H. B. K.) Palm.

A small but graceful palm, native to tropical South America, becoming 30 feet in height. The erect stem is slightly swollen at the base and is clearly ringed; these rings are armed with stiff black slender spines 2 or 3 inches long. The bright-green terminal pinnate fronds are 4 to 5 feet long, spreading, and drooping. (Adapted from *Curtis's Botanical Magazine, pl. 6854.*)

For previous introduction, see S. P. I. No. 25944.

51740. *ARONIA ARBUTIFOLIA* (L.) Pers. Malaceæ.

(*Pyrus arbutifolia* L. f.)

From Atlanta, Ga. Seeds purchased from Otto Katzenstein & Co. Received December 18, 1920.

Native North American shrub, very showy in late fall and winter, with its brilliant red fruits and scarlet leaves. Grows wild from New York to Ohio, Arkansas, and Florida.

For previous introduction, see S. P. I. No. 44379.

**51741. ZIZIPHUS SPINA-CHRISTI (L.) Willd. Rhamnaceæ.**

From Haifa, Syria. Seeds presented by Amram Khazanoff, Jewish Colonization Association. Received November 11, 1920.

"Fruit of *Ziziphus spina-christi*, locally known as *sidr*, which you may find worth while experimenting with as a stock for the jujube." (Khazanoff.)

For previous introduction, see S. P. I. No. 44361.

**51742. ACROCOMIA SCLEROCARPA Mart. Phœnicaceæ.****Macauba palm.**

From Lavras, Minas Geraes, Brazil. Seeds presented by Escola Agrícola. Received November 15, 1920.

The *gru gru*, an exceedingly handsome palm, native to Trinidad and very common there. It is tall growing, with a single stem about 1 foot in diameter, ventricose, with long black spines all over the stem, and a handsome head of very fine foliage; the leaves, 9 to 12 feet long, are gracefully drooping. The abundant round fruits are yellowish brown and 2 inches in diameter. The pulp of the fruits and kernels of the seeds are edible, and a valuable oil is obtained from the latter. Handsome walking sticks are made from the stems. (Adapted from the *Journal of the Board of Agriculture of British Guiana*, vol. 12, p. 271.)

For previous introduction, see S. P. I. No. 37382.

**51743. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. Plum.**

From Shahjahanpur, United Provinces, India. Seeds presented by N. L. Rockey, district superintendent. Received November 20, 1920.

"Plum seed which I hope may be of some use, although I suppose that California plums may have been derived from them. I do not know whether these would make prunes or not. They are certainly sweet enough." (Rockey.)

For previous introduction, see S. P. I. No. 43988.

**51744 to 51747. ACONITUM spp. Ranunculaceæ. Monkshood.**

From Edinburgh, Scotland. Seeds presented by Dr. Isaac Bayley Balfour, director, Royal Botanic Garden. Received November 23, 1920.

**51744. ACONITUM FEROX Wall.**

A plant with an erect stem 3 to 6 feet high, rounded, palmately trifid leaves cut into irregularly indented lobes. The large pale-blue flowers are in a terminal dense-flowered raceme. The mass of the root sold by Indian druggists as aconite is derived from this species. The active principle in the root is an alkaloid, pseudoaconitine. It is used as a narcotic sedative, as an external application for neuralgia, etc., and internally chiefly in the treatment of chronic intermittent fevers. (Adapted from Watt, *Dictionary of the Economic Plants of India*, vol. 1, p. 87, and *National Standard Dispensatory*, p. 98.)

For previous introduction, see S. P. I. No. 38993.

**51745. ACONITUM FISCHERI Reichenb.**

As a garden plant this is at once one of the best, and well worth growing in any collection of hardy plants. The growth reaches 4 to 6 feet, terminated by a fine panicle of large, showy pale-blue flowers. It is an autumn-flowering species from Siberia and Kamchatka.

Medicinally, this plant is known as Japanese aconite and is imported quite largely into Europe, frequently finding its way to the United States. The Japanese aconite contains as its active constituent an alkaloid called japaconitine, which is now generally believed to be identical with aconitine (the alkaloid in *A. napellus*). (Adapted from *Flora and Sylva*, vol. 1, and *National Standard Dispensatory*, pp. 98 and 101.)

**51746. ACONITUM SEPTENTRIONALE Koelle.**

A plant native to the Himalayas from Chitral to Kumaon, mostly in forests, locally abundant at altitudes of 5,000 to 12,000 feet in Kashmir. The root is perennial, elongate; the stem erect, 3 to 6 feet high, much branched. The flowers are pale yellow or dull purple, with a short-beaked

**51744 to 51747—Continued.**

helmet which has a long cylindrical dorsal prominence. This species also yields much of the aconite of European commerce. (Adapted from *Kirtikar, Indian Medicinal Plants, vol. 1, p. 10.*)

**51747. ACONITUM VARIEGATUM L.**

A large plant reaching 1.5 meters in height, found in certain humid forests of the Swiss Alps, and bearing from July to September beautiful blue flowers often streaked with white. The upper sepal is the shape of a helmet and at least twice as tall as wide. At the base of each flower stalk the plant usually bears two or three adventitious roots swollen into tubercles. The tubers are smaller than those of *A. napellus* (the official variety of aconite), but closely resemble small specimens of it. (Adapted from *Bonnier, Flore Complète Illustrée en Couleurs de France, Suisse, et Belgique, vol. 1, p. 39.*)

**51748 to 51750.**

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received November 24, 1920.

**51748. ANDROSACE COCCINEA Franch. Primulacæ.**

"The scarlet androsace. Not hardy, will need a greenhouse in winter; dies after flowering, but makes good seed if it is allowed to flower in the open." (*Bulley.*)

**51749. GENTIANA sp. Gentianacæ.**

Gentian.

Received as *Gentiana farreri*, for which a place of publication has not yet been found.

**51750. MECONOPSIS PSEUDOINTEGRIFOLIA Prain. Papaveracæ.**

A biennial with huge flowers of a delightful citron color touched with green. It differs from *M. integrifolia* in having the flowers on a common stalk.

**51751. FICUS CARICA L. Moracæ.**

Fig.

From Austin, Tex. Plants presented by F. T. Ramsey. Received November 26, 1920.

"The *Ramsey* fig. This has proved to be the best we have ever seen. One cutting bore 81 figs seven months after planting. Every cutting planted in March will bear figs by fall." (*Ramsey.*)

**51752. MALUS GLAUDESCENS Rehder. Malacæ. Wild crab apple.**  
(*Pyrus glaucescens* Bailey.)

From Rochester, N. Y. Trees presented by John Dunbar, Department of Parks. Received November 30, 1920.

"Seedlings of *M. glaucescens*, perhaps 4 years old, which have large deep roots. They will, I think, suit your purpose for stock plants. When in bloom it is a beautiful ornamental plant." (*Dunbar.*)

For previous introduction, see S. P. I. 49036.

**51753 to 51758.**

From Richmond, Victoria, Australia. Seeds presented by F. H. Baker, through Harlan P. Kelsey, Salem, Mass. Received December 7, 1920.

**51753 and 51754. CALLITRIS CUPRESSIFORMIS Vent. Pinacæ.**

**51753.** Received as a "variety of Murray pine" without further description.

An elegant, moderate-sized cypresslike tree, native to Australia, introduced and acclimatized at Hakgala Gardens, Ceylon, where it bears seeds freely. Very ornamental for lawns, etc., and good for timber, fuel, etc. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, pp. 400 and 454.*)

For previous introduction, see S. P. I. No. 51282.

**51754.** Received simply as "Murray pine," apparently the typical form.

**51753 to 51758—Continued.**

**51755.** CANDOLLEA GRAMINIFOLIA (Swartz) F. Muell. Candolleaceæ.  
(*Styldium graminifolium* Swartz.)

"Trigger plant." (Baker.)

An interesting tufted plant with scapes of large, beautiful rose-lilac flowers and beautiful narrow swordlike leaves, very glabrous, 5 to 8 inches long, the outermost gracefully recurved. (Adapted from *Le Jardin Fleuriste*, vol. 3, p. 286.)

For previous introduction, see S. P. I. No. 44324.

**51756.** EUCALYPTUS ALPINA Lindl. Myrtaceæ.

A scrambling small tree with stringy bark, coriaceous leaves almost greasy in luster, fucose buds, and fruits which though smaller than those of *E. muelleri* have some resemblance to them. The tree is confined to the highest parts of the Gramplains (Victoria). (Adapted from *Maiden, Critical Revision of the Genus Eucalyptus*, vol. 1, p. 259, and vol. 3, p. 163.)

For previous introduction, see S. P. I. No. 49860.

**51757 and 51758.** KENNEDIA MONOPHYLLA Vent. Fabaceæ.  
(*Hardenbergia monophylla* Benth.)

**51757.** "The purple native sarsaparilla from Panton Hill District."  
(Baker.)

An ornamental Australian vine, with solitary obtuse leaflets up to 4 inches in length and numerous violet or rose-purple flowers borne in twos or threes in racemes. (Adapted from *Maiden, Flowering Plants and Ferns of New South Wales*, pt. 1, p. 55.)

For previous introduction, see S. P. I. No. 45790.

**51758.** "Variety *fruticosa*."

**51759 to 51761. MANGIFERA INDICA L. Anacardiaceæ. Mango.**

From Buitenzorg, Java. Seeds presented by Dr. M. W. Docters van Leeuwen, director, Botanic Garden. Received December 11, 1920. Quoted notes by the director.

**51759.** "Variety *aroemanis*."

**51761.** "Variety *madoe*."

**51760.** "Variety *golek*."

**51762. ADONIS VERNALIS L. Ranunculaceæ.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received December 14, 1920.

A fine perennial reaching a height of 2 feet and bearing glistening yellow blossoms, in full sun often measuring 3 to 4 inches across. The entire plant contains about 10 per cent of aconitic acid, which is used in medicine as a substitute for digitalis to slow the action of the heart, increase the force of the heart beat, and increase the blood pressure. (Adapted from *Gardening Illustrated*, vol. 29, p. 146, and *National Standard Dispensatory*, p. 104.)

**51763 and 51764.**

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920.

**51763.** HYLOCEREUS sp. Cactaceæ.

Cactus.

"(No. 510a. Bogota, Colombia. October 24, 1920.) *Pitahaya blanca* (white pitahaya), from the Bogota market. A rare edible-fruited cactus cultivated in Cundinamarca, probably at altitudes of 4,000 to 5,000 feet. The fruits are elliptic and rather slender in outline, about 4 inches long, light yellow externally, containing within a quantity of white, translucent flesh in which small black seeds are embedded. The flavor and quality of the fruit are rather better than those of other pitahayas I have seen." (Popenoe.)

**51763 and 51764—Continued.**

**51764.** RUBUS MACROCARPUS Benth. Rosaceæ. **Colombian berry.**

“(No. 509a. Bogota, Colombia. October 24, 1920.) The *Colombian berry* or *giant blackberry of Colombia* (Spanish, *mora* or *mora de Castilla*). From El Penon, on the road between Sibate and Fusagasuga, Cundinamarca. Seeds from unusually large and fine fruits of the giant blackberry, of which seeds and plants have been sent in under previous numbers.”

For description, see S. P. I. Nos. 51401 and 51706.

**51765 to 51768.**

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920. Quoted notes by Mr. Rock.

**51765.** BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. **Goa bean.**  
(*Psophocarpus tetragonolobus* DC.)

“No. 28. A bean with four-winged pods, which are borne in great abundance. They are collected while quite green and cooked like string beans. I have eaten this vegetable and found it very delicious, better than the green string bean. Cultivated in Malaya.”

For previous introduction, see S. P. I. No. 49711.

**51766.** CANARIUM sp. Balsameaceæ.

“No. 23. Native to China and sold in the markets at Singapore. The seed is edible, like the pill nut of the Philippines.”

**51767.** CARAPA GUIANENSIS Aubl. Meliaceæ. **Crabwood tree.**

“No. 4. A tall tree with large leaves and large globose fruits containing many angular and variably shaped fawn-colored seeds. It is known as the crab-oil tree and is a native of Guiana and tropical Africa. It is cultivated in Singapore.”

This tree, which has large ovate leaves, bears triangular nutlike fruits, ripening in June, July, and August; when crushed these exude a rich oil. This oil appears to be equal in lubricating value to ordinary machine oil, and it should be utilized. The cakes from which the oil has been expressed might serve as cattle feed. The tree grows in commercial quantities throughout the lower Amazon regions. The wood excels mahogany. (Adapted from Lange, *Lower Amazon*, pp. 11, 406, and 461.)

For previous introduction, see S. P. I. No. 44711.

**51768.** COLEUS ROTUNDFOLIUS (Poir.) Cheval. and Perr. Menthaceæ.  
(*C. tuberosus* A. Rich.)

“No. 13. This labiate is now cultivated in the Malay Peninsula as a substitute for potatoes. The tubers are produced in abundance, but are small and thin skinned. Plants grown from tubers will produce no tubers the first year, but when planted from cuttings of the green portion of the stem they will produce tubers in five months. The tubers are fully mature when the leaves begin to drop.”

For previous introduction, see S. P. I. No. 20427.

**51769.** LANSIUM DOMESTICUM Jack. Meliaceæ. **Langsat.**

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Garden. Numbered May, 1921.

An erect symmetrical tree, native to the Malay Archipelago, 35 to 40 feet high, with pinnate leaves composed of five to seven leaflets 4 to 8 inches long. The velvety, straw-colored fruits, 1 to 2 inches in diameter, in clusters of 5 to 30, have delicious white aromatic subacid flesh and are usually eaten out of hand, but are also of culinary value.

For previous introduction, see S. P. I. No. 47230.

**51770. DIALIUM LAURINUM Baker. Cæsalpiniacæ.**

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920.

"No. 27. A leguminous tree, with edible fruits, native to Malaya." (*Rock.*)

An erect, unarmed tree, native to Malakka, with oblong, rigidly coriaceous leaflets, 4 to 5 inches long, glossy above. The copious, obscure flowers are in ample terminal and axillary panicles. The black 1-seeded pod is fragile, roundish, 1 inch deep, and thinly coated with grayish brown down. The seed is as large as a bean. (Adapted from *Hooker, Flora of British India, vol. 2, p. 269.*)

**51771. MANGIFERA INDICA L. Anacardiaceæ. Mango.**

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received October 15, 1920.

"A mango grown near Surabaya, Java, which has fruits more than 12 inches long, of good quality." (*David Fairchild.*)

**51772 to 51777.**

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920. Quoted notes by Mr. Rock.

**51772. FLACOURTIA RUKAM Zoll. and Mor. Flacourtiaceæ.**

"No. 30. A handsome tree with small edible berries which make a fine preserve. Native to Malaya."

An unarmed tree with pubescent young branches, glabrous coriaceous leaves 3 to 5 inches long and 1½ to 2 inches wide, and 4-flowered umbels. The tree is much cultivated for its fruits, the size of a large cherry. (Adapted from *Hooker, Flora of British India, vol. 1, p. 192.*)

**51773. HYDROCARPUS ANTHELMINTHICA Pierre. Flacourtiaceæ.**

"No. 31. The Siamese chaulmoogra tree."

A vigorous tree, 10 to 20 meters high, with graceful furrowed branches; entire, coriaceous leaves, 10 to 30 centimeters long, pale yellowish above, shining below; and two to three, few-flowered, unilateral racemes of rose-colored or purple flowers. The fruit is large, round, 8 centimeters in diameter, and contains about 80 grayish, nearly ovate seeds. The seeds and the oil expressed from them have been used by the Chinese for three centuries for skin diseases. The tree is called false chaulmoogra by European pharmacists. (Adapted from *Bulletin, Société Botanique de France, vol. 55, p. 523.*)

For previous introduction, see S. P. I. No. 48228.

**51774. MANGIFERA ODORATA Griffith. Anacardiaceæ.**

"No. 32. A large tree with edible green fruits larger than the ordinary mangos, with a very strong odor. Sold on the market in Singapore."

"This interesting relative of the cultivated mango is indigenous to the island of Malakka, the home of most of the species of *Mangifera*. At Singapore it is called *kuwini*. The name *bumbum* appears to be applied to it in Java. It is a tall tree, said to attain a height of 80 to 100 feet, the trunk and crown resembling those of *M. indica*. It is glabrous throughout or very obscurely pubescent on the panicle; the leaves are 6 to 12 inches long and 2 to 4 inches broad. The odorous flesh-colored flowers are one-fourth of an inch broad; the petals three times as long as the reflexed greenish sepals, which are suffused with blood red. The fruit is oblong, yellow-green, spotted with yellow, offensive in odor, but with yellow fibrous pulp of sweet flavor and lacking any taste of turpentine, which is so frequent in inferior forms of *M. indica*. The stone is compressed and fibrous. While perhaps of not great value for its fruit, this species possesses considerable interest as a possible stock for the mango and for breeding experiments. In the region where it is found the fruit is said to be eaten by the natives, but not by Europeans." (*Popenoe.*)

## 51772 to 51777—Continued.

51775. *MERRILLIA CALOXYLON* (Ridley) Swingle. Rutaceæ. **Katinga.**  
(*Murraya caloxyton* Ridley.)

"No. 26. A tree with large citronlike, somewhat woody fruit. The seeds are embedded in a thick resinous substance which may be of economic importance. The seeds germinate readily."

The *katinga*, a tree of considerable size, native to southern Siam and Upper Perak, is famous in the Malay Peninsula for its beautiful wood, which is light yellow, ornamented with dark-brown streaks and stains, fairly hard in texture, and takes a good polish. The large yellowish green flowers are borne in small panicles; the thin, bright deep-green leaves, 8 inches long, have 13 leaflets and a flattened winged rachis. The fresh fruits are subglobose, 70 to 80 millimeters in diameter, nearly smooth, gray-green, with a leathery pericarp 10 to 12 millimeters thick with irregular branched lacunæ filled with resinous gum. The five to six locules, divided by cartilaginous solid walls 3 to 4 millimeters thick, are filled with a transparent jellylike gum surrounding the seeds. It is possible that this species would be worthy of cultivation as an ornamental plant. (Adapted from *Philippine Journal of Science*, vol. 13, p. 338.)

51776. *ONCOSPERMA HORRIDUM* (Griffith) Scheff. Phœnicaceæ. **Palm.**

"No. 20. The *nibung*, a very ornamental palm 80 feet high, which grows usually in swampy forests. The trunk is covered with spines; the wood is used for the manufacture of walking sticks."

A tree with an armed trunk and few, spreading leaves, 14 to 16 feet long, bearing very narrow, acuminate, spreading, coriaceous leaflets 2 to 3 feet long. There are two complete acutely margined spathes—the inner cuspidate, the outer 1 to 1½ feet long and armed. The purplish black fruit is borne on pendulous spadix branches 2 to 3 feet long. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 415.)

For previous introduction, see S. P. I. No. 49549.

51777. *ONCOSPERMA TIGILLARIA* (Jack) Ridley. Phœnicaceæ. **Palm.**

"No. 21. A palm similar to *Oncosperma horridum* [S. P. I. No. 51776 (Rock's No. 20)], but much more graceful. It also occurs in swampy forests."

A very elegant palm, 30 to 40 feet high, distinctly annulate, armed, with a thick graceful crown. The pinnate leaves are 10 to 12 feet long, the pinnæ 2 feet long, pendulous, coriaceous, ferruginous scurfy, bearing on the under side scales attached by their middle. The globose berries, the size of a carbine bullet, are borne on pendulous, purplish sanguineous spadix branches. The two spathes are boat-shaped and stout, the outer is green, covered here and there with whitish ferruginous scurf and armed on the outer surface. The inner spathe is almost unarmed, more scurfy, and velvety to the touch. The trunk is much used for making posts. Native to borders of paddy swamps in Malakka and in forests in Laineer. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 465.)

51778. *ZEA MAYS* L. Poaceæ. **Corn.**

From Marseille, France. Seeds presented by Mr. Stieljès, Institut Colonial de Marseille, through Dr. P. J. S. Cramer. Received October 5, 1920.

"A curious variety of corn with a small cob and small cream-colored grains, which is said to be very productive." (Cramer.)

51779 and 51780. *CORYLUS COLURNA* L. Betulaceæ.

**Turkish hazel.**

From Rochester, N. Y. Seeds presented by John Dunbar, assistant superintendent, Department of Parks, through R. E. Horsey, Highland Park Greenhouses. Received October 25, 1920.

51779. The Constantinople nut is a vigorous, free-growing tree, up to 60 feet in height, with a stout trunk, more or less horizontal branches,

**51779 and 51780—Continued.**

heart-shaped, glossy green leaves 5 inches long, and small hard-shelled nuts inclosed in fleshy, hairy, green involucre. (Adapted from *Gardeners' Chronicle, third series, vol. 40, p. 256.*)

For previous introduction, see S. P. I. No. 49194.

**51780.** Variety *pyramidalis*. A form of more compact, conelike habit.

**51781 to 51785.**

From Coban, Guatemala. Seeds presented by Gustav Helmrich. Received November 2, 1920.

**51781.** *PANICUM GLUTINOSUM* Swartz. Poaceæ. Grass.

"A grass growing in woods from Cuba and Mexico to southern Brazil, originally described from Jamaica. In Brazil called 'graminha do matte' and considered the best of shade grasses. In the West Indies known as 'ginger grass' and 'burr.'" (C. V. Piper.)

For previous introduction, see S. P. I. No. 49450.

**51782.** *PANICUM LAXUM* Swartz. Poaceæ. Grass.

A more or less spreading grass with simple or sparingly branched culms 40 to 100 centimeters high. Native to the savannas and open woods of Mexico, the West Indies, and south to Paraguay. (Adapted from *Contributions from the National Herbarium, vol. 15, p. 115.*)

For previous introduction, see S. P. I. No. 38041.

**51783.** *PASPALUM HUMBOLDTIANUM* Fluegge. Poaceæ. Grass.

"A handsome perennial grass producing strong scaly rootstocks, with tufted culms, 40 to 80 centimeters high, erect from a woody, decumbent base. The nodes are densely bearded with upwardly appressed white hairs; the flat, spreading blades, 8 to 18 centimeters long and 8 to 15 millimeters wide, are slightly narrowed toward the base into a stiff point. The margins are usually stiffly fringed with hairs, and the panicles, 10 to 15 centimeters long, are of pale, lax, spreading spikelets, beautifully fringed with long white glistening hairs. Native to rocky ground on the highlands from central Mexico to Argentina." (Agnes Chase.)

For previous introduction, see S. P. I. No. 51096.

**51784.** *PENNISETUM DURUM* Beal. Poaceæ. Grass.

"*Kul-aj* (reed of cow). Very good fodder, native to Guatemala." (Helmrich.)

**51785.** *RHYNCHOSPORA* sp. Cyperaceæ. Sedge.

"*Cok-see* (little cutting grass)." (Helmrich.)

**51786 to 51791.**

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 10, 1920. Quoted notes by Mr. Popenoe.

**51786.** *BEFARIA PHILLYREAEFOLIA* Benth. Ericaceæ.

"(No. 488a. October 14, 1920. Herb. No. 1152.) From the mountains near Sibate, Cundinamarca, at an altitude of about 9,000 feet. A bushy shrub about 5 feet high, with handsome tubular flowers, deep rose-pink in color and about 1 inch in length."

**51787.** *BERBERIS RIGIDIFOLIA* H. B. K. Berberidaceæ. Barberry.

"(No. 492a. October 14, 1920. Herb. No. 1118.) From the mountains near Sibate, Cundinamarca, at an altitude of about 9,000 feet. A thorny shrub about 6 feet high, with small leaves, small deep-yellow flowers, and oval black fruits about one-fourth of an inch long. An attractive ornamental shrub, recommended for trial in the South and on the Pacific coast."

**51788.** *ILEX* sp. Aquifoliaceæ.

"(No. 494a. October 14, 1920. Herb. No. 1151.) From Sibate, Cundinamarca, altitude about 8,600 feet. A small tree wild in this region and considered worthy of trial as an ornamental plant. It has oval leaves

## 51786 to 51791—Continued.

about 3 inches long and produces an abundance of small berries which are first green, then cream colored, then red, and finally, when fully ripe, almost black. They are used locally for making ink. Test in Florida and on the Pacific coast."

51789. *MUTISIA CLEMATIS* L. f. Asteraceæ.

"(No. 487a. October 14, 1920. Herb. No. 1145.) A climbing plant, wild and cultivated around the edges of the sabana of Bogota, at altitudes of 8,500 to 9,500 feet. It reaches a height of about 20 feet. Its foliage is graceful in appearance, of a grayish green color, and the bright-crimson flowers, which suggest small single dahlias in appearance, are about 2 inches in diameter. I believe the plant is one worthy of cultivation in California and Florida, where it will probably succeed."

51790. *VACCINIUM FLORIBUNDUM* H. B. K. Vacciniaceæ.

"(No. 490a, October 14, 1920. Herb. No. 1155.) From the mountains near Sibate, Cundinamarca, at an altitude of about 9,400 feet. A small shrub, compact and bushy in habit, about 5 feet high, with fine leaves and small rose-pink tubular flowers."

51791. *VICIA ANDICOLA* H. B. K. Fabaceæ.

"(No. 489a. October 14, 1920. Herb. No. 1153.) A small, slender climber, reaching a height of 8 or 10 feet, with delicate foliage and pea-shaped, bright-blue flowers about half an inch broad. From the mountains near Sibate, Cundinamarca, at an altitude of 9,400 feet. For trial in California and Florida and perhaps in the North as an annual."

## 51792 and 51793.

From Darwin, Northern Territory, Australia. Seeds presented by C. E. Allen, curator, Botanic Garden. Received November 11, 1920.

51792. *ANDROPOGON BOMBYCINUS* R. Br. Poaceæ.

Grass.

"Native grass, 4 to 5 feet high." (*Allen.*)

"An erect perennial grass, native to Australia, growing to a height of 2 or 3 feet, becoming rather harsh in texture when mature. The herbage is lemon scented, but readily grazed by animals when young. The grass is very conspicuous when in bloom, on account of the silvery white heads. This grass grows in various soil types, even in drifting sands, and will endure much heat and drought." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 17035.

51793. *POLLINIA ARTICULATA* Trin. Poaceæ.

Grass.

"An annual wiry delicate grass of secondary value as pasture. Widely distributed in Asia from China to India and throughout the Malay Archipelago to Australia." (*C. V. Piper.*)

## 51794 to 51801.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 18, 1920. Quoted notes by Mr. Popenoe.

51794. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

"(No. 499a. October 14, 1920.) Seeds of *durazno*, or peach. The common seedling white clingstone grown in the vicinity of Anolaima, Cundinamarca, and elsewhere on the upper slopes of the escarpment, at altitudes of 6,000 to 7,000 feet. This is a very inferior fruit, and the seeds are intended to be grown for testing as stock plants."

51795. *BERBERIS QUINDUENSIS* H. B. K. Berberidaceæ.

Barberry.

"(No. 500a. October 14, 1920. Herb. No. 1154.) Seeds of *tachuelo*, from El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. An arborescent shrub or small tree, up to 20 feet high, with small, stiff, spiny, hollylike leaves, small, golden-yellow, fragrant flowers, and oval, blue-black berries about an inch long. An attractive thing, particularly when in bloom. For trial as an ornamental plant."

## 51794 to 51801—Continued.

51796. *BROWNEA GRANDICEPS* Jacq. Cæsalpiniaceæ.

"(No. 497a. October 14, 1920.) Seeds of a magnificent flowering tree, native to the Magdalena Valley in Colombia. These seeds are from Guaduas, Cundinamarca, altitude about 3,300 feet.

"The tree is not large—about 20 feet in height—but it produces flame-scarlet flowers in compact clusters (they could almost be termed heads) 6 to 8 inches long and broad. While this plant is tropical, the fact that it is grown at Guaduas makes me think that it may succeed in southern Florida."

51797. *DRIMYS WINTERI* Forst. Magnoliaceæ.

Canelo.

"(No. 505. October 25, 1920. Herb. No. 1109.) Plants of *palo de aji*. From El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. A small tree, reaching a height of 18 feet. The leaves are long and slender, bright green above and silvery below. The flowers, which are produced in clusters about 6 inches broad, are individually an inch in diameter, double, pure white, and faintly fragrant. When crushed the leaves have a spicy odor. This is an ornamental tree worthy of trial in the lower South and on the Pacific coast."

For previous introduction, see S. P. I. No. 42869.

51798. *LUPINUS CRUCKSHANKSII* Hook. Fabaceæ.

Lupine.

"(No. 496a. October 14, 1920. Herb. No. 1150.) Seeds of *chocho*. From a garden on the road between Sibate and El Penon; altitude, about 9,400 feet. Several species of lupine are known in Cundinamarca under this common name. Some are wild, some cultivated. The one represented by these seeds is a handsome half-woody shrub, a favorite garden plant on the sabana of Bogota. It reaches a height of about 6 feet and is usually broad and bushy in habit. Above the attractive foliage rise numerous spikes of varicolored pealike flowers. The predominant colors are blue, lilac, white, and yellow.

"To my mind, this is a plant well worth cultivating in the United States. In California and Florida it will probably grow as a perennial. It seems to me that it might be possible to cultivate it elsewhere as an annual."

For previous introduction, see S. P. I. No. 51566.

51799. *TIBOUCHINA* sp. Melastomaceæ.

"(No. 502. October 25, 1920. Herb. No. 1185.) Plants of *siete-cueros*. From El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. A handsome arborescent shrub, wild in several parts of Cundinamarca and cultivated in the gardens and dooryards of Bogota. It ultimately reaches about 15 feet in height and produces flowers about 2 inches across: when these first open they are purplish red in color, and as they grow older they change to bluish purple and sometimes almost to deep blue. It is a plant which merits a trial in California and Florida as an ornamental."

51800. *VALLEA STIPULARIS* L. f. Elæocarpaceæ.

"(No. 501a. October 25, 1920. Herb. No. 1149.) Seeds of *raque*. From Sibate, Cundinamarca; altitude, about 9,000 feet. A small tree, common in this region. It has attractive foliage and about July, August, and September produces small clusters of rose-red flowers, followed by wrinkled fruits half an inch in diameter. It is an attractive plant which should be tested in the lower South and on the Pacific coast as an ornamental tree."

51801. *LASIANTHUS* sp. Rubiaceæ.

"(No. 503. October 23, 1920. Herb. No. 1110.) *Clavel del monte*, from El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. A tall shrub native to this region. It produces rose-pink flowers, somewhat funnel-shaped and about 2 inches across at the mouth. It does not bloom very profusely, but is an attractive thing nevertheless and deserves a trial in the lower South and on the Pacific coast."

**51802. SOLANUM BULLATUM Vell. Solanaceæ.**

From Lavras, Minas Geraes, Brazil. Seeds presented by B. H. Hunnicutt. Received November 20, 1920.

A South American plant which may possibly be valuable as a forage plant, because of its large percentage of protein. The analysis of air-dried leaves and branches shows 20.83 per cent of protein in the leaves and 14.06 per cent of protein in the branches.

For previous introduction, see S. P. I. No. 42815.

**51803 to 51807.**

From Singapore, Straits Settlements. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 1, 1920. Quoted notes by Mr. Rock.

**51803. ARECA CATECHU L. Phœnicaceæ. Betel-nut palm.**

"No. 11. Variety *alba*. The white-fruited betel-nut palm, cultivated only. The fruits are larger than those of the common variety of *Areca catechu*."

For previous introduction, see S. P. I. No. 51127.

**51804. ARTOCARPUS CHAMPEDEN (Lour.) Spreng. Moraceæ.**  
(*A. polyphema* Pers.)

"No. 8. A species of breadfruit cultivated for its fruits, which are oblong and about 1 foot in length. It is much in favor with the Malays. The seeds are similar to those of the jack fruit and are roasted and eaten by the natives. Propagation is by seed."

**51805. CANARIUM RUFUM A. W. Benn. Balsameaceæ.**

"No. 9. A tall tree with handsome proportions, producing abundant seeds. The nuts are triangular, and the seeds are eaten like those of *Canarium commune*. It is a native of the Malay Peninsula."

**51806. JAGERA SPECIOSA Blume. Sapindaceæ.**

"No. 3. A small tree with trilocular fruits which are borne on long pendent racemes. The tree is about 20 feet in height and quite attractive on account of the pinnate foliage and orange-red fruits. It is a native of the Malay Peninsula and New Guinea. The fruits are much sought for by the natives."

**51807. STYRAX BENZOIN Dryander. Styracaceæ.**

"No. 10. A tall tree producing the gum benjamin of the Malay Peninsula. It occurs quite commonly in the lowland forests together with Dipterocarpaceæ. Native to the Malay Peninsula."

**51808. ACACIA sp. Mimosaceæ.**

From Quito, Ecuador. Seeds presented by Ludovic Söderström, through E. W. D. Holway, University of Minnesota, Minneapolis, Minn. Received December 2, 1920.

"Seeds from a dry region in Ecuador. It was suggested that they would do well in warm parts of California and Arizona. The wood is exceedingly hard and is used for sugar-cane rollers, etc." (*Holway*.)

**51809 to 51823.**

From Buitenzorg, Java. Seeds presented by H. J. Wigman, jr. Received December 3, 1920.

**51809. ADENANTHERA PAVONINA L. Mimosaceæ. Coral-bean tree.**

The Indian barricari, the seeds of which are brilliant scarlet and are strung to form ornaments for personal adornment. In India advantage is taken of their uniformity of weight (about 4 grains each) to use them as weights. Powdered and mixed with borax they form an adhesive substance. The seeds are occasionally used as an article of food. The hard, durable heartwood is beautiful coral red when freshly cut and sometimes marked with stripes of a darker shade; after exposure it turns purple, like rosewood; it is used for house building and cabinet-making. A dye is obtained by simply rubbing the wood against a stone,

## 51809 to 51823—Continued.

and this is used by the Brahmins for marking their foreheads after religious bathing. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 5, 369, and 637.)

For previous introduction, see S. P. I. No. 49955.

**51810. BARYXYLUM INERME** (Roxb.) Pierre. *Cæsalpiniaceæ*.  
(*Peltophorum ferrugineum* Benth.)

A large, quick-growing, symmetrical tree, with a spreading top and fine, graceful feathery foliage, indigenous to the dry regions of Ceylon and the Malay Peninsula where the rainfall varies from 50 to 70 inches. The young leaves and shoots are covered with a brown velvety tomentum. The tree flowers twice a year at irregular seasons, some specimens being in blossom while others near by are in ripe fruit. The flowers are rusty yellow, sweet scented, and borne in large erect panicles. The tree is a magnificent sight when in full bloom. It is especially suited to dry districts, but also thrives to perfection in the moist regions up to 1,800 feet. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, pp. 299 and 452.)

For previous introduction, see S. P. I. No. 41574.

**51811. CANANGIUM ODORATUM** (Lam.) Baill. *Annonaceæ*.

**Ylang-ylang.**

A large, quick-growing tree, 60 to 80 feet high, native to the Philippines, Guam, and Java. The large, greenish yellow flowers are strongly scented and yield by distillation the popular perfume ylang-ylang. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 573.)

**51812. CANARIUM INDICUM** Stickm. *Balsameaceæ*.

**Kanari.**

(*C. commune* L.)

"A handsome Malayan shade tree bearing a stone fruit with a hard endocarp which contains one to three seeds. Fresh, mature seeds contain approximately: Water, 31.3 per cent; oil, 54.5 per cent; protein, 11 per cent; ash, 3.2 per cent; and traces of sugar. A food for infants, to prevent the formation of a firm coagulum during the digestion of cow's milk, is prepared by adding to two parts of cow's milk an emulsion consisting of 1 part ground seeds, 15 parts water, and 5 per cent milk sugar." (*W. G. Boorsma*.)

For previous introduction, see S. P. I. No. 48981.

**51813. CASSIA SIAMEA** Lam. *Cæsalpiniaceæ*.

A large, quick-growing tree, yielding hard dark timber and good fuel. It is an important timber and cabinet tree, native to Ceylon, India, and the Malay Peninsula. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, pp. 452 and 464.)

For previous introduction, see S. P. I. No. 42362.

**51814. CHRYSOPHYLLUM CAINITO** L. *Sapotaceæ*.

**Caimito.**

A fairly large and handsome West Indian tree, with striking dark-green leaves which are copper colored underneath. The purplish, smooth, round fruit is four-seeded, the seeds being brown and half an inch long. In an unripe state the fruit contains a sticky white latex, but when fully matured the white, transparent, jellylike substance surrounding the seeds is sweet and agreeable. The fruit when cut across presents a stellate form, the cells with their white edible contents radiating from the central axis. The tree is well worth cultivating for ornament or shade for roadsides, etc. It thrives at Peradeniya, where it was first introduced in 1802. Propagated by seed and thrives best in deep, rich, well-drained soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 150.)

For previous introduction, see S. P. I. No. 50471.

**51815. DAMMARA ALBA** Rumph. *Pinaceæ*.

(*Agathis loranthifolia* Salisb.)

A splendid tree, up to 100 feet high, with a stem reaching 8 feet in diameter, straight and branchless for two-thirds its length. It is of great

## 51809 to 51823—Continued.

importance on account of its yield of the transparent dammar resin extensively used for varnish. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 161.)

For previous introduction, see S. P. I. No. 51129.

51816. *DEGUELIA MICROPHYLLA* (Miquel) Valet. Fabaceæ.

A tall tree, native to Sumatra and Java, with pinnate leaves and dense, erect, axillary panicles of violet-colored flowers. Of possible value as a shade tree for coffee plantations. (Adapted from *Icones Bogorienses, Jardín Botanique de Buitenzorg*, vol. 2, pl. 129.)

51817. *ELAEOCARPUS ANGUSTIFOLIUS* Blume. Elæocarpaceæ.

A tree native to Buitenzorg Province, with oblong-lanceolate, acuminate, serrulate leaves and short, axillary racemes of showy flowers. The fruits are globular. (Adapted from *Blume, Bijdragen tot de Flora van Nederlandsch Indië*, p. 120.)

51818. *EUSIDEROXYLON ZWAGERI* Teijsm. and Binn. Lauraceæ.

A large tree with wrinkled reddish bark and reddish tomentose young branches. The coriaceous oblong-elliptic leaves are shining above and glabrous below except for puberulent veins. The oblong-ovate drupes are borne in panicles. (Adapted from *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, vol. 25, p. 292.)

51819. *MIMUSOPS ELENGI* L. Sapotaceæ.

A tree native to Ceylon. The bark is used in native medicine for decayed gums and also for snake bite. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 596.)

For previous introduction, see S. P. I. No. 41809.

51820. *MIMUSOPS KAUKI* L. Sapotaceæ.

"Most of the Straits islands are covered with a valuable tree, the *Mimusops kauki*, the fruit of which is sweet and highly nutritious. In some islands the inhabitants subsist chiefly on it during one season of the year. The *Mimusops* grows on the mainland of the Greater and Lesser Daudai. The fruit is dried in the sun and strung for use in seasons of scarcity. Its shape and sweetness have occasioned the misnomer of 'date' among the whites." (*Gill, A Visit to New Guinea*, p. 201.)

For previous introduction, see S. P. I. No. 48011.

51821. *PTEROCARPUS INDICUS* Willd. Fabaceæ.

Padouk.

A large forest tree with drooping branches, the trunk often being provided with broad buttresses. The leaves, 8 to 10 inches long, are composed of five to nine ovate leaflets 2 to 4 inches long. The standard and wings of the yellow papilionaceous flowers are fringed on the margins. The tree has been introduced as a shade tree in many tropical localities. Cups are made of the beautiful flesh-tinted wood, which turn water yellow, orange, and finally blue. The valuable timber and cabinet wood furnished by this tree shows pale red lines of growth and large conspicuous pores. (Adapted from *Annual Report of the Smithsonian Institution, 1915*, p. 271.)

51822. *PTERYGOTA ALATA* (Roxb.) R. Br. Sterculiaceæ.  
(*Sterculia alata* Roxb.)

A large tree of the western peninsula, Sylhet, Chittagong, Pegu, and Martaban, down to Tenasserim. It is found also on the Andaman Islands. The winged seeds are sometimes eaten by the natives of Burma. They are used in Sylhet as a cheap substitute for opium. The yellowish white wood is light, coarsely fibrous, and perishable. (Adapted from *Watt, Economic Products of India*, vol. 6, pt. 3, p. 360.)

For previous introduction, see S. P. I. No. 26938.

51823. *TOONA SINENSIS* (Juss.) Roemer. Meliaceæ.

(*Cedrela sinensis* Juss.)

"One of four best low-growing, ornamental trees. It is said to attain a height of 70 feet in China, but the tallest I have seen in this country (at Philadelphia) is not over 40 feet. It is a comparatively rare tree on account of the difficulty in securing seed, the trees only flowering occa-

**51809 to 51823—Continued.**

sionally and then only sparingly. Its wood could probably be used to advantage in the manufacture of cheap furniture. All of the species are easily propagated from root cuttings." (*G. W. Oliver.*)

For previous introduction, see S. P. I. No. 50647.

**51824 to 51827. TRICHOSANTHES ANGUINA L. Cucurbitaceæ.**

From Calcutta, India. Seeds presented by C. C. Calder, officiating director, Botanical Survey of India. Received December 13, 1920. Quoted notes by Mr. Calder.

51824. "*Chichinga*, black variety. From Howrah district."

51825. "*Chichinga*, black, with stripes. From Howrah district."

51826. "*Chichinga*, white variety. From Howrah district."

51827. "*Chichinga*, white, with stripes. From Howrah district."

**51828 and 51829. COFFEA ARABICA L. Rubiaceæ. Coffee.**

From Aden, Arabia. Seeds presented by Addison R. Southard, American consul. Received December, 1920. Quoted notes by Mr. Southard.

51828. "*Yaffei* (so called from the name of the Aden hinterland tribe which grows most of it) is considered by some the finest of all Arabian Mocha coffees."

51829. "*Sanani* (so called from the district of Sana, capital of Yeman, where it is grown) is a second quality of Arabian Mocha coffee which comes into the market in considerable quantities."

**51830. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. Jaboticaba.**

From Porto Alegre, Rio Grande do Sul, Brazil. Seeds presented by G. S. Froes. Received December 14, 1920.

"A Brazilian tree, up to 35 feet high, with narrowly elliptical, sharp-pointed leaves, short-pedicelled flowers produced directly from the bark of the trunk and branches, and purplish violet globose fruits half an inch to 1½ inches in diameter." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 51267.

**51831. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.**

From Buitenzorg, Java. Seeds presented by Dr. M. W. Docters van Leeuwen, director, Botanic Garden. Received December 14, 1920.

The mangosteen is renowned as one of the delicious fruits of the world and has been called the "queen of tropical fruits." The tree is strictly tropical and can be successfully grown only under the most favorable soil and climatic conditions.

For previous introduction, see S. P. I. No. 51200.

**51832 to 51842. CROTALARIA spp. Fabaceæ.**

From Gizeh, Mouderieh, Egypt. Seeds presented by Thomas W. Brown, director, Horticultural Section. Received November 6, 1920.

51832. *CROTALARIA ALATA* Buch.-Ham.

A suberect undershrub 1 to 2 feet high, with broad stipules forming a wing from one node nearly to the next. The pale flowers are in twos or threes on the racemes. The thin oblong obtuse leaves are 2 to 3 inches long. Native to India, from Kumaon to Assam and the Khasi Hills, ascending to 5,500 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 69.)

For previous introduction, see S. P. I. No. 47667.

## 51832 to 51842—Continued.

## 51833. CROTALARIA GRANTIANA HARV.

A small slender herbaceous plant with an erect, branching leafy stem, 1 foot in height. The trifoliolate leaves consist of cuneate leaflets one-half to three-fourths of an inch long and not one-sixth of an inch wide. The small, yellow, striate flowers are borne on filiform peduncles. Native to Natal. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 2, p. 43.*)

For previous introduction, see S. P. I. No. 34740.

## 51834. CROTALARIA INCANA L.

A tropical American plant about 1 meter high, erect, branched and somewhat shrubby, and softly gray pubescent. The leaves have three elliptical leaflets. The yellow flowers, with a standard over 10 millimeters wide, are crowded in 12 to 20 flowered elongated racemes 5 to 20 centimeters long. This plant occurs in waste places throughout the Tropics and is in flower all the year. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 137.*)

For previous introduction, see S. P. I. No. 47127.

## 51835. CROTALARIA LABURNIFOLIA L.

A low shrub with slender, elongated, terete branches, membranous, glabrous leaflets 1 to 2 inches long, and elongated, very lax, terminal and lateral racemes of bright-yellow flowers 1 inch long. The keel is very broad, with a long incurved beak. Native to the western Indian Peninsula, Ceylon, and Malakka. (Adapted from *Hooker, Flora of British India, vol. 2, p. 84.*)

For previous introduction, see S. P. I. No. 49279.

## 51836. CROTALARIA POLYSPERMA KOTSCHY.

A densely rufo-villose herbaceous plant with trifoliolate silky leaves and six to eight small, lax, long-peduncled, lateral racemes of violet-blue flowers. The standard is widely obovate, silky pubescent without, and 14 to 16 millimeters long. The wings are oblong with an obtuse tip; the apex of the keel is attenuated into an erect, somewhat obtuse beak. Native to the Nile Land, German East Africa, British East Africa, Sudan, and Eritrea. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 42, and Journal of the Linnean Society, vol. 42, p. 321.*)

## 51837. CROTALARIA RETUSA L.

A handsome East Indian annual with large yellow flowers in 12-flowered terminal racemes. The large round standard is streaked at the base, and the wings are short and villous at the back. The fluted upright stem, leafy from the base, is 1½ feet high. The oblong, wedge-shaped, entire leaves are clothed beneath with short appressed hairs and are roughish with small elevated points. (Adapted from *Curtis's Botanical Magazine, pl. 2561.*)

For previous introduction, see S. P. I. No. 36969.

## 51838. CROTALARIA SALTIANA ANDREWS.

A shrub with long, upward-curving, more or less silky branches, deciduous stipules, and dense racemes of yellow flowers. The standard is elliptic-ovate, the wings oblong, and the rounded keel 9 to 11 millimeters long. The trifoliolate leaves with small obovate leaflets are silky pubescent below, glabrous or nearly so above. Native to the Sudan and southern Abyssinia. (Adapted from *Journal of the Linnean Society, vol. 42, p. 309.*)

## 51839. CROTALARIA SPECTABILIS ROTH.

A robust undershrub 1 to 1.5 meters high, with oblong or broadly spatulate-oblong leaves which are moderately firm in texture, glabrous above, finely silky beneath, and 7.5 to 15 centimeters long. The foliaceous stipules are persistent. The yellowish purple flowers, 22 millimeters long, are in 20 to 40 flowered racemes 3 to 5 decimeters long. The plant is native to India, ascending to an altitude of 3,000 feet in Kumaon. It is cultivated as a garden flower in the Punjab, India, where it is known as *Sauni*, but it is apparently never cultivated as an agricultural product, though fiber is sometimes prepared from it. (Adapted from *Rock, Leguminous Plants of Hawaii, p. 127.*)

## 51832 to 51842—Continued.

51840. *CROTALARIA STRIATA* Schrank.

A low-growing Brazilian shrub with rounded green branches, trifoliate subglabrous leaves, and elongated terminal racemes of numerous drooping yellow flowers. The petals are striped with deep orange-brown. The broadly oblong standard is reflexed, and the subfalcate oblong wings are less than half the length of the much-acuminated keel, which is as long as the standard. (Adapted from *Curtis's Botanical Magazine*, pl. 3200.)

For previous introduction, see S. P. I. No. 50751.

51841. *CROTALARIA USARAMOENSIS* Baker f.

A tall herb allied to *Crotalaria lanceolata* E. Mey. from which it differs in its shorter and wider leaflets, 4 to 6 centimeters long and 10 to 16 millimeters wide, subacuminate at the tip and cuneate at the base. The leaves are glabrous above and slightly pubescent below. The numerous yellow striated flowers are in elongated terminal racemes, 15 to 25 centimeters long. The keel is rounded and acute at the tip. Native to German East Africa. (Adapted from *Journal of the Linnean Society*, vol. 42, p. 346.)

51842. *CROTALARIA RETUSA* L.

An ornamental tropical annual with an acutely quadrangular branched stem, 1 foot high, entire, oval, glabrous leaves, and terminal racemes of six to eight rather large and handsome flowers resembling in color those of some species of lupine. The greenish white standard, streaked within with pale blue, is bent back, the obovate wings are yellowish white at the base, the rest deep purple; the keel is whitish, yellow at the tip. (Adapted from *Curtis's Botanical Magazine*, pl. 3034.)

## 51843 to 51855.

From Rawalpindi, Punjab, India. Seeds presented by R. R. Stewart. Received December 14, 1920. Quoted notes by Mr. Stewart.

51843. *COTONEASTER MICROPHYLLA* Wall. Malaceæ.

A dwarf, dense, usually procumbent, much-branched shrub, with hard, ovate, shining leaves half an inch long, dark green on the upper surface, pubescent or tomentose beneath. The white, solitary flowers are one-third of an inch across, and the globose, bright-red fruits are one-fourth of an inch in diameter. Native to China and the temperate Himalayas at altitudes of 4,000 to 10,000 feet. (Adapted from *Collett, Flora Simlensis*, p. 173.)

For previous introduction, see S. P. I. No. 39008.

51844. *DUCHESNEA* sp. Rosaceæ.

"Wild strawberry."

51845. *IRIS* sp. Iridaceæ. Iris.

[Received without notes.]

51846. *ROSA* sp. Rosaceæ. Rose.

[Received without notes.]

51847. *ROSA* sp. Rosaceæ. Rose.

[Received without notes.]

51848. *ROSA* sp. Rosaceæ. Rose.

[Received without notes.]

51849. *ROSA* sp. Rosaceæ. Rose.

[Received as *Rosa webbiana*, but the fruit and seeds do not agree with our material of that species.]

51850. *RUBUS* sp. Rosaceæ.

[Received without notes.]

51851. *RUBUS* sp. Rosaceæ.

[Received without notes.]

## 51843 to 51855—Continued.

51852. SAUSSUREA LAPPA (Decaisne) C. B. Clarke. Asteraceæ.

The aromatic root of this tall perennial, native to Kashmir, at altitudes of 8,000 to 12,000 feet, is of medicinal value. The annual export has been as much as 1,000 tons, a large portion used for incense, further as an insecticide, keeping moths from cloth. The leaves are used as an insecticide as emballage for shawls. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 492.)

51853. VIBURNUM sp. Caprifoliaceæ.

[Received without notes.]

Viburnums are among our best ornamental shrubs, and this may be useful in breeding work if not for its own intrinsic value.

51854. VIOLA SERPENS Wall. Violaceæ.

Violet.

An herbaceous perennial with lilac-colored flowers found in woods above 7,000 feet altitude in the hilly districts throughout India and in China and Java; glabrous or with scattered hairs. The stems are short but distinct, covered with withered scales, and often producing runners. The broadly ovate, deeply cordate leaves are 1 to 2 inches long. (Adapted from Collett, *Flora Simlensis*, p. 40.)

51855. VIOLA sp. Violaceæ.

[Mixed seed, received without notes.]

## 51856 to 51869. LOTUS spp. Fabaceæ.

From Madrid, Spain. Seeds presented by the Botanic Garden. Received November 26, 1920.

51856. LOTUS ANGUSTISSIMUS L.

A plant with upright, sometimes decumbent to ascending, slender stems. The dark-green leaves are short stalked with small leaflets, the lower rounded obovate, and the upper lanceolate to linear. The golden-yellow flowers are often reddish at the tips. Found in meadows, on roadsides, on the less salty of the salt-pasture formations with *Cynodon dactylon*, on moist salt meadows rich in humus, and also in carbonates and sulphate salts, from the Mediterranean region to Hungary and southern France. (Adapted from Ascherson and Graebner, *Synopsis der Mitteleuropäischen Flora*, vol. 6, abt. 2, p. 685, and Hayek, *Die Pflanzendecke Oesterreich-Ungarns, Leipzig and Vienna*, pp. 159, 494.)

51857. LOTUS ANGUSTISSIMUS GRACILIS (Waldst. and Kit.) Aschers. and Graebn.

This plant differs from the species in its ascending or partly decumbent stem 1 to 3 decimeters long, its broader, elliptic, acute stipules, and its shorter peduncles. It is also less abundant. (Adapted from Ascherson and Graebner, *Synopsis der Mitteleuropäischen Flora*, vol. 6, abt. 2, p. 685.)

51858. LOTUS ARABICUS L.

A kind of vetch indigenous to Egypt, where it grows along the bed of the Nile, especially above Luxor. During the first Sudanese war this species of lotus was a continual source of trouble to the military authorities, since it was frequently cropped by the transport animals at the various encampments and led to a high mortality among them. By a chemical investigation it was ascertained that the toxicity was due to the production of prussic acid when the plant was moistened with water, as the result of the interaction of a glucosid and an enzym occurring together in its cells. The glucosid (lotusin) was obtained in a pure state and shown to be a derivative of a yellow coloring matter (lotoflavin), the latter in addition to dextrose and prussic acid being produced when lotusin is hydrolyzed, either by the action of the enzym (lotase) present in the plant or by boiling it with dilute mineral acids.

The Arabs are aware that *Lotus arabicus*, which is called "klutcher" in the vernacular, is poisonous only in the immature condition and that when allowed to ripen until seeds have formed it becomes innocuous and is then available as an excellent fodder. A chemical investigation of the fully ripe plants showed that they contained none of the poison-

## 51856 to 51869—Continued.

ous cyanogenetic glucosid and were consequently harmless. The proportion of prussic acid obtainable from *L. arabicus* is considerable and varies from 26 per cent in the case of young plants to 32 per cent in the case of those almost mature, when the yield of acid reaches the maximum. (Adapted from *Bulletin of the Imperial Institute, London, vol. 1, p. 12.*)

51859. *LOTUS CONIMERICENSIS* Brot.

A gray-green, more or less hairy plant with decumbent, ascending, or rarely erect thin stems and short-petioled leaves. The leaflets are mostly ovate-lanceolate to obovate. The ovate stipules are longer than the petiole and mostly longer than the leaflets. The small rose-colored flowers are in one-flowered inflorescences. Found in sandy regions or on grassy places on the Mediterranean coast, in the southwest parts of Provence and the Riviera. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, p. 689.*)

51860. *LOTUS CYTISOIDES* L.

A slightly hairy or nearly smooth plant with stipules shorter than those of *Lotus creticus*. The corolla wings are broadly obovate, entirely covering the keel. The pod, 3 to 5 centimeters long, is more or less compressed, torulose thickened, and straight or slightly bent. Found only on the Mediterranean seacoast on rocky precipices. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 672.*)

51861. *LOTUS EDULIS* L.

A more or less hairy plant with ascending or erect, rarely decumbent, branched stems, mostly 1 to 4 decimeters long. The gray-green leaflets are obovate, rarely wedge-linear, and the stipules are broad ovate to heart-shaped, oblique at the base, acute. The large yellow flowers are in heads of one to three. Found in sandy areas in the Mediterranean region only. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 668.*)

For previous introduction, see S. P. I. No. 7731.

51862. *LOTUS FILICAULIS* Durieu.

A form closely allied to *Lotus corniculatus* var. *major*. It is distinguished by the elongated, thin, stiff peduncle. Native to Algeria. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 682.*)

51863. *LOTUS GEBELIA* Vent.

An herbaceous plant, native to the Alps, which flowers all through the summer. The robust and almost woody stem is branched, leafy, glabrous, glaucous green, and one-fourth of a decimeter long. The ternate leaves are subtended by bracts which resemble the sessile, entire leaflets. The flowers, 6 to 10 millimeters long, are at first crimson red, then pale rose, and finally whitish streaked with rose. At night they fold down next the petiole and are covered by the three leaflike bracts. The glabrous pods furnish a pleasantly flavored, nourishing food. (Adapted from *Ventenat, Description des Plantes Nouvelles et Peu Connues, Cultivées dans le Jardin de J. M. Cels, p. 57.*)

51864. *LOTUS JACOBÆUS* L.

A plant with an erect stem, linear leaves, and subterranean pods; native to the Cape Verde Islands.

51865. *LOTUS LAMPROCARPUS* Boiss.

A plant native to the humid grasslands of Attica, with a robust stem often 2 feet long diffusing into long branches. The lower leaves are obovate, the upper oblong-acute. The yellow flowers are clustered in heads of two or three. The narrow erect pods are shining gray, silky, and smooth. (Adapted from *Boissier, Diagnoses Plantarum Orientalium Novarum, vol. 2, no. 9, p. 33.*)

51866. *LOTUS ORNITHOPODIOIDES* L.

A hairy annual with branched, decumbent, or ascending, rarely erect stems, mostly 1 to 3 decimeters long. The leaflets are wedge shaped at

## 51856 to 51869—Continued.

the base, obovate, rhombic, the two lower smaller, like stipules, ovate-rhombic. The yellow flowers are in clusters of two to five. There are usually several pods in a cluster, 2 to 5 centimeters long. Found in grassy fields in the Mediterranean region, near the seacoast, in southern Istria, Dalmatia, Croatia, etc. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 669.*)

For previous introduction, see S. P. I. No. 32030.

51867. *LOTUS SUAVEOLENS* Pers.

A slightly hairy plant with a stem which is usually well branched and nearly always decumbent. The inflorescence is mostly three to four flowered. The leaflets are obovate, wedge shaped at the base. Found in similar situations as *L. angustissimus* (which it somewhat resembles in habit) in meadows, on roadsides, on the less salty of the salt-pasture formations with *Cynodon dactylon*, on moist salt meadows rich in humus, and also in carbonates and sulphate salts, in Europe and north-western Africa. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 687.*)

51868. *LOTUS TENUIS* Waldst. and Kit.

A plant 2 to 4, rarely 8 decimeters high, smooth or nearly so, with usually many stems, decumbent or ascending or with erect branches. The leaflets, even the lower stipulelike ones, are linear-lanceolate to linear. The inflorescence is one to five flowered. This is a facultative halophyte found mostly on salty stations, on meadows, or in ravines throughout middle Europe, and in the Tyrol up to an altitude of 945 meters. It is found in swamp meadows, on salt meadows with *Plantago maritima*, on the dry salty pastures with *Salicornia*, on the salt steppes, and in various other halophyte formations. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 683, and Hayek, Die Pflanzendecke Oesterreich-Ungarns, Leipsig and Vienna, pp. 20, 157, 159, and 494.*)

51869. *LOTUS* sp.

[Received as *Lotus articulatus*, for which a place of publication has not yet been found.]

## 51870 and 51871.

From Penang, Straits Settlements. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 30, 1920. Quoted notes by Mr. Rock.

51870. *CYRTOSTACHYS LAKKA* Beccari. Phœnicaceæ.

Palm.

"(No. 17.) The famous 'sealing-wax palm.'"

A tall, slender, soboliferous palm with pinnatisect leaves about 4 feet long and the leaflets 20 inches long and 1 to 1½ inches wide, green above, ashy gray beneath. The sheath is red. The small ovoid fruits are borne on stout spreading spadix branches 1 to 2 feet long. Native to the humid jungles of Singapore. (Adapted from *Hooker, Flora of British India, vol. 6, p. 414.*)

For previous introduction, see S. P. I. No. 49530.

51871. *MILLETTIA ATROPURPUREA* (Wall.) Benth. Fabaceæ.

"(No. 14.) A fine symmetrical tree with dark foliage and dark-red to purplish black flowers. The pods are large and contain from one to two large brown seeds. It is worthy of cultivation on account of its handsome round crown and dark foliage. A native of the Malay Peninsula and Burma."

## 51872 to 51885.

From Rochester, N. Y. Presented by John Dunbar, assistant superintendent, Department of Parks. Received December 3, 1920.

51872. *MALUS BACCATA* (L.) Moench. Malaceæ. Siberian crab apple. (*Pyrus baccata* L.)

Seeds of the variety *orthocarpa*.

## 51872 to 51885—Continued.

51873. *MALUS FLORIBUNDA* Sieb. Malacæ. Crab apple.  
(*Pyrus floribunda* Kirchn.)

Seeds of one of the handsomest of all crab apples and one of the earliest to flower. It is a broad shrub with a trunk dividing at the base into several large branches. The pink flowers, which are deep rose color in the bud, turn white before the petals fall and are produced in the greatest profusion. The dark-green foliage is abundant, but the yellow or orange-colored fruits are not much larger than peas and make little show. The origin of this plant is uncertain. It was first sent to Europe from Japan, but it is not a native of that country. It was probably introduced from China, although it does not appear to be known in China now in a wild state. (Adapted from *American Florist*, vol. 46, p. 945.)

For previous introduction, see S. P. I. No. 49135.

51874. *MALUS NIEDZWETZKYANA* Dieck. Malacæ. Apple.  
(*Pyrus niedzwetzkyana* Hemsl.)

Seeds of a small free-growing tree with long, straight, rather thick flowering branches and smooth, very dark purple bark. The lanceolate leaves, 3 to 5 inches long on slender petioles 1 to 2 inches long, are rather thick, stiff, and tinged red on the fruiting branches. The petiole and midrib are bright red and slightly hairy. The deep rose-purple flowers, 1 to 1½ inches long and three-fourths of an inch across, are very numerous and clustered at the ends of short, lateral branchlets. The woolly calyx is white. The pendulous conical fruits, 1½ to 2 inches long, have crimson-purple skin and rose-purple, pleasantly flavored flesh. The wood is red also, and the leaves turn red in autumn. (Adapted from *Curtis's Botanical Magazine*, pl. 7975.)

For previous introduction, see S. P. I. No. 49037.

51875. *MALUS PRUNIFOLIA* (Willd.) Borkh. Malacæ. Apple.  
(*Pyrus prunifolia* Willd.)

Seeds of a small ornamental tree native to North China and southern Siberia, with beautiful white flowers 1½ inches across, in 6 to 10 flowered umbels, and smooth globose berries, 1 inch in diameter, green, amber yellow, and bright red in varying proportions. The young shoots, petioles, under surfaces of the leaves, and inflorescences are cottony. (Adapted from *Curtis's Botanical Magazine*, pl. 6158.)

For previous introduction, see S. P. I. No. 49038.

51876. *POPULUS ADENOPODA* Maxim. Salicacæ. Poplar.

Cuttings of a very distinct species easily recognized by the long-acuminate, closely crenate leaves, greenish beneath, of old mature trees. The common low-level poplar of Hupeh and Szechwan and the more eastern parts of the Yangtze Valley. In western Hupeh it is very abundant in open country and woods from river level up to an altitude of 1,500 meters. It is a rather slender, shapely tree, 20 to 25 meters or more tall, with a straight trunk clear of branches for 10 to 15 meters and clothed with smooth pale-gray bark, which on old trees and near the ground becomes dark and slightly fissured. The branches are thin, ascending spreading, and form an oval crown. The leaves vary considerably in degree of pubescence, but on old trees they are glabrous at maturity. On young trees and on adventitious shoots they are densely pubescent. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 23.)

For previous introduction, see S. P. I. No. 49040.

51877. *POPULUS MAXIMOWICZII* A. Henry. Salicacæ. Poplar.

Cuttings of a handsome, stately tree, the most satisfactory of the poplars, of upright, ovate outline, which comes out in foliage 10 days before other trees and is always green, the foliage hanging on as late in the season as almost any deciduous tree. It thrives on thin gravelly soil, so dry that Norway spruce and white ash could not survive on it. In favor of the tree is its rapid growth, 3 to 5 feet a year for the first eight years. Under similar conditions the Norway maple may grow 6 to 24 inches and the red oak and pin oak 12 to 30 inches. The leaf

## 51872 to 51885—Continued.

is rugose like that of *Rosa rugosa*, and the foliage does not drop from trees planted on gravelly soil where there is less than half an inch of rain in August. The trees at the Arnold Arboretum, now 20 years old and 35 feet high, have never been attacked by borers, and the leaves apparently have no attraction for any leaf-eating caterpillar. The fruiting catkins, 7 to 10 inches long, remain on the trees until September without opening. It is one of the few large exotic trees with deciduous leaves which can be recommended for general planting in the Northern States. (Adapted from *Garden Magazine*, vol. 29, p. 38.)

For previous introduction, see S. P. I. No. 49041.

## 51878. PRUNUS AMERICANA LANATA Sudworth. Amygdalaceæ. Plum.

Seeds of a thorny tree, 3 to 12 meters high, with ovate-serrate, very veiny leaves; the leaves, petioles, and shoots are covered with a dense, pale tomentum. Occurring sparsely in Texas on the San Antonio River and its tributaries, where the fruit is said to be yellow and less than 12 millimeters in diameter. (Adapted from *Contributions from the U. S. National Herbarium*, vol. 2, p. 102.)

## 51879. PRUNUS HORTULANA Bailey. Amygdalaceæ. Wildgoose plum.

Seeds of a vigorous tree, attaining a height of 30 feet or more, the shaggy trunk sometimes a foot in diameter, becoming furrowed in age. The bark is gray-brown, thick, and contains deposits of red cork cells which show as bright-red blotches or as thick layers when the bark is sectioned. The branches are very spreading and open, twiggy, slender, and thorny. The thin, peachlike leaves, 5 inches long and 1½ inches wide, become leathery, smooth, and glossy above and almost glabrous below except for the pubescent veins. The white, ill-scented flowers, three-fourths of an inch across, borne on very long spurs, open after the leaves expand and bloom later than any other cultivated plum. The clingstone fruit ripens very late, is globose, oval, and 1 inch in diameter. The thick, tough, and astringent skin is yellow to red with small conspicuous dots. The golden-yellow, coarse, firm, juicy flesh is strongly aromatic, and mildly sweet. The tree is found wild in Illinois, western Kentucky, western Tennessee, Missouri, northern Arkansas, Oklahoma, and southeastern Kansas. (Adapted from *Hedrick, Plums of New York*, p. 64.)

For previous introduction, see S. P. I. No. 41704.

## 51880. PRUNUS MEXICANA S. Wats. Amygdalaceæ. Plum.

Seeds of a plant with its young branches, pedicels, and petioles canescent with a short dense subtomentose pubescence. The leaves, 2 to 3 inches long, are oblong-lanceolate, acuminate, rounded at the base acutely toothed, puberulent above, pubescent and lighter colored beneath. The compressed-ovate fruits are on short fascicled pedicels. Found at Lerios, Coahuila, Mexico. (Adapted from *Proceedings of the American Academy*, vol. 17, p. 353.)

For previous introduction, see S. P. I. No. 32458.

## 51881. PRUNUS MUNSONIANA Wight and Hedrick. Amygdalaceæ. Plum

Seeds of a tree, 20 to 30 feet high, with grayish brown bark, shaggy and furrowed, and spreading, slender, zigzag branches, little or not at all thorny. The leaves, bright green and lustrous above, are dull green below, and the lower surfaces of the veins are pubescent; the leaves are lanceolate to oblong-lanceolate, 4 inches long and 1½ inches wide, with finely serrate margins. The white flowers, three-fourths of an inch across, appear before or with the leaves, late in the season, on lateral spurs. The globose, bright currant-red, clingstone fruits, an inch in diameter with conspicuous whitish dots, ripen early and have yellow juicy, melting flesh which is fibrous, sweetish, aromatic, and good. The fruit ships and keeps well considering the juiciness of most of the varieties. One of the best known plums for home and market use they have a sprightly vinous flavor and are pleasant to eat either on

## 51872 to 51885—Continued.

of hand or cooked. The trees form dense thickets in northern Texas, eastern Oklahoma, and parts of Missouri. A robust form is hardy in central New York. (Adapted from *Hedrick, Plums of New York, p. 80.*)

**51882.** PRUNUS REVERCHONII Sargent. Amygdalaceæ. Plum.

Seeds of a shrub sometimes 4 meters high, usually much smaller, growing in small thickets, with erect stems and slender glabrous branchlets, light orange-brown at first, bright chestnut brown, and very lustrous and marked by small orbicular white lenticels during their first year, becoming dull reddish brown the following season. When its branches are covered by its crowded clusters of white flowers 1.2 centimeters in diameter, set off by the green of the young leaves, the plant is a beautiful object and may become a valuable addition to the list of early garden shrubs. When the leaves unfold they are slightly hairy above and coated below with long matted pale hairs and at maturity are thin, yellow-green, and mostly glabrous, 4.5 to 8 centimeters long and 2 to 2.5 centimeters wide. The subglobose, red or amber fruit, 1.5 to 1.8 centimeters in diameter, has a thick skin and thin acid flesh. (Adapted from *Sargent, Trees and Shrubs, vol. 2, p. 158.*)

**51883.** PYRUS BETULAEFOLIA Bunge. Malaceæ. Pear.

Seeds of a tall, very handsome tree from northern China, with crowded clusters of rather small flowers which are followed by globose fruits not much larger than peas. The tree is very hardy, vigorous, and fast growing. (Adapted from *Arnold Arboretum Bulletin of Popular Information, No. 21.*)

For previous introduction, see S. P. I. No. 45822.

**51884.** PYRUS NIVALIS Jacq. Malaceæ. Pear.

Seeds of a small tree of sturdy habit, with its young shoots thickly covered with a white wool. The oval, entire leaves are 2 to 3 inches long. The pure white flowers, 1½ inches across, are produced in conspicuous clusters. The roundish, yellow-green fruit is 1½ inches or more in diameter. The tree is native to eastern Europe and Asia Minor, where it is sometimes more than 50 feet high. It is a very beautiful tree early in the season, owing to the pure-white shoots and abundant flowers. The tree is cultivated in France for its fruit, which is not eaten until bletted. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

For previous introduction, see S. P. I. No. 42797.

**51885.** PYRUS SALICIFOLIA Pall. Malaceæ. Willow-leaved pear.

Seeds of the handsome, willow-leaved pear, native to the eastern Mediterranean region, to various parts of southern Russia, and as far north as Siberia. The round-headed tree is 20 to 25 feet high, has a short stout trunk, and bears beautiful willowlike grayish to silvery leaves 1 to 3 inches long and scarcely more than half an inch wide. The dense corymbs of white flowers are borne freely in April. (Adapted from *Gardening Illustrated, vol. 34, p. 305.*)

## 51886 and 51887. CITRUS spp. Rutaceæ.

From Tripoli, Libia, Africa. Budwood presented by Dr. O. Fenzi, director, Stabilimento Orticolo Libico. Received December 18, 1920. Quoted notes by Doctor Fenzi.

**51886.** CITRUS NOBILIS DELICIOSA (Ten.) Swingle. Mandarin orange.

"*Giant early mandarin.* A mandarin of extra superior quality, ripening as early as the end of October, with an extra large fruit, well filled, and with thin skin; the pulp is very juicy, sweet, and aromatic."

**51887.** CITRUS SINENSIS (L.) Osbeck. Orange.

"*Lim dem* (Tripoli blood orange), considered the very best in its section. It is generally seedless, oval in shape, with nearly brick-colored skin. Some years ago a small export was made to Hamburg and realized higher prices than any of the best Spanish or California varieties."

**51888 and 51889. HEDYSARUM CORONARIUM L. Fabaceæ. Sulla.**

From Valetta, Malta. Seeds presented by the Società Economico-Agraria del Gruppo di Malta, through Carl R. Loop, American consul. Received December 18, 1920.

"Sulla is a deep-rooting perennial legume which is grown extensively in the Mediterranean region. It will withstand light frosts, but heavy freezing usually kills it back. It is adapted to deep, calcareous, well-drained soils, and requires much the same treatment as alfalfa. If sown under irrigation, about three cuttings a season may be obtained, but under ordinary conditions it will not be found so satisfactory a crop as alfalfa. The chief value of sulla lies in its use as a soil-improving crop and as hay." (*J. M. Westgate.*)

51888. *Gozo*. "An early-maturing crop." (*Loop.*)

51889. *Malta*.

**51890 to 51892.**

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received December 22, 1920.

51890. *BUTIA CAPITATA PULPOSA* (Barb.-Rodr.) Becc. Phœnicaceæ.  
(*Cocos pulposa* Barb.-Rodr.) Palm.

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis*, *C. yatay*, and *C. eriopatha*. The trunk is 6 to 12 feet tall by 1½ to 2 feet in diameter with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The edible fruit is yellow, about 1 inch long by 1¼ inches in diameter, and the pulp is of a texture and taste somewhat like that of the pineapple." (*C. B. Doyle.*)

For previous introduction, see S. P. I. No. 47350.

51891. *EHRETIA ACUMINATA* R. Br. Boraginaceæ.

A tree 30 feet high, native to Bhutan and the eastern parts of Bengal, where it flowers during the hot season. The small white flowers are clustered in distant fascicles in axillary and terminal compound panicles. The leaves are smooth, serrate, and oblong-lanceolate. The round red pulpy drupes, about the size of a pea, are considered delicious by the inhabitants of Bhutan. (Adapted from *Edwards's Botanical Register*, vol. 13, p. 1097.)

For previous introduction, see S. P. I. No. 34557.

51892. *SCHOTIA LATIFOLIA* Jacq. Cæsalpinaceæ.

An ornamental shrub with rich, beautiful foliage of reddish color when young. The flesh-colored flowers are in large panicles. Suitable to be grown in pots for blooming in conservatories and for cut flowers; can be grown in open ground wherever the lemon is hardy. (Adapted from *Southern California Acclimatizing Association, Santa Barbara, Calif., May, 1897, No. 5, p. 61.*)

For previous introduction, see S. P. I. No. 3470.

**51893. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.**

From Teheran, Persia. Seeds presented by John L. Caldwell, American Minister. Received December 23, 1920.

"The famous Persian Ispahan melon, known locally as *Kharbuza Gorgob*. These melons are famed for their delicious sweetness." (*Caldwell.*)

**51894. AVENA NUDA Hoejer. Poaceæ. Naked oats.**

From Chefoo, Shantung, China. Seeds presented by A. Sugden. Received December 23, 1920.

"Fresh huskless oats of surprising weight. They must be very solid." (*Sugden.*)

**51895. PHELEUM PRATENSE L. Poaceæ. Timothy.**

From Christiania, Norway. Seeds presented by Dr. N. Wille, director, Botanic Garden. Received December 14, 1920.

"*Norsk Timoteifrö.*" (Wille.)

A local Norse variety of timothy introduced for forage-crop investigations.

**51896. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen.**

From Brooksville, Fla. Grown at the Plant Introduction Garden. Received at Washington, D. C., July 3, 1919; numbered in December, 1920.

"As grown at Brooksville in 1920, these plants of unknown origin were somewhat smaller than the Trinidad dasheen, were later in maturing than that variety, and were all in flower early in November. Leaf petioles nearly plain green, with upper part more or less shaded with maroon. Blade with very irregular petiolar spot, extending along midrib and basal veins. Inflorescence small, one to each plant. Tube of spathe  $1\frac{1}{2}$  inches long; limb, about 8 inches; pistillate portion of spadix, 1 inch. A  $3\frac{1}{2}$ -inch corm tested in cooking was dry and mealy and of good flavor. This dasheen, or taro, appears to be distinct from any previously received." (R. A. Young.)

**51897. STILLINGIA SEBIFERA (L.) Michx. Euphorbiaceæ.**

(*Sapium sebiferum* Roxb.)

From San Antonio, Tex. Seeds presented by the superintendent, San Antonio Experiment Farm. Received November 10, 1920.

This tree, which occurs in all the warmer parts of China, is long lived, growing to 40 or 50 feet in height, with a diameter of 5 or 6 feet at maturity. The foliage takes on beautiful tints in autumn. The fruits are three celled, flattened-ovoid, and about three-fifths of an inch in diameter. When ripe they are blackish brown and woody in appearance and are either gathered by hand or knocked down by poles. After being collected, the fruits are spread in the sun, where they open and each liberates three elliptical seeds which are covered with a white substance. This covering is a fat or tallow and is removed by steaming and rubbing through a bamboo sieve. The fat is collected and melted, molded into cakes, and sold as the "pi-yu" of commerce. The seeds from which the fat has been removed are crushed, and the oil expressed from them is the "ting-yu" of commerce. In China the oil and tallow are used in the manufacture of candles. Both these products are also exported in quantity to Europe, where they are used in the manufacture of soap. (Adapted from *Wilson, A Naturalist in Western China, vol. 2, p. 67.*)

These seeds were collected from a tree sent to the experiment farm in 1910 under S. P. I. No. 23218.

For previous introduction, see S. P. I. No. 47363.

**51898 to 52267.**

From East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 20, 1920. Quoted notes by Doctor Shantz.

**51898. ABUTILON sp. Malvaceæ.**

"(No. 1294. Butiaba, Northern Province, Uganda. July 19, 1920.) A small yellow hibiscuslike flower with green foliage."

**51899. ABUTILON sp. Malvaceæ.**

"(No. 1325. Lur, Anglo-Egyptian Sudan. July 27, 1920.) A small wait-a-bit with a smilaxlike leaf and a yellow flower."

**51900. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ.**

(*A. arabica* Willd.)

"(Nos. 1528 and 1528a. Jebelein, Sennar Province, Anglo-Egyptian Sudan. August 14, 1920.) *Garat* or *garad*; acacialike plant used for tanning."

For previous introduction, see S. P. I. No. 50110.

## 51898 to 52267—Continued.

- 51901 and 51902. *ALBIZZIA LEBBECK* (L.) Benth. Mimosaceæ. Lebeck tree.  
 51901. "(No. 1474. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A large flat-topped acacialike tree with a very heavy crop of large, flat pods. It is grown throughout central and northeastern Africa (Nile Valley)."  
 For previous introduction, see S. P. I. No. 50713.  
 51902. "(No. 1545. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) An acacialike tree which bears thin pods."  
 For previous introduction, see S. P. I. No. 50713.
51903. *ANNONA SENEGALENSIS* Pers. Annonaceæ. Custard-apple.  
 "(Nos. 1279 and 1279a. West of Misindi, Northern Province, Uganda. July 19, 1920.) Custard-apple. I have observed this all through Africa, but this is the first ripe fruit I have seen."  
 For previous introduction, see S. P. I. No. 49343.
51904. *ANOGEISSUS LEOCARPA* (DC.) Guill. and Perr. Combretaceæ.  
 "(No. 1363. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920. Herb. No. 935.) Seed of a fine birchlike tree with the broad-spreading habit of a fig."
- 51905 to 51907. *ARACHIS HYPOGAEA* L. Fabaceæ. Peanut.  
 51905. "(No. 1349. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) Monkey nuts (peanuts); one of the chief crops here."  
 51906. "(No. 1496. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Peanuts grown by the Bori; voandzela is also grown."  
 51907. "(No. 1532. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Peanuts; small type grown here for Egyptian market."
51908. *ARISTIDA* sp. Poaceæ. Grass.  
 "(No. 1184. Kisumu, Nyanza Province, Kenia. July 11, 1920.) Very abundant here; of doubtful value."
51909. *ASPARAGUS FALCATUS* L. Convallariaceæ. Asparagus.  
 "(No. 1302. Panyamur, Northern Province, Uganda. July 20, 1920.) A spiny type of asparagus."  
 For previous introduction, see S. P. I. No. 33725.
51910. *BIXA ORELLANA* L. Bixaceæ. Annatto tree.  
 "(No. 1276. Misindi, Northern Province, Uganda. July 18, 1920.) Used as a dye plant. A very attractive shrub in central Africa."  
 For previous introduction, see S. P. I. No. 50222.
51911. *BRACHYSTEGIA* sp. Cæsalpiniaceæ.  
 "(No. 1278. Misindi, Northern Province, Uganda. July 18, 1920.) A beautiful Mopanelike shrub."
51912. *BUTYROSPERMUM PARKII* (Don) Kotschy. Sapotaceæ.  
 "(No. 1348. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A large tree and one of the most valuable oil trees, from the seeds of which is obtained a solid fat called shea butter. The seeds are roasted and ground, and the oil is boiled off."  
 For previous introduction, see S. P. I. No. 21057.
- 51913 and 51914. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.  
 51913. "(No. 1267. Misindi, Northern Province, Uganda. July 17, 1920.) Pigeon-peas from the native market."  
 51914. "(No. 1543. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) A small reddish pigeon-pea."

## 51898 to 52267—Continued.

51915. *CARDIOSPERMUM* sp. Sapindaceæ.

"(No. 1277. Misindi, Northern Province, Uganda. July 18, 1920.) A vine with a leaf similar to that of a clematis, but delicate in structure. The delicate white flower is followed by a three-sided bladder-shaped pod with one seed in the center of each of the three carpels."

51916. *CARDIOSPERMUM* sp. Sapindaceæ.

"(No. 1343. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A pretty vine with a bladder-shaped pod."

51917. *CASSIA* sp. Cæsalpiniaceæ.

"(No. 1350. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A small legume with a partition between seeds."

51918. *CASSIA* sp. Cæsalpiniaceæ.

"(No. 1352. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A pink-flowered legume with a leaf like a rose."

51919. *CASSIA* sp. Cæsalpiniaceæ.

"(No. 1420. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) A small legume which is abundant on the lowlands."

51920 and 51921. *CHLORIS ABYSSINICA* Hochst. Poaceæ. Grass.

51920. "(No. 1254. Namasagali, Eastern Province, Uganda. July 13, 1920.) Grass."

51921. "(No. 1415. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920. Herb. No. 941.) Grass which is abundant in central Africa but seldom dominant."

51922. *CICER ARIETINUM* L. Fabaceæ.

Chick-pea.

"(No. 1535. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) A small chick-pea called *kob kobeck*."

51923. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ. Watermelon.

"(No. 1533. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Seed of a cucurbit sold in market as a food called *durum*."

51924. *CLITORIA TERNATEA* L. Fabaceæ.

"(No. 1502. Malek, Mongalla Province, Anglo-Egyptian Sudan. August 9, 1920.) A beautiful leguminous vine with bright-blue flowers."

For previous introduction, see S. P. I. No. 39301.

51925. *COSMOS SULPHUREUS* Cav. Asteraceæ.

Cosmos.

"(No. 1270. Misindi, Northern Province, Uganda. July 18, 1920.) An orange-colored cosmos which forms a very pretty hedge."

For previous introduction, see S. P. I. No. 37884.

51926. *CROTALARIA* sp. Fabaceæ.

"(No. 1323. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A small yellow legume."

51927. *CROTALARIA* sp. Fabaceæ.

"(No. 1365. Near Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A small legume."

51928. *CROTALARIA* sp. Fabaceæ.

"(No. 1403. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A *Crotalaria* with large hairy pods."

51929. *CROTALARIA* sp. Fabaceæ.

"(No. 1418. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920.) A very small, yellow-flowered legume which forms dense mats or tangles of stems at the base of hills."

51930. *CROTALARIA* sp. Fabaceæ.

"(No. 1504. Shambe, Bahr el Ghazal Province, Anglo-Egyptian Sudan. August 10, 1920.) A blue-flowered *Crotalaria* with hairy pods."

## 51898 to 52267—Continued.

- 51931 and 51932. *CUCUMIS METULIFERUS* E. Mey. Cucurbitaceæ. **Cucumber.**  
 51931. "(Nos. 1295 and 1295a. Butiaba, Northern Province, Uganda. July 19, 1920.) A cucumber which is red near the tip; it ripens very unequally; is eaten by birds."  
 51932. "(No. 1495. Simsima, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A wild red type of cucumber, 1½ by 2 or 2½ inches. When ripe they are eaten by birds."
- 51933 and 51934. *CUCUMIS SATIVUS* L. Cucurbitaceæ. **Cucumber.**  
 51933. "(No. 1207. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Cucumber; a small type from the market."  
 51934. "(No. 1494. Simsima, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A deep-green cucumber with yellow markings."
51935. *CUCUMIS* sp. Cucurbitaceæ.  
 "(No. 1330. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) A small cucumber which is very popular with the natives of this section."
51936. *CUCUMIS* sp. Cucurbitaceæ.  
 "(No. 1417. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 4, 1920.) A large cucumber with long spines; orange color when ripe."
51937. *CUCUMIS* sp. Cucurbitaceæ.  
 "(No. 1537. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) *Senat*. A cucumberlike plant from the Red Sea region; the seeds are used as food."
51938. *DOLICHOS LABLAB* L. Fabaceæ. **Hyacinth bean.**  
 "(No. 1539. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) *Kaseringique*. A flat bean with a large white hilum. There are also brown and black varieties."
51939. *DURANTA REPENS* L. Verbenaceæ.  
 "(No. 1275. Misindi, Northern Province, Uganda. July 18, 1920.) A beautiful white-flowered type of *Duranta*."  
 For previous introduction, see S. P. I. No. 48707.
- 51940 and 51941. *ECHINOCHLOA PYRAMIDALIS* (Lam.) Hitchc. and Chase. (*Panicum pyramidale* Lam.) [Poaceæ. **Grass.**  
 51940. "(No. 1414. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920. Herb. No. 940.) A large grass which grows along watercourses and appears to extend throughout central Africa. It grows on soil a little more moist than that in which sorghum grows."  
 51941. "(No. 1503. Shambe, Bahr el Ghazal Province, Anglo-Egyptian Sudan. August 10, 1920.) A grass which is characteristic of the river front."  
 For previous introduction, see S. P. I. No. 49999.
- 51942 and 51943. *ELEUSINE CORACANA* (L.) Gaertn. Poaceæ. **Ragi millet**  
 51942. "(No. 1257. Jinja, Eastern Province, Uganda. July 13 1920.) Eleusine."  
 51943. "(No. 1264. Misindi, Northern Province, Uganda. July 17, 1920.) Eleusine from the market at Misindi."
- 51944 and 51945. *GOSYPIUM HIRSUTUM* L. Malvaceæ. **Cotton.**  
 51944. "(No. 1259. Palango, Eastern Province, Uganda. July 13, 1920.) Cotton now being planted here; it is probably Nyasaland or American Upland."  
 51945. "(No. 1335a. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Cotton from a native field."

## 51898 to 52267—Continued.

51946 to 51949. *Gossypium nanking soudanensis* Watt. Malvaceae. Cotton.

51946. "(No. 1347. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920. Herb. No. 912.) Cotton."

51947. "(No. 1359. Between Shindurru and Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920. Herb. No. 933.) Cotton; a wild plant in natural vegetation."

51948. "(No. 1366. Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Apparently like No. 1359 [S. P. I. No. 51947]."

51949. "(No. 1500a. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920. Cotton grown by the natives."

51950. *Gossypium* sp. Malvaceae. Cotton.

"(No. 1304. Mutu, Northern Province, Uganda. July 20, 1920.) A few seeds of cotton, probably wild."

51951. *Melhania ferruginea* A. Rich. Sterculiaceae.

"(No. 1327. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A hairy-leaved plant with yellow flowers."

51952 to 52050. *Holcus sorghum* L. Poaceae. Sorghum.  
(*Sorghum vulgare* Pers.)

51952. "(No. 1209. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Kafir corn just as sold in the market."

51953. "(No. 1200. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; spreading red head not as dark as No. 1197 [S. P. I. No. 51579], but much darker than No. 1198 [S. P. I. No. 51580]."

For an illustration of this and the four following sorghums, see Plate VI.

51954. "(No. 1201. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra: a spreading white kafirlike type."

51955. "(No. 1202. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Close, dark-red or tan-colored head, similar in color to No. 1198 [S. P. I. No. 51580]."

51956. "(No. 1203. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; spreading head of light-tan color."

51957. "(No. 1204. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; a very dark rather open but short-branched head."

51958. "(No. 1205. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; a very dense head of red-tan color."

51959. "(No. 1266. Misindi, Northern Province, Uganda. July 17, 1920.) Kafir corn."

51960. "(No. 1301. Panyamur, Northern Province, Uganda. July 20, 1920.) Kafir corn."

51961. "(No. 1320. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) Kafir corn; a small red head of m'tama."

51962. "(No. 1321. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A small, very dark head."

51963. "(No. 1322. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A lighter head, more open and spreading."

51964. "(No. 1324. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A white kafir corn."

51965. "(No. 1331. Atokafferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Kafir corn with a long, open, white head."

51966. "(No. 1332. Atokafferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Long, open, red head."

51967. "(No. 1333. Atokafferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Small, dense, red head."

## 51898 to 52267—Continued.

51968. "(No. 1334. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Dense, red head, not so small as the preceding number."
51969. "(No. 1335. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Long, tan head."
51970. "(No. 1454. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Large, spreading head of purplish tan color; abundant."
51971. "(No. 1455. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Spreading deep-red head; the branches of the head hang down."
51972. "(No. 1456. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Semipendent, spreading, white head with tan-colored tips."
51973. "(No. 1457. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) White with tan tips, red hull, and semipendent branches."
51974. "(No. 1458. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) White with a tan tinge and red hull; the branches are pendent with an upright central spike."
51975. "(No. 1460. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) White with black hull; the seeds are pointed."
51976. "(No. 1461. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Black hull, white with purple spots; a close head, but the branches stand distinct."
51977. "(No. 1462. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Grain stained purple; dark hull; short, stubby, rather open head."
51978. "(No. 1463. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Light-lemon grain with orange hull and rather spreading head."
51979. "(No. 1464. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Seed light tan; very long, rather open head, similar to No. 1463 [S. P. I. No. 51978]."
51980. "(No. 1465. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Very white head, deep-red almost black hull, plump white grain, purple tip."
51981. "(No. 1467. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Dull tan, rather long, close head; hull orange. Weevils were at work on this while it was still standing in the field."
51982. "(No. 1467a. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Durra."
51983. "(No. 1468. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Light lemon-colored head and orange-colored bracts; a very fine type similar to No. 1464 [S. P. I. No. 51979]."
51984. "(No. 1469. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A long head of deep almost reddish tan or wine color."
51985. "(No. 1470. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A small, dense head of deep purple or wine color."
51986. "(No. 1471. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A dense, white head with black hull, mottled with tan and purple."
51987. "(No. 1472. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A very large, dense, deep-red head with a tendency to gooseneck, which is rare here."

## 51898 to 52267—Continued.

51898. "(No. 1505. Tango, Upper Nile Province, Anglo-Egyptian Sudan. August 12, 1920.) Durra; a large-seeded type grown locally."
51899. "(No. 1525a. Shikaba, Upper Nile Province, Anglo-Egyptian Sudan. August 14, 1920.) Durra grown locally."
51990. "(No. 1526. Shikaba, Upper Nile Province, Anglo-Egyptian Sudan. August 14, 1920.) Red durra."
51991. "(No. 1530. Jebelein, Sennar Province, Anglo-Egyptian Sudan. August 14, 1920.) A large-seeded white durra."
51992. "(No. 1546. Atbara, Berber Province, Anglo-Egyptian Sudan. August 24, 1920.) Irrigated durra; a uniform, small-headed type."
51993. "(No. 1547. Edfou, Egypt. August 27, 1920.) Durra with very dense, uniform white heads."
51994. Variety *abyssinicus*. "(No. 1429. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Almost white awned."
51995. Variety *abyssinicus*. "(No. 1512. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) A light, hairy type."
51996. Variety *cordofanus*. "(No. 1508. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Rather hairy, awnless, light, but dark when ripe."
51997. Variety *cordofanus*. "(No. 1510. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Orange color, unawned except when very young; smooth."
51998. Variety *cordofanus*. "(No. 1511. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Similar to the preceding number."
51999. Variety *cordofanus*. "(No. 1521. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."
52000. Variety *eichengeri*. "(No. 1256. Jinja, Eastern Province, Uganda. July 13, 1920.) A small type."
52001. Variety *eichengeri*. "(No. 1309. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awned type."
52002. Variety *eichengeri*. "(No. 1310. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awned; rather small flower."
52003. Variety *eichengeri*. "(No. 1312. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Several small awned heads."
52004. Variety *eichengeri*. "(No. 1313. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Large awned heads."
52005. Variety *eichengeri*. "(No. 1338. Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Sorghum typical of this section."
52006. Variety *eichengeri*. "(No. 1357. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A light-colored type."
52007. Variety *eichengeri*. "(No. 1361. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A tall light type collected near Nyonki."
52008. Variety *eichengeri*. "(No. 1522. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."
52009. Variety *eichengeri*. "(No. 1523. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."

## 51898 to 52267—Continued.

52010. Variety *eichengeri*. "(No. 1524. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."
52011. Variety *eichengeri*. "(No. 1525. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Two very light, small heads."
- 52012 to 52014. Variety *niloticus*. "(Namasagali, Eastern Province, Uganda. July 13, 1920.) Collected near the Nile on land previously cultivated by the natives; this land naturally produces tall Cymbopogon and Panicumlike grasses. Much like the Kongo at Kabalo. The chief crop here is the banana, which is used as a vegetable and as a fruit. Eleusine, kafir corn, and corn are also grown."
52012. (No. 1239.)
52014. (No. 1249.)
52013. (No. 1248.)
52015. Variety *niloticus*. "(No. 1291. Escarpment. near Butiaba, Northern Province, Uganda. July 19, 1920. Collected between Escarpment and Butiaba (7 miles)."
- 52016 to 52019. Variety *niloticus*. "(Nos. 1370 to 1373. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a great field of this wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful if many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."
52020. Variety *niloticus*. "(No. 1422. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Heavy head, not awned; distinct type."
52021. Variety *niloticus*. "(No. 1423. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Large, rather light, **awned type; more common type along the river.**"
52022. Variety *niloticus*. "(No. 1431. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Dark awnless type."
52023. Variety *niloticus*. "(No. 1433. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Large, dark type."
52024. Variety *niloticus*. "(No. 1434. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1433 [S. P. I. No. 52023]."
52025. Variety *niloticus*. "(No. 1448. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Heavy, dark, awnless type."
52026. Variety *niloticus*. "(No. 1449. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Sorghum."
52027. Variety *niloticus*. "(No. 1475. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Lighter than the average, but still deep red and hairy when ripe."
52028. Variety *niloticus*. "(No. 1477. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very heavy, light hairy, not very ripe."
52029. Variety *niloticus*. "(No. 1483. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Dark colored; flowers sparse."
52030. Variety *vogelianus*. "(No. 1307. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Large flowers and head."
52031. Undescribed variety *a*. "(No. 1515. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Light."
52032. Undescribed variety *a*. "(No. 1517. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Darker than No. 1515 [S. P. I. No. 52031]."

## 51898 to 52267—Continued.

52033. Undescribed variety *a*. "(No. 1518. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920. Herb. No. 967.) Darker than No. 1515 [S. P. I. No. 52031]."
52034. Undescribed variety *b*. "(No. 1520. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Small, dark."
52035. Undescribed variety *c*. "(No. 1389. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52036. Undescribed variety *c*. "(No. 1392. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52037. Undescribed variety *d*. "(No. 1476. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very dark and very hairy."
52038. Undescribed variety *d*. "(No. 1478. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Dark with white hairs."
52039. Undescribed variety *d*. "(No. 1479. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Heavy; light-red chaff."
52040. Undescribed variety *d*. "(No. 1480. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Heavy; light-red chaff."
52041. Undescribed variety *d*. "(No. 1481. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very light color; heavy flower."
52042. Undescribed variety *d*. "(No. 1482. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very light color; heavy flower."
52043. Undescribed variety *d*. "(No. 1484. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Deep reddish even when young; large flower."
52044. Undescribed variety *d*. "(No. 1485. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Deep reddish even when young; large flower."
52045. Undescribed variety *d*. "(No. 1486. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Rather light, hairy; hull reddish."
52046. Undescribed variety *d*. "(No. 1487. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Rather light, hairy; hull reddish."
52047. Undescribed variety *e*. "(No. 1311. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awnless; heavy head."
52048. Undescribed variety *e*. "(No. 1308. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awnless; small head, large flower."
52049. Undescribed variety *e*. "(No. 1369. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52050. Undescribed variety *f*. "(No. 1374. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52051. *HOLCUS SORGHUM DRUMMONDII* (Nees) Hitchc. Poaceæ.  
**Chicken corn.**  
 "(No. 1506. Taufkia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920. Herb. No. 958.) Black-seeded type of sorghum."

## 51898 to 52267—Continued.

- 52052 to 52087. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ.  
Kamerun grass.
52052. "(No. 1212. Kampala, Buganda Province, Uganda. July 12, 1920.) A small type of sorghum; many of the plants are not over a foot high; may be distinct."
52053. "(No. 1221. Jinja, Eastern Province, Uganda. July 13, 1920.) Sorghum."
52054. "(No. 1223. Namasagali, Eastern Province, Uganda. July 13, 1920.) Light, small-seeded type."
52055. "(No. 1231. Namasagali, Eastern Province, Uganda. July 13, 1920.) A rather dark type."
- 52056 to 52063. "(Nos. 1232, 1236, 1240, 1241, 1243, 1246, 1247, 1250. Namasagali, Eastern Province, Uganda. July 13, 1920.) All these numbers were collected near the Nile on land previously cultivated by the natives, the soil naturally producing tall Cymbopogon and Panicumlike grasses, much like the Kongo at Kabalo. The chief crop here is the banana, which is used as a vegetable and as a fruit. Eleusine, kafir, and corn are also grown."
52064. "(No. 1314. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Large, awned heads."
- 52065 to 52067. "(Nos. 1336, 1337, 1340.) Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Sorghum heads typical of this section."
52068. "(No. 1353. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) Sorghum; awned and rather light."
52069. "(No. 1354. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) Similar to the preceding number."
52070. "(No. 1355. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) Similar to the preceding number; a slender reddish type."
52071. "(No. 1356. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A light-colored type."
52072. "(No. 1360. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) Sorghum collected near Shindurru."
- 52073 to 52086. "(Nos. 1376-1380, 1384, 1386, 1388, 1390, 1393, 1394, 1396-1398. Nile bank, opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) All these sorghums were collected in a great field of this wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful whether many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."
52087. "(No. 1519. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Small dark sorghum."
- 52088 to 52118. *HOLCUS SORGHUM EXIGUUS* (Forsk.) Hitchc. Poaceæ.  
Tunis grass.
52088. "(No. 1286. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Sorghum collected between Escarpment and Butiaba (7 miles)."
52089. "(No. 1287. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Sorghum collected between Escarpment and Butiaba (7 miles)."
- 52090 to 52092. "(Nos. 1400-1402. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Sorghums collected in a great field of wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful if many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."

## 51898 to 52267—Continued.

52093. "(No. 1424. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1423 [S. P. I. No. 52021]."
52094. "(No. 1425. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1423 [S. P. I. No. 52021]."
52095. "(No. 1426. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Deep-red awned type."
52096. "(No. 1427. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather light, awned type."
52097. "(No. 1428. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1427 [S. P. I. No. 52096]."
52098. "(No. 1430. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather light, hairy, awned."
52099. "(No. 1432. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Awned, rather light type."
52100. "(No. 1435. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather red, awned, hairy type."
52101. "(No. 1436. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather light, awned, hairy type."
52102. "(No. 1437. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Purplish, awned, hairy type."
52103. "(No. 1438. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Dark, awned, hairy type."
52104. "(No. 1439. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Light, awned, hairy type."
52105. "(No. 1440. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Light, awned, hairy type."
52106. "(No. 1441. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Dense head; reddish, awned, hairy."
52107. "(No. 1442. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to the preceding number, but with a more open head."
52108. "(No. 1443. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to the preceding number."
52109. "(No. 1444. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Reddish, awned, hairy type."
52110. "(No. 1445. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Awned, hairy, and a little darker than the preceding number."
52111. "(No. 1446. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Same as the preceding number."
52112. "(No. 1447. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Very dark, awned."
52113. "(No. 1450. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Red, awned, hairy."
52114. "(No. 1451. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Black seed, awned, hairy."
52115. "(No. 1452. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) A hairy, awned type."
52116. "(No. 1473. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Wild sorghum seeds collected in bulk from hundreds of plants along the river flats. It should reproduce for us practically all types found here."
52117. "(No. 1507. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920. Herb. No. 959.) A light type of sorghum, hairy, and small awned."

## 51898 to 52267—Continued.

52118. "(No. 1509. Taufikla, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Glauous, red or orange, unawned; a striking type."

52119 to 52166. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc.  
[Poaceae. Tabucki grass.]

52119. "(No. 1223. Namasagali, Eastern Province, Uganda. July 13, 1920.) Light, small-seeded type."

52120. "(No. 1224. Namasagali, Eastern Province, Uganda. July 13, 1920.) Dark, small-seeded type."

52121. "(No. 1225. Namasagali, Eastern Province, Uganda. July 13, 1920.) Rather light."

52122. "(No. 1226. Namasagali, Eastern Province, Uganda. July 13, 1920.) Rather light."

52123. "(No. 1227. Namasagali, Eastern Province, Uganda. July 13, 1920.) A black-seeded type."

52124. "(No. 1228. Namasagali, Eastern Province, Uganda. July 13, 1920.) Heavy, black type."

52125. "(No. 1229. Namasagali, Eastern Province, Uganda. July 13, 1920.) Slender, black seed."

52126. "(No. 1230. Namasagali, Eastern Province, Uganda. July 13, 1920.) Large, heavy type."

52127 to 52138. "(Nos. 1232a, 1233, 1234, 1235, 1237, 1238, 1242, 1244, 1245, 1251-1253. Namasagali, Eastern Province, Uganda. July 13, 1920.) These numbers were collected near the Nile on land which naturally produces tall Cymbopogon and Panicumlike grasses, previously cultivated by the natives. Much like the Kongo at Kabalo. The chief crop here is the banana, which is used as a vegetable and as a fruit. Eleusine and kafir corn are also grown."

52139. "(No. 1255. Jinja, Eastern Province, Uganda. July 13, 1920.) Sorghum; a small type."

52140. "(No. 1258. Jinja, Eastern Province, Uganda. July 13, 1920.) A small type."

52141. "(No. 1260. Misindi Port, Northern Province, Uganda. July 16, 1920.) Sorghum abundant along the road."

52142. "(No. 1271. Misindi, Northern Province, Uganda. July 18, 1920.) A dark type."

52143. "(No. 1272. Misindi, Northern Province, Uganda. July 18, 1920.) A rather light hairy type with very dark seed."

52144. "(No. 1273. Misindi, Northern Province, Uganda. July 18, 1920.) A tall, dark type."

52145. "(No. 1281. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Sorghum."

52146 to 52151. "(Nos. 1283, 1284, 1285, 1288, 1289, 1290. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) These numbers were collected between Escarpment and Butiaba (7 miles)."

52152. "(No. 1319. Suwara River, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) Sorghum about 12 feet high."

52153. "(No. 1339. Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Sorghum, typical of this section."

52154 to 52162. "(Nos. 1375, 1381, 1382, 1383, 1385, 1387, 1391, 1395, 1399. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Sorghums collected in a great field of this wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful if many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."

## 51898 to 52267—Continued.

52163. "(No. 1404. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A dark head."
52164. "(No. 1405. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A light head."
52165. "(No. 1406. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Intermediate between Nos. 1404 and 1405 [S. P. I. Nos. 52163 and 52164]."
52166. "(No. 1516. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Darker than No. 1515 [S. P. I. No. 52031]."
52167. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Barley.**  
 "(No. 1534. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 14, 1920.) **Barley.**"
52168. *IPOMOEA* sp. Convolvulaceæ. **Morning-glory.**  
 "(No. 1211. Entebbe, Buganda Province, Uganda. July 12, 1920.) A very attractive large-flowered ornamental shrub abundant at Kisumu."
52169. *IPOMOEA* sp. Convolvulaceæ. **Morning-glory.**  
 "(No. 1499. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Wild morning-glory; did not see it in flower. Probably an annual."
52170. *KIGELIA PINNATA* (Jacq.) DC. Bignoniaceæ.  
 "(No. 1544. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) 'Sausage tree,' one of the most common African trees; used as a street tree here in Khartum."
- For previous introduction, see S. P. I. No. 38698.
52171. *LEPTOCHLOA* sp. Poaceæ. **Grass.**  
 "(No. 1292. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) A tall grass found just below Escarpment."
52172. *LUPINUS TERMIS* Forsk. Fabaceæ. **Lupine.**  
 "(No. 1538. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) A large, white-seeded legume."
52173. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. **Tomato.**  
 "(No. 1341. Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Tomato grown at Liri. Collected July 21, 1920."
52174. *MANISURIS EXALTATA* (L. f.) Kuntze. Poaceæ. **Grass.**  
 (*Rottboellia exaltata* L. f.)  
 "(No. 1514. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) A few ripe seeds of a grass very abundant throughout central Africa."
52175. *MOMORDICA* sp. Cucurbitaceæ.  
 "(No. 1344. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) An orange-colored cucurbit with processes (similar to a rambutan in appearance)."
52176. *MORINGA OLEIFERA* Lam. Moringaceæ. **Horse-radish tree.**  
 (*M. pterygosperma* Gaertn.)  
 "(No. 1315. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) An ornamental white-flowered tree with long three-sided pods with a single row of winged seeds."
- For previous introduction, see S. P. I. No. 46386.
52177. *NICOTIANA TABACUM* L. Solanaceæ. **Tobacco.**  
 "(No. 1261. Near Atura, Eastern Province, Uganda. July 16, 1920.) Tobacco grown by the natives at a wood station."
52178. *PANICUM* sp. Poaceæ. **Grass.**  
 "(No. 1293. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Tall, coarse grass, mostly in thickets."

## 51898 to 52267—Continued.

52179. *PANICUM* sp. Poaceæ. Grass.  
 "(No. 1303. Panyamur, Northern Province, Uganda. July 20, 1920.) A grass which forms the zone next to the water's edge."
52180. *PARKINSONIA ACULEATA* L. Cæsalpiniacæ.  
 "(No. 1513. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Seed of a prominent street tree; the leaflets are very small, almost nothing left but the midrib."  
 For previous introduction, see S. P. I. No. 48176.
52181. *PENNISETUM GLAUCUM* (L.) R. Br. Poaceæ. Pearl millet.  
 (*P. typhoideum* Rich.)  
 "(No. 1541. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Pennisetum."
52182. *PENNISETUM PURPUREUM* Schumach. Poaceæ. Grass.  
 "(No. 1214. Port Bell, Buganda Province, Uganda. July 13, 1920.) Elephant grass; used like bamboo, for building houses. A house can be built from grass covering the area of its foundation and extending 6 feet around. It supplies material both for sides and roof. This grass is also used to make paper and is eaten by elephants and buffalo. It grows on good soil."
52183. *PENNISETUM* sp. Poaceæ. Grass.  
 "(No. 1362. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A tall Chaetochloalike grass."
- 52184 and 52185. *PHASEOLUS AUREUS* Roxb. Fabacæ. Mung bean.  
 52184. "(No. 1497. Simsima, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Small green bean commonly grown by the Bori."  
 52185. "(No. 1208a. Kisumu, Nyanza Province, Kenia. July 11, 1920.) Beans from the market."
- 52186 to 52209. *PHASEOLUS VULGARIS* L. Fabacæ. Common bean.  
 "(No. 1265. Misindi, Northern Province, Uganda. July 17, 1920.) Beans from the market."
52186. 1. Small black beans about twice as long as wide.  
 52187. 2. Long maroon beans with small cream-colored flecks.  
 52188. 3. Long gray beans with small white flecks and dark ring around the hilum.  
 52189. 4. Short lavender beans with dark ring.  
 52190. 5. Short drab beans with dark ring.  
 52191. 6. Short light-brown beans with dark ring.  
 52192. 7. Short light-green beans with brown ring.  
 52193. 8. Short greenish tan beans with brown ring.  
 52194. 9. Long yellowish tan beans with dark ring.  
 52195. 10. Long tan beans with dark-brown ring.  
 52196. 11. Large long red beans.  
 52197. 12. Long narrow light-red beans.  
 52198. 13. Light-pink beans with stripes and flecks of maroon.  
 52199. 14. Small flat dull-tan beans.  
 52200. 15. Light and dark tan beans with dark stripes.  
 52201. 16. Long cream beans with dark-red mark through hilum.  
 52202. 17. Long broad white beans.  
 52203. 18. Small short white beans.  
 52204. 19. "(No. 1208b. Kisumu, Nyanza Province, Kenia. July 11, 1920.)" A broad flat white bean.  
 52205. 20. "(No. 1208c.)" Brownish tan with stripes and flecks of maroon.  
 52206. 21. "(No. 1208d.)" Small long narrow black beans.  
 52207. 22. "(No. 1208e.)" Large long narrow red beans.

## 51898 to 52267—Continued.

52208. 23. "(No. 1208f.)" Gray and tan with various stripes and spots.
52209. 24. "(No. 1208g.)" Long narrow beans with light-brown color overlaid with darker stripes and flecks.
52210. PHOENIX RECLINATA Jacq. Phœnicaceæ. **Palm.**  
 "(No. 1217. Port Bell, Buganda Province, Uganda. July 13, 1920.) A wild date palm; one of the most graceful African palms."  
 For previous introduction, see S. P. I. No. 51234.
52211. RHAMPHICARPA FISTULOSA (Hochst.) Benth. Scrophulariaceæ.  
 "(No. 1416. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920. Herb. No. 937.) A plant that resembles a larkspur, but with a small white flower like a petunia. It should be an excellent annual border plant; it grows on rocks at the edge of tall grass. The flower is three-fourths of an inch across and produces an abundance of seeds."
- 52212 and 52213. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**  
 52212. "(No. 1346. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A small type grown about native huts."  
 52213. "(No. 1421. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920.) Ricinus."
52214. RUBUS sp. Rosaceæ. **Raspberry.**  
 "(No. 1290. Near the forest of Budongo, Northern Province, Uganda. July 19, 1920.) A red raspberry; a very good fruit."
52215. SACCHARUM SPONTANEUM L. Poaceæ. **Grass.**  
 "(No. 1318. Suwara River, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.)"  
 For previous introduction, see S. P. I. No. 33257.
52216. SCLEROCARYA CAFFRA Sond. Anacardiaceæ.  
 "(No. 1317. Nimule to Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) *Mongo*; a round or globular lime-colored fruit, about 2 inches in diameter, with a very thick skin and a sweet agreeable taste. The seed has many fibers extending outside. *Mungo* is a name used in the Kongo at Kabulo."  
 For previous introduction, see S. P. I. No. 49315.
- 52217 to 52219. SESAMUM ORIENTALE L. Pedalaceæ. **Sesame.**  
 52217. "(No. 1268. Misindi, Northern Province, Uganda. July 17, 1920.) Sesame."  
 52218. "(No. 1498. Simsima, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Sesame grown by Bori."  
 52219. "(No. 1305. Panyamur, Northern Province, Uganda. July 20, 1920.) Native-grown sesame."
- 52220 and 52221. SOLANUM NAUMANNI Engl. Solanaceæ.  
 52220. "(No. 1262. Misindi Port, Northern Province, Uganda. July 16, 1920.) An eggplant as red as a tomato, but pointed at the tip; from the market at Misindi."  
 52221. "(No. 1263. Misindi Port, Northern Province, Uganda. July 16, 1920.) An eggplant as red as a tomato, but rounded at the tip; from the market at Misindi."
52222. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**  
 "(No. 1501. Tombe, Mongalla Province, Anglo-Egyptian Sudan. August 9, 1920.) A white or very light green eggplant about 4 to 5 inches long and long obovoid in shape."
52223. SPOROBOLUS FIMBRIATUS Nees. Poaceæ. **Grass.**  
 "(No. 1006. Uaso Nyiro River, Kenia. July 28, 1920.) A tall grass which seems valuable and is abundant along the banks of the river; it is eaten by wild game. It may withstand small amounts of black alkali."

## 51898 to 52267—Continued.

52224. *SPOROBOLUS INDICUS* (L.) R. Br. Poaceæ. Grass.  
 "(No. 1345. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A tall grass."
- For previous introduction, see S. P. I. No. 51160.
52225. *TRICHILIA* sp. Meliaceæ.  
 "(No. 1358. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A large tree with tricarpetate pods; the seed is red with dark spots. In the Kongo region this is known as *kihellahella*."
52226. *TRICHODESMA ZEYLANICUM* (Burm. f.) R. Br. Boraginaceæ.  
 "(No. 1326. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A small borage with rather pretty flowers."
52227. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.  
 (*T. vulgare* Vill.)  
 "(No. 1536. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Wheat (Mugam)."
52228. *URENA LOBATA* L. Malvaceæ.  
 "(No. 1274. Misindi, Northern Province, Uganda. July 18, 1920.) A plant with a small light-pink flower 1 inch in diameter."  
 For previous introduction; see S. P. I. No. 50089.
52229. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ. Catjang.  
 "(No. 1328. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A small *Vigna* cultivated by the natives and eaten green or ripe."
- 52230 to 52232. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
52230. "(No. 1208h. Kisumu, Nyanza Province, Kenya. July 11, 1920.)" A small dull-red variety.
52231. "(No. 1208i. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Medium-sized clay-colored and white seeds."
52232. "(No. 1540. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) *Iuba* or *Hena theil*; a small bean."
52233. *VIGNA* sp. Fabaceæ.  
 "(No. 1194. Kisumu, Nyanza Province, Kenya. July 11, 1920.) A *Vigna* with a small hairy pod; it is a very poor seed producer."
52234. *VIGNA* sp. Fabaceæ.  
 "(No. 1219. Jinja, Eastern Province, Uganda. July 13, 1920.) A *Vigna* with velvet pods and blue flowers."
52235. *VIGNA* sp. Fabaceæ.  
 "(No. 1220. Jinja, Eastern Province, Uganda. July 13, 1920.) A *Vigna* with smooth pods and leaves and yellow flowers."
52236. *VIGNA* sp. Fabaceæ.  
 "(No. 1351. Regu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A *Vigna* with long narrow pods."
52237. *VIGNA* sp. Fabaceæ.  
 "(No. 1364. Near Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A wild *Vigna* similar to No. 1351 [S. P. I. No. 52236]."
- 52238 to 52254. *ZEA MAYS* L. Poaceæ. Corn.
52238. "(No. 1206. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Corn from a native field. This ear is small, but large ones are produced."
52239. "(No. 1208j. Kisumu, Nyanza Province, Kenya. July 11, 1920.) From the market." Broad, flat, cream-colored kernels.
52240. "(No. 1296. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Yellow flint with a few dark kernels."
52241. "(No. 1297. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Red and deep-red kernels in thick irregular rows."

## 51898 to 52267—Continued.

52242. "(No. 1298. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) A dark-blue ear with a few yellow kernels."
52243. "(No. 1299. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Deep red in irregular rows."
52244. "(No. 1300. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Purple and yellow."
52245. "(No. 1408. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) All native yellow flint."
52246. "(No. 1409. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) Yellow flint with starch tips to many of the kernels."
52247. "(No. 1410. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) White flint."
52248. "(No. 1411. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) Yellow and white flint mixed."
52249. "(No. 1412. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) A small white waxy ear."
52250. "(No. 1413. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) A red ear."
52251. "(No. 1490. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Red ear."
52252. "(No. 1491. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Yellowish."
52253. "(No. 1492. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) White flint."
52254. "(No. 1493. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) White flint with purple cob."
52255. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.  
 "(No. 1542. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Edible *Ziziphus* sold in the market."
52256. (Undetermined.)  
 "(No. 1213. Kampala, Buganda Province, Uganda. July 12, 1920.) A leguminous plant with pink flowers. It is quite abundant here and may be useful as a cover crop."
52257. (Undetermined.)  
 "(No. 1215a. Port Bell, Buganda Province, Uganda. July 13, 1920.) A bean with small clustered flowers and pods. Very abundant in central Africa."
52258. (Undetermined.)  
 "(No. 1216. Port Bell, Buganda Province, Uganda. July 13, 1920.) A legume; a very small form which may be good for citrus orchards."
52259. (Undetermined.)  
 "(No. 1269. Misindi, Northern Province, Uganda. July 17, 1920.) Fruit eaten by baboons in Bodongo forest."
52260. (Undetermined.)  
 "(No. 1282. Escarpment near Butiaba, Northern Province, Uganda. July 19, 1920.) A small Rhuslike tree with pretty foliage and berries."
52261. (Undetermined.)  
 "(No. 1316. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) A small leguminous shrub or low bush."
52262. (Undetermined.)  
 "(No. 1329. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A fruiting vine similar to *Strychnos*; the fruit is eaten by birds."
52263. *HEDYOTIS* sp. Rubiaceæ.  
 "(No. 1367. Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A plant with a small starlike flower with a very long tube."

## 51898 to 52267—Continued.

52264. (Undetermined.)

“(No. 1368. Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A long, red, gradually pointed cucumber.”

52265. (Undetermined.)

“(No. 1419. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920.) A cucurbit; eaten by birds. The smooth fruit is reddish when ripe and very bitter when green.”

52266. (Undetermined.)

“(No. 1500. Simsima, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A small red fruit which seems to be a cucurbit. There are two seeds in each fruit. It is valuable as an ornamental, but is not eaten.”

52267. (Undetermined.)

“(No. 1529. Shikaba, Upper Nile Province, Anglo-Egyptian Sudan. August 14, 1920.) *Mahaleb*; black shiny seed.”

## 52268. PAULOWNIA FORTUNEI (Seem.) Hemsl. Scrophulariaceæ.

From Taihoku, Taiwan, Japan. Seeds presented by R. Kanchira, director, Experimental Station of Forestry. Received December 17, 1920.

This tree is originally from eastern China. The elongated calyxes are glabrous and shining, except around the upper edge, which is yellowish pubescent. The tree does not attain the height of *Paulownia tomentosa*, but the whitish, spotted flowers are larger than those of *P. tomentosa*. The leaves are much longer and covered beneath with a short, dense, white pubescence. (Adapted from *Bulletin de la Société Dendrologique de France*, 1908, p. 162.)

For previous introduction, see S. P. I. No. 47164.

## 52269 to 52280. VICIA spp. Fabaceæ.

## Vetch.

From Erfurt, Germany. Seeds purchased from Haage & Schmidt. Received December 21, 1920.

52269. VICIA ATROPURPUREA Desf.

## Purple vetch

“The *purple vetch* is indigenous to the Mediterranean region. It is a viny annual which under favorable circumstances makes a stem growth of 4 or 5 feet. It is slightly less winter hardy than common vetch (*Vicia sativa*) and is adapted for growing as a winter annual only in the milder parts of the United States. It is especially valuable for green manure in the southwestern United States. Its seed habits are good, and it is also desirable as a hay and pasture crop.” (Roland McKee.)

52270. VICIA CRACCA L.

“*Tufted vetch*. Occurs as a native in America, as well as in Europe and Asia. It is a perennial with slender viny stems which under favorable circumstances attain a height of 3 feet. The seed habits are poor and the seed is difficult to harvest. It is relished by all kinds of stock and is considered valuable pasturage. The good qualities of this vetch make it worthy of attention as a crop to be grown under cultivation.” (Roland McKee.)

52271. VICIA HIRSUTA (L.) S. F. Gray.

A sparsely hardy annual with several prostrate or climbing slender knotty stems, 2 to 6 decimeters high, sometimes shorter, square ridged. The sessile leaves consist of 6 to 10 pairs of short, linear leaflets; the lower leaves are elliptic, notched at the edge, mostly 1 to 2 centimeters long and 1 to 2 millimeters wide. The inflorescence, 3 to 4 millimeters long, mostly 3 to 8 flowered, has a short, bearded tip. The flowers are bluish white. Found in grasslands, thickets, and steppe formation throughout middle Europe, also in the islands of the North Sea. (Adapted from *Acherson and Graebner, Synopsis der Mitteleuropäische Flora*, p. 906.)

## 52269 to 52280—Continued.

## 52272. VICIA HYBRIDA L.

"An annual vetch, native to the Mediterranean region and requiring about the same climatic conditions as the common vetch (*Vicia sativa*). It is a less vigorous grower than either common or hairy vetch (*V. villosa*) and for this reason less well adapted for growing under cultivation. However, it may be of value for pasturage." (*Roland McKee*.)

## 52273. VICIA MACROCARPA Bertol.

"Native to Europe and very closely allied to common vetch (*Vicia sativa*). It has larger seed and heavier seed pods than common vetch, but otherwise differs but little. The climatic and other requirements are the same as for common vetch." (*Roland McKee*.)

For previous introduction, see S. P. I. No. 18813.

## 52274. VICIA PANNONICA Crantz.

"*Hungarian vetch*. An annual vetch native to Europe and Asia. It makes a less viny growth than common vetch (*Vicia sativa*) or hairy vetch (*V. villosa*), but is a vigorous grower attaining a full stem length of 2½ to 3 feet. It is more winter hardy than common vetch and will seldom winterkill as far north as Washington, D. C. This species is especially adapted to poorly drained areas and is the best of the vetches in this regard." (*Roland McKee*.)

## 52275. VICIA ATROPURPUREA Desf.

Purple vetch.

See S. P. I. No. 52269 for description.

## 52276. VICIA SATIVA L.

"*Common vetch*. An annual, native to Europe, Africa, and Asia. Many varieties have long been in cultivation. Most of these are well adapted to the Pacific Coast States, but only a few are winter hardy in our Southern States. Common vetch is a little less viny than hairy vetch and under favorable conditions attains a height of 3 to 4 feet. It is well adapted for use as green manure, hay, and pasturage." (*Roland McKee*.)

## 52277. VICIA SATIVA LEUCOSPERMA (Moench) Seringe.

"This subspecies includes the varieties of common vetch with light-colored seeds, many of which are especially adapted in mild climates for late winter or early spring planting. Except in the color of the seed, they are quite like common vetch." (*Roland McKee*.)

## 52278. VICIA SEPTIUM L.

"*Bush vetch*. A perennial species native to Europe and Asia. It is semiupright or bushy in habit. Stock of all kinds relish this species and it affords good pasturage." (*Roland McKee*.)

## 52279. VICIA SYLVATICA L.

"A perennial species native to Europe, occurring in shaded woody situations. It is relished by stock and makes valuable pasturage." (*Roland McKee*.)

## 52280. VICIA VILLOSA Roth.

"*Hairy vetch* is an annual native to western Asia, sometimes called sand vetch or Russian vetch, and has been found adapted to nearly all parts of the United States. It produces large crops of excellent hay, but owing to its habit of growth is somewhat difficult to mow. In drought resistance it is perhaps the best of the vetches. It will also stand severe cold, so that it is rarely frozen out even in the northernmost States. This makes it particularly valuable as a winter cover and green-manure crop. Hairy vetch often volunteers and persists, and on this account it is somewhat objectionable where wheat is grown. It is difficult to separate hairy vetch seed from wheat. Seed of hairy vetch weighs 60 pounds to the bushel. A varying proportion of the seed is hard, and this does not germinate for some months. Largely on this account hairy vetch is inclined to persist where once planted. It gives the best results when planted on well-tilled and well-drained land. It may be cured as hay or used green as a soiling crop. For soiling purposes a succession of crops can be maintained by sowing at various

## 52269 to 52280—Continued.

dates. Where the winters are mild it is possible to use the vetch as green feed all through the autumn and early winter and up to June or later in the summer." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 34361.

## 52281 to 52297.

From Seharunpur, Punjab, India. Seeds presented by A. C. Hartless, superintendent, Government Botanic Gardens. Received December 24, 1920.

## 52281. ACACIA SUMA (Roxb.) Kurz. Mimosaceæ.

A medium-sized tree with white bark and downy branchlets armed with pairs of short-hooked spines. The 20 to 40 pinnæ bear 60 to 100 leaflets; the gum catechu is said to be made from the heartwood of this tree. The bark is peeled off and used for tanning. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 60.*)

## 52282. ADINA CORDIFOLIA (Roxb.) Benth. and Hook. Rubiaceæ.

A large handsome deciduous tree found in the foothills of the Himalayas from Jumna eastward, ascending to altitudes of 3,000 feet, and extending throughout the moister regions of India, Burma, and Ceylon. It is common in the western peninsula, in the Central Provinces, and all over Burma from Chittagong and Ava to Pegu and Martaban. The leaves are cordate; the yellow flowers are borne in small heads. The wood seasons well, takes a good polish, and is valued for turning, for construction work, furniture, and agricultural implements. (Adapted from *Watt, Dictionary of the Economic products of India, vol. 1, p. 115.*)

## 52283. ANOGEISSUS LATIFOLIA (Roxb.) Wall. Combretaceæ.

A large handsome tree met with in the sub-Himalayan tract, from the Ravi eastward, ascending to 3,000 feet in central and southern India. It yields a gum which is extensively used in calico printing. The leaves yield a black dye and are very useful in tanning. The gray, hard, shining wood is highly valued on account of its great strength and toughness, but it splits in seasoning and unless kept dry is not very durable. It is used for ax handles, poles for carrying loads, for furniture, agricultural implements, and in shipbuilding. It gives an excellent charcoal. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 257.*)

## 52284. ANOGEISSUS PENDULA Edgeworth. Combretaceæ.

A small gregarious tree with pendulous branches, found in the arid and northern dry zones of Rajputana-Malwa Plateau, as far as the Nerbudda, in Nimar, and in the Mandla District. The leaves are small, the tree coppices well; the yellowish white wood is hard, but is not in general use. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 258.*)

For previous introduction, see S. P. I. No. 33555.

## 52285. CELTIS AUSTRALIS L. Ulmaceæ.

A moderate-sized deciduous tree, found in the Suliman and Salt Ranges and throughout the Himalayas from the Indus to Bhutan, ascending to 8,500 feet; also in the Khasi Hills. It is extensively cultivated in southern Europe for fodder; cows fed on the leaves are supposed to give better milk. It is nowhere grown as a fruit tree in India, although the fruit is eaten by all classes and is esteemed. The fruit is remarkably sweet and is supposed to have been the lotus of the ancients, the food of the Lotophagi, which is described as sweet, pleasant, and wholesome and which Homer says was so delicious as to make those who ate it forget their native country. The berries are still eaten in Spain, and the modern Greeks are said to be very fond of them. The gray or yellowish gray wood, with irregular streaks of darker color, is tough and strong and is used for oars, whip handles, and for other purposes requiring toughness and elasticity. The branches are extensively employed in making hayforks, ramrods, and walking sticks. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 242.*)

For previous introduction, see S. P. I. No. 48662.

## 52281 to 52297—Continued.

## 52286. CRATAEVA RELIGIOSA Forst f. Capparidaceæ.

A moderate-sized, distorted, unarmed tree, with deciduous three-foliolate leaves, found here and there under cultivation from the Ravi eastward to Assam, Manipur, and Burma; also in central and southern India and Bengal; probably wild in Malabar and Kanara. A favorite tree near temples and tombs. The fruit is mixed with mortar to form strong cement, and the rind is used as a mordant in dyeing. The bark of this tree is demulcent, sedative, and alterative tonic, and the fresh leaves and root bark are rubefacient and vesicant. The fruit is said to be sometimes eaten. The yellowish white wood is moderately hard, even grained, and used for drums, models, combs, and in turnery. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 583.)

## 52287. DIOSPYROS MONTANA Roxb. Diospyraceæ.

A tree, often spinous, found native from the Himalayas (eastward from the Ravi) to Ceylon and Tenasserim. The thin ovate leaves are 2½ inches long. The globose glabrous fruit is one-half inch to 1½ inches in diameter. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 555.)

## 52288. DIOSPYROS PEREGRINA (Gaertn.) Guerke. Diospyraceæ.

(*D. embryopteris* Pers.)

A dense tree very common in India from the Himalayas (from the Jumna eastward) to Ceylon and Tenasserim and abundant in Bengal. The oblong obtuse leaves are coriaceous. The subglobose fruit, 1 to 2 inches in diameter, is glandular or rusty and usually four to eight seeded. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 557.)

For previous introduction, see S. P. I. No. 33567.

## 52289. ERYTHRINA VESPERTILIO Benth. Fabaceæ.

Coral tree.

A tree, 30 to 40 feet in height, native to Australia, with soft wood used by the aborigines for making shields. It is exceedingly light and spongy and might perhaps be useful for floats for fishing nets. The logs were used by the aborigines for crossing rivers and creeks. (Adapted from Maiden, *Useful Native Plants of Australia*, p. 426.)

For previous introduction, see S. P. I. No. 42466.

## 52290. FICUS GLOMERATA Roxb. Moraceæ.

Fig.

A large tree of the Salt Range and Rajputana found along the sub-Himalayan tracts to Bengal, central and southern India, Assam, and Burma. The bark yields a black dye, and the bark, leaves, and fruit are used in medicine. The fruit is edible but inferior, though greedily eaten by cattle. The leaves are collected as fodder. The soft gray wood is not durable, though it lasts well under water and is used for well frames. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 351.)

For previous introduction, see S. P. I. No. 12111.

## 52291. HETEROPHRAGMA ADENOPHYLLUM (DC.) Seem. Bignoniaceæ.

A tree, 30 to 50 feet high, native to Assam and eastern Bengal and extending to Tenasserim and the Andamans. The pinnate leaves are 1 to 1½ feet long and the subsessile, acute, or obtuse leaflets are 7 to 14 inches long and 5 inches wide. The stout, many-flowered, terminal panicles bear tomentose, tubular-ventricose flowers, rose or yellow, 2 inches in diameter, and hardly crisped or crenate. The cylindrical spiral capsule is 1 to 3 feet long and 1 inch in diameter. (Adapted from Hooker, *Flora of British India*, vol. 4, p. 381.)

## 52292. KYDIA CALYCINA Roxb. Malvaceæ.

A tree native to the tropical regions of the Himalayas, from Kumaon eastward, and throughout the Western Ghats, with rounded cordate leaves, 4 to 5 inches long and 3 inches wide, glabrous above or with thinly scattered hairs, closely felted beneath. The much-branched, many-flowered inflorescence bears white or pink flowers. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 348.)

For previous introduction, see S. P. I. No. 47702.

## 52281 to 52297—Continued.

52293. *MORINGA OLEIFERA* Lam. Moringaceæ. Horse-radish tree.  
(*M. pterygosperma* Gaertn.)

"A small tree, cultivated as an ornamental in Cuba, usually 15 to 20 feet in height, erect, with compound leaves nearly a foot long. The white flowers are borne in panicles, and the slender pods are often a foot long." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 46386.

52294. *OWENIA CERASIFERA* F. Muell. Meliaceæ.

A small tree, native to Queensland, with pinnate leaves consisting of 6 to 10 obliquely oval-oblong, obtuse leaflets, 1½ to 3 inches long, glabrous above, pubescent underneath. The black drupes are globular, 1½ inches in diameter, with red flesh. (Adapted from *Bentham, Flora Australiensis, vol. 1, p. 386.*)

For previous introduction, see S. P. I. No. 32819.

52295. *PHYLLANTHUS EMBLICA* L. Euphorbiaceæ. Nelli.

A moderate-sized deciduous tree native to the forests of tropical India and Burma. It yields a gum which is little known. The fruit, known as the emblic myrobalan, is used as a medicine and also in dyeing and tanning. As the fruit ripens the tannic acid diminishes and the fruit becomes edible and even pleasant to eat. It is the size of a small gooseberry, with a fleshy outer covering and a hard three-celled nut containing six seeds. The fruit is used for preserves and is also prepared as a pickle. A sherbet made from the fruit is a favorite cooling drink. The leaves and bark are used for tanning; the leaves also make good fodder. The red, hard close-grained wood when well seasoned is flexible, tough, and tolerably straight grained. It is used for building purposes, furniture, agricultural implements, gunstocks, and is adapted for turning. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 217.*)

For previous introduction, see S. P. I. No. 47751.

52296. *PUTRANJIVA ROXBURGHII* Wall. Euphorbiaceæ.

A moderate-sized evergreen tree, native to tropical India, where it occurs wild and cultivated from the lower Himalayas, in Kumaon, eastward and southward to Pegu and Ceylon. The obtuse, acute leaves are 2 to 3 inches long. The globose white-tomentose fruits are the size of a cherry. (Adapted from *Hooker, Flora of British India, vol. 5, p. 336.*)

For previous introduction, see S. P. I. No. 33581.

52297. *WRIGHTIA TOMENTOSA* Roem. and Schult. Apocynaceæ.

A small, usually crooked, deciduous tree with corky bark, native to tropical India, extending from the Indus eastward and southward to Ceylon, Burma, and Penang, ascending to 2,000 feet in the Himalayas. The densely tomentose, elliptic leaves are 3 to 6 inches long and 1½ to 2½ inches wide. The yellowish flowers, with orange coronal scales, occur in many-flowered cymes. (Adapted from *Hooker, Flora of British India, vol. 3, p. 653.*)

Received as *Wrightia mollissima*, which is now generally referred to *W. tomentosa*.

## 52298 to 52304.

From Cali, Valle del Cauca, Colombia. Collected by Wilson Popenoe. Agricultural Explorer of the United States Department of Agriculture. Quoted December 27, 1920. Quoted notes by Mr. Popenoe.

52298. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

"(No. 530. December 3, 1920.) Shoots of *Cambrai* pineapple. From the Hacienda Manuelita, near Palmira. This is an excellent pineapple, by far the best variety I have seen in Colombia, but apparently of very limited distribution. It is fairly common in the Cauca Valley, but is not grown on an extensive commercial scale.

"The fruit is oblong to oblong-conic, commonly tapering slightly toward the apex. It weighs 4 to 8 pounds and would probably attain even larger

## 52298 to 52304—Continued.

size under good cultivation. The surface is fairly smooth, the eyes being only slightly deeper than those of Smooth Cayenne. The flesh is pale yellow, exceedingly juicy, of rich, subacid flavor, and quite tender. While it does not equal Smooth Cayenne in sweetness and delicacy of flavor, it is a much better fruit. The plant is a large and vigorous grower with serrate leaves."

52299. *CARICA* sp. Papayacæ.

"(No. 523a. November 22, 1920.) Seeds of *red-fruited papayuela*. From a garden near Armenia, Depto. de Caldas, at an altitude of about 5,000 feet. This is the most interesting form of *Carica* which I have discovered in Colombia. It is remarkable for the rich crimson color of its fruits. Whether or not this color will be inherited by its seedlings I do not know; if it is, then we have in this form a papaya of much interest for use in breeding. The stem and petioles of the plant are deep purple. The fruits are oblong-elliptic, about 4 inches long, and as they mature they assume a crimson color which is at length deep and rich and very attractive. The flesh is white, like the normal form of the species, rather acid, with an applelike scent. A cross between this species and *Carica papaya* might produce a new fruit of most attractive appearance."

52300. *PASSIFLORA MALIFORMIS* L. Passifloracæ.

Granadilla.

"(No. 531a. December 3, 1920.) Seeds of *granadilla*, from the Cali market. This is a species which I have not seen elsewhere in Colombia. The fruit is remarkable for its unusually hard shell. Except for this character and its pale-green color, it greatly resembles the fruit of *Passiflora edulis*. It is a better fruit than some of the other species of *Passiflora* found in Colombia."

For previous introduction, see S. P. I. No. 43330.

52301. *RHEEDIA MADRUNO* (H. B. K.) Planch. and Triana. Clusiaceæ.

"(No. 528. December 3, 1920.) Seeds of *madroño*. From the Hacienda Manuelita, near Palmira. This is a common tree, both wild and cultivated, in the Cauca Valley and a favorite fruit. It occurs at altitudes of 3,000 or 4,000 feet and probably will not, therefore, be sufficiently frost resistant for cultivation in California. It may succeed in southern Florida, and will, of course, be adapted to tropical regions, such as the West Indies.

"The tree, which reaches about 35 feet in height, is a handsome one. It is commonly pyramidal, sometimes rather slender, and its abundant foliage is dark green. The leaves are elliptic and about 6 inches long. The fruits are the size of a small lemon, and about the same color. The skin is thick and leathery and very rough; the flesh is whitish, translucent, and of an aromatic subacid taste which is very agreeable. The two or three rather large seeds are oblong.

"Compared with the more important tropical fruits, such as the mango, the *madroño* can not be considered of great value; yet the ornamental appearance of the tree and the pleasant flavor of the fruit make it well worth growing in tropical gardens."

52302. *RUBUS GLAUCUS* Benth. Rosacæ.

"(No. 522a. November 22, 1920.) Seeds collected near the Hacienda Cajamarca, on the Quindío trail between Ibagué and Armenia, at an altitude of about 3,000 feet. [This plant has been described under S. P. I. No. 50691.] It is a common species in Central America and northwestern South America, sometimes cultivated for its fruit, which is an excellent berry. Where not cultivated, the fruit produced by wild plants is very commonly gathered and sold in the markets of towns and cities.

"These seeds were taken from an unusually productive plant. Since scanty productiveness is the principal defect of this species, viewed from a horticultural standpoint, an effort to obtain strains more productive than the average seems well worth while. In addition to being a productive plant, this number can be recommended as producing fruits of excellent quality."

## 52298 to 52304—Continued.

52303. SOLANUM TUBEROSUM L. Solanaceæ.

Potato.

"(No. 529. December 3, 1920.) Tubers of *papa criolla* (native potato) from the Cali market. This is the common yellow-fleshed potato of the Andes, a variety of small size but remarkably rich flavor. The variety is said to be very early and to be suited to cultivation in a warmer climate than others. It is a round potato, here not commonly over 3 inches in diameter, deep rose-colored, with very deep eyes, a very thin skin which peels readily from the boiled tuber, and mealy flesh of rich yellow color and excellent quality. This appears to be a very interesting variety for trial in the United States."

For previous introduction, see S. P. I. No. 52316.

52304. (Undetermined.)

"(No. 527a. December 3, 1920.) From La Manuelita, near Palmira, Colombia. Seeds of *carbonero*, a mimosaceous tree, 60 feet high, cultivated in the Cauca Valley as a shade tree in coffee plantations. The tree, said to be an exceedingly rapid grower and to furnish timber of good quality, is rather attractive in appearance, with finely pinnate foliage and small whitish flowers. It seems to me worthy of trial in southern Florida as a quick-growing shade tree for planting along streets and avenues."

52305. MALUS SYLVESTRIS Mill. Malacææ.

Apple.

(*Pyrus malus* L.)

From Rangiora, New Zealand. Cuttings presented by Ivory's Nurseries. Received October 19, 1920.

"*Double Vigor*. This has been raised after many years of selection and with us is blight proof and much more vigorous in growth than the Northern Spy stocks which are generally used in this Dominion." (N. Goldsbury, of Ivory's Nurseries.)

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