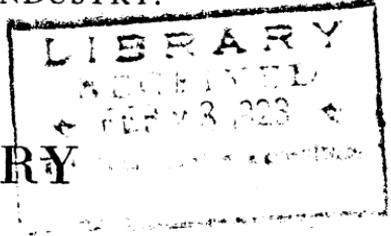


Issued February 14, 1923.

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 JANUARY 1
TO MARCH 31, 1920.

(No. 62; Nos. 49124 to 49796.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM JAN- UARY 1 TO MARCH 31, 1920 (NO. 62; NOS. 49124 TO 49796).

INTRODUCTORY STATEMENT.

During the period of three months covered by this inventory, Wilson Popenoe, Agricultural Explorer for this office, was exploring and collecting living plant material in the region of the city of Guatemala, Coban, Tucuru, Antigua, and El Barranquillo in the Republic of Guatemala, and Dr. H. L. Shantz, as Agricultural Explorer attached to the Smithsonian Expedition, was exploring and collecting in Mozambique, East Africa, Northern Rhodesia, and the Belgian Kongo. Inasmuch as both of these explorers are experienced travelers and especially familiar with American agriculture, what they collected has unusual value.

Of Mr. Popenoe's introductions described here, the following appear at this time of particular interest:

The large-fruited subtropical hawthorn (*Crataegus stipulosa*, No. 49145), which is used for jellies and preserves, reminds us of Frank N. Meyer's discovery and introduction of the large grafted Chinese haws which have grown well in this country. The pacaya palm (*Chamaedorea* sp., No. 49325) has an inflorescence which is used extensively as a salad in Guatemala. The two superior varieties of the coyó (*Persea schiedeana*, Nos. 49329 and 49330), a close relative of the avocado, represent a fruit new to horticulture and one of great value for tropical and subtropical regions; these fruits, according to Mr. Popenoe, have even a better flavor than the avocado. The three remarkable tropical blackberries (*Rubus* spp., 49331 to 49333) from Alta Vera Paz ought at least to be valuable for breeding purposes. An entirely new species of Annona (*A. scleroderma*, No. 49371), called the "posh," has a thick, hard-shelled fruit and ought to make a good shipper; its delicious snow-white flesh, which is more acid and sprightly than that of the sugar-apple, should make it popular. The ochoy (*Paspalum fasciculatum*, No. 49401) and the "hotz kor" (*Chaetochloa paniculifera*, No. 49372) are considered among the best pasture grasses of Guatemala and since they are adapted to moist regions should be available for trial on the Everglades; and the "kos-kún" (*Pennisetum complanatum*, No. 49763), a most important grass from Antigua, may also thrive there. Other interesting plants listed here with Mr. Popenoe's careful descriptions include an undetermined species of walnut from Alta Vera

Paz (*Juglans* sp., No. 49375); seven pasture and forage grasses from Alta Vera Paz (Nos. 49376 to 49382); *Persea donnell-smithii* (No. 49383), a wild species related to the avocado; two new species of scarlet sage (*Salvia* spp., Nos. 49389 and 49742), one with flowers somewhat richer in color than those of the scarlet sage in cultivation in America and the other with flowers twice as large; also a new blue-flowered species (*Salvia amarissima*, 49780) and a species of *Alpinia* (No. 49443), related to the ginger of commerce, which produces bright-red fruits used by the Kekchi Indians as an ingredient of soups and stews. *Dahlia maxonii* (No. 49757), a new species discovered by Mr. Popenoe, grows to a height of 18 feet and bears lilac-pink flowers, whereas *D. popenovii* (No. 49758) is only 4 feet high and bears crimson flowers. Doctor Safford considers the latter to be one of the wild parents of the cultivated cactus dahlias.

Doctor Shantz's introductions which should be emphasized are as follows:

Panicum madagascariense (No. 49210), a grass for the sandy soils of the South; the m'goma tree (*Ricinodendron rautanenii*, Nos. 49213 and 49214) of Southern Rhodesia, the wood of which is remarkably light; the Morula (*Sclerocarya caffra*, Nos. 49215 and 49315), a beautiful tree bearing edible fruits with oily seeds; a tropical jujube (*Ziziphus mucronata*, No. 49219) from Bulawayo; the Rhodesian teak (*Baikiaca plurijuga*, No. 49228); the Rhodesian ash (*Burkea africana*, No. 49230); the Rhodesian mahogany (*Pahudia quanzensis*, No. 49241); two wild persimmons (*Diospyros* spp., Nos. 49235 and 49236) from Victoria Falls and two from the Transvaal (Nos. 49298 and 49299); the inkulu (*Diospyros senegalensis*, No. 49586) from the Kafue River; the uteta tree (*Caesalpinia* sp., No. 49460), a legume bearing poisonous pods which the natives boil in four successive waters before they are safe to eat; the popular native fruit mahobohobo (*Uapaca sansibarica*, No. 49466), astringent when green but sweet when ripe; the impinji (*Ximenia americana*, No. 49467), a fruit resembling the American plum; and three as yet undetermined species—the m'seche (No. 49469) having the odor of a lychee, the m'fwefee (No. 49470) with very sweet edible fruits, and the m'tantanvara (No. 49471) with fruits like the wild cherry. The Kafir orange (*Strychnos spinosa*) has fruited so well in Florida that another small-fruited species (No. 49599), with an agreeable flavor, may make the improvement of this wild fruit possible. The m'tingele (No. 49607), the maululu (*Canthium lanciflorum*, No. 49608, reported to be one of the most delicious fruits of the Victoria Falls region), and the m'pila (No. 49609) are promising wild fruits.

Fenugreek is an important forage crop in Egypt and has just fallen short of being a real success in our own South. Its relative from New South Wales (*Trigonella suavissima*, No. 49124), which Sir Thomas Mitchell recommends for use like spinach, deserves to be thoroughly tested.

Through Consul Deichman, of Valparaiso, we have received a valuable collection of Chilean trees, some of which will doubtless find a home in the region around San Francisco, where already several of these Chilean species seem quite at home. They include three of the Chilean oaks (*Nothofagus* spp., Nos. 49274 to 49276).

Vicary Gibbs has sent us bulbs of the beautiful *Nomocharis* (*N. pardanithina*, No. 49281), a lilylike plant from western China, which, Reginald Farrer says, the Chinese eat as they do onions.

Stranvaesia davidiana (No. 49287) is a valuable new shrub from western China which has behaved as an evergreen in Washington, D. C., and deserves to be used extensively in dooryards; it is attractive through the winter.

It remains to be seen whether Mr. Neipp's *Gladiolus malangensis* (No. 49369) from west Africa is of value for the breeders of this showy and popular flower.

J. B. Norton, the asparagus breeder, has seeded at Hartsville, S. C., what he considers the hardiest of the evergreen ornamental species of asparagus (*Asparagus acutifolius*, No. 49458) and recommends it for dooryard hedges. It is suggestive of a fine-leaved juniper, and since it has storage roots and drought-resistant foliage it should be valuable for dry regions.

Through the kindness of Doctor Burns, of the Bombay Department of Agriculture, 16 species of forage grasses (Nos. 49506 to 49521) have been obtained for trial by Professor Piper, particularly in the Southern States.

An entirely new cereal crop from Sierra Leone, called fundi (*Digitaria exilis*, Nos. 49522 to 49524), is sent in by Mr. Scotland, Director of Agriculture. It is reported to be adapted to light soils and to produce a grain of very good flavor suited for the use of invalids.

The massaranduba (*Mimusops huberi*, No. 49709), of Para, is related to the sapote and may succeed in southern Florida; it is a market fruit in Para. The cupú-assú (*Theobroma grandiflora*, No. 49710) from this same region, a close relative of cacao, bearing its fruits on the trunk, is one of the most important fruit trees of the State of Para. Neither of these appears to have been cultivated elsewhere in the Tropics.

The goa bean (*Botor tetragonoloba*, No. 49711) has grown well in Florida, and since its young pods make a delicious vegetable similar to snap beans it deserves study as a winter vegetable for shipping to northern markets. Its edible tubers are said to contain 24 per cent of protein.

Since the hondapara of India (*Dillenia indica*, No. 49713) has flowered at Miami it deserves further study as an ornamental and fruit tree as well.

An unusual collection of seeds (Nos. 49613 to 49661) has been sent in by Mr. Cave, curator of the Lloyd Botanic Garden at Darjiling. It includes *Berberis angulosa* (No. 49616) with berries nearly an inch long; a Himalayan birch (*Betula utilis*, No. 49620) from Kashmir; a Chinese hazelnut (*Corylus ferox*, No. 49626), 20 feet tall; the blady grass (*Imperata cylindrica*, No. 49637), which produces a paper pulp almost equal to that of esparto; the giant lily (*Lilium*

giganteum, No. 49641), growing to 9 feet in height; *Michelia excelsa* (No. 49642) and *M. lanuginosa* (No. 49643), two beautiful trees; *Piptanthus nepalensis* (No. 49645), a hardy evergreen climber with large racemes of yellow flowers; a wild cherry tree (*Prunus cerasoides*, No. 49647) with cymes of rose-red flowers; and a species of currant (*Ribes griffithii*, No. 49651) with fruit clusters 9 inches long.

The botanical determinations of seeds introduced have been made and the nomenclature revised by H. C. Skeels; and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript 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., October 18, 1921.

INVENTORY.¹

49124. TRIGONELLA SUAVISSIMA Lindl. Fabaceæ.

From Sydney, New South Wales. Seeds presented by J. H. Maiden, director, Botanic Gardens, through A. J. Pieters, of the Bureau of Plant Industry. Received January 9, 1920.

This cloverlike plant, called "Darling clover" in Australia, where it is native, has fragrant stems and foliage and in favorable locations is perennial, becoming 3 feet or more in height. When grown on rich black soils subject to periodic inundations it produces a large quantity of nutritious herbage, of which stock are particularly fond and on which they fatten. It provides good feed in late winter and early spring, hence it is a valuable addition to pastures. Sir Thomas Mitchell wrote of this plant, which he called "Australian shamrock," "The perfume of this herb, its freshness and flavor, induced me to try it as a vegetable, and we found it delicious and tender as spinach." The perfume is due to the presence of coumarin. If cut when in flower and properly cured it makes good hay. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1909, p. 12.)

49125 to 49137.

From Rochester, N. Y. Cuttings presented by John Dunbar, assistant superintendent of parks. Received January 3, 1920.

49125. BERBERIS DUROBRIVENSIS C. Schneid. Berberidaceæ. Barberry.

"*Berberis durobrivensis* is a supposed hybrid between *B. poireti* and some unknown species which was raised at Rochester, therefore its specific name." (Alfred Rehder.)

49126. BERBERIS EMARGINATA Willd. Berberidaceæ. Barberry.

A Siberian *Berberis* which becomes 3 or 4 feet in height. The leaves are narrowly obovate, and the yellow flowers appear in May. The slender red fruits mature in September and October. (Adapted from *Guimpel, Otto, and Hayne, Abbildungen der fremden Holzarten, vol. 1, p. 78, pl. 62.*)

49127. BERBERIS OBLONGA (Regel) C. Schneid. Berberidaceæ. Barberry.

"Allied to *Berberis heteropoda*, but has angular branches, obovate leaves, and 10 to 20 flowered racemes, followed by oblong fruits. The plant is a native of Turkestan." (Alfred Rehder.)

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in 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 in many cases undoubtedly will 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.

49125 to 49137—Continued.

49128. *BERBERIS POIRETI* C. Schneid. Berberidaceæ. **Barberry.**

A hardy and handsome shrub, native to northern China, with slender, arching branches and simple spines. It reaches 5 feet in height. The leaves are quite narrow, with green lower surfaces, and the ovoid or oblong fruits are a deep blood red. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 490.*)

49129. *BERBERIS VERRUQUOSA* Hemsl. and Wils. Berberidaceæ. **Barberry.**

This attractive Chinese *Berberis* is found as an evergreen shrub in western Szechwan, where it becomes 3 or 4 feet in height. The yellow flowers and ovoid purplish blue fruits are borne among the small, very spiny leaves. (Adapted from *Curtis's Botanical Magazine, pl. 8454.*)

49130. *BERBERIS VULGARIS* L. Berberidaceæ. **Barberry.**
Variety *lutea*.

"Mr. Dunbar showed me *Berberis vulgaris* var. *lutea*, a garden hybrid. It is a small, pale, slender-fruited form, not a particularly free fruiter but would carry its seedlessness, I believe." (*David Fairchild, Report of Western Trip, 1919, p. 16.*)

49131. *EVODIA DANIELLII* (Benn.) Hems. Rutaceæ.
(*Xanthoxylum daniellii* Benn.)

A moderate-sized bushy tree, 10 to 20 feet high, with unequally pinnate leaves up to 3 inches in length. The flowers appear in June and July in numerous corymbose panicles. The fruit consists of a number of oblong or elongated capsules which have a peculiar aromatic odor and a pungent bitter flavor. The Chinese are said to use parts of this fruit as a condiment. (Adapted from *Bennett, Annals and Magazine of Natural History, 3d ser., vol. 10, p. 198.*)

49132. *HAMAMELIS MOLLIS* Oliver. Hamamelidaceæ.

A large bush or small tree, sometimes 30 feet high, native to western China. The roundish short-stemmed toothed leaves are 4 to 5 inches long, and the golden-yellow flowers are borne in nearly sessile heads. (Adapted from *Curtis's Botanical Magazine, pl. 7884.*)

49133 and 49134. *HIBISCUS SYRIACUS* L. Malvaceæ. **Rose of Sharon.**

49133. White and red. 49134. Variety *caeruleus*.

49135. *MALUS FLORIBUNDA* Siebold. Malaceæ. **Apple.**
(*Pyrus floribunda* Kirchn.)

"The best known of the eastern Asiatic crabs is *Malus floribunda*. This is one of the handsomest and most satisfactory of all flowering trees for this climate. It blooms every year without fail, and as it reaches maturity it assumes a picturesque habit. The bright pink flower buds are very beautiful and the masses of small flowers which completely cover the branches are at first pink and gradually become white." (*Bulletin of Popular Information, Arnold Arboretum, No. 3.*)

49136. *PARROTIA PERSICA* (DC.) Meyer. Hamamelidaceæ.

A small tree, 10 to 15 feet high, found native in Persia and Transcaucasia. The alternate coarsely toothed leaves become brilliantly colored in autumn, and the heads of small flowers are conspicuous for their scarlet anthers. The wood of this tree is exceedingly hard and durable. (Adapted from *Curtis's Botanical Magazine, pl. 5744.*)

49125 to 49137—Continued.

49137. TAMARIX HISPIDA Willd. Tamaricaceæ. Tamarisk.

A very ornamental shrub of graceful habit, not more than 4½ feet high, with very finely divided leaves and beautiful racemes of minute pink flowers, which appear in September. (Adapted from *Revue Horticole*, vol. 66, p. 352, pl. 1894.)

49138 to 49144.

From Shansi, China. Presented by Prof. Joseph Bailie, Berkeley, Calif. Received January 3, 1920.

49138. AVENA NUDA Hoejer. Poaceæ. Naked oats.

"Huskless oats from Shansi Province." (*Bailie.*)

49139. CHAETOCHELOA ITALICA (L.) Scribu. Poaceæ. Millet.
(*Setaria italica* Beauv.)

A variety with straw-colored seeds.

49140. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"Kaoliang seed from Shansi Province."

49141. LINUM USITATISSIMUM L. Linaceæ. Flax.

"Hu ma tze from Taichow." (*Bailie.*)

49142. PINUS BUNGEANA ZUCC. Pinaceæ. White-barked pine.

Seeds of one of the most strikingly beautiful of the oriental conifers.

For previous introduction and description, see S. P. I. No. 42730.

49143 and 49144. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

49143. Tubers from an unnamed variety.

49144. Seed from an unnamed variety.

49145 to 49148.

From the city of Guatemala, Guatemala. Seeds collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received January 5, 1920. Quoted notes by Mr. Popenoe.

49145. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 232a.) The manzanilla is a large shrub or small tree, native to Guatemala, attaining a height of about 20 feet. In the spring it produces white flowers resembling apple blossoms, and in the fall the yellow applelike fruits, about 1½ inches in diameter, are gathered and eaten in various ways, principally stewed and in the form of jelly."

For previous introduction, see S. P. I. No. 45575.

49146. PASSIFLORA LIGULARIS JUSS. Passifloraceæ. Sweet granadilla.

"(No. 233a.) The sweet granadilla is grown in the highlands of Guatemala and produces fruit the size of a hen's egg, with a thick, brittle shell inclosing a white gelatinous pulp with a delicate aromatic flavor."

For previous introduction, see S. P. I. No. 43437.

49147. RUBUS TUERCKHEIMII Rydb. Rosaceæ. Mora.

"(No. 234a.) A wild Rubus common in the vicinity of San Lucas, Guatemala, at an altitude of nearly 7,000 feet. In habit and fruit this plant resembles the blackberry; the berry is, however, lighter in color,

49145 to 49148—Continued.

with a rather acid flavor. The fruit is used for preserves and for stewing."

For previous introduction, see S. P. I. No. 43438.

49148. SPONDIAS PURPUREA L. Anacardiaceæ. **Red mombin.**

"(No. 235a.) A small stiff or sometimes spreading tropical American tree up to 25 feet in height, with compound leaves up to 6 inches long and purplish maroon flowers in few-flowered racemes. The oblong-ovoid fruit is commonly purplish and about an inch in length."

49149 to 49160.

From Victoria Falls, Rhodesia. A collection of seeds presented by C. Starke & Co., Mowbray, Cape Town, through Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 6, 1920. Quoted notes by Doctor Shantz.

49149. CHAETOCHELOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"(No. 284.) Boer manna."

49150 to 49152. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"Three varieties."

49150. "(No. 288.) Starke's Mammoth White Kafir melon."

49151. "(No. 290.) 'Tsama melon.'"

49152. "(No. 291.) 'Monketaan melon.'"

49153. CUOURBITA MAXIMA Duchesne. Cucurbitaceæ. **Pumpkin.**

"(No. 289.) Fraserdale Improved Boer pumpkin."

49154. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

"(No. 287.) Cape 6-rowed barley."

49155. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. Poaceæ. **Barley.**

"(No. 286.) Nepal or beardless barley-wheat."

49156. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"(No. 282.) Recleaned Cape lucern."

49157. MELILOTUS INDICA (L.) All. Fabaceæ. **Yellow sweet clover.**

"(No. 281.) Cape Stink Klaver."

49158. PHALARIS MINOR Retz. Poaceæ. **Grass.**

"(No. 283.) Cape Canary seed."

An annual grass, native to the Mediterranean countries, but introduced into many parts of the world. It is erect or ascending with tufted culms up to 3 feet in height and linear leaves from 2 to 6 inches long. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 7, p. 682.*)

49159. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"(No. 280.) Green Moonghi."

49160. SECALE CEREALE L. Poaceæ. **Rye.**

"(No. 285.) Cape Early rye."

49161. FAGOPYRUM VULGARE Hill. Polygonaceæ. Buckwheat.*(F. esculentum Moench.)*

From Brisbane, Queensland. Presented by H. C. Quodling, director, Department of Agriculture. Received January 6, 1920.

"*Sarrasin*. Although we received the original sample under the name of 'Sarragin' buckwheat, I am of the opinion that 'Sarrasin' is the correct name." (*Quodling*.)

49162 to 49173.

From Victoria Falls, Southern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 8, 1920. Quoted notes by Doctor Shantz.

49162. BAUHINIA sp. Cæsalpiniaceæ.

"(No. 262. Victoria Falls. November 16, 1919.) A large tree with a large, dry, almost solid pod."

49163. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ.*(L. aegyptiaca Mill.)*

"(No. 273a. Victoria Falls. November 17, 1919.) A *Luffa* growing in the garden at the hotel; may be a native form; it forms a large fibrous pepo about 6 or 7 inches long."

49164. MARKHAMIA sp. Bignoniaceæ.

"(No. 265. Victoria Falls. November 17, 1919.) A small tree with long pods bearing winged seeds."

49165. OPLISMENUS AFRICANUS CAPENSIS (Hochst.) Stapf. Poaceæ.**Grass.**

"(No. 273. Victoria Falls. November 17, 1919.) A grass from a palm grove; it looks to be good forage, especially for partially shaded areas of the South."

49166. THUNBERGIA sp. Acanthaceæ.

"(No. 274. Victoria Falls. November 17, 1919.) A shrub or woody vine with fragrant white flowers and black fruits."

49167. XIMENIA AMERICANA L. Olacaceæ. False sandalwood.

"(No. 248. Victoria Falls. November 13, 1919.) *Impinji*. A small plum with reddish yellow or orange skin which is bitter and unpleasant, but the flavor much like a good cherry, not sour and not sweet. Grows on a small tree and fruits abundantly. Should be useful for jam and jelly; also as a flavor for drinks."

49168. HELIANTHUS ARGOPHYLLUS Torr. and Gray. Asteraceæ.**Sunflower.**

"(No. 247. Beira, Mozambique. November 3, 1919.) A silver-leaved sunflower grown as an ornamental at Beira and at Lourenco Marques."

49169. GARCINIA LIVINGSTONEI T. Anders. Clusiaceæ.

"(No. 263a. Victoria Falls. November 17, 1919.) *Munkononga*. An evergreen tree with heavy branches; loaded with fruit on the larger small branches. Fruit orange color, of very pleasant flavor and eagerly devoured by natives and apes."

49170. TOUNATEA MADAGASCARIENSIS (Desv.) Kuntze. Cæsalpiniaceæ.*(Swartzia madagascariensis Desv.)*

"(No. 263. Victoria Falls. November 15, 1919.) A medium-sized tree with long, narrow, sugar-bearing pods."

49162 to 49173—Continued.

49171. (Undetermined.)

"(No. 266. Victoria Falls, November 17, 1919.) A 'walt-a-bit' woody vine with large pods 3 to 4 inches long."

49172. (Undetermined.)

"(No. 270. Victoria Falls. November 17, 1919.) A small tree with yellow flowers and beadlike fruits."

49173. *URGINEA ALTISSIMA* (L. f.) Baker. Liliaceæ.

"(No. 271. Victoria Falls. November 17, 1919.) A large bulb with tall spikes of greenish white flowers about 3 feet high; abundant."

49174. RUBUS sp. Rosaceæ.**Raspberry.**

From Porto Rico. Plants presented by E. E. Barker, plant breeder, Insular Experiment Station, Rio Piedras. Received January 8, 1920.

"On a recent trip into a mountainous part of the island in the district of Aibonito, I found the native raspberry, called 'fresa,' growing luxuriantly. The plants grow a meter or more in height and were in dense patches. They were in flower and beginning to fruit. The fruit is large and brilliant red in color; the flavor is not remarkable." (Baker.)

49175. SCHIZOSTACHYUM sp. Poaceæ.**Bamboo.**

From Benkulen, Sumatra. Seeds presented by H. Wigman, Buitenzorg, Java, through F. E. Lloyd, McGill University, Montreal, Canada. Received January 8, 1920.

Bamboos of this genus, according to Munro, "are very closely allied to *Melocanna*." G. F. Richmond, in the Philippine Journal of Science, Sect. A, vol. 5, p. 233, gives results of an experimental cutting of *Schizostachyum mucronatum* for pulp. Approximately one-quarter of an acre produced about 4 tons of air-dry material free of nodes. "This weight will produce approximately 2 short tons (1,812 kg.) of pulp."

49176 to 49196. CORYLUS spp. Betulaceæ.**Filbert.**

From St. Jean-le-Blanc, Orleans, France. Plants and cuttings presented by Edmond Versin. Received January 9, 1920.

49176 to 49193. *CORYLUS AVELLANA* L.

49176. No. 1. *Du Béarn.*

49177. No. 2. *Fertile.*

49178. No. 3. *D'Alger.*

49179. No. 4. *De Beynes.*

49180. No. 6. *De Nottingham.*

49181. No. 7. *De Brunswick.*

49182. No. 9. *Cosford a coque
tendre.*

49183. No. 10. *Bergeri.*

49184. No. 11. *Fructu albo.*

49185. No. 12. *Fertile de Coutard.*

49186. No. 13. *Cob.*

49187. No. 14. *Daviana.*

49188. No. 15. *D'Angleterre.*

49189. No. 17. *Large fruited.*

49190. No. 18. *Golden leavcs.*

49191. No. 19. *Des Anglais.*

49192. No. 20. *Atlas.*

49193. No. 21. *Emperor.*

49194. *CORYLUS COLUMNNA* L.

Turkish hazel.

No. 16. The nuts of this species are small and somewhat flattened, with the roundish involucre several times longer than the nut. The tree reaches a height of 70 feet, with broad shining leaves. (Adapted from Goeschke, *Die Hazelnuss*, p. 41.)

49176 to 49196—Continued.

49195 and 49196. *COBYLUS MAXIMA* Mill.

This is quite similar to the common filbert, *Corylus avellana*, but is more luxuriant, with the husk narrowed above the nut and forming an elongated beak. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 148.*)

49195. No. 5. *De Piémont.* **49196.** No. 8. *De Provence.*

49197 to 49221.

From Victoria Falls, Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 12, 1920. Quoted notes by Doctor Shantz.

49197. *ACACIA* sp. Mimosaceæ.

"(No. 224. Bulawayo, Southern Rhodesia. November 5, 1919.) A small tree which flowers and bears a heavy crop of beans."

49198. *ACACIA* sp. Mimosaceæ.

"(No. 227. Bulawayo, Southern Rhodesia. November 5, 1919.) A large handsome tree with very rough bark and recurved spines. It grows to a height of 30 feet and has fine foliage and probably very hard wood."

49199. *ANNONA RETICULATA* L. Annonaceæ. **Custard-apple.**

"(No. 214. Lourenco Marques, Mozambique. October 29, 1919.) Seed from a large custard-apple served on a boat out of Lourenco Marques."

49200. *CAESALPINIA SEPIARIA* Roxb. Cæsalpiniaceæ.

"(No. 220. Salisbury, Southern Rhodesia. November 4, 1919.) A 'wait-a-bit' of almost running habit of growth. Forms a hedge which is practically impenetrable because of the short recurved spines. The foliage and flowers are attractive."

49201. *CAJAN INDICUM* Spreng. Fabaceæ. **Pigeon-pea.**

"(No. 241. Bulawayo, Southern Rhodesia. November 6, 1919.) Dhal bean."

49202 and 49203. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

49202. "(No. 235. Bulawayo, Southern Rhodesia. November 5, 1919.) *Majoda.* A large dark Kafir melon."

49203. "(No. 234. Bulawayo, Southern Rhodesia. November 5, 1919.) *Majoda.* The ordinary melon."

49204. *COMBRETUM APICULATUM* Sond. Combretaceæ.

"(No. 223. Bulawayo, Southern Rhodesia. November 5, 1919.) A small tree which grows on dry land; should be tried in the South and Southwest."

49205 and 49206. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

49205. "(No. 237. Bulawayo, Southern Rhodesia. November 5, 1919.) *Ironbark.*"

49206. "(No. 233a. Bulawayo, Southern Rhodesia. November 5, 1919.) *Macleay River.*"

49207. *CUCURBITA PEPO* L. Cucurbitaceæ.

"(No. 233b. Bulawayo, Southern Rhodesia. November 5, 1919.) *Macleay River.*"

49197 to 49221—Continued.

49208. *Gossypium hirsutum* L. Malvaceæ. Cotton.

"(No. 213. Beira, Mozambique. November 3, 1919.) *Nyasaland upland*. Grown at Shimba on the Zambezi. The seed is distributed to the natives and the cotton is bought from them by the Mozambique Company."

49209. *Holcus sorghum sudanensis* (Piper) Hitchc. Poaceæ.

Sudan grass.

"(No. 236. Bulawayo, Southern Rhodesia. November 5, 1919.)"

49210. *Panicum madagascariense* Spreng. Poaceæ.

Grass.

"(No. 218. Beira, Mozambique. November 3, 1919.) A fine grass; grows well on sandy land of the Beira region. It may prove valuable on sandy soils of the South. Grows to a height of about 15 inches."

49211. *Passiflora edulis* Sims. Passifloraceæ.

Granadilla.

"(No. 230. Bulawayo, Southern Rhodesia. November 5, 1919.) Seed from a granadilla served at a hotel. Fruit about 1½ by 2 inches, of an agreeable flavor."

49212. *Phaseolus aureus* Roxb. Fabaceæ.

Mung bean

"(No. 232. Bulawayo, Southern Rhodesia. November 5, 1919.) A small green bean."

49213 and 49214. *Ricinodendron rautanenii* Schinz. Euphorbiaceæ.

49213. "(No. 229. Bulawayo, Southern Rhodesia. November 5, 1919.) The *m'goma* tree, which produces a remarkably lightweight wood used instead of pith; it is also used as a base to be covered with metal or leather. The seeds should be sawed open for planting; otherwise germination will be very slow."

49214. "(No. 249. Victoria Falls. November 13, 1919). *M'goma*. A fine tree bearing nuts with very hard shells, but with edible kernels which are also valuable for oil. I think it will prove a valuable introduction; piles of nuts were seen near the houses of the natives of this section."

49215. *Sclerocarya caffra* Sond. Anacardiaceæ.

Morula.

"(No. 225. Bulawayo, Southern Rhodesia. November 5, 1919.) See No. 139 [S. P. I. No. 48823] and No. 193 [S. P. I. No. 49315]. The nuts are exceedingly good."

Morula nuts, the seeds of *Sclerocarya caffra*, are found in northern Transvaal. They weigh from 3 to 4 grams and measure one-half by 1 inch. They consist of 87.9 per cent of very hard shell and 12.01 per cent of kernel, which has a pleasant nutty flavor and should be very nutritious as a food. Upon ether extraction, these kernels yield from 5 to 6.3 per cent of a pale-yellow oil, which has been analyzed as follows:

Specific gravity at 15.5° C.-----	0.9153
Acid value (as oleic)-----	1.59
Saponification number-----	19.1
Unsaponifiable matter-----per cent--	.93
Wijs' iodine number-----	72.9
Glycerol-----per cent--	10.6
Hehner number-----	94.7

49197 to 49221—Continued.

The fatty acids probably consist of:

Stearic and palmitic acids	-----per cent.	9.0
Oleic and linoleic acids	-----do.	91.0

Linolic acid is absent.

(Adapted from *The Year Book of the American Pharmaceutical Association*, vol. 6, p. 211.)

49216. TETRAPLEURA sp. Mimosaceæ.

“(No. 228. Beira, Mozambique. November 3, 1919.)” A tall unarmed tree with small flowers in spiciform racemes, allied to *Prosopis*. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 330.)

49217. TRICHOLAENA ROSEA Nees. Poaceæ.

Natal grass.

“(No. 219. Beira, Mozambique. November 3, 1919.) A most promising red-panicked grass [same as No. 187, S. P. I. No. 49317]. Grows everywhere from Nelspruit, Transvaal, to Salisbury, Rhodesia, and also in Mozambique. It seeds readily and seems to be early in maturing; not cultivated in Africa.”

49218. STIZOLOBIUM DEERINGIANUM Bort. Fabaceæ. Florida velvet bean.

“(No. 231. Bulawayo, Southern Rhodesia. November 5, 1919.) Velvet beans for cattle.”

49219. ZIZIPHUS MUCRONATA Willd. Rhamnaceæ.

“(No. 221. Bulawayo, Southern Rhodesia. November 5, 1919.) A small, pretty tree which fruits abundantly.”

For previous introduction, see S. P. I. No. 48261.

49220. ZIZIPHUS sp. Rhamnaceæ.

“(No. 222. Bulawayo, Southern Rhodesia. November 5, 1919.) A tree much later in coming into leaf and with fruits somewhat larger than those of No. 221 [S. P. I. No. 49219].”

49221. (Undetermined.)

“(No. 226. Bulawayo, Southern Rhodesia. November 5, 1919.) A low spreading tree with black fruit.”

49222. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau. Poaceæ.

(*P. nigra* Munro.)

Bamboo.

From Niles, Calif. Plants purchased from the California Nursery Co. Received January 13, 1920.

One of the most elegant of bamboos, with characteristic black stems 10 to 20 feet in height and plumelike masses of dark-green leaves. It is a native of China and Japan and is quite hardy in regions of mild winters. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 152.)

49223. SOPHORA TETRAPTERA J. Miller. Fabaceæ.

(*Edwardsia tetraptera* Poir.)

From Temuco, Chile. Seeds presented by Dr. E. W. D. Holway. Received January 13, 1920.

“These seeds were given me by a German priest, who says it is a most valuable tree on account of the extreme hardness of the wood—‘hard enough for nails,’ as he put it.” (*Holway*.)

An exceedingly handsome large shrub or small tree, native to New Zealand. The flowers, which are borne in large clusters in spring, are deep yellow; the prominent calyx is of a bronze-gold hue. The pinnate leaves, of a somewhat silky texture, are very pleasing in appearance. (Adapted from *Gardening Illustrated*, vol. 29, p. 185.)

49224 to 49255.

From Victoria Falls, Southern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 14, 1920. Quoted notes by Doctor Shantz.

49224. ACACIA sp. Mimosaceæ.

"(No. 276. Victoria Falls. November 17, 1919.) A fine large acacia with large pods like a Robinia; seeds usually eaten by weevils. Grows near watercourses and is one of the most attractive acacias of this section."

49225. ACACIA sp. Mimosaceæ.

"(No. 277. Victoria Falls. November 17, 1919.) A large acacia similar to No. 276 [S. P. I. No. 49224], but a 'wait-a-bit' with thin pods and smaller seeds. Very gummy when cut and bark very red."

49226. ADANSONIA DIGITATA L. Bombacaceæ.

"(No. 254. Victoria Falls. November 13, 1919.) Seed from a tree about 20 feet in diameter and about 40 feet high. Flowers about 4 inches in diameter; fruit a woolly gourd 6 inches long. The pulp of the fruit is used to make a drink."

49227. ARACHIS HYPOGAEA L. Fabaceæ.

Peanut.

"(No. 240. Bulawayo, Southern Rhodesia. November 6, 1919.) A cluster peanut from British East Africa."

49228. BAIKIAEA PLURIJUGA Harms. Cæsalpiniaceæ. **Rhodesian teak.**

"(No. 255. Victoria Falls. November 13, 1919.) A fine large tree; the best timber tree of the country, but the wood is hard to work."

49229. BRACHYSTEGIA RANDII Baker f. Cæsalpiniaceæ.

"(No. 252. Victoria Falls. November 13, 1919.) A beautiful tree 20 to 30 feet high. The wood is comparatively soft and not termite proof. The bark yields an excellent fiber and is used by the natives in building their huts."

49230. BURKEA AFRICANA Hook. Cæsalpiniaceæ.

Rhodesian ash.

"(No. 253. Victoria Falls. November 13, 1919.) One of the most common plants of the dry African forests; known as 'Rhodesian ash'; does best in sandy soil. Has tough, coarse-grained wood; the seeds are said to be used as food in times of famine."

49231. CANAVALI ENSIFORME (L.) DC. Fabaceæ.

Jack bean.

"(No. 246. Bulawayo, Southern Rhodesia. November 6, 1919.) A native bean with a pod 12 to 18 inches long. Not edible."

49232. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Watermelon.

"(No. 242. Bulawayo, Southern Rhodesia. November 6, 1919.) 'Man Rataan,' a Kafir melon."

49233. COPAIVA COLEOSPERMA (Benth.) Kuntze. Cæsalpiniaceæ.

(*Copaifera coleosperma* Benth.)

"(No. 260. Victoria Falls. November 15, 1919.) A fine tree, which produces heavy crops of 1-seeded pods. The papery outer cover of the bean is very red."

49224 to 49255—Continued.

49234. CUCURBITA PEPO L. Cucurbitaceæ. Pumpkin.
 "(No. 245. Bulawayo, Southern Rhodesia. November 6, 1919.) Natal. Mixed cattle pumpkins."
49235. DIOSPYROS sp. Diospyraceæ. Persimmon.
 "(No. 272. Victoria Falls. November 17, 1919.) A tree covered with fruit from 1 to 1½ inches in diameter; brown hairs on the surface."
49236. DIOSPYROS sp. Diospyraceæ. Persimmon.
 "(No. 278. Victoria Falls. November 17, 1919.) A small tree the fruit of which is eaten by birds. The fruit appears to be black."
49237. HOLCUS SORGHUM L. Poaceæ. Sorghum.
 (*Sorghum vulgare* Pers.)
 "(No. 243. Bulawayo, Southern Rhodesia. November 6, 1919.) Kafir corn."
49238. IPOMOEA sp. Convolvulaceæ. Morning-glory.
 "(No. 250. Victoria Falls. November 13, 1919.) A more or less woody perennial vine with clustered light or purplish flowers; would be suitable as a porch or arbor vine."
49239. MIMUSOPS ZEYHERI Sond. Sapotaceæ.
 "(No. 264. Victoria Falls. November 17, 1919.) A fruit tree. The fruits are eaten by the natives and also by apes."
49240. OCHNA PULCHRA Hook. Ochnaceæ.
 "(No. 257. Victoria Falls. November 15, 1919.) A beautiful tree 10 to 30 feet high, which produces a quantity of beautiful racemes of yellow flowers and fruit."
49241. PAHUDIA QUANZENSIS (Welw.) Prain. Cæsalpiniaceæ.
 (*Afzelia quanzensis* Welw.) Mahogany bean.
 "(No. 258. Victoria Falls. November 16, 1919.) A fine large tree; beautiful for shade and the beans highly prized as ornaments. The wood is very beautiful; usually called 'Rhodesian mahogany' or 'pod mahogany.' The tree becomes from 2 to 7 feet in diameter, the latter size exceptional."
49242. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. Pearl millet.
 (*P. typhoideum* Pers.)
 "(No. 238. Bulawayo, Southern Rhodesia. November 6, 1919.) Nyanti."
49243. PSEUDOLACHNOSTYLIS sp. Euphorbiaceæ.
 "(No. 256. Victoria Falls. November 15, 1919.) A peculiar shrub or small tree. It has fruits with a sweetish sticky outer cover and a peculiar method of dehiscence."
49244. PTEROCARPUS sp. Fabaceæ.
 "(No. 269. Victoria Falls. November 17, 1919.) A small tree."
49245. TERMINALIA sp. Combretaceæ.
 "(No. 267. Victoria Falls. November 17, 1919.) Mongolas. A large tree with tough wood and bark."
49246. TETRAPLEURA sp. Mimosaceæ.
 "(No. 275. Victoria Falls. November 17, 1919.) A beautiful tree producing large pods. The tree is useful in many ways."

49224 to 49255—Continued.

49247. TETRAPLEURA sp. Mimosaceæ.

(Victoria Falls. November 17, 1919. Pod containing seed; no label.)

49248. VIGNA SINENSIS (Torner) Savi. Fabaceæ.

Cowpea.

“(No. 239. Bulawayo, Southern Rhodesia. November 6, 1919.) Indumba Kafir bean.”

49249. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ.

“(No. 244. Bulawayo, Southern Rhodesia. November 6, 1919.) *Inshluba*. Kafir beans.”

49250. XIMENIA AMERICANA L. Olacaceæ.

False sandalwood.

“(No. 279. Victoria Falls. November 14, 1919.) *Impinji*. A plum-like fruit similar to No. 248 [S. P. I. No. 49167], but larger and later; strong wild-cherry odor.”

49251. (Undetermined.)

“(No. 259. Victoria Falls. November 15, 1919.) A small tree with a strong odor of pepper when the leaves, stem, or fruits are crushed.”

49252. TOUNATEA MADAGASCARIENSIS (Desv.) Kuntze. Cæsalpiniaceæ.
(*Swartzia madagascariensis* Desv.)

“(No. P. 263. Victoria Falls. November 15, 1919.) A medium-sized tree with long, narrow sugar-bearing pods.”

49253. HIPPOCRATEA OBTUSIFOLIA Roxb. Hippocrateaceæ.

“(No. 261. Victoria Falls. November 15, 1919.) A peculiar woody vine with clusters of fruits attached by the end of the wing, with the heavy or seed end hanging free.”

49254. LEOPTYX CONGOENSIS Pierre. Meliaceæ.

“(No. 268. Victoria Falls. November 17, 1919.) A large tree with large pods bearing large winged seeds.”

49255. (Undetermined.)

“(No. 251. Victoria Falls. November 13, 1919.) A large acacialike tree with large flat pods.”

49256. BUPHANE DISTICHA (L. f.) Herbert. Amaryllidaceæ.

Fire-lily.

From Victoria Falls, Rhodesia. Bulbs collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 14, 1920.

“(No. 292. Victoria Falls. November 17, 1919.) The fire-lily or poison-lily; a flame of fire without leaves. Very characteristic.” (*Shantz.*)

For an illustration of this plant as it grows in Northern Rhodesia, see Plate I.

49257. EXOGONIUM PURGA (Wender.) Benth. Convolvulaceæ.

(*Ipomoea purga* Hayne.)

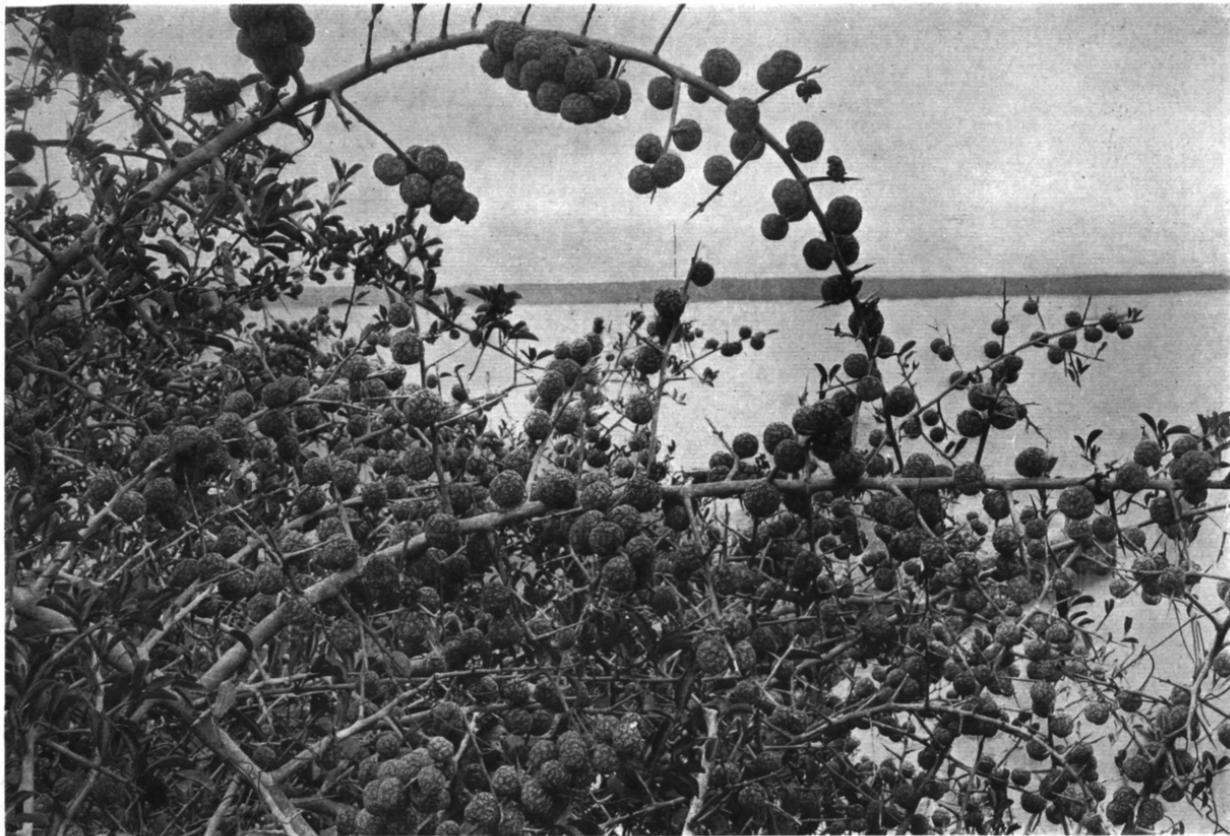
From Bahia, Brazil. Roots presented by H. M. Curran. Received January 14, 1920.

“I am sending a sample of *batata de purga*. It is a strong-growing Ipomoea-like vine, with ornamental white flowers about 3 inches across the corolla. The vine is smooth, quadrangular, with ribbonlike wings at the angles, as in *Passiflora quadrangularis*. The ends of the twigs and the calyx are pale yellowish green. This plant is common in the second-growth forests and abandoned



**THE FIRE-LILY OF VICTORIA FALLS. (BUPHANE DISTICHA (L. F.) HERBERT,
S. P. I. NO. 49256.)**

This plant is one of the most brilliant in the amaryllis family, a group of noteworthy ornamentals. The effect of the huge clusters is like that of so many splashes of flame. In moister air, where the mist from the Falls keeps the plants continually wet, the leaves and flowers appear at the same time; but away from the Falls, where the moisture is considerably reduced, the flowers precede the foliage. (Photographed by Dr. H. L. Shantz, Victoria Falls, Southern Rhodesia, November 8, 1919; P36710F'S.)



THE M'BULU, AN EAST AFRICAN SHRUB ALLIED TO THE MOCK ORANGE. (CARDIOGYNE AFRICANA BUREAU, S. P. I. No. 49319.)

This shrub is peculiar to Mozambique. It is usually found as a climber, but often forms a large bush. The fruits, about an inch across and of reddish yellow color, are said to be edible when fully ripe. The bush is very ornamental when in fruit. (Photographed by Dr. H. L. Shantz, Delgoa Bay, Mozambique, October 25, 1919; P36544FS.)

pasture lands from the coast to 50 or 100 miles inland and is found in all the small shops of the coast towns as a common remedy." (*Curran*.)

49258 to 49260.

From Medellin, Antioquia, Colombia. Seeds presented by W. O. Wolcott. Received January 15, 1920.

49258. ANNONA MURICATA L. Annonaceæ. **Soursop.**

"The soursop, known in Spanish-speaking countries as guanábana, is unexcelled for sherbets and refreshing drinks. The fruit is oblong, sometimes 4 or 5 pounds in weight, dark green, and prickly on the surface. The white, cottony flesh has a rich aromatic flavor. The tree is rarely more than 20 feet high and has thick glossy leaves and large greenish flowers; it is tropical in its requirements and will grow only in southern Florida." (*Wilson Popenoe*.)

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

49259. CANAVALI ENSIFORME (L.) DC. Fabacææ. **Jack bean.**

"These are called *frisol del diable*, or 'devil beans.'" (*Wolcott*.)

"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 tuberclled, and the plant will withstand much drought. It is remarkably free from insects and fungous diseases and is but slightly affected by root-knot. 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. 46977.

49260. CARICA PAPAYA L. Papayacææ. **Papaya.**

"Seeds of a big variety of papaya." (*Wolcott*.)

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

49261 to 49264. SACCHARUM OFFICINARUM L. Poacææ.

Sugar cane.

From Fajardo, Porto Rico. Seeds purchased from R. A. Veve, of the Fajardo Sugar Co. Received January 9, 1920.

"These varieties are known to produce fertile seeds and juices of high density." (*Veve*.)

49261. *Cristalina*.

49263. *D117*.

49262. *D109*.

49264. *D433*.

49265. MANIHOT ESCULENTA Crantz. Euphorbiacææ.

Cassava.

(*M. utilisissima* Pohl.)

From Kingston, Jamaica. Cuttings presented by William Harris, Government botanist and superintendent of public gardens. Received August 11, 1919. Numbered January, 1920.

Introduced for testing in the southern United States, Hawaii, and Porto Rico. *Rodney*.

49266. SACCHARUM OFFICINARUM L. Poacææ.

Sugar cane.

From Fajardo, Porto Rico. Seeds purchased from R. A. Veve, of the Fajardo Sugar Co. Received January 9, 1920.

"One of the varieties known to produce fertile seeds and juices of high density." (*Veve*.)

Rayada (ribbon).

49267. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilis* Pohl.)

From Kingston, Jamaica. Cuttings presented by William Harris, Government botanist and superintendent of public gardens. Received August 11, 1919. Numbered January, 1920.

Introduced for testing in the southern United States, Hawaii, and Porto Rico.

White red-trash.

49268 to 49278.

From Valparaiso, Chile. Seeds presented by C. F. Deichman, American consul in charge. Received January 19, 1920. The descriptive notes are adapted from Castillo and Dey, *Jeograffia Vejetal del Rio Valdivia*, unless otherwise stated.

49268. AEXTOXICON PUNCTATUM Ruiz and Pav. Euphorbiaceæ.

Tigue. A Chilean tree belonging to the euphorbia family, with small colorless scales covering all of its parts and with dense foliage. The leaves, quite stiff and narrowly oblong in shape, are very dark green on the upper surfaces and light green or even whitish on the lower surfaces. The small white flowers are borne in short axillary racemes, and the fruits are small, black olive-shaped drupes. By reason of its beauty the wood is admirably suited for the making of small furniture, etc.

For previous introduction, see S. P. I. No. 44407.

49269. CRINODENDRON HOOKERIANUM Gay. Elæocarpaceæ.

Coicopio. A small tree, up to 30 feet in height, widely distributed in the valleys of central and southern Chile. The narrow serrulate leaves are from 3 to 5 inches long, and the blood-red fleshy flowers appear solitary in the axils. The wood, which is very white, is said to be very good for building purposes. (Adapted from *Curtis's Botanical Magazine*, pl. 7160.)

49270. EUCRYPHIA CORDIFOLIA Cav. Eucryphiaceæ.

Muermo. An ornamental and also useful Chilean tree which attains a height of about 15 feet, with thick, leathery, shining leaves and aromatic white flowers which appear in the spring and make the tree a beautiful sight. Because of the abundance of nectar, this tree is a favorite with the bees. The bark, rich in tannin, is utilized in dyeing and also in medicine.

For previous introduction, see S. P. I. No. 34391.

49271. EUCRYPHIA PINNATIFOLIA Gay. Eucryphiaceæ.

Quindo santo. An evergreen shrub or bush, from 3 to 10 feet high, which is particularly attractive because of its large white flowers, 2½ to 3 inches across, not unlike a large single rose with a tuft of stamens in the center. It does best in a rather moist situation protected from the strongest rays of the sun. (Adapted from *The Garden*, vol. 77, p. 421.)

49272. LAURELIA SEMPERVIRENS (Ruiz and Pav.) Tulasne. Monimiaceæ.
(*L. aromatica* Juss.)

Laurel. A tall evergreen tree with oblong, leathery leaves having an agreeable aromatic odor. It is a native of Chile, where the bark, leaves, and flowers are used medicinally as a remedy for headaches, bronchitis, digestive disorders, etc. The wood is valuable not so much because of

49268 to 49278—Continued.

its quality as of its abundance and ease of working; it varies in color from white to gray.

For previous introduction, see S. P. I. No. 35967.

49273. *MAYTENUS BOARIA* Molina. Celastraceæ.

Maiten. A tree with slender pendulous branches, oblong leaves, greenish yellow flowers, and seeds which furnish an oil valuable for certain medicinal purposes. The tree, which is a native of Chile, reaches a height of about 40 feet. Its ornamental value lies chiefly in the nature of the foliage, which responds to the faintest breeze with a restless quivering. The leaves are also valued for forage.

For previous introduction, see S. P. I. No. 43272.

49274. *NOTHOFAGUS DOMBEYI* (Mirb.) Oerst. Fagaceæ.

(*Fagus obliqua* Mirb.)

Coigüe. A majestic tree with leathery oval or elliptic short-stemmed leaves which are of an intense shining green color. It is a native of Chile, where it will grow in soil too damp for cultivation. The wood is quite valuable for building purposes.

For previous introduction, see S. P. I. No. 34381.

49275. *NOTHOFAGUS OBLIQUA* (Mirb.) Blume. Fagaceæ.

(*Fagus obliqua* Mirb.)

Roble. A tall deciduous tree with oval-oblong clear green leaves and 3-sided nuts. The wood, which is considered a valuable timber, varies in quality with the nature of the soil. The streets of the city of Valdivia are paved with blocks of wood of this tree. It is said to be the most northerly of the Chilean beeches.

For previous introduction, see S. P. I. No. 34384.

49276. *NOTHOFAGUS PROCERA* Oerst. Fagaceæ.

(*Fagus procera* Poepp. and Endl.)

Rauti. A deciduous Chilean timber tree, once abundant in the Province of Valdivia but now comparatively scarce, owing to the great demand for its wood. The wood is reddish and compact, and is used for parquet flooring, cabinetwork, etc.

For previous introduction, see S. P. I. No. 34386.

49277. *PERSEA LINGUE* (Ruiz and Pav.) Nees. Lauraceæ.

Lingue. An evergreen tree widely distributed in many parts of Chile. The oval-elliptic leaves are entire. The short-pedicelled flowers are of a dirty yellow color and the small roundish fruits dark violet. The aromatic properties of the leaves and the tannin of the bark make the trees of medicinal value, while the reddish yellow wood is prized both for its beauty and for its durability.

For previous introduction, see S. P. I. No. 42875.

49278. *TRICONDYLIUS OBLIQUA* (Ruiz and Pav.) Kuntze. Proteaceæ.

(*Lomatia obliqua* R. Br.)

Radal. An evergreen tree, up to 35 feet in height, with somewhat grooved branches, alternate leathery leaves with shining upper surfaces, and axillary racemes of white flowers. The leaves are fragrant, reminding one of the European walnut, and an infusion of the bark has purgative properties utilized in medicine.

49279. CROTALARIA LABURNIFOLIA L. Fabaceæ.

From Cairo, Egypt. Seeds presented by the director of the horticultural section, Gizeh Branch, Ministry of Agriculture. Received January 20, 1920.

A low shrubby plant with slender elongated branches, compound leaves, and terminal and lateral racemes of bright-yellow flowers. It is a native of western India, where it is often seen in gardens because of its flowering throughout the year. It is also used for paper making. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 613*, and *Hooker, Flora of British India, vol. 2, p. 84.*)

49280. CAMOENSIA MAXIMA Welw. Fabaceæ.

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Experiment Station. Received January 24, 1920.

Probably the largest flowered and certainly one of the most delicately beautiful vines in the world. The flowers are sometimes 8 inches long and have a delicious fragrance when first opening; their pure-white fluted petals are margined with gold, changing to a darker tinge with age. This magnificent vine adorns the tops of lofty trees on the edges of forests in tropical Africa. The clusters are pendulous and sometimes contain a dozen flowers. (Adapted from the *Garden Magazine, vol. 7, p. 229.*)

This vine flowered in 1908 in the greenhouses of the United States Department of Agriculture.

For previous introduction, see S. P. I. No. 45608.

49281. NOMOCHARIS PARDANTHINA Franch. Liliaceæ.

From Elstree, Herts, England. Seeds presented by Vicary Gibbs, Aldenham House Gardens. Received January 24, 1920.

A rare liliaceous plant from western China, concerning which Reginald Farrer speaks as follows: "It is most like some hybrid of a minor lily with *Odontoglossum rosii*, combining the perverse and sinister spottings of the one with the frank and graceful loveliness of the other, with a delicacy of shell-pink coloring. You see it on the high alpine grassy slopes of Hpimaw Pass, nodding down at you with myriads of wide-open dark-eyed faces in every shade of pale rose. For 4,000 years the Chinese have devoured its bulbs like onions." (Adapted from *Gardeners' Chronicle, 3d ser., vol. 66, p. 221.*)

49282 to 49284. QUERCUS LYRATA × VIRGINIANA. Fagaceæ. Oak.

From College Station, Tex. Plants presented by H. Ness, horticulturist, Texas Agricultural Experiment Station. Received January 26, 1920. Quoted notes by Mr. Ness.

"The six plants are the second generation (F_2) of *Quercus lyrata* ♂ × *virginiana*, descendants of three different mother plants of the first generation. Since the first generation produced at the time no male flowers, the second generation are deferred hybrids. There are three possible male parents of this second generation; namely, the post oak (*Q. minor*), the water oak (*Q. nigra*), and the live oak (*Q. virginiana*)."

49282. "No. 1."

49284. "No. 3."

49283. "No. 2."

49285. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, Porto Rico Agricultural Experiment Station. Received January 28, 1920.

"Seed of the native tomato. There is apparently only one variety, a small wrinkled kind, somewhat bitter, immune to blight, and used mainly to flavor soups." (*May*.)

49286. ORYZA SATIVA L. Poaceæ. Rice.

From Manozuazabo, Santo Domingo. Seeds presented by Juan Gonzalez, through T. S. Muriel, instructor of agriculture. Received January 28, 1920.

"Called 'Cana negra.'" (*Muriel*.)

49287. STRANVAESIA DAVIDIANA Decaisne. Malaceæ.

From Kew, England. Seeds presented by W. Watson, curator, Royal Botanic Gardens. Received January 28, 1920.

Variety *salicifolia*. Probably a willow-leaved form.

"A shrub 4 to 20 feet in height with oblong or oblong-lanceolate sharp-pointed green leaves, loose clusters of white flowers, and roundish scarlet fruits. It is a native of western and central China." (*Alfred Rehder*.)

49288 to 49324.

From Lourenco Marques, Mozambique. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 28, 1920. Quoted notes by Doctor Shantz.

49288. ALBIZZIA ADIANTHIFOLIA (Schum.) W. F. Wight. Mimosaceæ.
(*A. fastigiata* E. Mey.)

"(No. 190. Lourenco Marques, Mozambique. October 27, 1919.) A large spreading leguminous tree; favored as a shade tree."

49289. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

"(No. 196. Lourenco Marques, Mozambique. October 27, 1919.) Seed of an Annona saved from a local tree by Mrs. John J. Ray, wife of the American consul. About 4 inches across; excellent variety."

49290. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"(No. 197. Lourenco Marques, Mozambique. October 27, 1919.) Seed of a locally grown variety obtained from the market."

49291. ARISTOLOCHIA sp. Aristolochiaceæ.

"(No. 211. Lourenco Marques, Mozambique. October 27, 1919.) Seed of a vine used to cover fences and hedges."

49292. BIDENS PILOSA L. Asteraceæ.

"(No. 188. Nelspruit, Transvaal. October 20, 1919.) The blackjack; a good forage plant, eaten as readily as alfalfa."

49293. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

"(No. 192. Lourenco Marques, Mozambique. October 27, 1919.) Local beans purchased in the market."

49294. CASSIA sp. Cæsalpinaceæ.

"(No. 183a. Nelspruit, Transvaal. October 20, 1919.) An acacialike plant with sticky, long, dark pods; not eaten by stock."

49288 to 49324—Continued.

49295. *CROTALARIA* sp. Fabaceæ.

"(No. 184. Nelspruit, Transvaal. October 20, 1919.) Apparently a perennial legume; 8 inches high."

49296. *CROTALARIA* sp. Fabaceæ.

"(No. 203. Lourenco Marques, Mozambique. October 27, 1919.) A low spreading leguminous shrub with yellow flowers."

49297. *DELONIX REGIA* (Boj.) Raf. Cæsalpiniaceæ.

(*Poinciana regia* Hook.)

"(No. 195. Lourenco Marques, Mozambique. October 27, 1919.) The most abundant street tree; leaves large and bipinnate; pods $1\frac{1}{2}$ inches broad and 12 to 18 inches long, remaining on the tree a long time."

49298. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 175. Kenkelbosch, Transvaal. September 10, 1919.) 'Jackal's fruit.' A sweetish fruit produced in abundance on a low shrub. Not eaten to any extent by the people; occasionally used as jam."

49299. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 176. Nelspruit, Transvaal. October 20, 1919.) Similar to No. 175 [S. P. I. No. 49298]."

49300. *ERAGROSTIS* sp. Poaceæ.

Grass.

"(No. 179. Mafeking, Cape Province. October 2, 1919.) Looks like an important forage plant."

49301. *ERAGROSTIS* sp. Poaceæ.

Grass.

"(No. 180. Mafeking, Cape Province. October 2, 1919.) Grass with the habit of *Sporobolus airoides*."

49302. *ERYTHROXYLON* sp. Erythroxylaceæ.

"(No. 200. Lourenco Marques, Mozambique. October 27, 1919.) A small cherrylike fruit; apparently good when fully ripe."

49303. *HARPAGOPHYTUM PROCUMBENS* (Burchell) DC. Pedaliaceæ.

"(No. 178. Taungs, Cape Province. September 28, 1919.) A plant with its seed large and armed with many recurved hooks."

49304. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 189. Nelspruit, Transvaal. October 20, 1919.) Plants with the bunch habit, growing here naturally and called 'buffalo grass.'"

49305. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"(No. 208. Lourenco Marques, Mozambique. October 27, 1919.) A low spreading Ipomoea with reddish lavender flowers."

49306. *JACARANDA* sp. Bignoniaceæ.

"(No. 145. Near Pretoria, Transvaal, October 12, 1919, and Lourenco Marques, Mozambique, October 27, 1919.) The most common street tree, a beautiful blue-flowered ornamental which blooms profusely."

49307. *MACADAMIA TERNIFOLIA* F. Muell. Proteaceæ.

Macadamia.

"(No. 185. Nelspruit, Transvaal. October 20, 1919.) A fine large tree grown by H. S. Hall, who secured seed from Ceylon."

49308. *MIMUSOPS MARGINATA* N. E. Brown. Sapotaceæ.

"(No. 198. Lourenco Marques, Mozambique. October 27, 1919.) A tree, 10 to 20 feet high, bearing a small plumlike fruit, dry and puckery

49288 to 49324—Continued.

when green, but sweet when fully ripe. Eaten by the natives; also made into an intoxicating drink."

49309. *MOMORDICA* sp. Cucurbitaceæ.

"(No. 212. Lourenco Marques, Mozambique. October 27, 1919.) A small cucurbitaceous vine with yellow and green mottled fruits changing to bright red and with very red flesh."

49310. *PAHUDIA QUANZENSIS* (Welw.) Prain. Cæsalpiniaceæ.

(*Afzelia quanzensis* Welw.)

Mahogany bean.

"(No. 207. Lourenco Marques, Mozambique. October 27, 1919.) A broad spreading tree with very rich pinnate foliage, regarded as one of the most beautiful trees for street planting and for parks. It produces a beautiful mahoganylike wood, but much coarser grained."

49311. *PERESKIA ACULEATA* Mill. Cactaceæ.

"(No. 210. Lourenco Marques, Mozambique. October 27, 1919.) A leafy Opuntialike vine with yellow fruits half an inch in diameter. Used as an ornamental."

49312. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"(No. 182. Johannesburg, Transvaal. October 4, 1919.) Presented by S. P. Powell; said to be a very fine variety."

49313. *RICINUS COMMUNIS* L. Euphorbiaceæ.

Castor-bean.

"(No. 201. Lourenco Marques, Mozambique. October 27, 1919.) Castor-oil bean plants are abundant here."

49314. *SCHEFFLERODENDRON GAZENSE* E. G. Baker. Fabaceæ.

"(No. 194. Lourenco Marques, Mozambique. October 27, 1919.) A large bean from a very attractive tree found in the coastal forest."

49315. *SCLEROCARYA CAFFRA* Sond. Anacardiaceæ.

Morula.

"(No. 193. Lourenco Marques, Mozambique. October 27, 1919.) A large, beautiful tree which bears edible fruit in abundance. The edible seed is a valuable oil producer. It is causing almost as much interest here as the *mufurra*. The seeds are very hard to crack."

49316. *TECOMA STANS* (L.) Juss. Bignoniaceæ.

Yellow tecoma.

"(No. 209. Lourenco Marques, Mozambique. October 27, 1919.) A shrub 4 to 6 feet high, bearing yellow trumpet-shaped flowers; one of the most widely used ornamentals here."

49317. *TRICHOHAENA ROSEA* Nees. Poaceæ.

Natal grass.

"(No. 187. Nelspruit, Transvaal. October 20, 1919.) A grass which seems to grow as a weed in the bush veld and in Mozambique; it makes very rapid growth as a ruderal, giving way to *Cynodon*."

49318. *VICIA* sp. Fabaceæ.

"(No. 181. Kimberley, Cape Province. September 12, 1919.) Seed of a small Vicialike plant."

49319. *CARDIOGYNE AFRICANA* Bureau. Moraceæ.

M'bulu.

"(No. 204. Lourenco Marques, Mozambique. October 27, 1919.) *M'bulu*. A shrub or small tree like a mock orange."

For an illustration of this shrub, see Plate II.

49320. *OCHNA ATROPURPUREA* DC. Ochnaceæ.

"(No. 205. Lourenco Marques, Mozambique. October 27, 1919.) An attractive tree with pink flowers and fruit as showy as the flowers; black seeds on a pink receptacle."

49288 to 49324—Continued.

49321. *OCHNA MOSSAMBICENSIS* Klotzsch. Ochnaceæ.

"(No. 206. Lourenco Marques, Mozambique. October 27, 1919.) Similar to No. 205 [S. P. I. No. 49320], but a low bush, seldom over 1 to 3 feet high; seed smaller, but fruit redder and even more showy."

49322. *CONOPHARYNGIA ELEGANS* Stapf. Apocynaceæ.

"(No. 191. Lourenco Marques, Mozambique. October 27, 1919.) A very abundant small tree or shrub covered with large, annular pods. When in full foliage it is a very attractive ornamental and may be of value as a rubber plant. Latex abundant."

For an illustration of this plant, see Plate III.

49323. (Undetermined).

"(No. 199. Lourenco Marques, Mozambique. October 27, 1919.) Similar to No. 198 [S. P. I. No. 49308], but fruit very tart and pleasant; cherrylike."

49324. (Undetermined.)

"(No. 177. South of De Aar, Cape Province. September 13, 1919.) A few lily seeds."

49325 to 49334.

From Coban, Guatemala. Plant material collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received January 29, 1920. Quoted notes by Mr. Popenoe.

49325. *CHAMAEDOREA* sp. Phœnicaceæ.

Pacaya palm.

"(No. 236. Coban, Alta Vera Paz. December 27, 1919.) Plants of the *pacaya*, or Guatemalan salad palm, a species which was introduced into the United States in 1917 [see S. P. I. No. 45022], but which is worthy of a wider trial than has yet been given it. It is a tender plant, probably suitable for cultivation only in southern Florida. It likes a half-shade, plenty of moisture, and a soil rich in humus. It is a handsome small palm reaching about 20 feet in height, with a straight trunk about 2 inches in diameter and a crown of graceful pinnate leaves about 6 feet long. In Guatemala the leaves are often cut and used for house decoration. The young inflorescences, which are taken before the spathes are open, furnish a popular dish, pacaya salad. They can also be fried in batter, or boiled with other vegetables. They have a slightly bitter taste. If these inflorescences could be produced commercially in southern Florida, pacaya salad would undoubtedly find a place upon the menus of large hotels and restaurants in northern cities."

49326 to 49328. *DAHLIA MAXONII* Safford. Asteraceæ.

Dahlia.

49326. "(No. 237. Coban, Alta Vera Paz. December 27, 1919.) *Single white* variety. Cuttings of a rare form of the common tree dahlia of Guatemala, producing single white starlike flowers up to 5 inches in diameter. It appears to occur only as a cultivated or semicultivated form; I have never seen it among the wild plants on the mountainsides. In habit of growth and other characteristics except the color of the flower it is identical with the typical *Dahlia mazonii*."

49327. "(No. 238. Coban, Alta Vera Paz. December 27, 1919.) *Double white* variety. Cuttings from a plant in a dooryard at Tac-

49325 to 49334—Continued.

tic, Alta Vera Paz. This variety of the common Guatemalan tree dahlia is in cultivation at Antigua as well as in Alta Vera Paz, but it appears never to occur wild. Like the double lilac variety it has coarser leaves than the typical *Dahlia mazonii*, and its flowers are very double, pure white, and 3 to 4 inches in diameter."

49328. "(No. 239. Coban, Alta Vera Paz. December 27, 1919.) *Double lilac* variety. Cuttings from a plant growing in a dooryard at Tactic, Alta Vera Paz. This variety resembles the type in color, though it is sometimes of a deeper shade of lilac with less pink, and, like the double white variety, it produces flowers 3 to 4 inches in diameter. It may be noted, however, that the double-flowering varieties produce fewer flowers than the type which is single. The double lilac form is rather common in cultivation throughout Alta Vera Paz, but I have never seen it wild."

49329 and 49330. *PERSEA SCHIEDEANA* Nees. Lauraceæ. Coyó.

49329. "(No. 240. Coban, Alta Vera Paz. December 27, 1919.) *Vera Paz*. Cuttings of a superior variety of the coyó from the property of Padre Rivera in Tactic. An illustration of the fruit may be seen in Department Bulletin No. 743, 'The Avocado in Guatemala,' plate 13; in this plate an ordinary coyó is shown on the right, and the Vera Paz variety (as I suggest it be called) appears on the left. It is the finest coyó I have seen, and I recommend it strongly for trial in southern Florida and southern California, since I have come more and more to feel that the coyó, in its finer varieties, is a fruit of even better flavor than the avocado. Unfortunately, this species has never been given horticultural attention, and doubtless much remains to be done before it can take a place in our orchards alongside the avocado. The first step, certainly, is to secure the best available varieties, and I feel sure that the *Vera Paz* is one of them, for I have searched through the territory in which this fruit is abundant and I have found none better. Its pear-shaped fruits weigh about a pound and have a thick, leathery skin, ivory-white flesh containing much oil and with a rich, coconutlike flavor, and a seed about the same size as that of our best avocados.

"The coyó probably does not come into bearing as young as the avocado, and as a rule it is not so productive in old age; but varieties which will be satisfactory in this latter respect can probably be obtained. I am inclined to believe also that the fruit from young trees may be much inferior in quality to that from old ones. These points and several others must be determined by a trial in the United States and elsewhere. Since the tree occurs in Guatemala at altitudes ranging from 300 to 6,000 feet, it seems probable that the species will succeed in cool regions, like southern California and southern Florida, as well as in warm ones, like Cuba and Porto Rico."

49330. "(No. 241. Coban, Alta Vera Paz. December 27, 1919.) *Hempstead*. This variety has been called to my attention by Robert W. Hempstead, after whom I suggest it be named. The parent tree is growing in a small finca along the road from Coban to San Cristóbal Vera Paz, and the fruit, which I have not seen,

49325 to 49334—Continued.

is described as large and of excellent quality. It is said to be pear shaped, somewhat slender, up to about 2 pounds in weight, with ivory-white flesh free from fiber and of excellent quality in every way. The parent tree is probably 50 years old, if not more; it is about 50 feet high and is said to be productive; at the time this budwood was cut (Dec. 26) it was in flower. The season of ripening is August and September.

"In this variety and the previous one (Vera Paz) I believe we have two coyós of as good quality as can be obtained, and with them as a beginning I believe it will be readily possible to develop from this species a fruit new to horticulture and of great value for tropical and subtropical regions."

49331. RUBUS ADENOTRICHOS Schlecht. Rosaceæ. Blackberry.

"(No. 243a. Coban, Alta Vera Paz. December 27, 1919.) Probably the best wild blackberry of Alta Vera Paz. It is not, however, so distinct from the cultivated berries of the North as to make it of great interest to northern horticulturists. It is a vigorous species, making a bush about 10 feet high and fruiting fairly profusely. The fruits are three-quarters of an inch to an inch in length and in flavor and color not distinguishable from some of the cultivated blackberries. In Kekchi it is, along with two or three other species, called *tokán*; in Spanish *mora*."

49332. RUBUS GLAUCUS Benth. Rosaceæ. Andes berry.

"(No. 244a. Coban, Alta Vera Paz. December 27, 1919.) *Tokán uuk* (Kekchi); *mora* (Spanish). The most remarkable Rubus of Vera Paz and one which seems to possess unusual promise. It can best be likened to the loganberry in character, yet its flavor is more nearly that of the red raspberry. Because of the large size of the fruits and their excellent quality it merits a careful trial in the United States.

"In habit the plant is suberect or even trailing, and it makes little wood. The canes sometimes reach 10 to 15 feet in length. The stems and lower surfaces of the leaves are silvery white, by which means it is easy to distinguish the species from the others which occur in Alta Vera Paz. Compared to most of them it is rare. The leaves are trifoliolate, with lanceolate to elliptic leaflets, long-acuminate and sharply serrate. The flowers are white, in panicles up to 6 inches long. The fruits vary from round to oblong in form and are often an inch in length; in cultivation they would quite likely be even larger.

"The wild plants are not very productive, but their productiveness could be increased greatly by proper pruning. The fruit is not borne at the ends of the canes but upon short fruiting laterals, and pruning would increase the number of these.

"By the Indians of Vera Paz this is esteemed as the finest of the wild species of Rubus, an esteem to which it seems fully entitled. The plant is found occasionally along roadsides and in the edge of scrub. It likes a heavy soil and plenty of moisture."

49333. RUBUS URTICAEFOLIUS Poir. Rosaceæ. Blackberry.

"(No. 242a. Coban, Alta Vera Paz. December 27, 1919.) *Tokán yak* (Kekchi); *mora* (Spanish), a wild blackberry abundant in Alta Vera Paz at altitudes of 3,000 to 5,000 feet. It is a robust and vigorous

49325 to 49334—Continued.

species, the most productive of those which occur in Vera Paz. It is readily distinguishable from the others by its stout canes, densely clothed with soft red spines.

"The plant forms a more or less compact bush up to 15 feet in height. The leaves have three or five oblong-ovate, shortly acuminate, finely serrate leaflets. The fruits, which are produced in terminal panicles 4 to 8 inches long, are about half an inch in length, oblong to ovate in outline, composed of numerous drupelets smaller than those of the cultivated blackberries. The color of the ripe fruit is nearly black; when immature it is wine colored. The sweet flavor somewhat resembles that of the blackberry. The juice is abundant, and the seeds are small and not hard.

"Because of its vigorous habit of growth, its productiveness, and the high quality of the fruit this species deserves a trial in the southern and southwestern United States."

For previous introduction, see S. P. I. No. 45356.

49334. ZEA MAYS L. Poaceæ.**Corn.**

"(No. 245a. Coban, Alta Vera Paz. December 27, 1919.) 'Cold country' corn, as it is called here; long slender ears of flint corn, produced in the vicinity of Coban, probably at an altitude of about 4,000 feet. Of interest to those engaged in the study or breeding of corn."

49335. BELOU MARMELOS (L.) LYONS. Rutaceæ.**Bel.***(Aegle marmelos* Correa.)

From Honolulu, Hawaii. Seed presented by Dr. H. L. Lyon, department of botany and forestry, Hawaiian Sugar Planters' Experiment Station. Received March 12, 1920.

"Variety *subglobosa*." (Lyon.)

A good-sized tree with ash-colored bark; few irregular branches, often with sharp, strong spines; and densely pubescent trifoliolate leaves. It is commonly cultivated throughout India and ascends the mountains to about 4,000 feet. The wild variety has a far inferior fruit. The wood is light colored and variegated, compact and hard. A native drum is made from it, and in some parts it is used for the hubs of wheels and for sugar crushers. The juice of the fruit makes a delicious sherbet, and is much esteemed in Bengal as a hot-weather beverage. The bark, roots, and fruit are used medicinally by the natives. (Adapted from *Beddome, Flora Sylvatica, pl. 161.*)

For previous introduction, see S. P. I. No. 46477.

49336 to 49339. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Botanical Station. Received January 29, 1920. Quoted notes by Mr. Grey.

49336. "Harvard Seedling 144."

49337. "Harvard Seedling 4124. Immune to mottling."

49338. "Harvard Seedling 6047. High in sugar, averaging from 19 to 20 per cent sucrose in our own hand-mill analyses."

49339. "Harvard Seedling 6098."

49340. CASTANOPSIS HYSTRIX A. DC. Fagaceæ.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received March 18, 1920.

A low evergreen tree with wide-spreading branches, fairly common at low altitudes on Mount Omei, Szechwan, and in the surrounding country. The contrast between the rufous-brown young leaves and the shining green upper surfaces of the older leaves is striking. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, pt. 1-2, p. 197.*)

49341. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Botanical Station. Received January 29, 1920.

"High in sugar, averaging from 19 to 20 per cent sucrose in our own hand-mill analyses." (*Grey.*)

49342. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From New South Wales. Seed obtained through J. W. T. Duvel, United States Grain Corporation, New York. Received January 31, 1920.

Roseworth. [This is the name of an agricultural station in New South Wales. No description of this variety is at present available.]

49343. ROSA LAXA Retz. Rosaceæ. Rose.

From Elstree, Herts, England. Seeds presented by Hon. Vicary Gibbs, Aldenham House Gardens. Received January 31, 1919.

A beautiful single rose, native to the Altai Mountains and central Siberia. It has arching stems, seven to nine oblong, serrate leaflets, and very attractive white or pink flowers which are borne singly or in twos or threes. The globose pulpy fruits are bright red. (Adapted from *Willmott, The Genus Rosa, pt. 8, pl. 53.*)

For previous introduction, see S. P. I. No. 47161.

49344. HAEMATOSTAPHIS PIERREANA Engl. Anacardiaceæ.

From Lambarene, Gabon, French Equatorial Africa. Seeds presented by Edward A. Ford, Société des Missions Evangéliques de Paris. Received January 31, 1920.

"Seeds of a native fruit which I saw for the first time only recently. It has a very acrid taste, but makes excellent jam. I have not seen the tree; the name given me by the Fang people is *fogo*. It may be the same as the *ofos*, *Pseudospondias longifolia* (*Haematostaphis pierreana*), but I am not sure." (*Ford.*)

A tall tree with dense foliage composed of unequally pinnate membranous leaves over a foot in length. The fruit is ovoid with a thick layer of flesh, and is about an inch in length. (Adapted from *Engler, Botanische Jahrbücher, vol. 36, p. 219.*)

49345. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

From Hangchow, Chekiang, China. Seeds collected by O. F. Cook, of the Bureau of Plant Industry, United States Department of Agriculture. Received February 2, 1920.

"A form of Job's-tears with somewhat flattened seeds." (*Cook.*)

49346 to 49349. GOSYPIUM sp. Malvaceæ. Cotton.

From Lima, Peru. Bolls presented by James H. Roth, American vice consul in charge. Received March 1, 1920. Quoted notes by Mr. Roth.

"Rough cotton, sometimes known as vegetable wool, cultivated a few miles inland from the port of Payta, in the vicinity of Catacaos, valley of the Piura River, Peru. These forms are practically identical with those that have been discovered in prehistoric graves where they were buried with the mummies."

49346. "White bolls. Samples of the best kind of rough Peruvian cotton grown in the Piura-Payta section of the country."

49347. "*Mestizo*, naturally colored."

49348. "*Pardo*, brown and maroon or purplish."

49349. "*Duro*. Undeveloped boll, having been stung by an insect known here as 'rabi-atado,' a plague which is doing enormous damage in this province."

49350. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Georgetown, Demerara, British Guiana. Seeds presented by R. Ward, superintendent, Botanic Gardens. Received February 4, 1920.

Demerara No. 108

49351 to 49356. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilisstima* Pohl.)

From Barbados, British West Indies. Cuttings presented by John R. Bovell, Director of Agriculture. Received August 12, 1919, grown in quarantine, and numbered in March, 1920.

Introduced for testing in Porto Rico and Hawaii.

49351. *Friendship*.

49354. *Trinidad No. 2*.

49352. *Helada*.

49355. *Trinidad No. 3*.

49353. *Trinidad No. 1*.

49356. *White Greenaway*.

49357. PHYLLOSTACHYS MITIS (Lour.) A. and C. Rivière. Poaceæ. Bamboo.

From Nice, France. Rhizomes presented by Dr. A. Robertson Proschowsky. Received February 5, 1920.

"As concerns the bamboo, it is the tallest species of those commonly cultivated here, and the culms usually attain a height of 10 to 12 meters, rarely more. It is an exceedingly hardy species and a very useful plant, the culms being strong and quite straight. Prof. Trabut, of Algiers, expressed the opinion that this bamboo is the most useful also in Algeria." (*Proschowsky*.)

49358 and 49359. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilisstima* Pohl.)

From Barbados, British West Indies. Cuttings presented by John R. Bovell, Director of Agriculture. Received August 12, 1919, grown in quarantine, and numbered in March, 1920.

Introduced for testing in Porto Rico and Hawaii.

49358. *B. 101*.

49359. *Blue Top*.

49360 to 49363. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Antigua, British West Indies. Seeds presented by Arnold W. Gallwey, acting curator and agricultural superintendent. Received February 6, 1920.

49360. *B. 3412*.

49362. *D. 74*.

49361. *B. 4596*.

49363. *D. 109*.

49364 and 49365.

From Blackwood, South Australia. Seeds presented by Edwin Ashby, "Wittunga." Received February 9, 1920. Quoted notes by Mr. Ashby.

49364. GREVILLEA BUXIFOLIA (J. E. Smith) R. Br. Proteaceæ.

"A native of New South Wales, where it grows on rough, sandy land, but it makes a nice shrub in my garden, about 6 feet high. It will stand hard cutting. It flowers freely, the flowers being rather more interesting than showy. All the flowers are clothed with silky hairs. It should do well in California."

49365. GREVILLEA LAVANDULACEA Schlecht. Proteaceæ.

"A native of South Australia, where it grows from a foot to 18 inches high on a sandy or clayey subsoil, but it seems to prefer broken rocky soil (quartzite). It does very well on rockeries and should be treated as a rock plant (dwarf, hard-wooded shrub). It produces a mass of pink flowers from the beginning of our winter until late spring. It should do well in California, where it will be an acquisition to those who have rock gardens."

For previous introduction, see S. P. I. No. 47189.

49366 and 49367. RICINUS COMMUNIS L. Euphorbiaceæ.

Castor-bean.

From Huatabampo, Sonora, Mexico. Seeds presented by J. R. Uribe, Hacienda Delia, Rio Mayo. Received February 9, 1920.

"Samples of the beans which grow wild here." (Uribe.)

49366. Seeds 18 mm. long by 15 mm. wide; light gray with a few brown markings.

49367. Seeds 15 mm. long by 8 mm. wide; light gray, mostly overlaid with dark-brown markings.

49368. FESTUCA HOOKERIANA F. Muell. Poaceæ.

Grass.

(*Schedonorus hookerianus* Benth.)

From Sydney, New South Wales. Seeds presented by George Valder, undersecretary and director. Received February 9, 1920.

A stout perennial grass, 2 to 4 feet in height, indigenous to New South Wales, Victoria, and Tasmania. It has flat, rather long leaves, very loose panicles up to a foot in length, and rigid flowering glumes. It stands mowing and pasturing well and is relished by stock. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 107, and *Bentham, Flora Australiensis*, vol. 7, p. 656.)

49369. GLADIOLUS MALANGENSIS Baker. Iridaceæ.

Gladiolus.

From Ochileso, Angola, West Africa. Bulbs presented by H. A. Neipp, American Mission. Received February 6, 1920.

A West African gladiolus from 1 to 2 feet in height, with three or four erect, linear, rigid leaves and a simple or branched inflorescence. The deep-red flowers are borne in loose spikes 4 to 6 inches long. (Adapted from *Bulletin de l'Herbier Boissier*, 2d ser., vol. 1, p. 867.)

49370 to 49383.

From Guatemala. Collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received February 9, 1920. Quoted notes by Mr. Popenoe.

49370 to 49383—Continued.

49370. *ANANAS SATIVUS* Schult. f. Bromeliaceæ.

Pineapple.

"(No. 266. Tucuru, Alta Vera Paz. January 12, 1920.) Suckers of a variety of pineapple from Tucuru at an altitude of about 3,200 feet. It is known to the few Americans in this region as the 'sugar-loaf' pineapple because of its sweetness. It is described by R. W. Hempstead, through whose courtesy I have obtained these suckers, as broadly oval, large, with white, very juicy, sweet-flavored flesh."

49371. *ANNONA SCLERODERMA* Safford. Annonaceæ.

"(No. 249a. Tucuru, Alta Vera Paz. January 12, 1920.) *Posh* (Kekchi); Spanish orthography *poz*, sometimes called in English 'hard-shelled custard-apple.' Seeds of a rare species of *Annona* from Chama, on the Rio Chixoy; altitude 950 feet.

"In size of tree and habit of growth this species resembles *Annona reticulata*. In foliage, however, it is quite distinct. The leaves are oblong to oblong-lanceolate, 6 to 9 inches long, 2½ to 3 inches broad, shortly acuminate, coriaceous, deep green and almost glossy above, paler beneath.

"The fruits, which are borne on stout stalks about an inch long, are broadly heart-shaped to round and up to 4 inches in diameter. The surface, which is dull gray-green, differs in character from that of most other *Annonas*; it is divided by prominent ridges into irregularly pentagonal areas. The skin or outer covering is nearly a quarter of an inch thick and coarsely granular in texture. It forms a brittle shell which effectively protects the flesh and makes it possible for the ripe fruit to be handled roughly without injury to the flesh. The latter, which is snow-white and divided into loosely cohering segments each containing a seed the size of a bean, is of remarkably pleasant flavor suggesting that of the sugar-apple (*A. squamosa*), with a dash of lemon. Many *Annonas* are heavily sweet or mawkish; not so the *posh*. It has sufficient acidity (more than the cherimoya) to give it sprightliness, and it never cloy the palate.

"The trees which I have seen at Chama are more productive than the average cherimoya. The species may well be compared to *Annona squamosa* in fruiting habit. Abortive fruits, such as many of those borne by most cherimoya trees, are rarely produced, but there is considerable variation in the size. The average is about 3 inches in diameter.

"This species evidently belongs to the tropical lowlands; hence, in the United States, it is likely to succeed only in southern Florida."

For previous introduction, see S. P. I. No. 40835.

49372. *CHAETOCLOA PANICULIFERA* (Steud.) Hitchc. Poaceæ. Grass.
(*Setaria paniculifera* Fourn.)

"(No. 258a. Tucuru, Alta Vera Paz. January 12, 1920.) *Hotz kor* (Kekchi). Seeds collected near Chama. This plant is found commonly throughout Alta Vera Paz, where it is considered one of the best forage grasses. It is thought to be more nourishing than most other grasses, and both horses and cattle eat it readily in spite of the fact that the leaves are covered with somewhat coarse hairs which it might be expected would prove disagreeable to animals.

"*Hotz kor* never forms pastures or solid stands over large areas, but usually grows on slopes or among scrub, where it forms scattered clumps.

49370 to 49383—Continued.

sending up leaves to a height of 4 to 6 feet and flower stalks sometimes 6 or 7 feet above the ground. It is a perennial, and I am told by R. W. Hempstead that it will stand four cuttings a year. It seems particularly adapted to moist regions and for this reason is recommended for trial in the Everglades of Florida."

49373. CHAMAEDOREA sp. Phœnicaceæ.

Pacayito.

"(No. 271. Tucuuru, Alta Vera Paz. January 18, 1920.) *Pacayito*, called *kok kib* in Kekchi, a handsome dwarf palm found under dense forest in several parts of Vera Paz. It appears to occur only in regions where there are limestone outcroppings. These plants were collected on the Finca Los Alpes."

49374. CROTALARIA SAGITTALIS L. Fabaceæ.

"(No. 252a. Tucuuru, Alta Vera Paz. January 12, 1920.) Seeds of a species growing to about 18 inches in height collected at Finca Samac, near Coban. It should be tested in the South as a cover crop. In Kekchi it is called *tzok tzok xul*."

49375. JUGLANS sp. Juglandaceæ.

Walnut.

"(No. 265a. Tucuuru, Alta Vera Paz. January 12, 1920.) Nuts of the *nogal* or native black walnut tree. It is occasionally seen in cultivation but more commonly wild. It makes a shapely tree up to 50 feet in height and yields nuts much like those of *Juglans nigra* but with a thicker shell. Its wood is considered valuable."

49376. PANICUM HIRSUTUM Swartz. Poaceæ.

Grass.

"(No. 257a. Tucuuru, Alta Vera Paz. January 12, 1920.) A forage grass, 3 feet high, said to be of good quality. Collected from the roadside near Chama, Alta Vera Paz."

49377. PASPALUM PANICULATUM L. Poaceæ.

Grass.

"(No. 252a. Tucuuru, Alta Vera Paz. January 12, 1920.) A pasture grass from the Finca Samac, near Coban. The plant grows to about 2 feet in height and apparently spreads by seeds only. As forage it is considered very good."

49378. PASPALUM CANDIDUM (Humb. and Bonpl.) Kunth. Poaceæ.

Grass.

"(No. 263a. Tucuuru, Alta Vera Paz. January 12, 1920.) *Kah tut*. A pasture grass from the Finca Samac, near Coban. It grows about 18 inches in height and is very abundant in the edges of the coffee plantation, where it often forms solid stands. It is cut for feeding to stock and is considered very good for this purpose."

49379. PASPALUM PANICULATUM L. Poaceæ.

Grass.

"(No. 256a. Tucuuru, Alta Vera Paz. January 12, 1920.) A grass, growing to about 3 feet in height, found near Chama, on the Rio Chixoy. Said to be a good forage grass."

49380. PASPALUM PLICATULUM Michx. Poaceæ.

Black grass.

"(No. 261a. Tucuuru, Alta Vera Paz. January 12, 1920.) A common pasture grass from the Finca Samac, near Coban. This species grows to about 15 inches in height, and its leaves, though rather small, are abundant."

For previous introduction, see S. P. I. No. 47049.

49370 to 49383—Continued.

49381. *PENNISETUM COMPLANATUM* (Nees.) Hemsl. Poaceæ. Grass.

“(No. 259a. Tucuru, Alta Vera Paz. January 12, 1920.) *Kux kub*. Seeds of a foxtall occurring in pastures of Finca Samac, near Coban, Alta Vera Paz. It grows about 3 feet high and is said to be good forage.”

49382. *PENNISETUM DISTACHYUM* (Fourr.) Rupr. Poaceæ. Grass.

“(No. 260a. Tucuru, Alta Vera Paz. January 12, 1920.) *Xul aj*. Seeds of a large grass occurring along ravines and in half-shady places, Finca Samac, near Coban. It grows to 6 feet in height, with leaves an inch broad, and seeds abundantly. It looks like a valuable forage grass.”

49383. *PERSEA DONNELL-SMITHII* Mez. Lauraceæ.

“(No. 248a. Tucuru, Alta Vera Paz. January 12, 1920.) *Oh-mash* (Kekchi, for ‘monkey avocado’). A wild species of *Persea* found in the valley of Tactic (where these seeds were obtained) and abundantly on the mountains between Tactic and Coban, principally in open places.

“This is a slender tree up to 40 feet in height (commonly about 25 feet), with large oblong-obovate leaves, reddish pubescent beneath, and small terminal panicles of black fruits the size and shape of peas. While its fruit is not edible or useful in any way, the species is of interest as a relative of the avocado and may have value as a stock for the latter, especially for wet lands. Its degree of frost resistance is unknown, but the fact that it occurs in the zone of the Guatemalan avocado indicates that it will probably be as hardy as the latter and maybe even hardier.”

49384. *CALLILEPIS* sp. Asteraceæ.

From Nelspruit, Transvaal. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 29, 1920.

“(No. 186. Nelspruit, Transvaal. October 20, 1920.) A composite about 10 to 14 inches high, with almost white chrysanthemumlike flowers.” (*Shantz*.)

49385 to 49401.

From Guatemala. Collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received February 9, 1920. Quoted notes by Mr. Popenoe.

49385. *POLYGALA FLORIBUNDA* Benth. Polygalaceæ. Chupak.

“(No. 268a. Tucuru, Alta Vera Paz. January 18, 1920.) *Chupak*. Seeds of a handsome shrub, wild and cultivated in Vera Paz. It sends up stems about 6 feet in height, each one terminating in a large loose panicle of purplish flowers. Since it is of easy culture and blooms nearly all the year it is considered a desirable ornamental by Europeans in this region. Its roots are used in place of soap. Presented by Mrs. Gustavo Helmrich, of Finca Samac, near Coban.”

For previous introduction, see S. P. I. No. 44683.

49386. *RANDIA ACULEATA* L. Rubiaceæ.

“(No. 269a. Tucuru, Alta Vera Paz. January 18, 1920.) Seeds of a shrub which I have seen only in the vicinity of Purula, Baja Vera Paz. It grows in the edge of the forest, occasionally in the open, and seems to thrive on lots of moisture. It is interesting because of its formal appearance and symmetrical growth, which strongly resembles *Buxus*. It should make an excellent hedge plant and for specimen plants in a

49385 to 49401—Continued.

formal garden should be very attractive. It reaches about 10 feet in height, and its slender branches are clothed with small leaves arranged in clusters. The fruits, which are white when ripe, round, and about half an inch in diameter, increase the ornamental appearance of the plants."

49387. RUBUS GLAUCUS Benth. Rosaceæ. **Andes berry.**

"(No. 250a. Tucuru, Alta Vera Paz. January 12, 1920.) *Tokán uk.* Seeds collected near Santa Cruz, Alta Vera Paz. See No. 244a [S. P. I. No. 49332] for description."

49388. RUBUS sp. Rosaceæ. **Blackberry.**

"(No. 255a. Tucuru, Alta Vera Paz. January 12, 1920.) *Tokán.* Seeds of a good blackberry found near Santa Cruz, Vera Paz. Probably the same as No. 243a [S. P. I. No. 49331], but the fruits are not quite as sweet as those of the plant from which the latter seed was obtained."

49389. SALVIA POPENOEI Blake. Menthaceæ. **Sage.**

"(No. 254a. Tucuru, Alta Vera Paz. January 12, 1920.) *Tutz unún* (Kekchi). Seeds of a handsome plant found along the roadside between Tactic and Purula. It grows commonly 3 to 5 feet high and bears terminal spikes of bright crimson-scarlet flowers somewhat richer in color than those of *Salvia splendens*."

49390 to 49399. ZEA MAYS L. Poaceæ. **Corn.**

49390. No. 1. Dark red.

49391. No. 2. Dark red, but lighter than No. 1.

49392. No. 3. Dirty white; kernels flat.

49393. No. 4. Dirty white; kernels square.

49394. No. 5. Dirty white with a tinge of yellow.

49395. No. 6. Yellow; kernels broad and flat.

49396. No. 7. Yellow; kernels longer and more square.

49397. No. 8. Lighter yellow than Nos. 6 or 7.

49398. No. 9. Light mulberry color with a few darker grains.

49399. No. 10. Dirty white with red streaks.

49400. COCCOSIPSILUM REPENS Swartz. Rubiaceæ.

"(No. 267a. Tucuru, Alta Vera Paz. January 18, 1920.) An interesting herbaceous plant found on moist slopes in Vera Paz. It creeps along the ground, making stems about 2 feet in length, and produces pale-blue flowers about half an inch broad, followed by bright-blue fruits in clusters of two or three, half an inch in diameter and very beautiful."

49401. PASPALUM FASCICULATUM Willd. Poaceæ. **Grass.**

"(No. 246. Tucuru, Alta Vera Paz. January 12, 1920.) *Ochóy*, a wet-land forage grass from Chama, on the Río Chisoy, about 8 leagues from Coban. This plant makes excellent forage, being considered one of the very best. It grows vigorously, spreading by means of underground rhizomes, and sends up shoots ordinarily to a height of about 3 feet. It rarely flowers."

49402. PICEA sp. Pinaceæ.**Spruce.**

From Shansi, China. Seeds presented by Joseph Bailie, Berkeley, Calif.
Received February 20, 1920.

A Chinese spruce of possible value as an ornamental or park tree.

49403. DIOSPYROS KAKI L. f. Diospyraceæ.**Kaki.**

From Paotingfu, Chihli, China. Cuttings presented by H. W. Robinson,
American Board Mission. Received February 10, 1920.

Scions of the Japanese persimmon for propagation experiments in this country.

49404. SOLANUM sp. Solanaceæ.

From Ciudad Lerdo, Durango, Mexico. Tubers presented by Dr. Ellswood
Chaffey. Received March 2, 1920.

Wild potato tubers requested for experimental purposes.

49405. DATURA SANGUINEA Ruiz and Pav. Solanaceæ.

From Monterey, Calif. Seeds presented by H. A. Greene, Monterey Tree-
Growing Club. Received February 14, 1920.

"A large, treelike Peruvian plant, extending in its native land to altitudes
where heavy frosts are encountered every night. It is somewhat smaller than
Datura arborea, with smaller leaves and more narrowly tubular flowers. The
corolla tube is green at the base, orange-yellow in the middle, and scarlet at
the mouth." (*O. F. Cook.*)

For previous introduction see S. P. I. No. 41329.

49406. CHAMAEDOREA sp. Phoenicaceæ.**Pacayito.**

From Guatemala. Seeds collected by Wilson Popenoe, Agricultural Ex-
plorer for the Bureau of Plant Industry. Received February 14, 1920.

"(No. 271a. Tucuru, Alta Vera Paz. January 18, 1920.) *Pacayito*. See No.
271 [S. P. I. No. 49373] for notes. These seeds were collected from plants in
the forest at Finca Los Alpes." (*Popenoe.*)

49407 and 49408.

From Mayaguez, Porto Rico. Seeds presented by T. B. McClelland, horti-
culturist, Agricultural Experiment Station. Received February 12, 1920.

49407. DESMANTHUS VIRGATUS (L.) Willd. Mimosaceæ.

A white-flowered woody plant, common in many places in the West
Indies. The leaves, which are sensitive, are bipinnate, and the pods
are linear-compressed. In Jamaica the brown polished seeds are used
for beads. (Adapted from *Grisebach, Flora of the British West Indies*,
p. 218, and *Lindley, Treasury of Botany, vol. 1, p. 394.*)

49408. MIMOSA CERATONIA L. Mimosaceæ.

A vinelike shrub, 2 to 5 meters high, found in many places in the West
Indies. The branches and stems are covered with small recurved
prickles, and the flowers are borne in globose heads. (Adapted from
Grisebach, Flora of the British West Indies, p. 219.)

49409. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.*(Prunus davidiana Franch.)***Peach.**

From Sacaton, Ariz. Seeds presented by S. H. Hastings, director, Agricul-
tural Experiment Station, through Prof. S. C. Mason, of the Bureau of
Plant Industry. Received February 21, 1920.

"One of the trees of *Amygdalus davidiana* differed so strikingly from the
others that I made special note of it. The top was more round and open, the

branches thicker, more rigid, and the small twigs thicker and shorter and decidedly less willowy than in the ordinary type. The leaves were broader than usual, less acuminate, and with coarser marginal serrations. The fruits were unusually large with flesh unusually thick and soft and of a more downy appearance than those of the usual type." (*Mason.*)

49410. RHEUM sp. Polygonaceæ. Rhubarb.

From Tatsienlu, Szechwan, China. Seeds presented by Dr. C. Glass Davitt, College of Yale in China, Changsha, China. Received February 21, 1920. •

"Tibetan wild rhubarb seed. Tatsienlu, West China. October, 1919." (*Davitt.*)

Obtained for breeding experiments.

49411. CYNODON INTERMEDIUS Rang. and Tad. Poaceæ. Grass.

From Coimbatore, Madras, India. Seeds presented by C. Tadulingam, assistant lecturing botanist. Agricultural College, through C. V. Piper, Bureau of Plant Industry. Received February 21, 1920.

A widely creeping perennial grass, rooting at the nodes; leafy, with slender erect or ascending flowering branches, which vary in length from 12 to 18 inches. The leaf blades are linear, flat, and up to 7 inches in length. This grass is a native of the Nilgiri Hills, southwestern India. It is intermediate between *Cynodon dactylon* and *C. barberi*, differing from the former principally in not having underground stems and from the latter in being more extensively creeping and with longer and more slender branches. (Adapted from *Journal of the Bombay Natural History Society, vol. 26, p. 304.*)

49412 to 49431. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Edinburgh, Scotland. Tubers presented by the secretary, Board of Agriculture. Received February 25, 1920.

The following varieties are introduced for experiments being carried on by the Bureau of Plant Industry to obtain varieties resistant to the wart disease.

49412. <i>America.</i>	49422. <i>Lochar.</i>
49413. <i>Arran Comrade.</i>	49423. <i>Majestic.</i>
49414. <i>Arran Victory.</i>	49424. <i>Mauve Queen.</i>
49415. <i>The Bishop.</i>	49425. <i>May Queen.</i>
49416. <i>Dargill Early.</i>	49426. <i>Midlothian Early.</i>
49417. <i>The Duchess.</i>	49427. <i>Nithscale.</i>
49418. <i>Edsell Blue.</i>	49428. <i>Resistant Snowdrop.</i>
49419. <i>Epicure.</i>	49429. <i>Rhoderick Dhu.</i>
49420. <i>Immune Ashleaf.</i>	49430. <i>Sharpe's Express.</i>
49421. <i>Irish Queen.</i>	49431. <i>Tinwald Perfection.</i>

49432. SORBUS TORMINALIS (L.) Crantz. Malaceæ.

From Borde Hill, Cuckfield, Sussex, England. Plants presented by Col. Stephenson R. Clarke. Received February 25, 1920.

A fine large tree, native to southern and central Europe. The dark-green leaves, rather variable in shape and size, turn yellow and red in autumn, and the white flowers are borne in June in rather lax corymbs about 4 inches in diameter. The reddish yellow roundish fruits are sometimes eaten when very ripe. (Adapted from *Hempel and Wilhelm, Bäume und Sträucher, vol. 3, p. 81, pl. 53.*)

49433 to 49440. CORYLUS AVELLANA L. Betulaceæ. Filbert.

From Maidstone, England. Plants purchased from George Bunyard & Co. Received February 26, 1920. Quoted notes taken from Bunyard's Catalogue, 1915-16, p. 32.

49433. "*Cosford*. Nut almost round, large, most excellent flavor, and very thin shell. A prolific variety and recommended as a pollenizer for less fertile sorts."

49434. "*Duke of Edinburgh*. Nut large, oblong; shell rather thick; of excellent flavor."

49435. "*Early Prolific*. Curiously frizzled husk; nuts small but produced in large clusters, often 10 to a bunch; very early, sweet, and good. Sometimes called the Frizzled nut."

49436. "*Kentish*. Nut long, pointed, very sweet and delicate. Of great antiquity, having been grown in Kent for a long period. Has been almost superseded, on account of its infertility, by the Kentish Cob."

49437. "*Kentish Cob*. Nut large, broad, and long; excellent flavor; prolific; the best for all-round use. Almost exclusively grown in Kent for market."

49438. "*Kentish Cob*." [Nuts only were received of this variety.]

49439. "*Pearson's Prolific*. Nut round, short, good flavor; an abundant and early bearer; produces large quantities of catkins and is valuable for purposes of cross-fertilization."

49440. "*Webb's Prize Cob*."

49441. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Seeds presented by the director, Botanic Gardens. Received February 28, 1920.

This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color. This rind incloses the pulp segments, five to seven in number, between snow white and ivory in color with the texture of a well-ripened plum and a most delicious flavor.

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

49442. CEIBA PENTANDRA (L.) Gaertn. Bombacaceæ. Kapok.
(*Eriodendron anfractuosum* DC.)

From Buitenzorg, Java. Seeds presented by G. F. J. Bley. Received February 28, 1920.

"The kapok tree is widely distributed in the Tropics of both hemispheres and attains a height of 75 to 100 feet, with wide-spreading horizontal branches. When about 5 years old it begins to bear pods with kapok down, the yield increasing with the age of the tree. Well-developed trees yield annually about 7,000 pounds per acre under favorable conditions. Kapok is excellent for pillows, mattresses, life preservers, etc., and its use is constantly increasing." (*L. H. Dewey*.)

For previous introduction, see S. P. I. No. 46522.

49443 to 49456.

From Guatemala. Seeds collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received February 28, 1920. Quoted notes by Mr. Popenoe.

49443 to 49456—Continued.

49443. *ALPINIA* sp. Zinziberaceæ.

"(No. 282a. Tucuru, Alta Vera Paz. January 19, 1920.) From Chama, Alta Vera Paz. A plant which resembles *Alpinia nutans* in foliage and produces close to the ground large numbers of bright-red fruits about an inch long, containing small hard seeds surrounded by a mucilaginous pulp, much used by the Kekchi Indians as an ingredient of soups and stews. Kekchi name *tzih*."

49444. *AMARANTHUS* sp. Amaranthaceæ.

"(No. 283a. Tucuru, Alta Vera Paz. January 19, 1920.) From the Finca Mocca; altitude 3,500 feet. An annual cultivated in Alta Vera Paz for its small black seeds, which are toasted and ground and used to make sweetmeats. The plant grows about 3 feet high and bears crimson flower heads."

49445. *GYNANDROPSIS SPECIOSA* (H. B. K.) DC. Cappariaceæ.

"(No. 281a. Tucuru, Alta Vera Paz. January 19, 1920.) Presented by Harry Johnson. An annual about 3 feet high with red flowers."

49446. *HOMOLEPIS ATURENSIS* (H. B. K.) Chase. Poaceæ. Grass.
(*Panicum aturense* H. B. K.)

"(No. 273a. Tucuru, Alta Vera Paz. January 19, 1920.) A good pasture grass from the Finca Los Alpes; altitude 3,000 feet. It grows about 15 inches high and is said to be very nourishing."

49447. *ISACHNE ABUNDINACEA* (Swartz) Griseb. Poaceæ. Grass.

"(No. 274a. Tucuru, Alta Vera Paz. January 19, 1920.) A pasture grass from Finca Mocca; altitude about 3,500 feet. Perhaps too tough to be of great value. It grows about 2 feet high."

49448. *LASIACIS OAXACENSIS* (Steud.) Hitchc. Poaceæ. Grass.
(*Panicum oaxacense* Steud.)

"(No. 277a. Tucuru, Alta Vera Paz. January 19, 1920.) A tall grass (about 4 feet) from the Finca Mocca. It makes abundant foliage and loose heads of large seeds."

49449. *MANDEVILLA AURICULATA* (Pohl.) Schum. Apocynaceæ.

"(No. 279a. Tucuru, Alta Vera Paz. January 19, 1920.) Presented by Harry Johnson. A climbing plant from Chama, Alta Vera Paz, reaching a height of 30 feet. Its flowers are funnel shaped, 2 inches across the top, and creamy white with a strawberry-red throat."

49450. *PANICUM GLUTINOSUM* Swartz. Poaceæ. Grass.

"(No. 276a. Tucuru, Alta Vera Paz. January 19, 1920.) A grass found in the edges of the coffee plantation at Finca Mocca. It grows about 4 feet high."

49451. *PASPALUM VIRGATUM* L. Poaceæ. Grass.

"(No. 275a. Tucuru, Alta Vera Paz. January 19, 1920.) A tall grass from Finca Los Alpes. It makes coarse leaves and produces large heads of seed. It is not considered as good as some other grasses in this region."

For previous introduction, see S. P. I. No. 47050.

49452. *PASSIFLORA SERRATIFOLIA* L. Passifloraceæ.

"(No. 278a. Tucuru, Alta Vera Paz. January 19, 1920.) A vigorous climber from the hot country (low altitudes), producing round fruits

49443 to 49456—Continued.

up to 2 inches thick, lemon yellow, with translucent whitish flesh, which is subacid and of fairly pleasant flavor. The seeds are shaped like diminutive arrowheads. Presented by Harry Johnson."

49453. *SOLANUM SEAFORTHIANUM* Andrews. Solanaceæ.

"(No. 285a. Tucuuru, Alta Vera Paz. January 19, 1920.) A climbing plant from the forest in the Finca Mocca, at an altitude of about 3,000 feet. It becomes about 20 feet in height, making slender stems and graceful foliage, and bears white flowers followed by decorative fruits, which are round, half an inch in diameter, and bright orange-red."

49454. *INDIGOFERA* sp. Fabaceæ.

"(No. 284a. Tucuuru, Alta Vera Paz. January 19, 1920.) A small leguminous plant of semicreeping habit from the Finca Los Alpes; altitude 3,000 feet. It makes stems about 3 feet long and bears terminal spikes of salmon-pink flowers."

49455. *VALOTA INSULARIS* (L.) Chase. Poaceæ.

Grass.

"(No. 286a. City of Guatemala. February 3, 1920.) A grass cultivated near El Progreso, in the hot country between the city of Guatemala and Zacapa. It grows to 6 or 7 feet in height, makes abundant foliage, and appears to be a good forage plant."

For previous introduction, see S. P. I. No. 47057.

49456. (Undetermined.)

"(No. 280a. Tucuuru, Alta Vera Paz. January 19, 1920.) Presented by Harry Johnson. An herbaceous perennial from Chama, Alta Vera Paz, growing about a foot high and producing spikes of red flowers."

49457. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. **Tomato.**

From Honolulu, Hawaii. Seeds presented by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received March 2, 1920.

"Seeds of a cross between the wild species and *Earliana*." (Westgate.)

49458. *ASPARAGUS ACUTIFOLIUS* L. Convallariaceæ.

From Hartsville, S. C. Seeds collected by J. B. Norton, Agricultural Explorer for the Bureau of Plant Industry. Received March 2, 1920.

"This is probably the hardiest evergreen species of the genus. Stock grown from S. P. I. No. 34620 has survived four winters at Hartsville, S. C., when the temperature has gone below 10° F. It makes a beautiful thickset hedge of a very dark green color, suggesting a fine-leaved juniper. As the plants grow older there is a tendency to produce vinelike shoots. The tuberlike storage roots and drought-resistant foliage make it valuable for regions of scanty rainfall. The shoots are edible, although much smaller than those of ordinary asparagus. The flavor, however, is said by some to be superior to that of the common species." (Norton.)

49459 to 49471.

From Kafue, Northern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 2, 1920. Quoted notes by Doctor Shantz.

49459. *BRACHYSTEGIA* sp. Cæsalpiniaceæ.

"(No. 300. Bolenga Camp. November 25, 1919.) *Mombo* (Chimyanja). A large, spreading acacialike plant with large pods and large flat seeds,

49459 to 49471—Continued.

which are eaten by baboons and natives. The bast fiber was formerly used to make cloth; now used whenever fiber is required. A most useful as well as ornamental tree."

49460. CAESALPINIA sp. Caesalpinaceæ.

"(No. 299. Bolenga Camp. November 25, 1919.) *Uicta* (Chimyanja). A small tree not over 10 feet high, bearing large pods, the beans of which are eaten after four successive boilings; the water is thrown off each time. The beans are said to kill if eaten after one boiling."

49461. CARYOPHYLLUS JAMBOS (L.) Stokes. Myrtaceæ. **Rose-apple.**
(*Eugenia jambos* L.)

"(No. 318. Kafue. December 4, 1919.) *Musafa* (in Mashakalumbwe and in Chimyanja). A beautiful light lemon-green fruit 1 inch in diameter, with a most agreeable spicy flavor; the seeds are large and the pulp firm and crisp. This fruit is said to taste something like *Jambosa malaccensis*; it is also very attractive in appearance."

For previous introduction, see S. P. I. No. 44891.

49462. GARCINIA LIVINGSTONEI T. Anders. Clusiaceæ.

"(No. 324. Kafue. December 6, 1919.) *Munkononga* (Chimyanja) or *mutunguu* (Mashakalumbwe). A very excellent fruit to eat out of hand. The stone, or rather the embryo, easily dries out. The tree is very productive and has handsome foliage and fruit."

Plate IV shows a fruiting branch of this tree.

49463 and 49464. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

49463. "(No. 313. Kafue. December 4, 1919.) An early-maturing kafir."

49464. "(No. 314. Kafue. December 4, 1919.) A later but better type of kafir."

49465. PROTEA ABYSSINICA Willd. Proteaceæ.

"(No. 336. Kafue. December 7, 1919.) A large white Protea which grows on poor soil. The flowers are reddish in color and very attractive, 2 to 3½ inches across. This and other Proteas, while attractive in flower and foliage, hold the old seed heads for several years, and this often gives them a half-dead appearance."

49466. UAPACA SANSIBARICA Pax. Euphorbiaceæ.

"(No. 295. Bolenga Camp. November 25, 1919.) The popular wild fruit *mahobohobo*; also called *masuku* or *massigou*. The tree has broad, leathery evergreen leaves, and the brownish yellow clusters of fruit are produced mainly on the old wood. When very ripe the fruit is sweet, but it is like a persimmon when not fully mature."

For previous introduction, see S. P. I. 32394.

49467. XIMENIA AMERICANA L. Olacaceæ. **False sandalwood.**

"(No. 309. Kafue. December 4, 1919.) *Impinji*, similar to No. 301 [S. P. I. No. 49602], but a larger fruited form. The fruits are fairly edible if the skin and stone are both rejected; they are borne in abundance and look like *Prunus americana*, but are red and have a large stone. The seed is pounded to obtain the much-prized oil."

For previous introduction, see S. P. I. No. 42896.

49459 to 49471—Continued.**49468. ZEA MAYS L.** Poaceæ.**Corn.**

"(No. 312. Kafue. December 4, 1919.) This corn is grown by the natives south of the Kafue River and is said to be a small early-maturing type. It is planted in December, when the rains come."

49469. (Undetermined.)

"(No. 345. Kafue. December 7, 1919.) A small tree, called *m'seche* in Chimyanja, with very attractive white flowers. The fruit, which has the odor of a lychee, is said to be eaten, and the hulls are used in making rattles for dancing."

49470. (Undetermined.)

"(No. 293. Bolenga Camp. November 25, 1919.) *M'fwefee* (Chimyanja). A small tree said to bear very sweet edible fruits, which are small, oval, and green with white spots."

49471. (Undetermined.)

"(No. 337. Kafue. December 7, 1919.) *M'tantanvara* (Chimyanja). A small black fruit resembling a small wild cherry. It is eaten by the natives and dries on the tree much like our *Prunus melanocarpa*."

49472 and 49473.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, Agricultural Experiment Station. Received March 5, 1920.

49472. CARICA PAPAYA L. Papayaceæ.**Papaya.**

"Seed of a variety of *Carica papaya* which I received from the cold regions of Colombia; that is, from high altitudes. I think this variety would grow and fruit in California." (*Calvino*.)

49473. CARICA CANDAMARCENSIS Hook. f. Papayaceæ.

A graceful little tree, native to the Andean region of South America, where it is cultivated up to an altitude of 9,000 feet for the sake of its edible fruit. The fruits are smaller and sweeter than those of *C. papaya*, are about 9 inches long, with soft, white flesh, sometimes very acid in cool regions. The outside is of a bright golden yellow. (Adapted from *Curtis's Botanical Magazine*, pl. 6198.)

49474. PITTOSPORUM CRASSIFOLIUM Soland. Pittosporaceæ.

From San Francisco, Calif. Seeds presented by John McLaren, superintendent, Golden Gate Park. Received March 9, 1920.

"An evergreen tree introduced from Australia, its native land. It is of easy culture, not particular as to soil, and is very effective as a lawn ornamental, either single or in groups; it also makes a good hedge plant. It is propagated by seeds." (*McLaren*.)

Mr. McLaren recommends this shrub as one which will probably endure the sea breeze and salt spray of the Florida coast.

49475. PASSIFLORA EDULIS Sims. Passifloraceæ.**Granadilla.**

From Tangier, Morocco. Seeds presented by J. Goffart. Received March 10, 1920.

"The passion vine is extensively grown in Australia and thrives in the warmer portions of the United States, although not yet well known. The fruit is the size and shape of an egg and contains a pulp of exceedingly good flavor; this is eaten with a spoon after cutting off one end of the fruit. The pulp is also

used as a flavoring for cakes, ice cream, and drinks and in fruit salads. The vine grows well in any ordinary open soil with abundant fertilizer. The rich green foliage is very ornamental." (*F. O. Popenoe.*)

For previous introduction, see S. P. I. No. 44854.

49476. BACTRIS MARAJA Mart. Phœnicaceæ. Palm.

From Bahia, Brazil. Seeds presented by H. M. Curran. Received March 2, 1920.

"(Bahia, December, 1919.) A palm said to grow in a swamp; has a spiny stem and produces clusters of edible dark-purple fruits resembling grapes in appearance and flavor. The fruits are very common in the markets in Ilheos, where these were obtained; they are called 'manvel velho,' or swamp coconut." (*Curran.*)

49477 to 49479.

From Kafue, Northern Rhodesia. Collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 5, 1920. Quoted notes by Dr. Shantz.

49477. AULOTANDRA sp. Zinziberaceæ.

"(No. 320. December 4, 1919.) Roots of a beautiful orchidlike plant which forms a spike about 6 inches high, upon which one flower appears at a time. The flowers, about 2 to 3 inches across, have pale-yellow centers with the edges white to lavender or reddish lavender. They open in the morning and last most of the day. The swollen roots have a delicate flavor and are aromatic."

49478. AULOTANDRA sp. Zinziberaceæ.

"(No. 321. December 4, 1919.) Roots of a delicate Aulotandra with a lacelike pure-white flower with a touch of yellow in the center, which opens in the early evening and fades as soon as the sun strikes it the next day. Only one flower is pushed up at a time. Like the preceding number [No. 49477] but more delicate, and the spike remains under the ground."

49479. LISSOCHILUS ABENARIUS Lindl. Orchidaceæ.

"(No. 322. December 4, 1919.) Tubers of a beautiful land or soil orchid with a spike $1\frac{1}{2}$ to $2\frac{1}{2}$ feet high, bearing beautiful lavender flowers. The flower spike appears in advance of the leaves. This is one of the most attractive orchids I have seen."

49480. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Salina Cruz, Oaxaca, Mexico. Seeds presented by Wilbur Barker. Received March 9, 1920.

"The black sapote, which is native to Mexico, is a compact and shapely ornamental tree with oblong-oval glossy leaves about 4 inches long. The fruits, which greatly resemble those of the kaki, or Japanese persimmon, are light green when ripe and from 2 to 4 inches in diameter. The dark-brown or almost black flesh is sweet and when cut up or mashed with orange juice makes a first-rate dish." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44187.

49481. PROSOPIS STEPHANIANA (Bieb.) Kunth. Mimosaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received March 9, 1920.

"Ayaba, south of Biskra, Algeria." (*Trabut.*)

A shrubby plant, 1 to 2 feet in height, found from the eastern Mediterranean countries to the Caucasus and northern Africa. The branches and petioles are pubescent, and the compound leaves are composed of 4 to 5 pairs of leaflets, with 8 to 12 pairs of pinnæ in each leaflet. The thick pods are ovoid-oblong. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 633.*)

For previous introduction, see S. P. I. No. 32728.

49482. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From Colon, Canal Zone, Panama. Presented by A. MacIlvane, American consulate. Received March 10, 1920.

"Taboquilla squash seeds." (*MacIlvane.*)

49483. PRUNUS BESSEYI Bailey. Amygdalaceæ. Sand cherry.

From Brookings, S. Dak. Seedlings presented by N. E. Hansen, professor of horticulture, South Dakota State College of Agriculture and Mechanic Arts. Received March 12, 1920.

"Sand-cherry seedlings of western South Dakota stock. They have been under cultivation at this station for several plant generations." (*Hansen.*)

49484 to 49488.

From Richmond, Victoria. Seeds presented by F. H. Baker. Received March 13, 1920. Quoted notes by Mr. Baker.

49484. ACACIA CULTRIFORMIS A. Cunn. Mimosaceæ.

"Panton Hill; rare."

A shrubby acacia from Australia with sharp-pointed, simple, whitish leaves and small headlike racemes of yellow flowers. Although it does not exceed 10 feet in height it makes a very elegant ornamental. (Adapted from *Revue Horticole, vol. 68, p. 503.*)

For previous introduction, see S. P. I. No. 48039.

49485. ACACIA PYCNANTHA Benth. Mimosaceæ.

"Panton Hill district."

An Australian shrub with long, narrow, curved leaves and numerous large flower heads, which are borne in terminal panicles. In its native country the bark of this shrub is valued for its large percentage of tannin. (Adapted from *Revue Horticole, vol. 68, p. 504.*)

For previous introduction, see S. P. I. No. 48059.

49486. ACACIA RETINODES Schlecht. Mimosaceæ.

"A very good wattle."

An acacia, native to Australia, with elongated leaves up to 6 inches in length and elegant terminal panicles of odorous flower heads. It is said to flower in France almost throughout the year. (Adapted from *Revue Horticole, vol. 68, p. 505.*)

For previous introduction, see S. P. I. No. 38758.

49487. KENNEDYA RUBICUNDA (Schneev.) Vent. Fabaceæ.

(*Glycine rubicunda* Schneev.)

A shrubby, twining plant, native to New South Wales. It runs up to a height of 5 or 6 feet or more, producing an abundance of large showy dark-red flowers of a somewhat dingy appearance. The plant is easily propagated by seeds, which should be soaked in warm water for a few hours before planting. (Adapted from *Curtis's Botanical Magazine, pl. 268.*)

For previous introduction, see S. P. I. No. 39873.

49484 to 49488—Continued.**49488. TECOMA SMITHII** W. Wats. Bignoniaceæ.

"Shrub with yellow blooms; about 5 feet high."

A beautiful shrubby plant, said to have been produced in Australia as a cross between *Tecoma capensis* and *T. mollis*. The flowers have orange tubes and yellow segments and are borne in large compound panicles. (Adapted from *Gardeners' Chronicle*, 3d, ser., vol. 14, p. 649.)

49489 to 49495.

From Arlington, Va. Seedlings grown at the Arlington Experimental Farm, Va., by M. B. Waite and H. W. Truesdell. Numbered March 15, 1920. Quoted notes by Mr. Truesdell.

49489. PYRUS sp. Malaceæ.**Pear.**

"(Row 1, tree 13.) Fruit: Size medium, 2 to 2½ inches in diameter; form regular, globose; stem medium stout, inserted in a pronounced cavity; skin thin, fairly smooth; dots brownish, numerous; color yellow, sometimes with red blush; flesh juicy, firm, fine grained; flavor mild; dessert quality good; ripe September 1 to 15. Earlier, smaller, finer grained, more tender, and slightly better in quality than the Kieffer variety.

"Tree: Large, vigorous, of hybrid-oriental pear character; bark dark gray, branches spreading, foliage dark, abundant, 1½ by 2½ inches (average); very productive; blight resistant.

"When in very rapid growth blight occasionally goes 6 to 12 inches down the shoots. Apparently less susceptible than the Kieffer variety."

49490. PYRUS sp. Malaceæ.**Pear.**

"(Row 2, tree 15.) Fruit: Size medium, 2 to 2½ inches in diameter; form obovoid to slightly pyriform; stem medium length, moderately stout, set in a shallow cavity; skin rather thick, medium smooth, very finely russeted; color greenish brown with a red blush; flesh juicy, firm, fine grained; flavor rich, very sweet; dessert quality best; ripe September 10 to 20.

"Distinctly like the Seckel pear in flavor, texture, and color, but larger and with more red blush and even thicker and more sirupy juice.

"Tree: Medium size and vigor, Seckellike; branches slightly spreading; bark light red; foliage fairly abundant, medium green, 1½ by 2½ inches (average); has not produced heavily; rather blight resistant.

"One blight infection has occurred, girdling the leader in the top of the tree and causing removal about this point. No other blight was seen on this tree, in spite of severe pruning and vigorous twig tips. Probably equal or superior to the Seckel and Kieffer varieties in blight resistance."

49491. PYRUS sp. Malaceæ.**Pear.**

"(Row 22, tree 15.) Fruit: Size medium, 2 by 2¾ inches in diameter; form broadly obovoid; stem short, moderately stout, set in a very slight depression; skin thin; color light yellow; flesh very juicy, fine grained; flavor moderately sweet; dessert quality good; ripe September 10 to 20.

"Tree: Large, vigorous; bark reddish; branches spreading or drooping; foliage abundant, light green, 1½ by 1½ inches (average); apparently productive; very blight resistant (no blight observed); somewhat susceptible to San Jose scale."

49489 to 49495—Continued.

49492. *PYRUS* sp. Malaceæ.

Pear.

"(Row 37, tree 2.) Fruit: Size medium; pyriform, with distinct neck; stem slender, $1\frac{1}{2}$ inches long; skin thin, smooth; color golden yellow; flesh fine grained, juicy, buttery, melting; flavor subacid; dessert quality good to very good; ripe August 25 to September 1.

"Tree: Large, vigorous, of European pear character; bark light gray; branches somewhat spreading; foliage abundant, light green, three-fourths of an inch by 1 inch (average); has not produced heavily; very resistant to blight (no blight observed)."

49493. *PYRUS* sp. Malaceæ.

Pear.

"(Row 38, tree 26.) Fruit: Size medium, $2\frac{1}{2}$ by 3 to $3\frac{1}{4}$ inches; pyriform with a tendency to obconic, neck distinct; stem rather thick, about three-fourths of an inch long; skin thin, smooth, dots numerous, small; color yellow with crimson cheek, sometimes covering entire surface; flesh fine grained, melting; dessert quality good; ripe August 10 to 20.

"Tree: Size moderately large and rather vigorous; bark brown; branches rather spreading; foliage moderately abundant, medium green; has not produced heavily; very resistant to blight (no blight observed)."

49494. *PYRUS* sp. Malaceæ.

Pear.

"(Row 1, tree 10.) Fruit: Size medium; $2\frac{1}{2}$ by $2\frac{1}{2}$ inches; form regular, obconic; stem stout, 1 inch long, base fleshy, inserted in a broad shallow cavity; skin rough, rather thick, tender; dots few, large; color yellow; flesh juicy, soft, rather fine grained, melting; flavor rather sweet; dessert quality good; ripe about October 1.

"Tree: Large, vigorous; bark light brown; branches somewhat spreading; foliage abundant, rather dark; productive; blight resistance about the same as the Kieffer variety."

49495. *PYRUS* sp. Malaceæ.

Pear.

"(Row 36, tree 4.) Fruit: Size medium, 2 inches in diameter by $2\frac{1}{2}$ inches in length; pyriform; stem medium stout, seven-eighths of an inch long, inserted in a very small cavity; skin thin, tender, smooth, glossy, waxy; dots numerous, inconspicuous; three-fourths of the surface covered with crimson, the rest light yellow; flesh medium juicy, firm, fine grained, mild; dessert quality fair to good; ripe August 10 to 20.

"Tree: Medium size and vigor, of European pear character; bark reddish brown; branches rather upright; foliage not abundant, light green, 1 by $1\frac{1}{2}$ inches (average); has not been productive; blight resistant (observed only on forced top grafts)."

49496. *DIOSCOREA ALATA* L. Dioscoreaceæ.

Greater yam.

Grown for several years at the Plant-Introduction Field Station, Brooksville, Fla. Numbered March 25, 1920, for convenience in recording distribution.

"A yam obtained from O. P. Wernicke, Brooksville, Fla., who brought it from Avon Park, Fla., where he had grown it in light sandy soil with much success. This yam has a high water content, and when cut into pieces, boiled, and mashed it is easily beaten to a light, creamy consistency without the addition of milk. This is considered to be the best method of preparing this type of yam for the table, and when it is so prepared it is scarcely distinguishable from mashed potato." (R. A. Young.)

49497. HOLCUS SORGHUM L. Poaceæ. Sorghum.*(Sorghum vulgare Pers.)*

From Kampala, Uganda. Seeds presented by L. Hewett, acting Director of Agriculture, Uganda Protectorate, through Prof. C. V. Piper. Numbered March 20, 1920.

"A red-seeded variety of sorghum grown by the Nubians along the Kongo."
(H. N. Vinall.)

49498 to 49501. HOLCUS SORGHUM L. Poaceæ. Sorghum.*(Sorghum vulgare Pers.)*

From Ibadan, Nigeria. Seeds presented by A. H. Kirby, acting Director of Agriculture, Southern Nigeria, through Prof. C. V. Piper. Numbered March 20, 1920. Quoted notes by H. N. Vinall.

49498. "A variety with flat light-red seed. Native name *Aha Bawa*."

49499. "A variety with white flat seed similar to the variety formerly grown in the United States under the name 'Jerusalem corn.' Native name *Farafara*."

49500. "A pink-seeded variety. Native name *Karwa-prin-sosia*."

49501. "A variety with seed similar to those of *Aha Bawa* [S. P. I. No. 49498], but somewhat smaller and deeper red. Native name not known."

49502 to 49504. HOLCUS SORGHUM L. Poaceæ. Sorghum.*(Sorghum vulgare Pers.)*

From Kampala, Uganda. Seeds presented by L. Hewett, acting Director of Agriculture, Uganda Protectorate, through Prof. C. V. Piper. Numbered March 20, 1920. Quoted notes by H. N. Vinall.

49502. "A variety with small dark-red seed, like those of Sumac sorgo. This is probably a sweet-stemmed variety. Native name *Namatera*."

49503. "A variety with small dark-red seed, like *Namatera* [S. P. I. No. 49502]. The seeds appear almost identical. Native name *Kaini*."

49504. "A variety with small dark-red seed, very much like *Namatera* [S. P. I. No. 49502] and *Kaini* [S. P. I. No. 49503], but with a shallow dent in the blossom end of the seed. Native name *Kakoba Kamnubat*."

49505. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau. Poaceæ.*(P. nigra Munro.)***Bamboo.**

From Niles, Calif. Plants presented by the California Nursery Co. Received April 17, 1920.

"The black bamboo is one of the important cultivated species in Japan, although it is smaller than the other timber sorts, seldom growing over 20 feet and 1½ inches in diameter.

"The culms when young are covered with dark-brown to purple spots which spread as it grows older until the whole culm becomes dark brown, almost black, except just below the nodes, where there is an ash-gray line. This dark color at once distinguishes the species from all other Japanese bamboos.

"This is one of the hardiest forms grown in England and is certainly one of the most decorative kinds.

"The uses of this species are limited to the manufacture of furniture, numerous household articles, and fancy fishing poles, for all of which these black bamboos are peculiarly fitted." (*David Fairchild*.)

49506 to 49521.

From Poona, Bombay Presidency, India. Seeds presented by Dr. William Burns, economic botanist, Bombay Department of Agriculture. Numbered March 26, 1920.

49506. *ANDROPOGON CARICOSUS* L. Poaceæ. Grass.

A grass with erect stems, forming tufts at the rooting nodes of the creeping base. The linear leaves are 6 to 8 inches long and the racemes are pale green or silvery. Native to tropical Asia and Madagascar. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 987.*)

For previous introduction, see S. P. I. No. 41886.

49507. *ANDROPOGON CARICOSUS* L. Poaceæ. Grass.

Received as *Andropogon annulatus*.

49508. *ANDROPOGON PACHYARTHUS* Hack. Poaceæ. Grass.

An annual grass with linear glabrous leaves and slender stems, 6 to 18 inches high, suberect and decumbent below. Native of the East Indies and Dekkan, India. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 976.*)

Received as *Andropogon pumilus*.

49509. *ANDROPOGON PURPUREO-SERICEUS* Hochst. Poaceæ. Grass.

A robust annual grass with smooth and polished erect stems 3 to 4 feet high, and linear leaves 8 to 10 inches long. Native to Abyssinia. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 984.*)

For previous introduction, see S. P. I. No. 41891.

49510. *ANDROPOGON PERTUSUS* (L.) Willd. Poaceæ. Grass.

A perennial grass native to southern Asia and tropical and subtropical Australia. One of the best grasses to withstand long droughts, while it will bear any amount of feeding. It endures cold better than some other Queensland Andropogons, and though not so palatable to pasture animals as some other grasses it is valuable for the summer season, when many others fail in the arid interior. It is of inferior value where the best English grasses can be grown; it is even apt to strangle them. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 42.*)

For previous introduction, see S. P. I. No. 34046.

49511. *ANDROPOGON TRINII* Steud. Poaceæ. Grass.

(*A. monticola trinii* Hooker.)

A perennial grass with slender culms, 1 to 3 feet high, in dense tufts and with spreading branches at length erect. Native to India, the East Indies, and tropical Africa. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 7, p. 349.*)

Received as *Andropogon monticola*.

49512. *APLUDA ABISTATA* Torner. Poaceæ. Grass.

A creeping perennial grass, commonly found in hedges or other shady places in the plains of northern India and in the Himalayas, ascending to 7,000 feet in altitude. It is used for fodder in the Banda district. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 272.*)

Received as *Andropogon varia*.

For previous introduction, see S. P. I. No. 41892.

49506 to 49521—Continued.

- 49513.** BRACHIARIA ERUCIFORMIS (J. E. Smith) Griseb. Poaceæ. Grass.
(*Panicum isachne* Roth.)

A grass from the plains of India and from watery places at altitudes of 6,000 feet in Kashmir and the Punjab to Bengal and southward to Ceylon. The slender much-branched stems are 1 to 2 feet high, with bearded nodes and softly hairy or glabrous leaves. (Adapted from *Hooker, Flora of British India, vol. 7, p. 28.*)

For previous introduction, see S. P. I. No. 32429.

- 49514.** CENCHRUS BIFLORUS Roxb. Poaceæ. Grass.

A grass with simple stems, 6 to 24 inches long, and linear-lanceolate leaves 3 to 10 inches long; native to the East Indies. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 917.*)

For previous introduction, see S. P. I. No. 41894.

- 49515.** CHLORIS PARAGUAIENSIS Steud. Poaceæ. Grass.

"A perennial grass native to India, Burma, and Ceylon, but now widespread in the Tropics. According to Duthie it is considered in northern India a good fodder grass up to the time of flowering, after which time cattle will not touch it. In Australia it is considered one of the best grasses for rpasturage and hay. An earlier test in this country with S. P. I. No. 36255 did not indicate that it is of much value." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 41897.

- 49516.** COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

This plant, native to southern Asia, New Guinea, and Polynesia, is cultivated for food by the eastern hill tribes of India and supplies a staple article of diet to the Tankhul Nagas of Manipur; it is also grown in Burma. The form cultivated for food has an easily breakable, deeply furrowed shell, that of the wild plant being extremely hard and shining. Seeds require long soaking before they are sown. The plant thrives best under humid conditions. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 135.*)

For previous introduction, see S. P. I. No. 48012.

- 49517.** DINEBRA ARABICA Jacq. Poaceæ. Grass.

A laxly cespitose, somewhat rigid annual, branched from the base, with the culms sometimes prostrate, sometimes ascending or obliquely erect, 1 to 18 inches long. Plentiful, but in few localities, on plains flooded in the rainy season between Loanda and Quicuxe, or in damp groves or in drying-up ponds. Native to tropical Africa and the East Indies. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, vol. 2, pt. 1, p. 223.*)

For previous introduction, see S. P. I. No. 41902.

- 49518.** ISCHAEMUM CILLARE Retz. Poaceæ. Grass.

"One form of this grass is harvested in and near Colombo, Island of Ceylon, and is extensively brought into town as fodder for cattle. It is well known as the *Rat-tena*, literally 'red-grass,' of the Singhalese." (*Trimen, Handbook of the Flora of Ceylon, vol. 5, p. 216.*)

A grass with stems 6 inches to 2 feet long, slender or sometimes stout, erect or sometimes creeping, and with leaves 2 to 6 inches long. Native to Bengal, the lower Himalayas, and Ceylon. (Adapted from *Hooker, Flora of British India, vol. 7, p. 133.*)

49506 to 49521—Continued.

49519. *ISCHAEMUM SULCATUM* Hack. Poaceæ. Grass.

A grass, native to India, with slender stems, 8 to 18 inches long, and with leaves 2 to 10 inches long. It is very nutritious and is largely used as fodder wherever it occurs in abundance. It grows along the edges of cultivated land in the black soil of central India, where it is known as *Pownia* or *Pona*. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 7, p. 137.)

For previous introduction, see S. P. I. No. 41912.

49520. *ISEILEMA ANTHEPHOBIDES* Hack. Poaceæ. Grass.

A stout, tufted grass, less than 3 feet high, with erect or ascending stems, linear leaves, and crowded leafy panicles. Native to the southern Dekkan Peninsula. (Adapted from Hooker, *Flora of British India*, vol. 7, p. 219.)

An annual grass, one of the most valuable forest fodder grasses in the Indian peninsula. (Adapted from the *Agricultural Journal of India*, vol. 12, *Special Indian Scientific Number*, p. 135.)

For previous introduction, see S. P. I. No. 41913.

49521. *PENNISETUM CILIARE* (L.) Link. Poaceæ. Grass.
(*P. cenchroides* Rich.)

Dhaman. A perennial, spreading, fodder grass, adapted to desert regions, and native to tropical Africa and subtropical southwestern Asia. It is well adapted for silage, green fodder, and hay, and is so nutritious as to have led to the native saying: "What ghi (or ghee, i. e., clarified butter) is to man, that the *dhaman* is to a horse." (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 364.)

For previous introduction, see S. P. I. No. 41915.

49522 to 49524. *DIGITARIA EXILIS* (Kippist) Stapf. Poaceæ.

Fundi.

From Mano, Sierra Leone, West Africa. Seed presented by D. W. Scotland, Director of Agriculture, Njala, Mano, Sierra Leone, through Prof. C. V. Piper. Numbered March 26, 1920.

A cereal native to tropical Africa and cultivated in West Africa, where it was first observed in 1798. It closely resembles *Digitaria longiflora*, which is probably the wild ancestral form. The grain has a very good flavor, and it is believed that if it were exported to Europe it might prove a valuable addition to the light farinaceous articles of food used by the delicate or convalescent. The plant is said not to require manuring and to thrive well in light soils and even in rocky situations. It is grown in Nigeria at an elevation of 4,000 feet. (Adapted from Kew *Bulletin of Miscellaneous Information*, No. 8, p. 383, 1915.)

49522. Light type.

49524. Medium type.

49523. Heavy type.

49525 and 49526.

From Buitenzorg, Java. Tubers presented by the director of the Botanic Gardens. Received February 7, 1920.

49525. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

"*Tallus belang*, or *tallus soerat*. This is a yellow-fleshed taro. The meaning of the vernacular names is said by Dr. P. J. S. Cramer to be 'striped taro.'" (R. A. Young.)

49525 and 49526—Continued.

49526. *XANTHOSOMA SAGITTAEFOLIUM* (L.) Schott. Araceæ. Yautia.
 "Kiempoel poetieh. Introduced for testing in the South." (R. A. Young.)

49527 to 49567.

From Honolulu, Hawaii. Seeds collected by J. F. Rock and sent through Dr. H. L. Lyon, department of botany and forestry, Hawaiian Sugar-Planters' Association. Received February 19, 1920.

"All of the seeds, except those of No. 963, were collected on Mount Gedeh, Java, in July and August, 1919." (Lyon.)

49527. *AMOMUM COCCINEUM* (Blume) Benth. and Hook. Zinziberaceæ.
 (*Elettaria cocctnea* Blume.)

(No. 929.) A perennial herb, native to the more humid portions of Java, with narrowly acuminate leaves and oblong dense spikes of flowers. (Adapted from *Blume, Enumeratio Plantarum Javae, p. 53.*)

49528. *ARECA* sp. Phœnicaceæ. Palm.

(No. 933.) A palm characterized by its lofty trunk, pinnate leaves, whose stalks are rolled up into cylinders at the bases, and drupelike fruits with fibrous rinds. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 88.*)

49529. *CALOPHYLLUM HASSKARLII* Teijsm. and Binn. Clusiaceæ.

(No. 795.) A tree up to 20 meters in height, found throughout the East Indies, but rare in Java. In southern Preanger, Java, the wood is renowned as building material. (Adapted from *Heyne, Nuttige Planten van Nederlandschindïë, vol. 3, p. 267.*)

For previous introduction, see S. P. I. No. 11021.

49530. *CYTOSTACHYS LAKKA* Beccari. Phœnicaceæ. Palm.

(No. 693.) A stately and elegant palm, native to the East Indies, with a slender spineless stem crowned by a cluster of boldly arched leaves 3 to 4 feet in length. The fruits are elongate egg-shaped and about half an inch long. (Adapted from *Beccari, Annales du Jardin Botanique de Buitenzorg, vol. 2, p. 141*, and *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 947.*)

For previous introduction, see S. P. I. No. 46865.

49531. *DIANELLA ENSIFOLIA* (L.) Red. Liliaceæ.

(No. 800.) A very attractive member of the lily family from tropical Asia, with long grasslike leaves, lax panicles of blue or white flowers, and globose blue fruits which remain on the plant for some time after maturing. (Adapted from *Curtis's Botanical Magazine, pl. 1404.*)

49532. *DRYMOPHLOEUS PROPINQUUS* Beccari. Phœnicaceæ.

(No. 752.) A rather small palm, native to New Guinea, with a stem up to 2½ meters in height and 2 centimeters thick. The leaves, about a meter and a half long, are irregularly pinnate with pinnæ about 30 centimeters in length. (Adapted from *Beccari, Malesia, vol. 1, p. 43.*)

49533. *FICUS ALBA* Reinw. Moraceæ.

(No. 960.) A shrub or small tree from the Malay Archipelago at altitudes under 4,000 feet. Its variously shaped leaves are 5 to 8 inches long, with whitish lower surfaces, and the axillary fruits are about half an inch in diameter. (Adapted from *Hooker, Flora of British India, vol. 5, p. 530.*)

49527 to 49567—Continued.

49534. *FICUS* sp. Moraceæ.

(No. 962.)

49535. *FICUS* sp. Moraceæ.(No. 963.) "From Johore, Federated Malay States." (*Lyon.*)49536. *FICUS* sp. Moraceæ.

(No. 964.)

49537. *GARCINIA CORNEA* L. Clusiaceæ.

(No. 831.) A small erect tree, distributed throughout the Malay Archipelago. It has oblong or oblong-lanceolate leathery, shining leaves, 4 to 6 inches long, and roundish, bright-red fruits the size of a small orange. The seeds are inclosed in a white, juicy, very acid aril. (Adapted from *Hooker, Flora of British India, vol. 1, p. 260.*)

For previous introduction, see S. P. I. No. 39549.

49538. *LAGERSTROEMIA SPECIOSA* (Muenchh.) Pers. Lythraceæ.(*L. flos-reginae* Retz.)

Grape myrtle.

(No. 711.) A tree 50 to 60 feet in height, with leaves 4 to 8 inches long and large panicles of flowers, which vary in color from rose to purple from morning to evening. This is the chief timber tree in Assam, eastern Bengal, and Chittagong, India, where it occurs along river banks and in swampy ground and is commonly cultivated as an avenue tree. It has been introduced into southern California. (Adapted from *Watt, Dictionary of the Commercial Products of India, vol. 4, p. 701,* and *Bailey, Standard Cyclopaedia of Horticulture, vol. 3, p. 1775.*)

For previous introduction, see S. P. I. No. 45911.

49539. *LICUALA SPINOSA* Thunb. Phœnicaceæ.

Palm.

(No. 848.) A stout palm, 10 to 12 feet high, forming dense tufts, common on wet places throughout the Malay Peninsula. The trunk is about 3 inches thick, and the leaves are 6 or 7 feet long, with spiny petioles and round kidney-shaped blades about 4 feet in diameter. The spadix is longer than the leaves, and the spathes are green sprinkled with brownish scurf. (Adapted from *Calcutta Journal of Natural History, vol. 5, p. 322.*)

49540. *LINOSPADIX PETRICKIANA* Hort. Phœnicaceæ.

Palm.

(No. 774.) A very elegant palm, native to New Guinea, of low, graceful, spreading habit. The long pinnate leaves have slender acuminate pinnæ. (Adapted from *Gardeners' Chronicle, third series, vol. 24, p. 298.*)

49541. *LIVISTONA* sp. Phœnicaceæ.

Palm.

(No. 815.) The palms of this genus are trees with terminal fan-shaped leaves, with branching flower spikes growing out from among the leaves. They are distributed throughout tropical Asia and Australia. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 690.*)

49542. *MAGNOLIA BLUMEI* Prantl. Magnoliaceæ.(*Manglietia glauca* Blume.)

(No. 695.) A tall glabrous tree with leathery oval or oblong leaves, 5 to 7 inches long, solitary terminal yellowish flowers an inch and a half in length, and ovoid fruits the size of a hen's egg. It is dis-

49527 to 49567—Continued.

tributed throughout Java. (Adapted from *King, Materials for a Flora of the Malayan Peninsula, vol. 1, p. 14.*)

49543. MOBINDA BRACTEATA Roxb. Rubiaceæ.

(No. 760.) A medium-sized tree with a slender trunk, native to the eastern portions of the East Indian Archipelago. The most useful part of this tree is the root, which is a source of a red dye for linen and yarns, used by itself or with sapan wood (*Caesalpinia sapan*). The fruits are given to children as a vermifuge. (Adapted from *Heyne, Nuttige Planten van Nederlandschindië, vol. 4, p. 207.*)

49544. MYRICA JAVANICA Blume. Myricaceæ.

(No. 836.) An aromatic shrub, native to Java, with obovate leathery leaves and dioecious catkins. (Adapted from *Blume, Bijdragen Flora Nederlandsch Indië, vol. 1, p. 517.*)

49545. MYRISTICA INEBS Blume. Myristicaceæ.

(No. 691.) A tree with slender dark-brown branchlets, oblong-lanceolate papery leaves up to 7 inches long, and large oblong fruits borne singly or in pairs, up to 3 inches long and half as thick. It is native to Java. (Adapted from *Journal and Proceedings, Asiatic Society of Bengal, vol. 75, pt. 2, p. 230.*)

49546. NAGEIA CUPRESSINA (R. Br.) F. Muell. Taxaceæ.

(*Podocarpus cupressina* R. Br.)

(Nos. 797 and 809.) A lofty evergreen tree, distributed throughout the Malay Archipelago. On the older branches the leaves are minute and lanceolate; on the younger branches the leaves are linear, distichous, and spreading. (Adapted from *Hooker, Flora of British India, vol. 5, p. 650.*)

49547. NECTANDRA ANGUSTIFOLIA (Schrad.) Nees and Mart. Lauraceæ.

(No. 835.) A tree native to southern Brazil with narrowly lanceolate acuminate leaves and axillary panicles of flowers. The wood is used for interiors of houses and for cabinetwork. (Adapted from *Correa, Flora do Brazil, p. 46, and Linnaea, vol. 8, p. 48.*)

49548. ONCOSPERMA FILAMENTOSUM Blume. Phœnicaceæ. Palm
(*Areca tigillaria* Jack.)

(No. 726.) A very 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 long. On the borders of paddy swamps in the Malay Peninsula this palm is quite common. (Adapted from *Calcutta Journal of Natural History, vol. 5, p. 464.*)

For previous introduction, see S. P. I. No. 45962.

49549. ONCOSPERMA HORRIDUM (Griffith) Scheff. Phœnicaceæ. Palm.
(*Areca horrida* Griffith.)

(No. 707.) A stately palm, 30 to 40 feet tall, indigenous to the Straits Settlements. The trunk is annulate and much armed, and the pinnate dark-green leaves, which spread in every direction, are up to 16 feet in length and 5 feet in width. The axillary spadix has a stout yellow peduncle, and the round, purplish black fruits are the size of a musket ball. (Adapted from *Calcutta Journal of Natural History, vol. 5, p. 465.*)

49527 to 49567—Continued.

49550. OREODOXA sp. Phœnicææ. Palm.

(No. 771.) Some of the species of this genus are among the most graceful of palms, their slender ringed trunks becoming nearly a hundred feet in height and bearing large terminal pinnate leaves. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 321.*)

49551. OTOPHORA SPECTABILIS Blume. Sapindacææ.

(No. 741.) A sapindaceous tree, native to Java, with alternate leaves composed of 7 to 15 pairs of narrowly oblong leaflets, terminal clusters of small flowers, and round berrylike fruits. (Adapted from *Koorders and Valetton, Boomsorten op Java, Bijdrage No. 9, p. 171.*)

49552. PANDANUS AURANTIACUS Ridley. Pandanacææ.

(No. 887.) A large branching shrub about 12 feet tall with stems 2 or 3 inches thick, found in swampy places near the sea in the Malay Peninsula. The very narrow leaves are 3 feet long and $1\frac{1}{4}$ inches wide, glaucous green and sharp pointed. The female inflorescence consists of a stout rachis a foot long and five globose orange heads. (Adapted from *Journal of the Royal Asiatic Society, Straits Branch, vol. 41, p. 49.*)

49553. PARANEPHELIUM MACROPHYLLUM King. Sapindacææ.

(No. 841.) A tree 20 to 40 feet high, native to Perak, Java. The alternate, coriaceous pinnate leaves are 18 to 30 inches long, and the flowers are borne in erect axillary panicles. The surface of the globular woody fruits is covered with thick spines. (Adapted from *Journal of the Asiatic Society of Bengal, vol. 65, p. 450.*)

49554. PINANGA KUHLLI Blume. Phœnicææ. Palm.

(No. 847.) A palm 16 to 25 feet high, native to the lower altitudes of western Java, with a ringed stem 2 inches in diameter. The leaves are terminal, with petioles 2 feet long and elliptical blades about 4 feet long. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 31, p. 97.*)

49555. POLYALTHIA LATERIFLORA (Blume) Kurz. Annonacææ.

(No. 806.) A tree 50 to 70 feet tall, found at low altitudes in Perak, Java. The leaves are leathery, oblong to elliptic-oblong, with shining upper surfaces and up to 15 inches in length, and the greenish yellow thickish flowers are borne in fascicles. (Adapted from *King, Materials for a Flora of the Malayan Peninsula, vol. 1, p. 307.*)

49556. POLYGONUM sp. Polygonacææ.

(No. 697.)

49557. RANDIA DUMETORUM (Retz.) Lam. Rubiacææ.

(No. 833.) A deciduous thorny shrub or small tree, found throughout India and distributed eastward to southern China. The bark and fruit are used medicinally, the former as an external remedy to relieve pains and the latter as an emetic, for which purpose it is considered very valuable. The fresh ripe fruit is also roasted and eaten by the natives in many parts of the country. The light-colored compact wood is used for agricultural implements. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 389.*)

49558. RANDIA TOMENTOSA (Blume) Hook. f. Rubiacææ.

(No. 957.) A large shrub with very stout branches and very stout horizontal spines 1 to 2 inches long. The obovate or roundish leathery leaves are about 2 inches in length, and the velvety flowers are usually

49527 to 49567—Continued.

solitary. This species is distributed from southern India eastward to Java. (Adapted from *Hooker, Flora of British India, vol. 3, p. 110.*)

49559. SABAL MAURITIAEFORMIS (Karst.) Griseb. and Wendl. Phoenicaceæ. **Palm.**

(No. 781.) A West Indian palm with a trunk 60 to 80 feet in height and over a foot in diameter and large roundish leaves multifold to the middle and up to 12 feet in diameter. The black fruits are about the size of peas. (Adapted from *Grisebach, Flora of the British West Indies, p. 514.*)

49560. SALACIA sp. Hippocrateaceæ.

(No. 945.) The species of this genus are smooth erect or trailing evergreen shrubs with opposite shining laurellike leaves and very small green or yellowish flowers. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 1007.*)

49561. STADMANNIA FRASERI Linden. Sapindaceæ.

(No. 719.) The species of *Stadmannia* are trees with pinnate leaves having three to five pairs of elongated elliptical smooth leaflets and axillary panicles of small flowers. The wood is hard. (Adapted from *Engler and Prantl, Natürlichen Pflanzenfamilien, vol. 3, pt. 5, p. 334.*)

No published description of this species seems to be available in Washington.

49562. STYRAX sp. Styracaceæ.

(No. 808.) The members of this genus are trees or shrubs native to Asia and North America, with entire leaves and racemes of white flowers. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 1109.*)

49563. TECTONA GRANDIS L. f. Verbenaceæ. **Teak.**

(No. 832.) The common teak is a native of southern and central India. The young branches are quadrangular, the leaves are opposite and elliptical or egg shaped, and the white flowers are borne in terminal panicles. The wood is highly prized by shipbuilders because of its great strength and durability. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 1129.*)

For previous introduction, see S. P. I. No. 42374.

49564. TERMINALIA ARBOREA (Teysm.) Koord. and Val. Combretaceæ.

(No. 732.) A tree 30 meters high and 65 centimeters in diameter, distributed throughout Java at altitudes under 1,000 feet. The fruits are used only medicinally; a decoction is said to be a remedy for colic and other digestive disorders. (Adapted from *Heyne, Nuttige Pflanzen Nederlandschindië, vol. 3, p. 355.*)

49565. TERMINALIA ARJUNA (Roxb.) Wight and Arn. Combretaceæ.

(No. 689.) *Arjan*. A very large tree with smooth green or whitish bark, found on river banks throughout central and southern India. The leaves are narrowly oblong, about 9 inches long, and the flowers, which appear in April and May, are borne in terminal panicles. This tree yields a transparent gum which is used as a drug in northern India; the bark is used for tanning, and the wood for carts and agricultural implements. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 4, p. 16,* and *Beddome, Flora Sylvatica of India, vol. 1, pl. 28.*)

For previous introduction, see S. P. I. No. 43668.

49527 to 49567—Continued.

49566. *VOACANGA GRANDIFOLIA* (Miquel) Rolfe. Apocynaceæ.
(*Pootia grandifolia* Miquel.)

(No. 744.) A shrub or small tree, native to Java, with opposite dark-green elliptic-oblong leaves up to a foot in length. The white flowers are borne in racemelike clusters. (Adapted from *Miquel, Flora van Nederlandsch Indië, vol. 2, p. 417.*)

49567. *CALAMUS* sp. Phœnicaceæ. Rattan palm.

(No. 932.) There are several species of this genus whose stems are known under the names of rattan or canes. These have reedlike stems, rarely more than an inch or two in thickness, and pinnate leaves. The flowers are small, generally pink or greenish, and the fruits are covered with smooth, shining scales. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 191.*)

49568 to 49581.

From Paris, France. Seeds presented by Prof. E. Schribaux, directeur de la Station d'Essais de Semences. Received March 27, 1920. Quoted notes in italic by Professor Schribaux; other notes by C. W. Warburton.

49568. *AVENA STERILIS* L. Poaceæ. Oats.

"*Avoine du Maroc.* A black oat with long medium-slender lemmas, weak to medium-strong awns, and numerous basal bristles. Probably a winter form and identical with the black kernels in S. P. I. No. 46565."

49569 and 49570. *AVENA SATIVA* L. Poaceæ. Oats.

49569. "*Ligowo* × *Brie.* A segregating hybrid."

49570. "*Ligowo* × *Brie.* A segregating hybrid."

49571 to 49578. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.

(*T. vulgare* Vill.)

49571. "*Blé de Bordeaux.*"

49572. "*Blé de Gironde.*"

49573. "*Bladette de Puylaurens.*"

49574. "*Rieti* × *Japhet* (No. 30 ou A4)."

49575. "*Rouge de Alsace* × *Bordeaux* (B1)."

49576. "*Rouge de Alsace* × *Bordeaux* (B2)."

49577. "*Rouge de Alsace* × *Bordeaux* (B3)."

49578. "*Rouge de Alsace* × *Bordeaux* (B4)."

49579 and 49580. *TRITICUM DURUM* Desf. Poaceæ. Durum wheat.

49579. "*Blé de Fanfaron.*" 49580. "*Enano de Jaen.*"

49581. *TRITICUM TURGIDUM* L. Poaceæ. Poulard wheat.

"*Poulard de Australie.*"

49582 to 49612.

From Kafue, Northern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 5, 1920. Quoted notes by Doctor Shantz.

49582. *ACACIA* sp. Mimosaceæ.

"(No. 346. December 7, 1919.) An acacia with very delicate papery pods; abundant along the upper Kafue River."

49582 to 49612—Continued.

49583. *ACACIA* sp. Mimosaceæ.

“(No. 349. December 7, 1919.) A large acacia with thick pods; probably the same as No. 276 [S. P. I. No. 49224]; is like *A. robusta*. One of the prominent, larger acacias of this region.”

49584. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ. **Pumpkin.**

“(No. 315. December 4, 1919.) A large pumpkin of the ordinary type.”

49585. *CYMBOPOGON RUFUS* (Nees) Rendle. Poaceæ. **Grass.**
(*Andropogon rufus* Kunth.)

“(No. 356. December 7, 1919.) One of the coarser grasses. I question whether this is a good grass for grazing, but it might do for roughage or dry fodder.”

49586 and 49587. *DIOSPYROS SENEGALENSIS* Perr. Diospyraceæ.

Inkulu.

49586. “(No. 296. Bolenga Camp on the Kafue River. November 26, 1919.) A small tree, 10 to 15 feet in height, which is more abundant here than any other type of fruit tree. The fruit, which is called *inkulu*, *inchange*, or *chanja*, is much prized by the natives. It is somewhat smaller than No. 295 [S. P. I. No. 49466] but of equally good flavor; it has one to five seeds (usually three to four in each fruit), is yellow or slightly tan in color, and when not ripe is apparently full of tannin. When the natives wish to eat this or any other fruit they either chop down some of the larger limbs or the whole tree in order to secure the fruit with little or no exertion; they have no respect for trees or any natural growth.”

49587. “(No. 297. Bolenga Camp on the Kafue River. November 25, 1919.) A superior tree of No. 296 [S. P. I. No. 49586]. This tree has somewhat longer fruits, which are sweeter and of much better flavor than those from the ordinary trees.”

49588. *ERYTHRINA* sp. Fabaceæ.

“(No. 347. December 7, 1919.) A tree with thick pods which are constricted around each red bean. Used only as an ornament.”

49589. *GARCINIA LIVINGSTONEI* T. Anders. Clusiaceæ.

“(No. 302. November 25, 1919.) More seeds of No. 263a [S. P. I. No. 49169] but collected at Kafue, where it is known as *munkononga* in the Chimyanja tongue.”

49590. *GOSYPIUM* sp. Malvaceæ.

“(No. 325. December 6, 1919.) A shrub 6 feet high which produces a large number of bolls that contain numerous seeds covered with very short brownish lint.”

49591 and 49592. *LAGENARIA VULGARIS* Schrad. Cucurbitaceæ. **Gourd.**

49591. “(No. 316. December 4, 1919.) A small gourd used green as a vegetable; it is very good. All these fruits are stewed green as a vegetable in this country.”

49592. “(No. 334. December 7, 1919.) A gourd used by the natives as soap; also said to be food for cattle and pigs; grows on a vine covering trees that are 20 to 30 feet high.”

49582 to 49612—Continued.

49593. *LUFFA CYLINDRICA* (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

“(No. 303. November 25, 1919.) Seed of the luffa, which grows abundantly here. Same as No. 273a [S. P. I. No. 49163].”

49594. *MANIHOT GLAZIOVII* Muell. Arg. Euphorbiaceæ. Ceara rubber.

“(No. 351. December 7, 1919.) The Ceara rubber plant was introduced from South America, but is now one of the chief rubber plants of Africa. The trees seem to grow well and are about 15 feet high.”

49595. *OCHNA POLYNEURA* Gilg. Ochnaceæ.

“(No. 326. December 7, 1919.) A small tree, 6 to 15 feet, which has unusually attractive light-green foliage and yellow flowers. The ochnas are among the most attractive trees of this section. For ornamentals they should be valuable wherever they can be grown. They withstand long droughts in this country, but their reaction to cold or frost will have to be determined experimentally.”

A fruiting branch of this shrub is shown in Plate V.

49596. *OCHNA* sp. Ochnaceæ.

“(No. 327. December 7, 1919.) A low bush with red calyces, black carpels, and light glaucous leaves. A most attractive plant, 1 to 1½ feet high, forming a low clump, which when in fruit is a mass of red sepals set off by green and later black carpels. This is by far the most beautiful ochna I have seen, but it forms only a low bush, seldom 2 feet high. The shape is that of a low mound, about three or four times as wide as it is high. The edge is often silvery with the foliage, while the top is red and black from the sepals and carpels.”

49597. *ODINA EDULIS* Sond. Anacardiaceæ.

“(No. 333. December 7, 1919.) A dark-purple grapelike fruit with a delicate skin, somewhat musty in flavor but pleasant after the first taste. It is eaten by the natives and is supposed to be a cure for ‘black water fever.’ The fruits are produced before the leaves, the latter appearing at about the time the fruits are ripe. The plant is acaulescent, or at least does not develop much above the surface of the soil and thus escapes the annual fires. It is abundant from Pretoria to Kafue.”

49598. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

“(No. 343. December 7, 1919.) A plant quite abundant on the flats; said by the natives to be an oil plant.”

49599. *STRYCHNOS* sp. Loganiaceæ.

“(No. 310. December 4, 1919.) The small-fruited sweet variety; it is relished by the natives. It is lemon-orange in color, has a thick stony rind, yellowish brown inside, and is rather juicy, with a tart but very agreeable flavor. It is unlike any fruit I have eaten, is much easier to eat than an orange and, I should say, as agreeable to the taste. In eating, the seeds are rejected, as are those of pomegranates. The fruits are borne in great abundance and apparently are possessed of excellent keeping qualities. I think this well worth trying out in cultivation.”

For an illustration of fruits of this species, see Plate VI.

49600. *STRYCHNOS* sp. Loganiaceæ.

“(No. 311. December 4, 1919.) A large fruit, 3 to 5 inches across, very like No. 310 [S. P. I. No. 49599], but not of as good flavor according to the natives. I doubt whether there is much difference.”

49582 to 49612—Continued.

49601. *VIGNA* sp. Fabaceæ.

"(No. 348. December 7, 1919.) This bean looks something like a cowpea, but is apparently a perennial; it was not seen in bloom. It grows 3 to 4 feet high and produces a good crop of beans. Those sent were the first ones to ripen."

49602 to 49604. *XIMENIA AMERICANA* L. Olacaceæ. False sandalwood.

49602. "(No. 301. November 25, 1919). A tree like No. 279 [S. P. I. No. 49250], but collected at Kafue."

49603. "(No. 304. December 4, 1919.) *Impinji*. Apparently the same as No. 301 [S. P. I. No. 49602] and No. 279 [S. P. I. No. 49250], but with slightly smaller fruits. These are fairly edible if skin and stone are both rejected. They look like *Prunus americana*, but are red in color and have a large stone with a 'paper' shell. The pounded seed is prized for its edible oil. Abundant in Nyasaland."

49604. "(No. 305. December 4, 1919.) Same as No. 301 [S. P. I. No. 49602]."

49605. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 306. December 4, 1919.) Corn, which is said to be small and early, now being planted by the natives on the south side of the Kafue River. The trees are burned down, or chopped and burned afterward, and corn is planted where the soil is richest and where there is least likelihood of trouble from weeds. Termite hills are usually favorite locations."

49606. (Undetermined.)

"(No. 294. Bolenga Camp on the Kafue River. November 25, 1919.) A small tree."

49607. (Undetermined.)

"(No. 298. Bolenga Camp on the Kafue River. November 25, 1919.) Called *m'tingele* by the Chimyanja. A small tree or shrub with a fruit that appears to be a small kumquat, but which is really fleshy outside. It is eaten by some of the natives. The fruit is very good, although the flesh is very thin."

49608. *CANTHIUM LANCIIFLORUM* Hiern. Rubiaceæ.

Maululu.

"(No. 317. December 4, 1919.) Called *maululu* in Chimyanja, and 'plum' or 'fruit tree' by the whites. A small tree, 6 to 10 feet high, with a spreading top. The fruits are green, changing to light brown when ripe; they are somewhat spicy and sweetish and very pleasant after the first taste; each fruit has one or possibly two seeds, from 1 to 1½ inches long. This is regarded by the whites as their best fruit. Green fruits collected one day ripen rapidly and are often good to eat the following day."

Plate VII shows the fruits and Plate VIII the habit of growth of this tree.

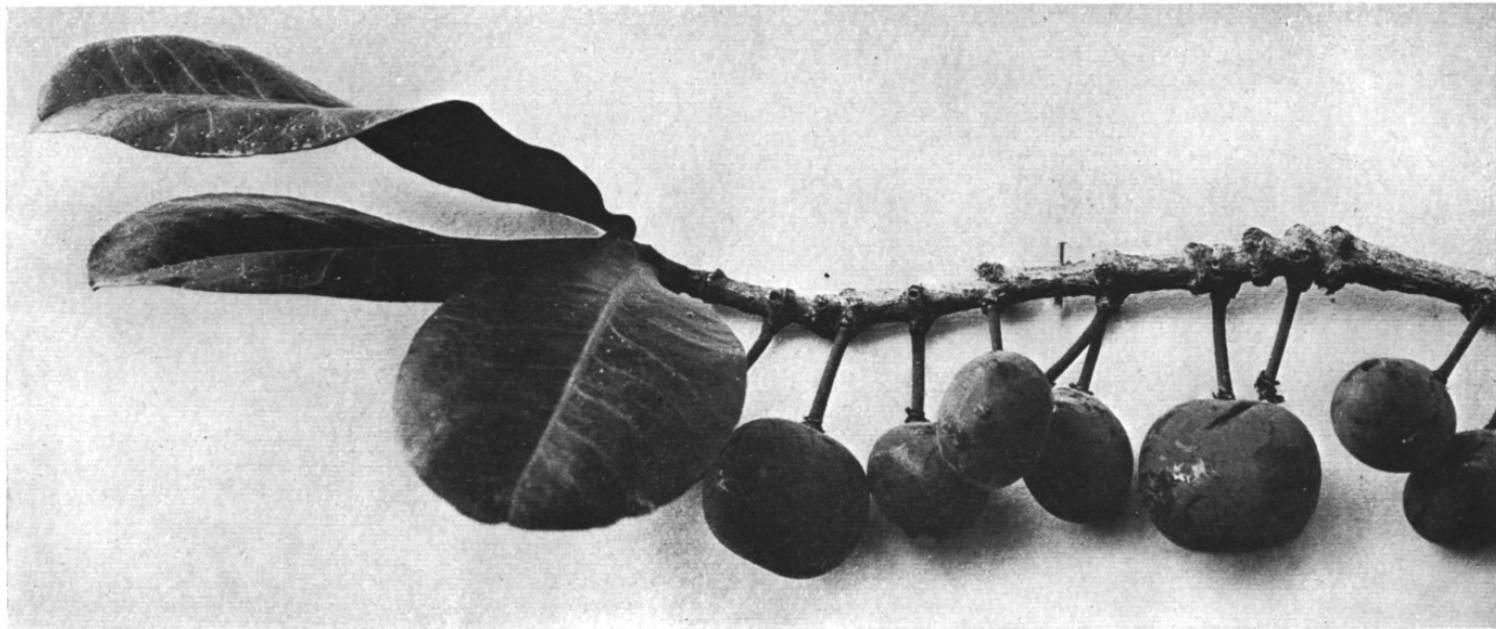
49609. (Undetermined.)

"(No. 319. Kafue. December 4, 1919.) *M'pila* (Chinja). A fruit about 2 inches through, which has a hard rind, green with a purple flush on one side; it is filled with seeds, which are surrounded with more or less fibrous pulp; the juice is milky. In flavor it is almost exactly like *Tamarindus*. It is used to make a very pleasant drink."



A LATEX-PRODUCING SHRUB FROM MOZAMBIQUE. (CONOPHARYNGIA ELEGANS STAPP, S. P. I. No. 49322.)

This small tree or large shrub is a very handsome ornamental when in full foliage, and as such merits attention in the South. Moreover, it produces very abundantly a milky juice, or latex, which has been suggested as of value for rubber. This shrub is closely allied to the genus *Landolphia*, which includes the most important rubber plants of Africa. (Photographed by Dr. H. L. Shantz, Lourenco Marques, Mozambique, October 25, 1919; P36561FS.)



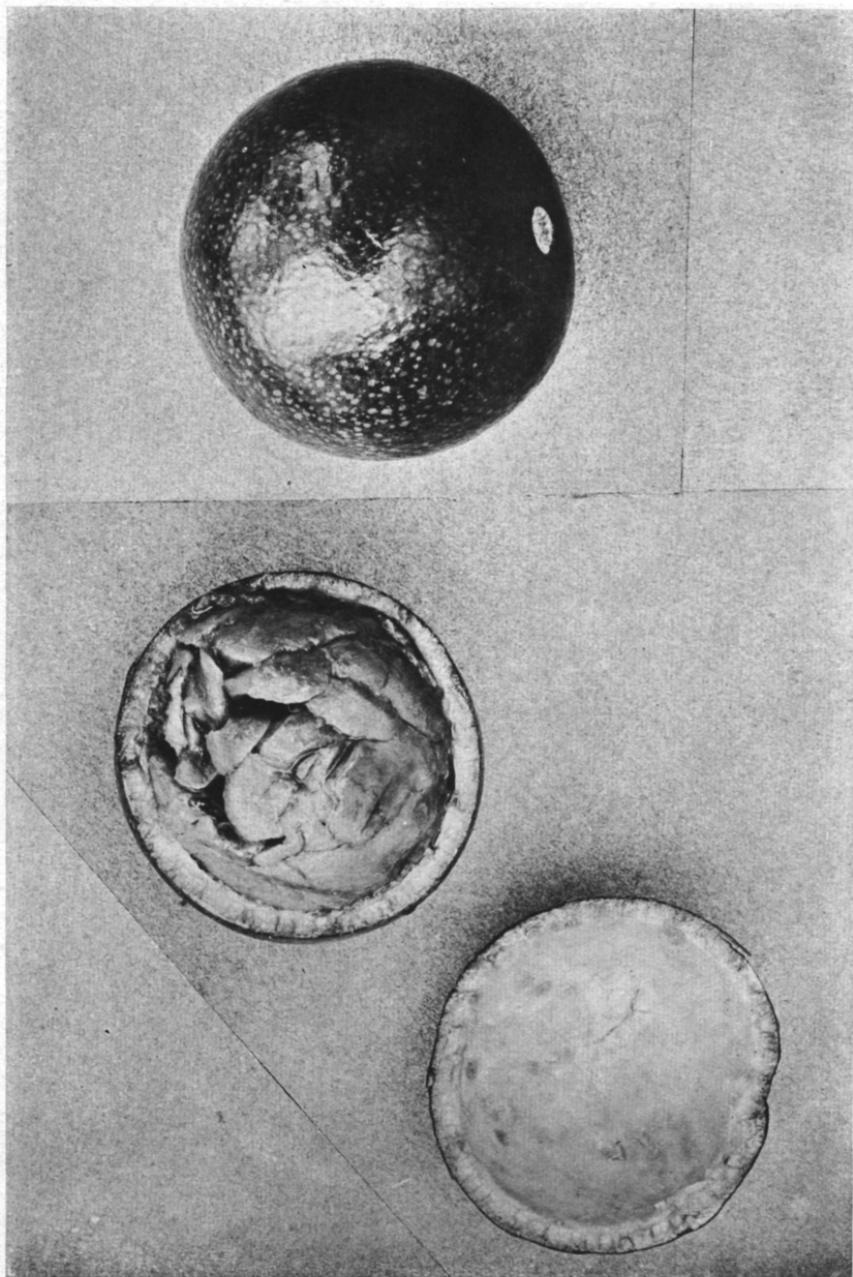
AN EAST AFRICAN RELATIVE OF THE MANGOSTEEN. (*GARCINIA LIVINGSTONEI* T. ANDERS., S. P. I. No. 49462.)

The munkononga, or mutunguu as the natives call this fruit, is one of the best indigenous fruits of East Africa. The tree is very productive and is itself very ornamental, as are the bright-orange fruits. The flesh of the fruits is juicy, orange colored, and of a delicious sprightly acid flavor. This species has already fruited in Florida, where it seems quite at home. (Photographed, slightly reduced, by Dr. H. L. Shantz, Victoria Falls, Southern Rhodesia, November 9, 1919; P36752FS.)



**A DROUGHT-RESISTANT ORNAMENTAL FROM NORTHERN RHODESIA. (OCHNA
POLYNEURA GILG., S. P. I. NO. 49595.)**

One of the most attractive of the native ornamentals, this species of *Ochna* is particularly beautiful both in flower and fruit. The shrub or small tree, 6 to 15 feet, in height, is quite as striking when the light-green foliage is contrasted with its black and yellow fruits as when the leaves form a neutral background for the masses of yellow flowers. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 3, 1919; P36824FS.)



A NEW RELATIVE OF THE KAFIR ORANGE. (STRYCHNOS SP., S. P. I. NO. 49599.)

"This small-fruited species has a deep-yellow fruit, with sweet juicy flesh, slightly acid, but of very pleasing flavor. It is much easier to eat than an orange and fully as agreeable to my taste. The fruits are borne in great abundance and are apparently possessed of excellent keeping qualities."—(Shantz.) The true Kafir orange is growing and fruiting in Florida. (Photographed, slightly reduced, by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 3, 1919; P36832FS.)



FRUITS OF THE MAULULU FROM THE ZAMBEZI BASIN. (*CANTHIUM LANCIFLORUM* HIERN, S. P. I. No. 49608.)

Regarded by the white people of the Zambezi River region as their best fruit, these "plums," as they are often called, merit wide trial. The sweet spicy flavor is very pleasant, and to those who have feasted on them the taste appeals as does that of few other fruits. (Photographed, slightly reduced, by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 3, 1919; P36826FS.)



A FRUITING TREE OF THE MAULULU. (CANTHIUM LANCIFLORUM HIERN, S. P. I. No. 49608.)

These trees are always small, usually not more than 6 to 10 feet tall, and their delicious fruits are borne profusely. The fruits are green, changing to a light brown when ripe, and are about the size of a large plum. When picked green they ripen rapidly and are often good to eat on the first or second day after being gathered. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 2, 1919; P36818FS.)

49582 to 49612—Continued.

49610. THUNBERGIA sp. Acanthaceæ.

"(No. 341. Kafue. December 7, 1919.) An attractive plant with a trumpet-shaped flower. This would make a fine garden flower."

49611. TROCHOMERIA GARCINI (L.) Benth. and Hook. Cucurbitaceæ.
(*Zehneria garcini* Sond.)

"(No. 350. Kafue. December 7, 1919.)"

An annual vine, native to Africa and India, with cordate, palmately 5-lobed leaves and small greenish flowers followed by 2-seeded fruits the size of a cherry. (Adapted from *Harvey, Flora Capensis, vol. 2, p. 487.*)

49612. PRINTZIA sp. Asteraceæ.

"(No. 355. Kafue. December 7, 1919.) A low perennial resembling *Centaurea*. May be valuable as a border plant."

49613 to 49661.

From Darjiling, Bengal, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received March 12, 1920.

49613. AIRA sp. Poaceæ.

Grass.

Received as *Deyeuxia filiformis*; identified at the Grass Herbarium.

49614. ALANGIUM ALPINUM (C. B. Clarke) Smith and Cave. Cornaceæ.

A deciduous tree, approaching 39 feet in height, with ascending branches and coriaceous leaves, glabrous above and pilose veined beneath. The lax, axillary, 3-flowered inflorescences with almost glabrous stamens are followed by black fruits, which are at first elongate turbinate, afterwards compressed ellipsoid. Native to the eastern Himalayas at altitudes of 5,000 to 9,000 feet. (Adapted from *Records of the Botanical Survey of India, vol. 6, p. 96.*)

49615. ANEMONE VITIFOLIA Buch.-Ham. Ranunculaceæ.

One of the commonest and most ornamental plants in Nepal, where it grows in all the forests of the great valley and the surrounding mountains, delighting in the most shady, retired, and moist situations in the vicinity of rills and torrents. It is also found in Kumaon and in Gossam Than in the Himalayas. The erect, nearly simple stem, clothed with oppressed hairs, is $1\frac{1}{2}$ to 3 feet high. The cordate radical leaves are long stalked, lobed, and coarsely serrated, much veined and somewhat wrinkled, glabrous above, downy and paler beneath. The involucre consists of two leaves like the radical leaves but smaller in size, inclosing two smaller leaves, from within which arise the three or four peduncles each bearing a single showy flower, drooping in the bud, afterwards erect. The white sepals are obovate and concave. (Adapted from *Curtis's Botanical Magazine, pl. 3376.*)

For previous introduction, see S. P. I. No. 47639.

49616. BERBERIS ANGULOSA Wall. Berberidaceæ.

Barberry.

A rare ornamental shrub, 4 feet high and upwards, growing at elevations of 11,000 to 13,000 feet in Nepal, Kumaon, and Sikkim. In autumn it forms a striking object from the rich golden yellow and red coloring of the foliage. The fruit is edible, being less acid than that of the common

49613 to 49661—Continued.

species of Europe and Asia. The erect, puberulent branches are stout, angled, and grooved, with slender, three to five branched spines. The deciduous fascicled leaves, 1 to 1½ inches long are oblanceolate, entire or with a few spinous teeth on the thickened margin, thinly coriaceous, opaque above, shining beneath. The pale golden yellow flowers are pendent on solitary or fascicled peduncles. The scarlet, globosely obovoid berry is nearly an inch long. (Adapted from *Curtis's Botanical Magazine*, pl. 7071.)

For previous introduction, see S. P. I. No. 40143.

49617. *BERBERIS CONCINNA* Hook. f. Berberidaceæ. **Barberry.**

A very beautiful and distinct species allied to *Berberis sibirica*, but readily distinguished by the long tripartite spines, slender pedicels, and glaucous leaves. The plant, native to the Sikkim Himalayas at elevations of 12,000 to 13,000 feet, forms a small low bush, 1 to 3 feet high, with spreading, almost prostrate branches thickly covered with small deep-green leaves, polished above, snowy white and glaucous below; these colors, together with the large scarlet berries and red branchlets give the shrub a singularly pretty appearance when in fruit. (Adapted from *Curtis's Botanical Magazine*, pl. 4744.)

For previous introduction, see S. P. I. No. 40145.

49618. *BERBERIS HOOKERI* Lem. Berberidaceæ. **Barberry.**
(*B. wallichiana* Hook., not DC.)

An upright-growing ornamental shrub, from 6 to 10 feet high, from near the summit of Mount Sheopur, Nepal. The long branches bear slender, rigid, deeply tripartite spines nearly an inch long. The beautiful spreading fascicled leaves resemble those of Christmas holly. From the center of these fascicles spring the drooping flower clusters. The outer 3 of the 9 to 12 spreading concave yellow sepals are tinged with red. The bright but rather pale yellow petals are concave and smaller than the sepals. (Adapted from *Curtis's Botanical Magazine*, pl. 4656.)

For previous introduction, see S. P. I. No. 44381.

49619. *BERBERIS UMBELLATA* Wall. Berberidaceæ. **Barberry.**

A hardy subevergreen ornamental shrub, about 3 feet high, with umbellike racemes of yellow flowers produced abundantly in June. It is readily increased either by seeds or by layering. It is easily known by its narrow, spineless leaves, slightly glaucous beneath when fresh, and becoming more so when dry. Native to the Himalayas. (Adapted from *Edwards's Botanical Register*, vol. 30, pl. 44.)

For previous introduction, see S. P. I. No. 33023.

49620. *BETULA UTILIS* D. Don. Betulaceæ. **Birch.**
(*B. bhojpattra* Wall.)

A moderate-sized deciduous tree, native to the temperate Himalayas from Kashmir to Sikkim and Bhutan, 40 to 60 feet high, or a shrub at high altitudes. The smooth, shining, reddish white or white bark peels off in broad horizontal rolls. In these layers the lenticels appear as pink patches. The wood is white with a pinkish tinge, tough, even grained, and moderately hard. A decoction of the bark is used as a wash for poisoned wounds. (Adapted from *Kirtikar, Indian Medicinal Plants*, vol. 2, p. 1213.)

For previous introduction, see S. P. I. No. 47647.

49613 to 49661—Continued.

49621. *Bromus* sp. Poaceæ.

Grass.

Received as *Avena aspera*; identified at the Grass Herbarium.49622. *Calamagrostis* sp. Poaceæ.

Grass.

Received as *Deyeuxia serotescens*; sample identified at the Grass Herbarium.49623. *Cassiope fastigiata* (Wall.) D. Don. Ericaceæ.

A beautiful free-flowering alpine shrub, about 9 inches high, one of the choicest from the northwestern Himalayas. These shrubs are fairly abundant at elevations of 12,000 to 13,000 feet in shady situations and in moist, peaty, well-drained soil. The solitary white bell-shaped flowers have the corolla segments recurved, showing the pink center and the curious awned stamens, like those of the arbutus. The tiny leaves, imbricated in four rows which give the stem a four-sided appearance, have white, membranous, ciliated margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 47, p. 379.)

49624. *Cathcartia villosa* Hook. f. Papaveraceæ.

A hardy annual or biennial found in the Sikkim Himalayas. The abundance of long, shaggy, fulvous hairs and the bright-yellow glabrous flowers give it a handsome appearance. The cordate radical leaves are long petioled and palmately five lobed; the stem leaves are sessile, and the uppermost are pinnatifid. The large nodding flowers have golden anthers and a green fleshy stigma. (Adapted from *Curtis's Botanical Magazine*, pl. 4596.)

49625. *Cautleya lutea* Royle. Zinziberaceæ.(*Roscoeia elattor* Smith.)

A plant common in the eastern Himalayas at altitudes of 5,000 to 8,000 feet, where it develops erect tufted stems, 8 to 10 inches long, with pale or reddish brown lower surfaces. The golden yellow flowers are borne in spikes 4 to 8 inches high. (Adapted from *Curtis's Botanical Magazine*, pl. 6991.)

For previous introduction, see S. P. I. No. 47656.

49626. *Corylus ferox* Wall. Betulaceæ.

Hazel.

A Chinese tree 20 feet in height, with light, compact, pale wood. The nuts are small and precisely like the common hazelnut in taste. The tawny yellow shell is exceedingly hard and thick. The involucre is made up of beautiful greenish gray lacinate bracts. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 1, p. 77.)

49627. *Cotoneaster acuminata* Lindl. Malaceæ.

An ornamental shrub native to the Himalayas, with erect branches, ovate-lanceolate leaves $1\frac{1}{2}$ inches long, and white or pinkish flowers, followed by orange-red globose obovoid fruits. (Adapted from *Revue Horticole*, vol. 61, p. 348.)

For previous introduction, see S. P. I. No. 47663.

49628. *Cyperus* sp. Cyperaceæ.

Sedge.

Received as *Stipa orthoraphium*; identified at the Grass Herbarium.

49613 to 49661—Continued.

49629. *DANTHONIA CACHEMYRIANA* Jaub. and Spach. Poaceæ. Grass.

A perennial grass, with stems 1 to 2 feet high, ascending from a stout woody stock, densely tufted or creeping below and clothed with shining sheaths. The long narrow convolute leaves are erect, wiry, and glabrous; the lower sheaths rarely tomentose. The spikelets are erect, pale, and rather shining. Native to the temperate and alpine Himalayas and western Tibet at elevations of 10,000 to 14,000 feet. (Adapted from *Hooker, Flora of British India, vol. 7, p. 281.*)

49630. *DICENTRA SCANDENS* (D. Don) Walp. Papaveraceæ.

An herbaceous perennial, native to the temperate Himalayas from Nepal to Garwhal at elevations of 5,000 to 6,000 feet. The angled stem is slender and graceful, and each raceme bears 8 to 12 yellow or purple flowers nearly an inch long, followed by membranous lanceolate capsules. (Adapted from *Hooker, Flora of British India, vol. 1, p. 121.*)

49631. *DICENTRA THALICTRIFOLIA* (Wall.) Hook. f. and Thoms. Papaveraceæ.

A slender climbing plant with a perennial root, native to the temperate regions of the Himalayas from Nepal to Bhutan and in the Khasi Hills at altitudes of 4,000 to 8,000 feet. Very similar to *Dicentra scandens* except for the thick fleshy ovate-cordate capsule. (Adapted from *Hooker, Flora of British India, vol. 1, p. 121.*)

For previous introduction, see S. P. I. No. 47674.

49632. *DOBINEA VULGARIS* Buch.-Ham. Anacardiaceæ.

A branching shrub from Nepal, with opposite elliptic, acutely serrate leaves, 4 to 6 inches long. The minute flowers are in lax panicles; the staminate are campanulate and the pistillate apetalous. The narrow capsule has winged margins. (Adapted from *Don, Prodromus Florae Nepalensis, p. 249.*)

49633. *ELAEOCARPUS PRUNIFOLIUS* Wall. Elæocarpaceæ.

A tree native to Sylhet and the Khasi Hills at altitudes of 1,000 to 3,000 feet. The glabrous lanceolate leaves, 3 to 5 inches long and often recurved, are on 2-inch petioles. The loose racemes of silky flowers, nearly as long as the leaves, are followed by ovoid drupes nearly an inch long. (Adapted from *Hooker, Flora of British India, vol. 1, p. 407.*)

49634. *ENKIANTHUS DEFLEXUS* (Griffith) C. Schneid. Ericaceæ.

(*E. himalaicus* Hook. f. and Thoms.)

A large ornamental shrub or small tree, 20 feet in height, native to Bhutan and Sikkim at elevations of 8,000 to 10,000 feet, with deciduous leaves crowded toward the ends of the branches and whorls of drooping flowers. The stiff slender branches have red-brown bark, the young ones being bright red, as are also the petioles, midribs, and margins of the leaves. The lanceolate serrulate leaves are 2 to 3 inches long, pubescent beneath when young. The broadly campanulate flowers, half an inch long, with dull yellowish red petals streaked and tipped with brighter red are borne on pendulous hairy pedicels, 1½ inches long. (Adapted from *Curtis's Botanical Magazine, pl. 6460.*)

For previous introduction, see S. P. I. No. 33772.

49613 to 49661—Continued.

49635. *FICUS HOOKERI* Miquel. Moraceæ.

An entirely glabrous tree, with thinly coriaceous oval leaves up to 11 inches in length and axillary, depressed, obovate fruits growing in pairs, up to an inch in diameter when ripe. This fig is not common; it ascends to 6,000 feet in the Sikkim Himalayas and Khasi Hills, India. (Adapted from King, *Annals of the Royal Botanic Garden, Calcutta, vol. 1, p. 36.*)

For previous introduction, see S. P. I. No. 47685.

49636. *GYNOCARDIA ODOBATA* R. Br. Flacourtiaceæ.

A moderate-sized evergreen tree, with hard round fruits which grow on the stem and main branches, found from Sikkim and the Khasi Hills eastward to Chittagong, Rangoon, and Tenasserim. The fruits 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 *Hydnocarpus kurzii*. (Adapted from Watt, *Dictionary of the Economic Products of India, vol. 4, p. 192*, and Watt, *Commercial Products of India, pp. 546, 1067.*)

49637. *IMPERATA CYLINDRICA* (L.) Beauv. Poaceæ.

Blady grass.

(*I. arundinacea* Cyrilli.)

A well-known agricultural and technical chemist in Queensland has conducted very successful experiments in manufacturing paper pulp out of *lalang grass*, or, as it is more commonly known, *blady grass*, on account of its great blades, which are 4 or 5 feet long. It resembles very closely the esparto of Spain and North Africa, and when dried before making it into pulp yields as high as 60 per cent of first-class paper-making pulp.

This expert states that esparto is the best pulp known and the blady-grass product is within 10 per cent of the same value. There are millions of tons of this grass growing in Queensland. Three crops a year can be cut from it. (Adapted from *Indian Trade Journal, vol. 44, p. 252.*)

For previous introduction, see S. P. I. No. 47700.

49638. *IRIS CLARKEI* Baker. Iridaceæ.

Iris.

A handsome iris with a very stout creeping rootstock, a tall stout stem, and linear leaves reaching 2 feet in length. The perianth is bright lilac blotched with violet, with a yellow throat. The bright-violet styles are an inch long with square crests. (Adapted from Hooker, *Flora of British India, vol. 6, p. 275.*)

For previous introduction, see S. P. I. No. 39019.

49639. *JASMINUM HUMILE* L. Oleaceæ.

Jasmine.

A profuse-flowered Chinese plant with drooping, somewhat angular branches and pinnate entire leaves, paler beneath. The terminal-panicled yellow flowers are very sweet scented. The tube of the corolla is shorter than the 5 or 6 cleft limb, which is rolled back. The large tongue-shaped anthers lie in the throat of the corolla tube. One plant, only a foot in height, bore 12 panicles. (Adapted from Curtis's *Botanical Magazine, pl. 1731.*)

For previous introduction, see S. P. I. No. 39120.

49613 to 49661—Continued.

49640. *LIGUSTRUM CONFUSUM* Decaisne. Oleaceæ.

A small tree, sometimes attaining a height of 40 feet in Sikkim, India, where it is native. The leathery leaves are up to 3½ inches long, and the white flowers appear in panicles from 1 to 5 inches in length. (Adapted from *Hooker, Flora of British India, vol. 3, p. 616.*)

For previous introduction, see S. P. I. No. 47706.

49641. *LILIUM GIGANTEUM* Wall. Liliaceæ. Lily.

This majestic lily is common in the damp thick forests of the Himalayas, the Provinces of Kumaon, Gurhwal, and Busehur. The bulb grows close to the surface in rich black mold at altitudes of 7,500 to 9,100 feet, where it is covered with snow November to April. The smooth hollow stems are commonly from 6 to 9 feet high and are used for musical pipes. The handsome cordate leaves, shining dark green above, paler below, are 10 to 12 inches long on petioles of equal length; both become smaller near the apex. In the large, fragrant white flowers, 12 to a raceme, the perianth tube is slightly greenish, and the inner surfaces of the segments are tinged with deep purple. (Adapted from *Curtis's Botanical Magazine, pl. 4673.*)

49642. *MICHELIA EXCELSA* Blume. Magnoliaceæ.

A lofty deciduous tree found in the temperate Himalayas from Nepal to Bhutan, at altitudes of 5,000 to 8,000 feet, and on the Khasi Hills. The tree is known as the white magnolia; the sapwood is small and white and the heartwood olive brown and glossy. The wood is soft but very durable and is used for planking, for door and window frames, and for furniture. It is the principal wood employed for these purposes in the Darjiling Hills. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 5, p. 243.*)

For previous introduction, see S. P. I. No. 47731.

49643. *MICHELIA LANUGINOSA* Wall. Magnoliaceæ.

A Himalayan tree of variable height, with leaves white and fuzzy beneath and white flowers 3 to 4 inches in diameter. In Sikkim it forms a large bush, flowering in autumn. (Adapted from *Hooker, Flora of British India, vol. 1, p. 43.*)

For previous introduction, see S. P. I. No. 47732.

49644. *PANAX PSEUDOGINSENG* Wall. Araliaceæ.

(*Aralia pseudoginseng* Benth.)

An herbaceous perennial from Nepal, with 3 to 5 fascicled tubers, which are mucilaginous and slightly aromatic. The purplish stem is erect and simple, and the three or four radical leaves, 2 to 6 inches long, are palmate. The upper leaves are somewhat rough with copious gray, bristly hairs. The leaflets are lanceolate and deeply serrate. The small white flowers are in three umbels, followed by globose scarlet berries. (Adapted from *Wallich, Plantae Asiaticae Rariores, vol. 2, p. 30.*)

For previous introduction, see S. P. I. No. 42622.

49645. *PIPTANTHUS NEPALENSIS* (Hook.) Sweet. Fabaceæ.

A fairly hardy evergreen climber with beautiful foliage and flowers, which are attractive throughout the summer. It thrives in poor soils if the situation be warm, sunny, and sheltered. In common with most leguminous plants *Piptanthus* makes simple vertical roots 3 feet in

49613 to 49661—Continued.

length; it then develops stems 3 feet long the first season and reaches a height of 10 feet in the third year. It speedily covers the wall space allotted to it. In the first spring it will make lateral growths, each terminated by a raceme of yellow flowers that in shape closely resembles a bunch of grapes; the individual flowers bear a close resemblance to those of the English gorse (*Ulex europaeus*). The deep green, glabrous, trifoliolate leaves are large and of similar shape to those of well-grown broad beans (*Vicia faba*). (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 43, p. 178.)

49646. POLYGALA ARILLATA Buch.-Ham. Polygalaceæ.

A large shrub from the mountains of Nepal, with dark-green leaves 5 to 7 inches long and nodding yellow-flowered racemes equaling the leaves in length. The large 3-petaled flowers are irregular; two petals are spreading, and the center one is 3-lobed with the innermost lobe keel shaped. The purple coriaceous capsule is kidney shaped, and the solitary globose seeds are suspended from the center of the capsule in large fleshy, golden yellow arils. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 1, p. 84.)

49647. PRUNUS CERASOIDES D. DON. Amygdalaceæ. Himalayan cherry. (*P. puddum* Roxb.)

A large tree of brilliant appearance when in flower, from altitudes of 3,000 to 8,000 feet in the temperate Himalayas. The cymes of rose-red or white flowers are followed by oblong drupes with acid yellowish red flesh. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314.)

For previous introduction, see S. P. I. No. 48276.

49648. RHODODENDRON ANTHOPOGON DON. Ericaceæ. Rhododendron.

A small shrub, 1 foot high, with rough, densely scaly branches and leaves which are 1½ inches long, cinnamon brown beneath and, as it were, tomentose from the layer of glands. The yellow flowers are in numerous short terminal fascicles. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 472.)

For previous introduction, see S. P. I. No. 39051.

49649. RHODODENDRON LEPIDOTUM WALL. Ericaceæ. Rhododendron.

"This is a very distinct evergreen from the Himalayas and western China. It grows about 1½ feet high, forming compact bushes which bear curious flat purple or reddish blossoms freely during May." (*Gardening Illustrated*, vol. 40, p. 303.)

For previous introduction, see S. P. I. No. 39066.

49650. RHODODENDRON SETOSUM DON. Ericaceæ. Rhododendron.

A neat little shrublet about a foot in height, native of the moorland and rocky slopes of the loftier passes leading across the eastern Himalayas into Tibet, reaching its uppermost limit within a few miles of the summit. Here the brilliant red-purple flowers render this species a charming object, and after hot sunshine the air is filled with a heavy aroma due to a copious resinous secretion which testifies to the comparatively dry climate it enjoys. It is a typical high alpine species with its late flowering and early fruiting, its dwarf habit, and slow growth. The twigs are beset with deciduous spreading hairs. The tiny coriaceous

49613 to 49661—Continued.

ous leaves are sparingly scaly on both surfaces. (Adapted from *Curtis's Botanical Magazine*, pl. 8523.)

For previous introduction, see S. P. I. No. 39067.

49651. *RIBES GRIFFITHII* Hook. f. and Thoms. Grossulariaceæ.

A glabrous plant from the temperate and subalpine east Himalayas, in Bhutan and Sikkim at 10,000 to 13,000 feet. The broad cordate leaves, 3 to 7 lobed, are very smooth and pointed. The lax pendent racemes, 9 inches long, bear large flowers, followed by very beautiful red berries, which are extremely sour. (Adapted from the *Journal of the Linnean Society*, vol. 1, p. 88.)

For previous introduction, see S. P. I. No. 44904.

49652. *RUBIA CORDIFOLIA* L. Rubiaceæ.

Madder.

An herbaceous creeper with rough or hispid leaves, five to a whorl, common throughout the hilly districts of India from the northwest Himalayas eastward and southward to Ceylon. The manjit root obtained from this plant was formerly much employed by the natives of India in dyeing coarse cotton cloth various shades of scarlet, coffee-brown, or mauve. It has been largely displaced by the tar dyes, but is still employed for special purposes or in remote localities. The method of dyeing practiced is much the same all over India, the color being produced by steeping the fabric in an infusion of the stem or root chips, subsequent to being mordanted with a solution of alum. (Adapted from *Watt, Commercial Products of India*, p. 927.)

For previous introduction, see S. P. I. No. 48277.

49653. *RUBUS MOLUCCANUS* L. Rosaceæ.

A robust prickly plant from elevations of 3,000 to 7,000 feet in the central and eastern Himalayas. The inflorescences and wide-spreading branches are densely clothed with white, gray, or fulvous tomentum, and the leaves, 2 to 10 inches across, are tomentose beneath. The white flowers are followed by globose juicy fruits of many small scarlet drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 330.)

For previous introduction, see S. P. I. No. 47782.

49654. *RUBUS* sp. Rosaceæ.

Received as *Rubus niveus*. The seeds do not agree with our samples of *R. niveus* Thunb. nor with *R. niveus* Wall.=*R. pedunculatus* Don.

49655. *SLOANEA DASYCARPA* (Benth.) Hemsl. Elæocarpaceæ.

A Chinese tree about 15 feet high, with rigidly erect flowering branches. The lanceolate leaves are coriaceous, the nodding flowers are axillary or in terminal corymbs; the sepals are broad, and the cup-shaped corolla is toothed and scarcely longer than the very numerous stamens. The prickly capsule dehisces into five valves, each valve bearing a fleshy, golden aril containing four or five seeds. (Adapted from *Hooker, Icones Plantarum*, pl. 2628.)

49656. *SOLANUM MACRODON* Wall. Solanaceæ.

An erect, shrubby plant, clothed with minute, glistening, jointed hairs, growing at altitudes of 3,000 to 8,000 feet in the temperate Himalayas from Nepal to Bhutan and in the Khas Hills. The lanceolate leaves,

49613 to 49661—Continued.

2 to 6 inches long, are setulose above. The purple-rose or nearly white flowers are followed by small globose berries. (Adapted from *Hooker, Flora of British India, vol. 4, p. 232.*)

For previous introduction, see S. P. I. No. 47799.

49657. SORBUS MICROPHYLLA Wenzig. Malaceæ.
(*Pyrus microphylla* Wall.)

An ornamental shrub native to the Himalayas, with erect, spreading branches and gray-black bark. The compound unequally pinnate leaves are green above, paler below. The small flowers are in corymbs and are followed by small ruby-colored pomes. (Adapted from *Garcke, Linnaea, vol. 38, p. 76.*)

For previous introduction, see S. P. I. No. 39135.

49658. SPIRÆA BELLA Sims. Rosaceæ. Spiræa.

A beautiful hardy shrub, native to Nepal, continuing in flower from May until the end of the summer. It may be increased by layers or seeds and flourishes in fresh loamy soil. The lanceolate blue-green leaves are alternate and the full terminal clusters of rose-colored flowers make this a striking ornamental. (Adapted from *Loddiges, Botanical Cabinet, vol. 13, pl. 1268.*)

For previous introduction, see S. P. I. No. 47801.

49659. SPIRÆA MICRANTHA Hook. f. Rosaceæ. Spiræa.

A shrub, native to Sikkim, India, and Bhutan, at altitudes of 5,800 to 10,000 feet. The membranous or coriaceous ovate-lanceolate leaves, 7 inches long, are glaucous hairy beneath. The very broad open cymes have small pale-colored flowers with spreading hairs. (Adapted from *Hooker, Flora of British India, vol. 2, p. 325.*)

For previous introduction, see S. P. I. No. 47802.

49660. STYRAX HOOKERI C. B. Clarke. Styracaceæ. Styrax.

A tree, often 40 feet high, from altitudes of 6,000 to 7,000 feet in Sikkim and Bhutan. The inch-long flowers are tomentose outside, and the young branches are stellately pubescent. The wood is white, close grained, and moderately hard. (Adapted from *Hooker, Flora of British India, vol. 6, pt. 8, p. 385.*)

49661. SWERTIA HOOKERI C. B. Clarke. Gentianaceæ.

A perennial herb with tufted, long-petioled, elliptic, radical leaves, 4 inches long, and smaller sessile stem leaves. The nodding purplish blue-veined flowers with oblong blue anthers are in axillary cymes. The annual flowering stems, 1½ to 4 feet high, are erect, thick, and hollow. (Adapted from *Hooker, Flora of British India, vol. 4, p. 127.*)

For previous introduction, see S. P. I. No. 41591.

49662 to 49686.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received March 16, 1920.

49662. BERBERIS BRACHYPODA Maxim. Berberidaceæ. Barberry.

(Seeds of Wilson No. 4416.) A bushy barberry 4 to 7 feet in height, found at altitudes of 5,200 to 11,700 feet in western China. It has 3-parted spines, oval serrate leaves, long slender panicles of yellow flowers, and

49662 to 49686—Continued.

scarlet fruits up to half an inch in diameter. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375*, and *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 922*.)

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

49663. BUDDLEIA DAVIDII Franch. Loganiaceæ.

(*B. variabilis* Hemsl.)

(Seeds.) A tall shrub, native to the mountainous portions of northern China, with opposite dark-green leaves from 4 inches to a foot in length, oblong or narrowly lanceolate, and either coarsely serrate or entire. The clear lilac flowers are crowded in dense heads 4 to 6 inches long. (Adapted from *Curtis's Botanical Magazine, pl. 7609*.)

For previous introduction, see S. P. I. No. 44531.

49664. CHAENOMELES LAGENARIA WILSONII Rehd. Malaceæ.

(Seeds of Wilson No. 4120.) A bush 4 to 6 meters tall, found at an altitude of 1,800 meters in western Szechwan. The flowers vary in color from white to red, and the fruits are golden and red. This variety differs from the typical form in the dense yellowish wool which covers the lower surfaces of the leaves. (Adapted from *Sargent, Plantae Wilsonianae vol. 2, p. 298*.)

For previous introduction, see S. P. I. No. 34589.

49665. CORNUS PAUCINERVIS Hance. Cornaceæ.

(Seeds of Wilson No. 136.) A low, spreading shrub, native to eastern Szechwan, China, where it frequents river banks and similar situations. The deep-green lanceolate leaves are nearly 2 inches long, and the white, showy flower clusters are produced abundantly in July from the ends of the branches and branchlets. About the 1st of October appear the jet-black fruits, which are quite showy. (Adapted from the *Gardening Magazine, vol. 24, p. 200*.)

49666. COTONEASTER SALICIFOLIA FLOCCOSA Rehd. and Wils. Malaceæ.

(Plants of Wilson No. 1133a.) A graceful shrub 2 to 4 meters high, native to western Szechwan, China, at altitudes of 2,300 to 3,000 meters. The coriaceous, usually oblong-lanceolate light-green leaves are up to 2 inches in length; the white flowers are borne in dense corymbs, and the roundish fruits are light red. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 173*.)

For previous introduction, see S. P. I. No. 44422.

49667. CRATAEGUS CULLASAGENSIS Ashe. Malaceæ.

(Cuttings.) A small tree up to 25 feet in height, native to Macon County, N. C., where it frequents dry woods and slopes. It has rough dark bark, dropping branches, obovate or elliptic serrate leaves, and roundish fruits about half an inch long, which become orange-red at maturity. (Adapted from *Small, Flora of the Southeastern United States, p. 555*.)

49668. DAVIDIA INVOLUCRATA Ball. Cornaceæ.

(Plants.) A shrub or low tree, indigenous to western China, with alternate, oval, acuminate leaves and terminal flower heads. Each flower head is preceded by two large creamy white bracts of unequal size, the larger reaching a length of about 7 inches. (Adapted from *Gardeners' Chronicle, 3d. ser., vol. 33, p. 786*.)

49662 to 49686—Continued.

49669. *DAVIDIA INVOLUCRATA VILMORINIANA* (Dode) Hemsl. Cornaceæ.

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

For previous introduction, see S. P. I. No. 44127.

49670. *DEUTZIA VILMORINAE* Lemoine and Bois. Hydrangeaceæ.

(Plants of M. Vilmorin No. 1547.) A vigorous erect shrub, native to China, suggesting in general appearance some of the smaller kinds of *Philadelphus*. Late in the spring it bears clusters of pure-white flowers with yellow anthers. Because of its late flowering it usually escapes the injurious effects of late frosts. (Adapted from *Gardening Illustrated*, July 7, 1917.)

For previous introduction, see S. P. I. No. 35184.

49671. *DEUTZIA* sp. Hydrangeaceæ.

(Plants of M. Vilmorin No. 4277.)

49672. *HEMIPTOLEA DAVIDII* (Hance) Planch. Ulmaceæ.

(*Zelkova davidii* Hemsl.)

(Cuttings.) A stout-branched shrub, native to Mongolia, with smooth brown bark and long stout spines on the smaller branches. The caducous leaves are small, oval, and deeply dentate, and the very inconspicuous flowers appear in April. (Adapted from *Revue Horticole*, vol. 85, p. 30.)

49673. *HYPERICUM PATULUM HENRYI* Veitch. Hypericaceæ.

(Plants of Wilson No. 1355.) This variety of *Hypericum patulum*, first discovered by Dr. A. Henry in Yunnan, China, is hardier than the typical form and sturdier in habit. The ovate dark-green leaves are 2 to 3 inches long, and the flowers are of a rich glowing yellow and about 2 inches wide. (Adapted from *Gardeners' Chronicle*, third series, vol. 38, p. 179.)

For previous introduction, see S. P. I. No. 43849.

49674. *JASMINUM NUDIFLORUM* Lindl. Oleaceæ.

Jasmine.

"A yellow-flowered jasmine, growing on dry banks, ravines, etc., in Shansi, China, where it flowers before the leaves come out, sometimes even in midwinter. The plants are of spreading habit, with very long, slender, green branches which root wherever they touch moist ground, making them very desirable for covering old walls, banks, etc." (*Frank N. Meyer*.)

For previous introduction, see S. P. I. No. 38248.

49675 to 49677. *LIGUSTRUM DELAVAYANUM* Harlot. Oleaceæ. Privet.

This hardy shrub was first discovered by Abbé Delavay in the mountains of Yunnan, China, where it became 2 to 4 meters high. In habit it is prostrate-spreading except for a few perfectly upright branches which rise from the center of the shrub. The shining dark-green foliage, which is remarkably persistent, reminds one of a myrtle and with the white flowers and blue-black fruits makes this plant a very attractive ornamental. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 601, and *Revue Horticole*, vol. 73, p. 495.)

49662 to 49686—Continued.

49675. (Seeds of Wilson No. 1075.)

49676. (Seeds of Wilson No. 1076a.)

49677. (Seeds of Wilson No. 1290.)

49678. *POPULUS YUNNANENSIS* Dode. Saliaceæ.

Poplar.

(Cuttings.) A poplar from the Province of Yunnan, China, with oval or narrowly oval, lightly dentate acuminate leaves with whitish lower surfaces. (Adapted from Dode, *Extraits d'Une Monographie Inédite du Genre Populus*, p. 63.)

49679. *PYRACANTHA CRENULATA* (Don) Roemer. Malaceæ.(*Crataegus crenulata* Roxb.)

(Plants.) "A rather small hawthorn, closely allied to *Crataegus pyracantha*, with small glistening green foliage and bearing a multitude of bright-red berries, found in stony places in Kansu, China, at altitudes of 3,000 to 5,000 feet. It would be very attractive as an ornamental rockery shrub." (*Frank N. Meyer.*)

For previous introduction, see S. P. I. No. 40737.

49680. × *RHODODENDRON SMITHII* Sweet. Ericaceæ.

Rhododendron.

(Plants.) "A hybrid of *Rhododendron arboreum* and *R. ponticum* with rose-purple flowers." (*Rehder.*)

49681. *RHODODENDRON* sp. Ericaceæ.

Rhododendron.

(Plants of M. Vilmorin No. 5303.)

49682. *RIBES DIACANTHA* Pall. Grossulariaceæ.

Currant.

(Plants.) A deciduous shrub, 4 to 6 feet high, native to Siberia and northern China. The obovate or rounded leaves are coarsely toothed and often 3-lobed and are up to 2 inches in width. The male flowers are yellow and are borne in erect racemes, and the smooth scarlet fruits are about the size of a red currant. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 401.)

For previous introduction, see S. P. I. No. 40431.

49683. *ROSA LONGICUSPIS* Bertol. Rosaceæ.

Rose.

(*R. sinowilsoni* Hemsl.)

(Plants of Wilson No. 1334.) A rambling bush about 20 feet high, native to western China, with sparse short prickles, large dark-green leaves, and very large lax corymbs of white flowers, the latter up to 2 inches in width. (Adapted from *Kew, Bulletin of Miscellaneous Information*, 1906, p. 158.)

49684. *ROSA SOULIEANA* Crép. Rosaceæ.

Rose.

(Seeds.) A large straggling bushy rose, native to Szechwan, China, with short, very sharp prickles and pale-green leaves 2 to 3 inches long. The creamy white flowers are about 2 inches wide and are borne singly at the ends of the branches or in cymose clusters. The small globular fruits are orange. (Adapted from *Willmott, The Genus Rosa*, pt. 4, pl. 18.)

For previous introduction see S. P. I. No. 38159.

49685. *SPIRÆA JAPONICA ACUMINATA* Franch. Rosaceæ.

Spirea.

(Plants of Wilson No. 579.) A handsome, hardy, deciduous shrub, 3 to 6 feet in height, native to western Szechwan and Hupeh, China, at altitudes of 1,000 to 1,700 meters. In July and August appear the

49662 to 49686—Continued.

brilliant rose-colored or red flowers which make a very fine contrast with the dark-green foliage. (Adapted from Paxton, *The Flower Garden*, vol. 11, p. 113, and Sargent, *Plantae Wilsonianae*, vol. 1, p. 452.)

49686. STYRAX JAPONICUM Sieb. and Zucc. Styracaceæ.
(*S. serrulatum* Hook. f., not Roxb.)

(Plants.) A bush or small tree, common in southern Japan, where it is much cultivated on account of its ornamental appearance. The leaves, very variable in size and form, are usually elliptic or narrower, and the white flowers, borne in drooping cymes, are about three-fourths of an inch in diameter. (Adapted from Curtis's *Botanical Magazine*, pl. 5950.)

49687 to 49708.

From Belgian Congo. Seeds and bulbs collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 22, 1920. Quoted notes by Doctor Shantz.

49687. BRACHIARIA BRIZANTHA (Hochst.) Stapf. Poaceæ. Grass.
(*Panicum brizanthum* Hochst.)

"(No. 424. Bukama. January 15, 1920.) A tall grass, especially in the higher land. Very abundant on the uplands, forming a large part of the great grass cover of this grassland country, with scattered trees and bushes."

49688. CAESALPINIA PULCHERRIMA (L.) Swartz. Cæsalpinaceæ.

"(No. 437. Bukama. January 16, 1920.) One of the most ornamental shrubs of this section. The flowers are red with 10 long stamens. It is extensively planted on the streets of Kongola."

For previous introduction, see S. P. I. No. 7266.

49689. CHLORIS PARAGUAIENSIS Steud. Poaceæ. Grass.

"(No. 422. Bukama. January 15, 1920.) A semiruderal which with *Dactyloctenium aegyptium* constitutes the chief weed cover at Bukama. It is very prolific and ripens its seeds early. It occurs even in the native sod."

For previous introduction, see S. P. I. No. 45208.

49690. DACTYLOCTENIUM AEGYPTIUM (L.) Richter. Poaceæ. Grass.
(*Eleusine aegyptiaca* Desf.)

"(No. 423. Bukama. January 15, 1920.) A ruderal varying greatly in size; it forms a dense early growth following rains. It often looks like Buchloë when reduced to one spikelet by overcrowding."

For previous introduction, see S. P. I. No. 38017.

49691. DALECHAMPIA sp. Euphorbiaceæ.

"(No. 417. Bukama. January 16, 1920.) A very attractive slender vine with white bracts below the flowers. It looks somewhat like a Euphorbia."

49692. DIGITARIA UNIGLUMIS (A. Rich.) Stapf. Poaceæ. Grass.

"(No. 438. Bukama. January 15, 1920.) An important river-bottom grass with slender branched panicles."

49687 to 49708—Continued.

49693. *ECHINOCHLOA PYRAMIDALIS* (Lam.) Hitchc. and Chase. Poaceæ. Grass.
(*Panicum pyramidale* Lam.)

"(No. 425. Bukama. January 15, 1920.) A tall grass of the lower lands."

49694. *ERAGROSTIS CILIANENSIS* (All.) Link. Poaceæ. Grass.

"(No. 426. Bukama. January 15, 1920. Herb. No. 469.) A low grass; it may be the same as that collected at Elizabethville."

49695. *GLADIOLUS PSITTACINUS* Hook. Iridaceæ. Gladiolus.

"(No. 418. Bukama. January 16, 1920. Herb. No. 560.) A beautiful pure-yellow gladiolus which grows in very wet soil, but also occurs on the upland. An important introduction, probably the same as No. 432, which is a fine large pure-yellow flower, as fine as our cultivated types. Very pure, but ranging to almost mottled with reddish spots in some individuals. The flower has unusually good form."

For previous introduction, see S. P. I. No. 14003.

49696. *HIBISCUS* sp. Malvaceæ.

"(No. 416. Bukama. January 16, 1920. Herb. No. 576.) A low plant, about a foot high, with pretty pink flowers."

49697. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ.

"(No. 420. Bukama. January 15, 1920.) A grass, apparently wild, all about Bukama; it grows either singly or in clumps from 5 to 12 feet high. When in flower the panicle is yellowish or with a reddish tinge, but dark or almost black when ripe. The leaves of the nearly ripe plant are red spotted. It is apparently regarded only as a weed here, but it is a very abundant grass along the river bottom. For the most part the plants are 7 to 12 feet high with very long heads. All down the Lualaba River to Kindu it is quite abundant, often growing almost as a swamp plant, but usually along the sides of paths or roads as a semiruderal. No use is made of it by the natives, and I have not seen it grazed."

49698. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ.

"(No. 421. Bukama. January 15, 1920.) A mixed lot of seed from many plants of the above [S. P. I. No. 49697]."

For previous introduction, see S. P. I. No. 45209.

49699. *INDIGOFERA* sp. Fabaceæ.

"(No. 434. Bukama. January 16, 1920. Herb. No. 572.) A plant resembling *Astragalus*, but with leaves like a rose."

49700. *MELOTHRIA* sp. Cucurbitaceæ.

"(No. 436. Bukama. January 16, 1920.) A very small fruited cucurbit; fruit one-fourth of an inch in diameter."

49701. *OXALIS* sp. Oxalidaceæ.

"(No. 433. Bukama. January 16, 1920. Herb. No. 553.) Bulbs of a very odd oxalis collected between Kalule Sud and Bukama. It is attractive chiefly on account of the leaf, which is cut back at the apex to form two lobes very much like leaflets. It has a storage root below the bulb as large in diameter as the bulb itself."

49687 to 49708—Continued.

49702. *Pennisetum glaucum* (L.) R. Br. Poaceæ. Pearl millet.
(*P. typhoides* Rich.)

"(No. 427. Bukama, January 15, 1920.) This plant, apparently a ruderal, grows almost everywhere and in almost the same locations as corn. Seed is exported at times to Rhodesia."

For previous introduction, see S. P. I. No. 48095.

49703. *Ricinus communis* L. Euphorbiaceæ. Castor-bean.

"(No. 419. Bukama, January 16, 1920.) Castor-oil bean."

For previous introduction, see S. P. I. No. 47913.

49704. *Vigna* sp. Fabaceæ.

"(No. 429. Bukama, January 16, 1920. Herb. No. 578.) A large vine very abundant here, with some variation in leaf. The following numbers may not be distinct, but have been kept separate and are each from the type shown in herbarium specimens."

49705. *Vigna* sp. Fabaceæ.

"(Nos. 430 and 431. Bukama, January 16, 1920. Herb. No. 581.) Similar to the foregoing [S. P. I. No. 49704]."

49706. *Vigna* sp. Fabaceæ.

"(No. 428. Bukama, January 16, 1920. Herb. No. 578.) Similar to the foregoing [S. P. I. Nos. 49704 and 49705]."

49707. *Zea mays* L. Poaceæ.

Corn.

"(No. 415. Kalule Sud. January 10, 1920.) Corn grown by the natives at this place; apparently the small variety seen growing in the small fields here. Corn is now growing in the fields here, nearly ripe and in all stages to that just emerging from the soil. That is always true of native culture whenever moisture conditions are such as to permit it."

49708. (Undetermined.)

"(No. 435. Bukama, January 16, 1920.) A small legume, about a foot high, with opposite long-lanceolate leaves and two beans in a pod."

49709 and 49710.

From Para, Brazil. Seeds presented by Paul Le Cointe, Goeldi Museum. Received March 31, 1920.

49709. *Mimusops huberi* Ducke. Sapotaceæ.

"*Massaranduba* with large yellow fruits; from the vicinity of Para." (Le Cointe.)

A large tree found in the primeval forests of Para, Brazil; it has very thick, rough bark and obovate leaves about 6 inches long. The 1 or 2 seeded roundish fruits are pale yellow with occasional reddish violet markings. They are edible and are sold in the markets of Para. The timber is used for general construction work and for railroad ties. (Adapted from *Archivos do Jardim Botânico do Rio de Janeiro*, vol. 2, p. 14.)

49710. *Theobroma grandiflora* (Willd.) Schum. Sterculiaceæ.

"*Cupú-assú* from the vicinity of Para." (Le Cointe.)

The cupú-assú is one of the most important fruit trees of the State of Para, where it commonly grows in slightly shaded places in the lower Amazon basin. The elliptical fruits, which are borne on the trunk and

49709 and 49710—Continued.

branches like the cacao, are the largest of the genus, being as large as coconuts, and the hard shell incloses a fibrous acid pulp from which a delightful drink is prepared. (Adapted from *Kew, Bulletin of Miscellaneous Information, 1910, No. 5, p. 164.*)

For previous introduction, see S. P. I. No. 33260.

49711 to 49713.

From Lamao, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamao Horticultural Station. Received March 9, 1920.

49711. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. Goa bean.
(*Psophocarpus tetragonolobus* DC.)

A tropical or subtropical blue-flowered herbaceous perennial which forms a dense cover and holds its leaves all summer. Underground tubers are formed, which are eaten raw or cooked; the young pods make a delicious vegetable when cooked as green beans are cooked; the shelled seeds are eaten even after the pods become too tough for food; and the young inflorescences are often used for salads. An analysis of the dried tubers showed the following percentages of constituents: Water, 9.05; fat, 0.98; protein, 24.62; carbohydrates, 56.07; cellulose, 5.38; ash, 3.90. (Adapted from *Bornay, Les Plantes Tropicales de la Famille des Légumineuses, p. 183.*)

For previous introduction, see S. P. I. No. 47510.

49712. CITRUS WEBBERII Wester. Rutaceæ.

"*Mangapug*. I commend these seeds from Cotabato to your special attention as one of our best native citrus fruits and difficult to obtain." (Wester.)

For previous introduction, see S. P. I. No. 47919.

49713. DILLENIA INDICA L. Dilleniaceæ.

"*Hondapara*. A fruit tree introduced from India. This tree should prove successful in Porto Rico and possibly in southern Florida." (Wester.)

A handsome medium-sized tree with a round compact crown; the dark-green leaves, 30 to 43 centimeters long and 9 centimeters in width, are coarsely serrate, with prominent veins. The large white flowers are fragrant and attractive; the smooth, greenish, heart-shaped fruits, 80 millimeters long by 95 millimeters across, are produced in great profusion, maturing in September and October. The edible part consists of the large fleshy sepals which inclose the carpels and are pleasantly acid, suggesting the flavor of an unripe apple. In India the sepals are used in making jelly and cooling drinks and also as a vegetable in curries. (Adapted from the *Philippine Agricultural Review, vol. 10 p. 16.*)

For previous introduction, see S. P. I. No. 6887.

49714 to 49716.

From Kalule Sud, Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 12, 1920. Quoted notes by Doctor Shantz.

49714 to 49716—Continued.

49714. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

"(No. 414. Kalule Sud. January 10, 1920.) Slips of a pineapple from the side of the track. May be from Natal; may be grown in the Kongo."

49715. GLADIOLUS sp. Iridaceæ.

"(No. 411. Kalule Sud. January 10, 1920.) Bulbs of a tall yellowish gladiolus with small red spots, abundant especially along the track. Compares favorably with the cultivated forms in size."

49716. (Undetermined.) Orchidaceæ.

"(No. 412. Kalule Sud. January 10, 1920.) A plant of a small orchid common on the trees about here. Not in flower at this time."

49717 to 49719.

From Grinnell, Iowa. Seed presented by Henry A. Conard, Grinnell College. Received March 19, 1920. Quoted notes by Mr. Conard.

49717. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"Seeds from three plants raised in Grinnell, Iowa, in 1919, from seed sent from Changsha, Hunan, China, to Ko-Nien Yang, a young Chinese student in the botany department. The fruits are 5 to 6 inches long, about 1 inch through at the stem end, tapering to a point; deep red, thin fleshed, and very pungent in flavor; very prolific. Subject to a fungous disease causing concentric circles of black pustules."

49718 and 49719. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

49718. "Seed from a large pumpkin grown in the botanical garden of Grinnell College, Grinnell, Iowa, in 1919, from seed sent from Changsha, Hunan, China, to Ko-Nien Yang. The fruits, cut in December, reached 18 inches across and 12 inches high; they are shallowly furrowed and of a dull-orange color with many green spots; the flesh is deep orange, 2 to 3 inches thick, soft and easily cooked, and of mild flavor. The skin is thin and soft but immune to rots, the fruits keeping perfectly into March."

49719. "From medium-sized fruit, picked before full maturity, cut in March."

49720. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

From San Gabriel, Calif. Seed presented by William Hertrich, San Marino Ranch. Received March 20, 1920.

A tree, 60 to 70 feet high, native to New South Wales and Queensland, with hard, close-grained, prettily marked timber, which is used for shingles and staves. The wood burns well and the ashes retain heat for a long time. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 397.)

49721 and 49722.

From Scheemda, Netherlands. Seed presented by N. V. Homo Ten Have, seedsman. Received March 20, 1920.

49721. BRASSICA ALBA (L.) Boiss. Brassicaceæ. **White mustard.**

An annual white mustard from eastern Europe, northern Africa, and northern and middle Asia. The seeds are less pungent than those of the black mustard (*Brassica nigra*) but are used in a similar manner. The young leaves of both are useful as a potherb and also as a salad. The cold-pressed oil of mustard seed serves for table use.

49721 and 49722—Continued.

From 15 to 20 pounds of seed of the white mustard are required to sow an acre, which in the climate of California yields in a few months a harvest of 1,400 pounds of seed. The plant matures its seeds well, even in the desert tracts of central Australia. It can be grown in shallow soil, even on land recently reclaimed from swamps, but it prefers clayey ground. The stalks and foliage after the seed harvest serve as sheep fodder. The plant can be employed with great advantage as green manure. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 82.*)

For previous introduction, see S. P. I. No. 45000.

49722. BRASSICA JUNCEA (L.) Cass. Brassicacæ. Mustard.

A mustard native from middle Africa to China. It is cultivated all over India for Sarepta mustard seed; also extensively raised in China as a pickle. It is a good salad plant. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 82.*)

For previous introduction, see S. P. I. No. 32416.

49723 to 49729. CITRUS spp. Rutacæ.

From Seharunpur, United Provinces, India. Budwood presented by A. C. Hartless, superintendent, Government Botanic Gardens. Received March 22, 1920. Quoted notes by Mr. Hartless.

49723 and 49724. CITRUS GRANDIS (L.) Osbeck. Pummelo.

49723. "Red pomelo."

49724. "Large white-fleshed pomelo."

49725. CITRUS sp.

"Nagpur orange."

49726. CITRUS sp.

"Round seedless lemon."

49727. CITRUS sp.

"Kaghzi lime."

49728. CITRUS sp.

"At Auni Kala lime."

49729. CITRUS sp.

"Sylhet or Rangpur lime."

49730. PERSEA AMERICANA Mill. Lauracæ. Avocado.

(*P. gratissima* Gaertn. f.)

From the city of Guatemala. Budwood collected by Willson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received March 22, 1920.

"Budwood of various ages from avocado No. 41, Finca El Pintado." (*Popenoe.*)

49731. LILIUM NEPALENSE D. Don. Liliacæ. Lily.

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

A showy lily, native to the central Himalayas, with a slender erect stem, 2 to 3 feet long, leafy to the inflorescence. The glossy bright-green leaves, 4 to 6 inches in length, are oblong-lanceolate and 5 ribbed. The flowers, 4 to 5 inches long, are greenish yellow outside and yellow within and flushed except in the

upper third with purplish black; the oblanceolate segments are reflexed only in the upper half. The purplish black filaments bear yellow anthers nearly an inch long. The plant was first discovered in the high mountains of Nepal. (Adapted from *Curtis's Botanical Magazine*, pl. 7043.)

For previous introduction, see S. P. I. No. 46086.

49732. GLADIOLUS sp. Iridaceæ.

From Kabalo, Belgian Kongo. Bulbs collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 26, 1920.

49733 to 49736.

From Foochow, Fukien, China. Seeds collected by J. B. Norton, Agricultural Explorer for the Bureau of Plant Industry. Received March 29, 1920. Quoted notes by Mr. Norton.

49733. MELOTHRIA HETEROPHYLLA (Lour.) Cogn. Cucurbitaceæ.

"(Herb. No. 1551. Kuliang Hills, near Foochow. July, 1919.) A wild vine with beautiful red fruits about the size of plums. This should be valuable as a cover for trellises."

49734. RUBUS PAYKOUANGENSIS Lev. Rosaceæ. Raspberry.

"(Herb. No. 1264. Kuliang Hills, near Foochow. July, 1919.) A low simple-leaved raspberry common in deep ravines. The fruit is edible but not plentiful."

49735. RUBUS SWINHOU Hance. Rosaceæ. Raspberry.

"(Herb. No. 1262. Kuliang Hills, near Foochow. July 3, 1919.) A black-purple raspberry, rather dry and bitter, but a very vigorous type. Suitable for crossing with those lacking in flavor."

49736. STYRAX SERRULATUM Roxb. Styracaceæ. Styrax.

"(Herb. No. 1560. Kuliang Hills, near Foochow. July, 1919.) A small shrub bearing an abundance of fruit."

49737 to 49742.

From Antigua, Guatemala. Cuttings collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received March 17, 1920. Quoted notes by Mr. Popenoe.

49737. BEGONIA sp. Begoniaceæ. Begonia.

"(No. 290. February 16, 1920.) A species which is found in moist places on the upper slopes of the Volcan de Agua at altitudes of approximately 7,000 to 9,000 feet. It often reaches 6 feet in height, and its flesh-pink flowers are of large size."

49738. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 289. February 16, 1920. Herb. No. 949.) *Manzanilla*. A wild tree growing on the Volcan de Agua at about 8,000 feet altitude. See S. P. I. No. 45575 for description."

49739 and 49740. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

49739. "(No. 291. February 16, 1920.) Avocado No. 38 from the Finca La Chacara in Guatemala. Guatemalan race. The parent tree is about 35 feet high, of erect habit, branched 12 feet from the ground, with an oval open crown. The bearing habits of the tree

49737 to 49742—Continued.

appear to be good; the crop this season is about 400 fruits, well distributed through the crown. The fruits are borne singly, never in clusters.

"The fruits on the parent tree are variable in size. The largest weigh about 24 ounces, the smallest not over 8 ounces. The shape is fairly uniform. The relative size of the seed varies somewhat, as is usual in avocado varieties. The major-domo of the finca recommends this as a very good fruit. Technically it may be described as follows:

"From broadly ovoid to nearly oval, sometimes tending to become broadly pyriform; weight 20 ounces, more or less; length $4\frac{1}{2}$ inches; greatest breadth 4 inches; base rounded, the stem inserted almost squarely; apex flattened or slightly depressed; surface smooth, dull green with numerous greenish yellow and russet dots; skin about one-twentieth of an inch thick, woody and brittle in texture, readily separating from the flesh; flesh cream yellow, pale green close to the skin, with slight fiber markings, smooth in texture and of rich nutty flavor; quality very good; seeds oblate, weighing about 2 ounces; tight in the cavity with both seed coats adhering closely. Ripening season probably midseason to late, March to June at Antigua."

49740. "(No. 293. February 16, 1920.) Avocado No. 40 from the Finca La Chacara in Antigua. Guatemalan race. The parent tree is about 25 feet high, spreading in habit, with a dense crown (most of the foliage is on the outside). The crop this year is not heavy, but the bearing habits of the tree are said to be good. The major-domo recommends this as the finest avocado in the finca, and to me it looks unusually promising because of the large size of the fruit coupled with the small size of the seed and the excellent quality of the flesh.

"Following is a description of the fruit: Form oval to elliptic, sometimes oblique; weight 16 to 24 ounces; length $4\frac{1}{2}$ to $5\frac{1}{2}$ inches; greatest breadth $3\frac{1}{2}$ to 4 inches; base broadly pointed, the stem inserted slightly to one side; apex broadly pointed, somewhat flattened on the ventral side; surface undulating to faintly pebbled, moss green with numerous yellowish green dots; skin $1\frac{1}{2}$ to 2 millimeters thick (about one-fifteenth of an inch), woody, brittle; flesh cream yellow, pale green close to the skin, free from all fiber discoloration, and of rich, pleasant flavor; quality excellent; seed relatively very small, tight in the cavity, with both seed coats adhering closely to the cotyledons. Season apparently rather late."

49741. *RUBUS* sp. Rosaceae.

Raspberry.

"(No. 287. February 16, 1920.) A wild raspberry from the upper slopes of the Volcan de Agua (collected at about 9,000 feet), near Antigua. The plants, which are found in grassy places on rich volcanic loam, send up stems 4 to 6 feet long, which often bend over and root at the tips. The flowers are white, and the fruits, which I have seen only in an immature state, are produced in abundance. Evidently they are as large as the raspberries of the north, and the Indians say they are of good quality."

49737 to 49742—Continued.

49742. *SALVIA LINDENII* Benth. Menthaceæ. Sage.

“(No. 288. February 16, 1920.) A red-flowered shrub which grows abundantly on the upper slopes (at altitudes of 8,000 to 9,000 feet) of the Volcan de Agua, near Antigua. It is erect, slender, and 8 to 10 feet in height. The flowers are double the size of those of *Salvia splendens* and of a rich rose-crimson. The species, which is evidently a perennial, should be hardy enough to stand the winters of California and Florida.”

49743. *TRIGONELLA FOENUM-GRÆCUM* L. Fabaceæ. Fenugreek.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received March 9, 1920.

“This plant yields an important condiment, and its root system is so well provided with tubercles that it is worthy of serious attention as a green-manure crop. The seeds are also of value for feeding purposes, and a large quantity of fodder is produced, which, if cut before the seeds ripen, is of excellent quality. The condition powders and condiment foods which are sold in England extensively and fed to ailing horses and cattle are mixtures of fenugreek with other meals or grains. Fenugreek is sometimes planted with berseem.” (*David Fairchild.*)

49744. *THEOBROMA CACAO* L. Sterculiaceæ. Cacao.

From Coban, Guatemala. Seeds presented by Dr. Oscar Majus. Received March 23, 1920.

A wide-branching evergreen tree, native to Central America and South America. The brown or purple beanlike seeds furnish the chocolate and cocoa of commerce. Apparently there are numerous distinct varieties, but little has been done thus far in the selection of the best types for commercial plantings.

49745 to 49796.

From the city of Guatemala, Guatemala. Collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received March 23, 1920. Quoted notes by Mr. Popenoe.

49745. *ACACIA FARNESIANA* (L.) Willd. Mimosaceæ. Cassie.

“(No. 327a. El Barranquillo. February 26, 1920.) *Subin.* Seeds of a tree about 20 feet high, which in Guatemala produces an abundance of small yellow flowers in January.”

For previous introduction, see S. P. I. No. 45012.

49746. *PITHECOLOBIUM TORTUM* Mart. Mimosaceæ.

“(No. 322a. El Barranquillo. February 26, 1920. Herb. No. 953.) *Aripin.* Seeds of the medium-sized tree which produces an abundance of small yellow flowers in February.”

49747 and 49748. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

49747. “(No. 318. Guatemala. February 26, 1920.) Plants of *Piña de Palín*, from San Lorenzo del Cubo, about 5,300 feet altitude. This pineapple is not of excellent quality, but, like *Red Spanish*, which it resembles in other respects as well, it is a good shipper.

“The plant is distinguished by its broad, coarsely serrate leaves. The fruit is oblong to oval-oblong, commonly about 6 inches long, with a large crown and broad recurving leaves. The surface is

49745 to 49796—Continued.

deep brownish yellow, and the carpels are marked by deeply incised lines. The eyes stand out prominently, making the surface of the fruit decidedly rough. The flesh is crisp, deep yellow, with plenty of acid and aroma, and enough sugar so that it can be eaten, when fully ripe, without additional sweetening. The juice is very abundant. This variety seems to do better than others at high altitudes, i. e., in a cool climate."

49748. "(No. 319. Guatemala. February 26, 1920.) Plants of *Piña de azúcar*, from San Lorenzo del Cubo, about 5,300 feet altitude. This variety, which is usually seen only on the coast or at altitudes of 3,000 feet and lower, strongly resembles *Smooth Cayenne*, and is probably a Guatemalan form of the latter."

49749. ARGEMONE MEXICANA L. Papaveraceæ.

"(No. 325a. El Barranquillo. February 26, 1920.) *Carlos Santo*. Seeds of an herbaceous plant about 4 feet high, which produces in March bright-yellow poppylike flowers about 2 inches broad."

49750. BIXA ORELLANA L. Bixaceæ. Annato tree.

"(No. 329a. El Barranquillo. February 26, 1920. Herb. No. 967.) *Achiotillo*. Seeds of a large shrub or small tree which produces rather large white flowers in January."

For previous introduction, see S. P. I. No. 44954.

49751. BRACHYPODIUM MEXICANUM (Roem. and Schult.) Link. Poaceæ.
Grass.

"(No. 297a. Antigua. February 17, 1920.) Seeds of a common grass from the upper slopes of the Volcan de Agua at altitudes of 7,000 to 8,000 feet. Its ultimate height is about 3 feet, and its leaves are rather succulent and narrow."

49752. CASSIA sp. Cæsalpiniaceæ.

"(No. 343a. El Barranquillo, February 26, 1920.) *Verbenilla*. Seeds of a tree 20 feet high, which produces yellow flowers in December."

49753. CEANOTHUS COERULEUS Lag. Rhamnaceæ.

"(No. 296a. Antigua. February 17, 1920.) *Ka-kiish*. Seeds of a large shrub, very similar to the common mountain lilac of southern California. It is abundant on the upper slopes of the Volcan de Agua at altitudes of 6,000 to 8,000 feet, and the dried branches are much used by the Indians of Santa Maria de Jesus as a support for chayote plants, peas, etc. The Indian name, *ka-kiish* (Cakchikel language), probably has reference to this use, as *kiish* is the name of the chayote. The plant may reach 10 or 12 feet in height; it produces panicles up to 4 inches long of fragrant lilac-blue flowers."

49754. COMBRETUM FARINOSUM H. B. K. Combretaceæ.

"(No. 341a. El Barranquillo. February 26, 1920. Herb. No. 958.) *Flor de peineta*. Seeds of a climbing plant which bears red flowers in March. The flowers are arranged in long, stiff racemes, which gives the common name *peineta*, or 'comb flower.'"

49745 to 49796—Continued.

49755. *CROTALARIA LONGIBOSTRATA* Arn. Fabaceæ.

"(No. 298a. Antigua. February 17, 1920. Herb. No. 950.) *Much*. Seeds of a fine-leaved bushy perennial *Crotalaria* from Santa Maria de Jesus, where it is cultivated in the gardens of the Indians. It is also grown elsewhere in Guatemala. The tender shoots are esteemed as greens and are cooked with meat or added to soups. The plant grows about 5 feet high and has woody branches. *Much* (pronounced 'mooch') is the name used by the Cakchikel Indians."

49756. *CROTALARIA MAYPURENSIS* H. B. K. Fabaceæ.

"(No. 300a. Antigua. February 17, 1920. Herb. No. 944.) Seeds of a shrubby *Crotalaria* about 5 feet high, with large yellow flowers like those of *Crotalaria retusa*. It occurs as a wild plant near Antigua."

49757. *DAHLIA MAXONII* Safford. Asteraceæ.

Dahlia.

"(No. 308a. Antigua. February 20, 1920.) Seeds of a dahlia which the Kekchi Indians of northern Guatemala know as *tzolokh*, while those who speak the Pokonchi language call it *shikor*. Spanish-speaking Guatemalans usually term it *Santa Catarina*. Though extremely abundant, both wild and cultivated, in many parts of the Guatemalan highlands (principally between 3,000 and 7,000 feet altitude) it seems never to have received much attention from botanists; indeed, as Dr. W. E. Safford found in 1919 that it had not yet received a name, he described it as *Dahlia maxonii* in honor of William R. Maxon, of the United States National Herbarium.

"Sometimes the stems reach to 15 or 18 feet and become quite woody toward the base. They terminate in a number of slender branches, each bearing several flowers, not all of which open at the same time. The flowers face outward and upward, as opposed to those of *D. imperialis*, which are distinctly nodding. The color is lilac-pink and the diameter of the flowers commonly 3 to 5 inches.

"When brought into cultivation around the huts of the Indians the species seems to lose its stability. In place of single lilac-pink flowers other forms often appear, and since the plant is easily propagated by cuttings it is a simple matter to reproduce these variations. A single white form is occasionally seen, and a double white and a double lilac are more common.

"When planted in northern gardens this species would be cut down by frost before it had time to reach the flowering stage, though it has in a few instances bloomed in California. (I am assuming that the species I have seen is *D. maxonii*.) In Florida, if the proper soil conditions can be provided, it should prove successful; and there are many places in northern India, in southern Japan, in subtropical Brazil, and numerous other countries where it would find congenial surroundings."

49758. *DAHLIA POPENOVII* Safford. Asteraceæ.

Dahlia.

"(No. 303. Antigua, February 17, 1920.) Tubers collected near Santa Maria de Jesus at an altitude of 6,500 feet.

"This species, which grows in the mountains of central Guatemala at altitudes of 5,000 to 7,000 feet, has been considered by Doctor Safford to be one of the wild parents of the cultivated cactus dahlias. It is a plant rarely exceeding 4 feet in height, with slender stems surmounted by single flowers 2 to 3 inches in diameter, having eight ray florets of

49745 to 49796—Continued.

crimson or orange-crimson. It is interesting chiefly to those engaged in breeding dahlias."

49759. *ERYTHRINA RUBRINERVA* H. B. K. Fabaceæ.

"(No. 338a. El Barranquillo. February 26, 1920.) *Pito*. Seeds of one of the native *Erythrinas*. While not so valuable perhaps as a flowering plant as some of its congeners, it has the interesting feature of edible flower buds, and it is a vegetable of some importance among the Guatemalans. The buds are boiled with meat."

49760. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceæ.

"(No. 336a. El Barranquillo. February 26, 1920. Herb. No. 952.) *Guayacán*. Seeds of the Guatemalan *lignum-vitæ*, a small tree which is covered in February or March with lavender-blue flowers."

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

49761. *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

"(No. 307a. Antigua. February 20, 1920.) Presented by Don Pedro G. Cofiño, of Antigua. Seeds of a variety of alfalfa which has been grown in Antigua for many years, perhaps introduced in Colonial days. Don Pedro Cofiño has planted *Grimm* and other varieties of alfalfa obtained from the United States, and none of them has given such good results as this native (or acclimatized) stock. He thinks, therefore, that the latter may prove useful in other regions with climatic conditions similar to those of Antigua.

"Alfalfa is grown in Antigua without irrigation, and flourishes even during the driest part of the year. There is no rainfall from October to May, and the total annual precipitation is from 30 to 40 inches. The permanent water table, however, is only 6 to 15 feet below the surface of the soil throughout the valley of Antigua. Alfalfa is cut in the Antigua region every 40 days throughout the year."

49762. *MELIA AZEDARACH* L. Meliaceæ.

"(No. 332a. El Barranquillo. February 26, 1920. Herb. No. 968.) *Paraiso*. Seeds of a tree 25 feet high with small whitish flowers, produced in January."

For previous introduction, see S. P. I. No. 26500.

49763. *PENNISETUM COMPLANATUM* (Nees) Hemsl. Poaceæ.

Grass.

"(No. 305a. Antigua. February 17, 1920.) *Kos-kún*. Seeds of the most important forage grass of the Antigua region. It is especially esteemed by the Indians of San Antonio Aguas Calientes. It makes slender wiry stems up to 6 feet high, with narrow succulent leaves and a foxtail seed head 5 or 6 inches long. It seems to grow well on dry land, though it is much less succulent during the dry season than during the wet."

49764 to 49776. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

49764. "(No. 313a. Guatemala. February 26, 1920.) Seeds of stock plant No. 5 from the Finca La Chacara in Antigua. An apparently very productive tree with nearly spherical fruits averaging a little less than a pound in weight and having an unusually small seed."

49745 to 49796—Continued.

49765. "(No. 314a. Guatemala. February 26, 1920.) Seeds of stock plant No. 4 from the Finca Chacara in Antigua. Budwood of this variety was introduced under avocado No. 38 (S. P. I. No. 49739), which see for description."
49766. "(No. 315a. Guatemala. February 26, 1920.) Seeds of stock plant No. 3 from the Finca La Polvora in Antigua. The parent tree is about 30 feet high, broad and spreading. It produced this season about 700 fruits. The fruit is broad pyriform to nearly round; weight of the largest specimens 16 to 18 ounces; length $4\frac{1}{2}$ to $4\frac{1}{2}$ inches; greatest breadth $3\frac{1}{2}$ to 4 inches; base pointed to nearly round, the stem inserted obliquely without depression; apex slightly flattened; surface decidedly rough, deep purplish maroon, almost glossy; dots not conspicuous; skin 1 to 2 millimeters (one twenty-fifth to one-twelfth of an inch) thick, somewhat more flexible than in the average variety of this region; flesh cream-yellow to yellow near the seed, whitish green close to the skin, almost free from fiber discolorations; dry in texture and of rich, pleasant flavor; quality good; seed round to oblate, 3 ounces in weight, tight in the seed cavity with both seed coats closely surrounding the cotyledons. Ripens in midseason."
49767. "(No. 317a. Guatemala. February 26, 1920.) Seeds of stock plant No. 2 from the Finca La Polvora in Antigua. The parent tree is about 35 feet high, erect, almost slender. It produced about 800 fruits this year, which ripened early to midseason. The fruit is oblong-ovoid to obovoid; weight of the largest specimens 12 to 14 ounces; length $4\frac{1}{2}$ to $4\frac{1}{2}$ inches; greatest breadth $3\frac{1}{2}$ to $3\frac{1}{2}$ inches; base slightly flattened to tapering, with the stem inserted to one side or nearly squarely; apex rounded to flattened slightly on one side; surface distinctly pebbled, moss green, with a few large greenish yellow dots; skin $1\frac{1}{2}$ to $2\frac{1}{2}$ millimeters (one-eighteenth to one-tenth of an inch) thick, hard and brittle; flesh cream yellow, very pale green close to the skin, the fiber markings noticeable, flavor strong, the texture a trifle watery; quality fair; seed nearly spherical in outline, 2 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons."
49768. "Seeds for stock from fruits purchased in the market in Guatemala."
49769. "Seeds for stock from fruits purchased in the market at Guatemala."
49770. "(No. 312a. Guatemala. February 26, 1920.) Seeds of stock plant No. 6 from the garden of an old Indian in San Antonio Aguas Calientes. The parent tree is about 20 feet high, evidently not very old, and is bearing this season a heavy crop, more than 500 fruits. The fruit is broadly ovoid to nearly round, obliquely flattened at the apex; weight about 10 ounces; length $3\frac{1}{2}$ inches, greatest breadth $3\frac{1}{2}$ inches; surface pebbled faintly, deep green with numerous yellow-green dots; skin 1 millimeter (one twenty-fifth of an inch) thick near the stem, becoming 2 millimeters (one-twelfth of an inch) at the apex; flesh cream-yellow, green near the skin, with slight fiber discolorations; flavor rich and oily; seed very large, roundish oblate, tight in the cavity, with both seed coats adhering closely to the cotyledons."

49745 to 49796—Continued.

49771. "(No. 316a. Guatemala. February 26, 1920.) Seeds of stock plant No. 1 from the Finca La Polvora in Antigua. The tree from which the seeds were gathered is very prolific, having produced 450 fruits this season. The fruit ripens early at Antigua."

49772 to 49776. "Seeds for stock; from fruits purchased in the market at Guatemala."

49777. *TRIPLARIS AMERICANA* L. Polygonaceæ.

"(No. 335a. El Barranquillo. February 26, 1920.) *Ballador*. Seeds of a tree said to be 25 feet high, with small white flowers, produced in January."

49778. *PETREA* sp. Verbenaceæ.

"(No. 326a. El Barranquillo. February 26, 1920.) *Palo de amor*. Seeds of a shrub 5 feet high, which produces small purplish flowers in May."

49779. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"(No. 334a. El Barranquillo. February 26, 1920.) *Jurín*."

49780. *SALVIA AMARISSIMA* Ortega. Menthaceæ. Sage.

"(No. 304a. Antigua. February 17, 1920. Herb. No. 951.) Seeds of an herbaceous plant about 2 feet high, with terminal spikes of small tubular flowers of the richest blue. It is found along roadsides in this region at altitudes of 5,000 to 6,000 feet and is apparently an annual."

49781. *SAPINDUS SAPONARIA* L. Sapindaceæ.

"(No. 324a. El Barranquillo. February 26, 1920.) *Jaboncillo*. Seeds of one of the soapberry trees which grows about 25 feet high, forming a dense crown of deep-green foliage. Its round fruits, about three-fourths of an inch in diameter, can be used in place of soap, but are rarely employed in this way by the natives."

49782. *SOLANUM SEAFORTHIANUM* Andrews. Solanaceæ.

"(No. 340a. El Barranquillo. February 26, 1920. Herb. No. 966.) *Adelfa*. Seeds of a climbing plant, said to produce blue flowers in November."

For previous introductions, see S. P. I. No. 30894.

49783. *TECOMA STANS* (L.) Juss. Bignoniaceæ. Yellow tecoma.

"(No. 337a. El Barranquillo. February 26, 1920. Herb. No. 955.) *Flor amarilla*. Seeds of a plant which may be the common *Tecoma stans* of southern California gardens, but my recollection is that the flower of the latter is not of such a deep yellow as this Guatemalan plant. It is a shrub about 15 feet high, producing terminal clusters of brilliant yellow trumpet-shaped flowers about an inch and a half broad at the mouth."

For previous introduction, see S. P. I. No. 48781.

49784. *TRINIOCHLOA STIPOIDES* (H. B. K.) Hitchc. Poaceæ. Grass.
(*Muehlenbergia stipoides* Trin.)

"(No. 229a. Antigua. February 17, 1920.) Seeds of a grass from the upper slopes of the Volcan de Agua at altitudes of 7,000 to 8,000 feet. It is about 3 feet high, with fine foliage and small seed."

49745 to 49796—Continued.

49785. *VERBESINA MEDULLOSA* Robinson. Asteraceæ.

"(No. 323a. El Barranquillo. February 26, 1920.) *Sosa blanca*. Seeds of a shrub or small tree about 10 feet high, which produces in August many small white flowers."

49786. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 344a. El Barranquillo. February 26, 1920.) 'Hot country' corn of a small-eared white dent variety."

49787. (Undetermined.)

"(No. 321a. El Barranquillo. February 26, 1920. Herb. No. 962.) *Mescal*. Seeds of a medium-sized tree which produces purplish red flowers in August."

49788. (Undetermined.)

"(No. 342a. El Barranquillo. February 26, 1920.) *Pimientillo*. Seeds of a tree about 15 feet high which produces an abundance of small yellow flowers in December."

49789. (Undetermined.)

"(No. 339a. El Barranquillo. February 26, 1920.) *Quina*. Seeds of a tree about 15 feet high which produces large white flowers in January."

49790. *CHEIROSTEMON PLATANOIDES* Humb. and Bonpl. Sterculiaceæ.

"(No. 302a. Antigua. February 17, 1920. Herb. No. 948.) *Tayuy*. Seeds of one of the characteristic trees of the upper slopes of the Volcan de Agua. It occurs abundantly at altitudes of about 8,000 to 9,000 feet. It reaches about 50 feet in height and often has a very stout trunk; the wood, however, appears to be soft and of little value. The leaves are 5 to 6 inches long and broad, and the flowers about 2 inches broad, are of most peculiar appearance, with the stamens projecting from the center to simulate a small hand."

49791. (Undetermined.)

"(No. 328a. El Barranquillo. February 26, 1920.) *Fruta de pava*. Seeds of a medium-sized tree which produces purplish flowers in January."

49792. *LUEHEA ENDOPOGON* Turcz. Tiliaceæ.

"(No. 330a. El Barranquillo. February 26, 1920. Herb. No. 961.) *Tapasahutte*. Seeds of a tree 20 feet high which produces large white flowers in August."

49793. *ANTIGONON* sp. Polygonaceæ.

"(No. 331a. El Barranquillo. February 26, 1920.) *Colación*. Seeds of a handsome climber with heart-shaped leaves and trusses of coral-pink flowers."

49794. (Undetermined.)

"(No. 333a. El Barranquillo. February 26, 1920.) *Papalotillo*. Seeds of a tree about 20 feet high. The flowers are said to be white and to be produced in January."

49745 to 49796—Continued.

49795. (Undetermined.)

“(No. 320a. El Barranquillo. February 26, 1920.) *Palo gíote*. Seeds of a tree up to 40 feet high which produces in January an abundance of small white flowers.”

49796. MYROXYLON ELLIPTICUM (Clos) Kuntze. Flacourtiaceæ.

(*Xylosma ellipticum* Hemsl.)

“(No. 301a. Antigua. February 17, 1920. Herb. No. 943.) Seeds of a thorny red-berried shrub from the mountainside between Antigua and Santa Maria de Jesus. It looks as though it would make a good hedge plant, the leaves being 2 to 3 inches long, of pleasing appearance, and the thorns quite formidable. When in fruit, the red berries, which are about the size of cranberries or coffee berries, but of a lighter color than the former, add greatly to the attractiveness of the plant. Its ultimate height is about 15 feet.”

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