

5981

Issued October 30, 1917.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

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

(No. 40; Nos. 38666 to 39308.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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BUREAU OF PLANT INDUSTRY.

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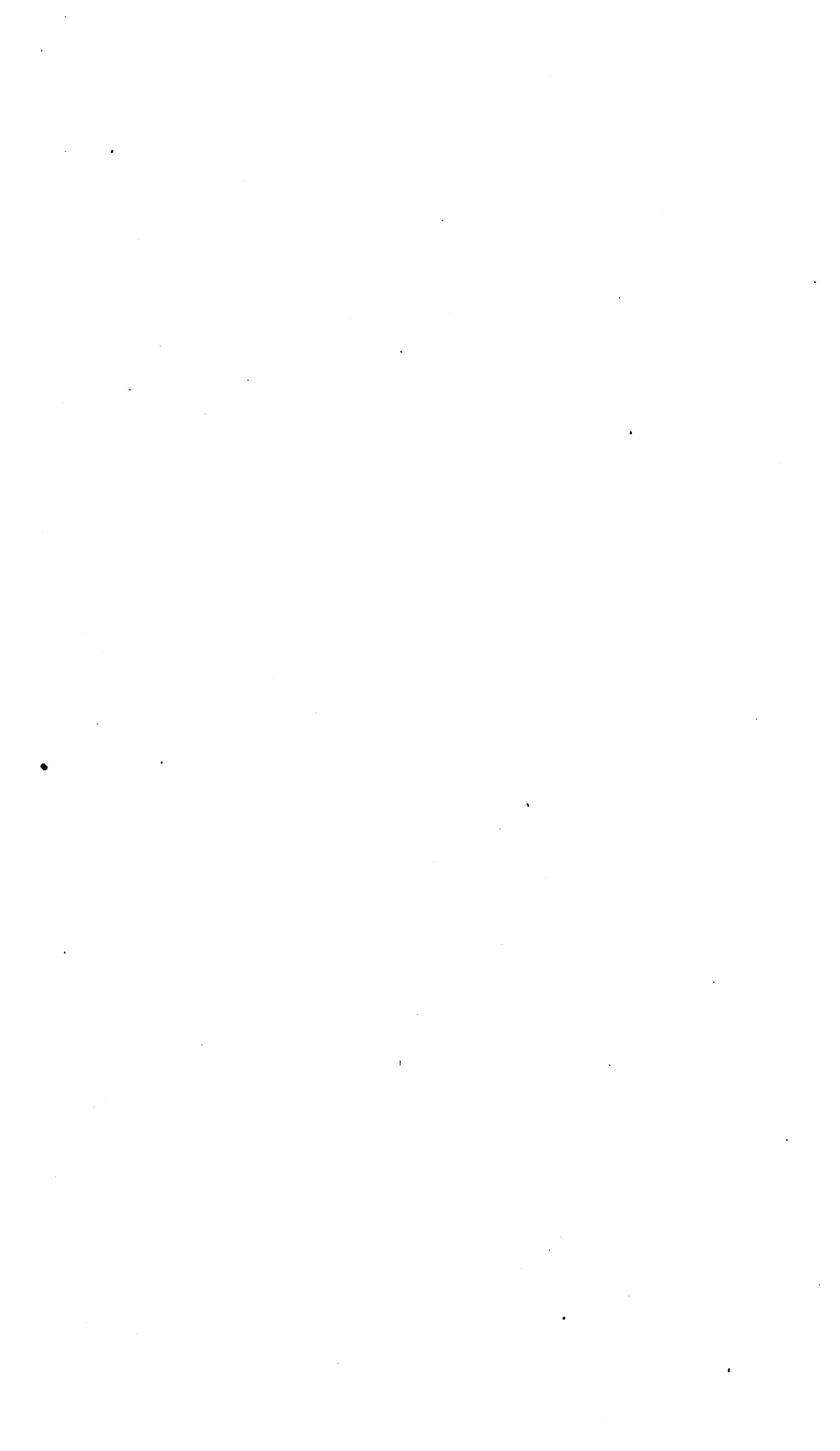
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1914 (NO. 40; NOS. 38666 TO 39308).

INTRODUCTORY STATEMENT.

The introductions in this inventory which appear most important from the brief descriptions received and from our limited experience with them are as follows:

Forage plants.—The Australian Rhodes grass, *Chloris virgata* variety *decora*, No. 39177, which has succeeded wonderfully on clay-pan, wind-swept, and sun-scorched soils when other grasses were difficult to establish; 12 species of grass, Nos. 38765 to 38776, from South Africa, some from the Kalahari desert region and others from the Transvaal and the Caldeon division of the coast region, which, if any of them prove as valuable as the Rhodes grass so successfully established here from the same general climatic area, will be decided acquisitions; a cowpea, No. 39143, called imboomba, grown by the Zulus of South Africa; a selected forage sugar cane called Quacsofoca, No. 39165, which in Queensland has proved superior to all the old standard sorts by its hardiness, yield, softness, and superior food value; grasses, *Erianthus rufipilus*, from the Himalayas, and *Pollinia fulva*, from the interior of Australia, Nos. 39010 and 39011, of one of which cattle are so extremely fond that they kill it by close cropping; and a smaller, finer stemmed grass somewhat resembling Para grass, *Eriochloa subglabra*, No. 38892, from Brazil called Capim Angolinha.

Cereals.—A collection of 13 forms of the grass *Coix lacryma-jobi*, Nos. 38868 to 38880, known as Job's-tears, certain of which produce soft kernels and are cultivated for food; 33 varieties of corn, Nos. 39228 to 39260, of the characteristic type from Copacabana, Peru; 5 varieties of the same cereal, Nos. 39158 to 39162, from Yachow, western China; a collection of sorghum varieties from Java, Nos. 39264 to 39282; 20 varieties of rice from the same tropical island,

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

Nos. 39199 to 39218; and the 2 commercial rices of the Valencia rice-growing region of southeastern Spain, Nos. 38685 and 38686.

Vegetables.—A fine variety of the winter *pe-tsai* or Chinese cabbage, *Brassica pekinensis*, No. 38782, with very white heads of a mild flavor; 2 rhubarb species, Nos. 39049 and 39050, from Darjiling, the stems of one of which are used for tarts, which might be hybridized with *Rheum rhaponticum*; 22 varieties of cassava, Nos. 38947 to 38968, representing the most important sorts grown in the State of Bahia, Brazil; a variety of pumpkin, No. 38884, from the Oasis of Merv, Turkestan, which has withstood the heat and drought of Sonora, Mexico, better than other sorts tested there; a long blood-red carrot for pickling purposes, from Sianfu, China, No. 38786; and a shrubby species of indigo, *Indigofera dosua*, No. 39119, from the temperate Himalayas, the flowers of which are eaten as a potherb, while the plant is used for fodder.

Fruits.—Seedlings from a large feijoa fruit, No. 38970, which was $3\frac{1}{2}$ by $2\frac{1}{2}$ inches, a most unusual size for this promising Paraguayan fruit; the Pelese apricot from Somma Vesuviana in Italy, No. 38778, which, according to Dr. Gustav Eisen, the discoverer, is superior to the Royal, with very firm flesh and fine flavor and good shipping qualities; the wampi, *Clauцена lansium*, No. 38708, a fruit related to the orange, but not as yet fruited in America, promising, furthermore, as a stock for the orange and grapefruit; a tropical grape, *Vitis tiliaefolia*, No. 38853, of vigorous habit and producing good fruits useful for jellies, which deserves to be used in the production of varieties of tropical grapes of good quality; six varieties of kuruba or Passiflora, Nos. 38881, 38882, and 39223 to 39226, which in Bogota are standard market fruits very highly esteemed by North Americans there, a red-fruited variety being particularly prized because of its decorative color; a new species of Eriobotrya, *E. petiolata*, No. 39111, related to the loquat, which may be of value as a stock for the latter, from the eastern Himalayan region; the Luisa mango, No. 38981, a fine type, presumably originating from Philippine seed in the island of Cuba; a quantity of litchi seeds gathered from bearing trees of this important fruit now growing in the Hawaiian Islands, No. 38779; *Poupartia axillaris*, No. 39136, a new fruit and shade tree from western Hupeh and Szechwan Provinces of China, which has proved hardy in Georgia; *Sorbus cuspidata* and *Sorbus insignis*, Nos. 39133 and 39134, two deciduous fruit trees native to the eastern Himalayas; *Dillenia pentagyna*, No. 39109, a deciduous tree from Oudh, Bengal, Assam, India, and Burma, the flowers, buds, and green fruits of which are eaten by the natives; and a remarkable rambling Rubus, *R. niveus*, No. 39130, from Kashmir and Sikkim, which is reported to bear a fruit superior to the English blackberry.

Trees for shade, for use around the dooryard, or for windbreaks.—The 80-foot tall, wild, pink-flowered cherry of Japan, *Prunus serrulata sachalinensis*, No. 38761, from the Arnold Arboretum, which deserves to be planted by the hundreds of thousands in our parks and on our private estates because of its hardiness and great beauty as a spring-flowering tree; the Nepal ash, No. 39014, which, though not hardy in England, may prove to be so in our Southern States; the East African cedar, *Juniperus procera*, No. 39185, from Eritrea, the wood of which, according to Schweinfurth, makes better pencils than that of the American juniper; the Swaziland tree, *Balanites maughamii*, No. 39196, a native of Portuguese East Africa, from the seeds of which a clear yellow odorless oil of about the commercial value of cottonseed oil is obtained, but which, because of difficulties of extraction, has not been exploited; the lofty forest tree, *Picea smithiana*, No. 39040, from Darjiling, India, the wood of which is used for packing cases and for charcoal; the moderate-sized horse-chestnut from northern Bengal, *Aesculus assamicus*, No. 39102; the Mongolian linden, *Tilia mongolica*, No. 38810, from Tahuashan, China, which Mr. Meyer thinks will be hardy in our Northern States; three distinct varieties of the Chinese soap-bean tree, *Gleditsia sinensis*, Nos. 38800 to 38802, which are remarkably drought and alkali resistant and are very ornamental, carrying all winter their pods, which contain large amounts of saponin; and the cigar-boxwood tree of China, *Toona sinensis*, No. 38805, from Changli, which ought to make a beautiful shade and avenue tree and be useful in the Southwest for its timber. The small Nepalese hazelnut, *Corylus ferox*, No. 39106, with prickly cups but edible nuts, may find a use in the development of the hazelnut industry. The large bamboo, *Dendrocalamus hamiltonii*, Nos. 38736 and 39178, from Darjiling, which produces shoots 80 feet tall, the young sprouts of which are edible and from which a luxury called *gass-tenga* is made in Assam, may prove hardy in the Southern States and be used, as it is in India, for windbreak purposes. As dooryard shrubs for small homes may be mentioned an evergreen Cotoneaster, *C. microphylla*, No. 39008; 18 Himalayan species of Rhododendron, Nos. 39051 to 39068, among them a dwarf form, a yellow-flowered form, and one reported to be adapted for use in the parched and arid climate of Tibet; a Nepal barberry, *Berberis nepalensis*, No. 39105, which flowers from October to March in the mild climate of its native habitat; an autumn-flowering plant, *Polygonum vacciniifolium*, No. 39048, for rock work, which has proved a favorite in England, where its bright rose-colored flowers bloom from August to November; and three forms of the evergreen shrubs *Euonymus*, Nos. 38833 to 38835, from Tahuashan, in the Shensi Province of China.

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

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

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 16, 1916.

INVENTORY.

38666 and 38667.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton.
Received July 1, 1914. Quoted notes by Mr. Hamilton.

38666. *HIBISCUS RADIATUS* Cav. Malvaceæ.

"Flowers yellow, crimson center. This plant is reputed a cure for fevers, etc., and a blood purifier. The whole plant is cut up, boiled, and the liquid drunk. Prefers sandy soil."

38667. *LIVISTONA MUELLERI* Bailey. Phœnicaceæ. Fan palm.

"Fan palm, 10 feet. Requires sandy soil."

38668. *PIRATINERA ALICASTRUM* (Swartz) Baill. Moraceæ.
(*Brosimum alicastrum* Swartz.) Bread-nut tree.

From Merida, Yucatan, Mexico. Presented by Mr. Julio Rendón, through Mr. P. L. Ricker, of the Bureau of Plant Industry. Received July 2, 1914.

See S. P. I. No. 34876 for previous introduction and description.

38669. *PENNISSETUM GLAUCUM* (L.) R. Brown. Poaceæ.
(*Pennisetum typhoideum* Rich.) Pearl millet.

From Zomba, Nyassaland, Africa. Presented by the Department of Agriculture, Zomba. Received June 29, 1914.

"*Machewere*. A local variety of spiked millet."

38670. *HOLCUS HALEPENSIS* L. Poaceæ. Johnson grass.
(*Sorghum halepense* Pers.)

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received July 1, 1914.

"The maturing of seeds of this grass seems to be very irregular, perhaps because we are now in our rainy season." (*Argollo Ferrão*.)

38671 to 38674.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received July 2, 1914. Quoted notes by Mr. Regnard, except as otherwise indicated.

38671. *ALEURITES FORDII* Memsley. Euphorbiaceæ. Tung tree.

"Large, spreading tree, very ornamental, both for its foliage and large pinkish white flowers. I have sent you by this mail per sample post two positive plates of *Aleurites* sp., representing flowers and young tree, about 20 feet high, which bloomed profusely during the month of November at my up-country residence. The blossoming generally precedes the coming out of leaves, but this year, owing to more active vegetation, the flowers

38671 to 38674—Continued. (Quoted notes by Mr. G. Regnard.)

and leaves showed at the same time. The seeds will be analyzed in our Department of Agriculture, and I shall give you the result. It is to be feared that the crop of seeds will be poor, as we have had very windy weather which has been an obstacle to the pollination."

38672. ROSCHERIA MELANOCHOETES Weindland. Phœnicaceæ. Palm.

"Fruit tree, from Saigon, Indo-China."

38673. PHOENICOPHORUM BORSIGIANUM (Koch) Stuntz. Phœnicaceæ.
(*Stevensonia grandifolia* Duncan.) Palm.

See Hooker, Curtis's Botanical Magazine, plate 7277, for full description.

38674. ROLLINIA MUCOSA (Jacq.) Baillon. Annonaceæ.
(*Rollinia sieberi* A. DC.)

"Fruit tree, very large fruited."

"A small tree with the habit of *Annona reticulata* L. with large edible fruit not equal in flavor to that of the cherimoya or sugar-apple." (*Safford, Classification of Annona, Contr. U. S. Nat. Herb., vol. 18, p. 58-60, 1914*, which see for full description and illustration.)

38675. ANNONA CHERIMOLA Miller. Annonaceæ. Cherimoya.

From Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie. Scions received July 1, 1914.

38676 to 38684.

From Cuzco, Peru. Presented by Dr. A. A. Giesecke, president, University of Cuzco. Received July 1, 1914.

38676 to 38678. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

38676. Special white. **38678.** Special white.

38677. *Donicititas*.

38679. AMYGDALUS PERSICA NECTARINA Ait. Amygdalaceæ. Nectarine.

38680 to 38683. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

Seeds of four distinct varieties of peaches introduced, like the preceding, for the work of Mr. W. F. Wight in breeding rosaceous plants.

38684. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. Black cherry.

"Not only is the rum cherry (*Prunus serotina*) widely spread in North America, but one of its forms reaches through Mexico, across the Isthmus of Panama, as far south as the mountains of Peru. Near Quito, in Ecuador, where this tree grows on the Equator, it appears to be in fruit the whole year round. This is *P. salicifolia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 251.*)

38685 and 38686. ORYZA SATIVA L. Poaceæ. Rice.

From Spain. Presented by Mr. Claude I. Dawson, American consul, Valencia, Spain. Received July 2, 1914.

"Two strains of the *Benloch* (or *Belloch*) variety. The commercial classes of rice in the Valencia region, especially along the north and south banks of the Jucar River, or center of the rice district, are at present *Benloch* (or *Belloch*)

38685 and 38686—Continued.

and *Amonquili*. During 1913 the two were cultivated in the proportion of 80 per cent for the first and 20 per cent for the second, and in the season just beginning the *Benloch* will certainly be overwhelmingly preferred, in view of repeated excellent results obtained by experiment stations and in actual cultivation. The *Benloch* (or *Belloch*) variety is of undetermined origin and very little is known here concerning it. It was introduced and distributed to farmers by the agricultural experiment station at Burjasot, near Valencia (Granja Escuela práctica de Agricultura de Valencia). It was easily and quickly domesticated and appears to be peculiarly adapted to this soil. It germinates quickly in the seed bed and stands transplanting according to the usual practice in this region. The grain gives a large percentage of rice flour in milling and the straw is firm and remains sound from beginning to end. One disadvantage is that it matures somewhat later than other varieties. It is also said to be inferior in food value to the *Bomba* variety. The yield of *Benloch* rice in 1913 was reported as being unusually high. In the municipal division of Villanueva de Castellon of the Ribera Alta of the Jucar River many fields produced 900 kilos per hanegada (10,800 kilos per hectare, or about 9,620 pounds per acre). Some fields gave even better results, reaching 1,000 kilos per hanegada (12,000 kilos to the hectare, or 10,688 pounds to the acre). According to report, this rice was sold at an average price of 27 pesetas per 100 kilos (\$4.86 per 220 pounds) on the thrashing floor. It is this wonderful productivity which has popularized the *Benloch* variety, since it is to this condition more than the class that all the work and hopes of the Valencia rice cultivator are subordinate." (Extract from *Mr. Dawson's letter dated Apr. 25, 1914.*)

38687 to 38693.

From Russia. Secured by Mr. E. Brown, of the Bureau of Plant Industry. Received July 3, 1914. Quoted notes by Mr. Brown, except as otherwise indicated.

38687 to 38691.

From Ekatarinodar, Kuban Government, Russia. Secured from Mr. A. N. Rockel.

38687. TRITICUM AESTIVUM L. Poaceae. Winter wheat.
(*Triticum vulgare* Vill.)

"No. 1. Best yielding variety in the Kuban district, from 30 to 60 bushels per acre. Seeded at the rate of 1½ bushels per acre from August till November." (Rockel.)

38688. HORDEUM DISTICHON NUTANS Schubl. Poaceae. Winter barley.

"No. 2. Seeded September to November in the south and August to September in the north; yield 50 to 80 bushels per acre." (Rockel.)

38689. BRASSICA ALBA (L.) Boiss. Brassicaceae. Yellow mustard.

"No. 4. Gives two crops in summer. Seeded in February to March High oil content." (Rockel.)

38690 and 38691. ZEA MAYS L. Poaceae. Corn.

38690. "No. 5. One of the small early types (*Cinquantino*) of flint corn raised in the Kuban district."

38691. "No. 6. One of the small early types (*Cinquantino*) of flint corn, called *Perl*, raised in the Kuban district."

38687 to 38693—Continued. (Quoted notes by Mr. E. Brown.)
38692 and 38693.

From the estate of A. Vassal, "Klarofskoy," Nogais Steppe, Government of Taurida, Russia.

38692. *SECALE CEREALE* L. Poaceæ. Winter rye.

"No. 7. This is the best variety grown in the region."

38693. *AVENA SATIVA* L. Poaceæ. Oats.

"No. 8. This is the best variety grown in the region."

38694. *ANNONA CHERIMOLA* Miller. Annonaceæ. **Cherimoya.**

From Mexico. Presented by Mr. Charles F. O'Brien, Los Angeles, Cal.

Received at the Plant Introduction Field Station, Chico, Cal., May, 1914.

"Seeds from a very choice variety of Mexican cherimoya, grown in the mountains east of Culiacan, Sinaloa." (O'Brien.)

38695. *ARAUCARIA ARAUCANA* (Mol.) Koch. Pinaceæ. **Pehuén.**

From Barbacena, Minas Geraes, Brazil. Presented by Mr. Frank R. Brainerd, Experiment Station. Received July 8, 1914.

"An evergreen tree, 50 to 80 feet high, of pyramidal or rounded form, with an erect cylindrical bole, $1\frac{1}{2}$ to $2\frac{1}{2}$ feet thick, all but the oldest parts prickly with living leaves or the remains of dead ones. Branches produced in regular tiers of five to seven. Leaves very uniform, ovate, with a slender spine-tipped point, from 1 to 2 inches long, one-half to 1 inch wide; hard, rigid, and leathery; dark glossy green except at the paler growing tips of the branches, and with numerous stomatic lines on both surfaces. The leaves are arranged spirally on the branch, overlapping at the broad, stalkless base, and are very densely packed (about 24 to 1 inch of stem); they remain alive for 10 to 15 years, and then persist for an indefinite time dead. Male and female flowers are usually borne on separate trees, but not invariably; the former are produced on egg-shaped or cylindrical catkins 3 to 5 inches long, the scales lanceolate, densely packed, with the slender points reflexed, the pollen being shed in early July. The female cones take two seasons to develop, appearing in the spring of one year and shedding their seeds in August or September of the next; they are globose, and usually 5 to 7 inches thick. Seeds conical, $1\frac{1}{2}$ inches long, three-fourths inch wide.

"Native of Chile; originally discovered about 1780, and introduced to England by Archibald Menzies in 1795. Menzies had, two or three years previously, when attached to Vancouver's voyage of survey, pocketed some nuts put on for dessert whilst he and the ship's officers were dining with the Viceroy of Chile. He sowed these nuts on board ship, and ultimately landed five plants, which proved to be the *Araucaria*, alive in England. One of the five existed at Kew until 1892. The Chile pine, whilst hardy in most parts of the British Isles, attains its finest development in the softer, moister counties, and in good free soil. It should always be raised from seeds, fertile ones of which are now regularly produced in several gardens. At Castle Kennedy I have seen seedling plants springing up naturally near the trees from which seeds had fallen. *Araucaria imbricata* is of peculiar interest as the only tree from the south of the Equator that attains to timber-producing size in the average climate of the British Isles. It becomes over 100 feet high and 7 feet in diameter of trunk in Chile, deriving its name from the Arauco Province (inhabited by the Araucanos Indians), where it was first found. A species is

38695—Continued.

found in Brazil, and several others in Australia and New Caledonia—all tender. In its general aspect, and especially as compared with the ordinary types of northern vegetation, the Chile pine is the most remarkable hardy tree ever introduced to Britain. It should always be grown as an isolated tree, or in an isolated group, as it associates very badly with ordinary garden vegetation. It was first introduced in quantity to this country [England] in 1844 by Wm. Lobb." (*W. J. Bean, Trees and Shrubs in the British Isles, vol. 1, p. 199, under Araucaria imbricata.*)

38696 to 38698.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received July 9, 1914. Quoted notes by Mr. Regnard.

38696. LINOMA ALBA (Bory) O. F. Cook. Phœnicaceæ.

Mascarene cabbage palm.

"A palm that attains a height of 50 feet. Young plants have dark-red margins on new leaves, which diminish when the tree becomes older. This true red variety is getting very scarce now, as almost all the trees newly planted are a cross mixture with the white. These seeds were gathered on the true red sort in a wide plantation of them. The cabbage of this palm is commonly eaten here and has quite a delicate flavor."

For a discussion of this Mascarene cabbage palm, see the Journal of the Washington Academy of Sciences, vol. 7, p. 123, 1917.

38697. HYOPHORBE AMARICAULIS Martius. Phœnicaceæ.

Palm.

"Said to grow 60 feet, though I have never seen it over 30 feet. This palm is very common in Round Island and has spread now in Mauritius, where it is planted as a curious ornamental plant only. Trunk bottle shaped."

38698. KIGELIA PINNATA (Jacq.) DC. Bignoniaceæ.

"The sausage tree, called by the natives here *Calabasse d'Amerique*, though a spreading tree of tropical Africa. The quite heavy and large fruit, 20 inches and over, sometimes 4 feet, are produced on very long cordlike stalks, thus hanging in the air, where they dangle for several weeks. This tree is held sacred by the savage tribes of Nubia. The wood is very hard and durable and easily worked."

38699 to 38707. OPUNTIA spp. Cactaceæ.

Prickly-pear.

From Nice, France. Presented by M. Robert Roland Gosselin, through Mr. William Dulany Hunter, American consul, Nice. Received July 10, 1914.

Cuttings introduced at the request of Dr. David Griffiths for his work in monographing the genus *Opuntia* in connection with studies of its forage value.

38699. OPUNTIA SPINULIFERA Salm-Dyck.

See S. P. I. No. 33335 for previous introduction.

38700. OPUNTIA FICUS-INDICA (L.) Miller.

Var. *costaricensis*.

38701. OPUNTIA DECUMANA (Willd.) Haw.

See S. P. I. No. 8916 for previous introduction.

38699 to 38707—Continued.**38702.** *OPUNTIA GYMNOCARPA* Weber (?).These cuttings were received under the name *Opuntia cafayatensis*.**38703.** *OPUNTIA CAMUESSA* Weber.

See S. P. I. No. 33334 for previous introduction.

38704. *OPUNTIA ROBUSTA LARREYI* Weber.

See S. P. I. No. 33328 for previous introduction.

38705. *OPUNTIA* sp.**38706.** *OPUNTIA GYMNOCARPA* Weber.

See S. P. I. No. 33329 for previous introduction.

38707. *OPUNTIA STREPTACANTHA* Lem.

See S. P. I. No. 33327 for previous introduction.

38708. *CLAUCENA LANSIUM* (Lour.) Skeels. Rutaceæ. **Wampi.**
(*Clausena wampi* Oliver.)

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Experiment Station. Received July 9, 1914.

“These seeds were kindly donated to the station by Mr. A. J. Campbell, of Honolulu, who has a wampi tree which bears a heavy crop of excellent fruit.”
(*Wilcox*.)

“A low, spineless tree, with spreading branches; leaves spirally arranged, pinnate; leaflets 5 to 9, ovate elliptical, 3 to 5 inches long, petiolate, light green, shiny above; flowers 4 to 5 parted, small, white, in large terminal panicles; ovary villous, 5-celled, with 1 ovule in each cell; style short; stamens 10; fruit ovate globose, about 1 inch long; skin glandular, pubescent; seeds green. The wampi is a native of southern China, where it is commonly grown for its fruits. It is cultivated to some extent in Hawaii and could probably be grown in the warmer parts of Florida and California. It can be grafted on grapefruit and other species of Citrus, which makes it desirable to test it as a stock for common citrus fruits. (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

38709 to 38731.

From Angeles National Forest, Cal. Presented by the Forest Service, Department of Agriculture, Washington, D. C., on the conclusion of eucalyptus planting in the national forests. Notes adapted from A. J. McClatchie, *Eucalypts Cultivated in the United States*, Bulletin 35, Bureau of Forestry, are given abridged credits, with page citations.

Most, if not all, of this seed was collected from California-grown trees.

38709 to 38730. *EUCALYPTUS* spp. Myrtaceæ.**38709.** *EUCALYPTUS ALPINA* Lindley.**Alpine gum.**

This tree, which is commonly known as the *Alpine gum*, is a small evergreen tree which reaches a height of 10 or 15 feet. The flowers are sessile in the leaf axils, and solitary or few. They are white in color. This rare and interesting alpine species might possibly do well for street planting. (Adapted from *W. R. Guilfoyle, Australian Plants*, and *Bailey, Cyclopedia of American Horticulture.*)

38709 to 38731—Continued.

38710. EUCALYPTUS BICOLOR A. Cunningh. Cooburn.

"This species is found growing in south Australia and eastern Australia to the Gulf of Carpentaria. This tree has a variety of local names, some of which are *Cooburn*, *box*, *black box*, *yellow box*, *bastard box*, and *grey gum*. It is also called *slaty gum*, from the gray and white patches on the bark.

"The timber is hard and durable, very lasting underground, and of a red color. It is used for fencing, rough buildings, and sleepers, also for shafts, poles, and cogs. It is more easily worked than the generality of ironbarks. The large trees are frequently hollowed and decayed at heart. This tree attains a height of between 100 and 120 feet and a basal diameter of 24 to 36 inches." (*Maiden, Useful Native Plants of Australia*, p. 471, under *E. largiflorens*.)

38711. EUCALYPTUS CITRIODORA Hook. Lemon-scented gum.

This is a handsome, fast-growing tree, soon becoming tall and slender. In favorable situations in the Southwest it attains a height of 60 to 100 feet in 10 to 15 years. The trunk is straight and even, the foliage being confined mostly to the lofty summit. The bark is light colored, faintly mottled by indentations that indicate where thin patches have flaked off. This mottling of the trunk, together with the stately character of the tree, the graceful foliage, the profuse bloom, and the fragrant leaves make this eucalypt one of the most attractive of the genus. The leaves of the tree are long, quite narrow, and equally shiny green on both sides. The foliage possesses a pleasant odor, closely resembling that of a lemon, giving the tree its varietal name *citriodora*. The tree thrives in the frostless coast regions, but is not suited to the dry interior valleys. It is especially sensitive to low temperatures. The wood is of a grayish, brownish, or yellowish tint, flexible, strong, and durable. The timber is used for fencing, implement handles, shipbuilding, paving, railway ties, bridge building, carriage making, and for the manufacture of railway coaches in Australia. The great value of this wood is due to its strength, elasticity, and beauty. Its profuse bloom makes it valuable also for bee pasture. (*McClatchie*, p. 54, 55.)

38712. EUCALYPTUS PAUCIFLORA Sieber. White gum.

This tree is of medium size; rarely exceeds 75 feet in height and 3 feet in diameter. It is a stately and quite handsome tree. The main branches are usually spreading and the smaller branches drooping. The bark is smooth and grayish. The leaves are shiny, the same color on both sides, and quite thick. The medium-sized flowers are in compact clusters. The shape of the fruits is that of the broader part of an egg. The tree does best in regions of moderate temperatures a short distance from the coast. It is resistant to frost. In Australia it grows from the base to near the top of the highest mountains. It will not endure drought nor a hot, dry atmosphere, though supplied with plenty of water artificially. The timber is comparatively soft, splits fairly well, but is rather brittle. It is not useful for underground purposes, but makes a good fuel. (*McClatchie*, p. 55, under *E. coriacea*.)

38709 to 38731—Continued.

38713. EUCALYPTUS CLADOCALYX F. Muell.

Sugar gum.

(Eucalyptus corynocalyx F. Muell.)

This tree attains a fair size and is commonly symmetrical and erect. Its growth is quite rapid from an early age. The usual height ranges from 50 to 100 feet, and in Australia the trunk is said to often attain a diameter of 5 or 6 feet. As a rule the trunk is straight, with only a slight taper. The bark is left smooth by the continuous flaking off of the patches or strips. The bark of the main stem is usually a deep cream color, that of the branches darker before shedding, and of the young twigs quite red. This Eucalyptus furnishes a timber that is very durable as railway ties, as posts, and for other underground situations. The wood warps very little in drying and when dry is very hard. It is also useful for the naves and felloes of wheels. (*McClatchie, p. 57, 58.*)

38714. EUCALYPTUS VIMALIS Labill.

Manna gum.

Both in Australia and in the Southwest the individuals of this species make rapid growth and commonly become trees of large size. Those growing in the Southwest give promise of eventually attaining a height of 300 feet and a trunk diameter of 15 to 30 feet. The surface of the bark varies considerably in appearance. That of the trunk and main branches is commonly persistent, but from some trees long slender strips are shed, leaving the trunk smooth and of a greenish or reddish creamy color. The persistent bark is brownish in color, furrowed and rough. This bark has the peculiar characteristic of exuding a honeylike substance, called 'lerp' by the natives, but better known as 'manna,' when the bark is punctured or wounded by insects. This Eucalyptus grows under quite a variety of climatic conditions. In the Southwest it thrives near the coast, on dry mesas, in the elevated valleys of the interior, and in the hot valleys of much of the desert region. The timber of this tree is less valuable than most of the eucalypts. It is not durable under ground and does not make good fuel. In Australia it is used for shingles and for rough building material. The tree can be grown for a forest cover, for windbreaks, for fuel, and for shade in many localities where species producing a better timber will not grow. (*McClatchie, p. 82, 83.*)

38715. EUCALYPTUS GLOBULUS Labill.

Blue gum.

This species is the best known of the eucalypts and in many respects the best known tree in all the world. It is the third tallest of the species of Eucalyptus, the usual height in Australia being 200 to 300 feet. In California, where trees can be found 30 or more years old, many have attained the height of 150 feet, and a diameter of 3 to 6 feet during these years. This remarkable tree has the power of adapting itself to a variety of climatic conditions. It thrives both in moist, warm regions, and in quite hot, dry ones. It makes a good growth both in low lands and in dry, stony uplands. This species is the most generally useful of all the eucalypts. The timber of this tree is of a rather pale color, is hard, heavy, and very strong and durable. It is fairly straight grained and splits easily. In Australia it is used for shipbuilding, for carriage making, and in the manufacture of agricultural implements. It is also used in

38709 to 38731—Continued.

bridge building, for telegraph poles, and for railway ties. It is also the one that is used principally in the manufacture of eucalyptus oil in California. (*McClatchie, p. 61-63.*)

38716. EUCALYPTUS GONIOCALYX F. Muell. Mountain spotted gum.

This tree commonly attains a good size, in some situations in Australia reaching a height of 300 feet, with a diameter of 6 to 10 feet. The leaves of the adult tree are long and quite slender, the two sides being similarly colored. The flowers are nearly stemless, in small clusters borne on flattened stalks. This species grows well in the coast regions of California, but so far as known has not been tested in the dry, hot valleys of the interior, or other similar situations. In Australia it ascends to elevations of 4,000 feet, and is therefore a promising species for the mountains of the Southwest. The tree furnishes a hard, tough wood used by wheelwrights, by boat builders, and for general building purposes. It is very durable in the ground and is consequently useful for railroad ties, for posts, and for other purposes in underground situations. It also makes an excellent fuel. (*McClatchie, p. 63, 64.*)

38717. EUCALYPTUS GOMPHOCEPHALA DC. Tooart tree.

The tree is rather stocky and is usually symmetrical. The bark of the trunk is dark gray, rough, and persistent. From the branches the bark flakes off in strips, leaving the surface smooth and light colored. The twigs are reddish yellow. The leaves are thick and shining and somewhat leathery, the upper surface being darker than the lower. The flowers are of large size. This tree thrives along the coast and does fairly well in the dry, interior valleys. It has not been grown extensively enough yet to determine what degrees of heat and cold it will endure in America. The tree furnishes a heavy wood that is very tough and strong. It is one of the strongest timbers in the world. The grain is so close and curled or twisted that it is not easily split. The timber is used principally in shipbuilding and for bridges. It is very durable in all kinds of weather and in a great variety of situations. (*McClatchie, p. 63.*)

38718. EUCALYPTUS LEUCOXYLON F. Muell. White ironbark.

Trees of this species attain fair size in a comparatively short time and when full grown are large. They are apt to grow out of the perpendicular, and the trunks are frequently crooked. The wood is white and straight grained. The foliage has a pleasing bluish cast and is well distributed over the tree. The leaves of the young seedlings are broad, opposite, stemless, or short stemmed. This tree will grow in a greater variety of climates than most eucalypts; in fact, there are few situations in the Southwest in which it will not thrive. It grows vigorously on the coast, on the interior plains and foothills, and in the dry, hot desert valleys of the interior. On account of its adaptability to so great a variety of climatic conditions, it can be used as a forest cover for almost all kinds of situations and thus supply a timber useful for a large number of purposes. It can be grown for fuel and for other purposes that the ordinary blue gum serves where the latter will not grow. (*McClatchie, p. 66.*)

38709 to 38731—Continued.

38719. *EUCALYPTUS MACROBRYNCHA* F. Muell.

Victoria stringy bark.

This tree is said to attain a fair height in Australia, but the specimens growing in the Southwest do not yet give promise of attaining great size, due probably to being planted at too low an elevation. The tree has not proved to be a very symmetrical one. The bark of the trunk and branches is thick, fibrous, and persistent, usually a dark-gray color. This species thrives at the coast, and is said to grow in Australia on comparatively sterile mountain ranges. It is, in Australia, essentially a mountain species, seldom growing on the plains. It will not endure dry, hot climates. The bark of the tree being rough and fibrous, it is used extensively in Australia for roofing sheds, stables, and other outbuildings. The fibers are also sometimes used for strings. The tree furnishes a wood that is hard and durable and easily split. It is useful for lumber, for fencing, and for shingles and fuel. The tree is a promising one as a forest cover for mountain ranges of the Southwest. (*McClatchie, p. 67.*)

38720. *EUCALYPTUS OBLIQUA* L'Herit.

Stringy bark.

This is a tall, straight-stemmed tree, sometimes attaining a height of 300 feet in Australia, with a stem diameter of 10 feet. The bark is fibrous and persistent on both the trunk and the branches, being of a somewhat grayish color. The leaves of the young trees are commonly broad, but they become narrower as the tree increases in age. This species grows fairly well at or near the coast, doing best, however, some distance inland, but it does not thrive in the dry, hot valleys of the interior. It will thrive in light, barren soils, but does not endure severe drought. The timber of this species is straight and easily split. In Australia this tree furnishes much of the hardwood lumber used for rough building purposes. It is also used extensively for fence rails, palings, and shingles. The bark has been used for paper making. (*McClatchie, p. 70.*)

38721. *EUCALYPTUS PIPERITA* Smith.

Peppermint stringy bark.

The trees of this species attain a considerable height and are commonly erect and shapely. The grayish bark of the trunk is fibrous and persistent. The leaves of the adult tree vary in shape from a broad lance shape and very unequally sided to a narrow lance shape and quite straight leaf. The flowers are about medium size, in compact clusters of 6 to 12. The tree makes a fairly rapid growth near the coast and in cool inland situations, but does not endure dry, hot climates, and will not tolerate heavy frosts. The timber is readily split and is used for fencing and general building purposes. It is one of the species eligible for planting as a forest cover on mountain sides where it is not too dry nor subject to too heavy frosts. (*McClatchie, p. 72, 73.*)

38722. *EUCALYPTUS POLYANTHEMOS* Schauer.

Red box.

This is commonly a medium-sized tree, although it is said occasionally to reach a height of 250 feet in Australia. It is not a rapid grower, and few of the American specimens have attained a diameter of over 1 foot. It commonly sends up a single trunk, but quite frequently several stems arise from the same base. The tree is of a spreading habit, and with its characteristic foliage and profuse

38709 to 38731—Continued.

bloom presents a very pleasing appearance. The bark of the trunk and branches is persistent, somewhat furrowed, and grayish in color. This species thrives under a great variety of climatic conditions. It grows at and near the coast, in the foothills, on the mountain sides, and in the hot, dry valleys of the interior. The timber of this tree is very hard, strong, and durable, being used in Australia for railroad ties, for cogs, and for the parts of wheels. It also makes an excellent fuel. Its habit of growth and pleasing aspect render it a good shade tree. It can also be used as a windbreak in localities where faster growing trees will not endure the climatic conditions. (*McClatchie, p. 73.*)

38723. EUCALYPTUS AMYGDALINA Labill.**Peppermint gum.**

In its native country the individuals of this species are the tallest of the genus. This eucalyptus is one of the most remarkable and important of all plants. Viewed in its marvelous height when standing forth in its fullest development on the slopes or within glens of mountain forests, it represents probably the tallest of all the trees of the globe. Considered as a hardwood tree of celerity in growth, it ranks among the very foremost. The tree endures low temperatures, but is injured by dry heat. It does best near the coast and at moderate elevations in well-watered mountain regions. The timber is not as valuable as that of many other eucalypts, but is said to be useful for shingles, rails, and for planking ships. It is comparatively light, unlike many other eucalypts, floating on water. It does not usually last well underground, nor does it furnish fuel of good quality. The leaves are a source of eucalyptus oil. (*McClatchie, p. 51, 52.*)

38724. EUCALYPTUS RESINIFERA Smith.**Kino eucalypt.**

This is a tree of fair size, when full grown, reaching a height of 100 feet. It is usually erect and symmetrical. The bark of the trunk is dark reddish, fibrous, and persistent, resembling considerably that of the stringy barks. The bark of the branches is more or less deciduous. The wood is a rich red color, resembling true mahogany, and is very heavy. This Eucalyptus, known as the red mahogany, grows quite well in the coast regions of California, but does not thrive in the dry interior valleys. It does not resist severe frosts, nor does it endure high temperatures in a dry atmosphere. The tree furnishes a timber that is very strong, hard, and durable. It is used in Australia for piles, posts, paving, shingles, and general building purposes. (*McClatchie, p. 74, 75.*)

38725. EUCALYPTUS LONGIROSTRIS Muell.**Red gum.**

(*Eucalyptus rostrata* Schlecht.)

Individuals of this species make a fairly rapid growth and are commonly above medium size. The tree varies considerably in habit and appearance, in some cases being erect and stately and in other cases unsymmetrical and irregular in growth. This red gum is one of the leading forest trees of the Australian continent. The tree is commonly about 100 feet high in Australia, but is reported under favorable circumstances to grow to double that height, with a trunk diameter of 6 to 12 feet. The red gum grows under a great variety

38709 to 38731—Continued.

of climatic conditions. It is scattered over the southeastern part of Australia, growing there in a great variety of situations. While it prefers moist river bottoms with an equable climate, it will endure much heat, severe frosts, and considerable drought. The red gum furnishes a timber that is very valuable for many purposes. When freshly cut the wood is a rich red color that grows darker as it is exposed to the air. It is close grained, the fibers being interlocked, thus rendering it quite difficult to split. In America the principal uses made of the red gum have been for fuel and for posts. On account of its profuse bloom it is a good honey-yielding tree, both in Australia and in America. (*McClatchie, p. 76, 77.*)

38726. EUCALYPTUS SIDEROXYLON A. Cunningh. Red ironbark.

The red ironbark is a tree of medium to large size. It usually grows erect, with an even trunk, having numerous side branches, especially toward the top. It never grows to a great height. The bark is the hardest and the darkest of the ironbarks, the color usually being a dark red or brown. It is furrowed and cracked and studded with beads of the kino that exudes from it. The whole appearance of the tree, with its rough, dark bark, its silvery narrow leaves, and daintily colored flowers, is quite distinctive, contrasting strongly with the smooth-barked broader leaved species of the genus. The wood is dark red, very hard, and heavy. The leaves are narrow lance shaped, often curved, and usually have a more or less evident silvery surface. The red ironbark is one of the very useful eucalypts. While the timber is not prized as highly in Australia as that of other ironbarks, it is nevertheless valuable for many purposes. Its principal use is for bridge construction, for railway ties, for girders and large beams in building, for joists, for posts, for the hubs, spokes, and shafts of vehicles, and for a great variety of other purposes where strength and durability are required. (*McClatchie, p. 80.*)

38727. EUCALYPTUS VIRGATA Sieber.

This is an erect shrub or a small tree with smooth or slightly ribbony bark and pale-colored wood, and it is found along the eastern coast of New South Wales, Australia. The mature leaves are lance shaped, generally about 4 inches long, of a thick, very coriaceous texture, and equally green and shining on both sides. The flowers occur usually six in each head, and the nearly globular fruits are about half an inch in diameter. The timber from this eucalypt is of an inferior quality. A singular fact about this eucalypt is that it does not seem to have any distinctive native name, being usually called *scrubby gum*, a name also applied to many other species. (Adapted from *J. H. Maiden, Forest Flora of New South Wales, vol. 3, p. 85-89, pl. 94.*)

38728. EUCALYPTUS TERETICORNIS Smith. Flooded gum

This tree attains a good size under favorable conditions, but it is commonly not much above 100 feet in height and 6 feet in diameter in Australia. In the Southwest it makes a rapid growth and gives promise of reaching fully the size the trees do in their home. The species thrives under a variety of climatic conditions

38709 to 38731—Continued.

It grows best near the coast but endures the dry heat of the interior valleys. The trees of this species furnish an excellent red-colored timber that is very hard, heavy, and durable. It is used for general building purposes, for shipbuilding, for wheelwright work, for railroad ties, for telegraph poles, posts, fencing, and fuel. (*McClatchie, p. 81, 82.*)

38729. EUCALYPTUS VIMINALIS Labill. **Manna gum.**

See S. P. I. No. 38714 for previous introduction and description.

38730. EUCALYPTUS MUELLERIANA Howitt. **Yellow stringy bark.**

"This is perhaps only a variety of *E. pilularis*; bark more fibrous or stringy, the inner bark yellow and imparting a yellow stain to the wood; juvenile leaves often with tufts of hairs; adult leaves glossy above; lid blunt or slightly pointed; fruit typically one-half inch thick." (*H. M. Hall. In Bailey, Standard Cyclopaedia of Horticulture.*)

38731. SYNCARPIA GLOMULIFERA (Smith) Niedenzu. Myrtaceæ.

(*Syncarpia laurifolia* Ten.) **Burra murra.**

"This tree, which is a native of Queensland and New South Wales, is locally known as the *turpentine tree*. It attains a height of 200 feet and a stem girth of 30 feet. It is a quick grower and well adapted for shading roadsides. The wood is very durable and is mostly used for flooring and for cabinetmaking, as it takes a high polish. It is one of the most valuable known timbers for piles in salt or fresh water. It is also used in the construction of railway sleepers, in shipbuilding, and for other purposes where a strong, durable wood is required. The wood is almost fireproof." (*Mueller, Select Extra-Tropical Plants, p. 521.*)

38732. PENNISETUM GLAUCUM (L.) R. BROWN. Poaceæ.

(*Pennisetum typhoideum* Rich.) **Pearl millet.**

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell.
Received July 10, 1914.

African millet.

38733 to 38741.

From Darjiling, India. Collected by Mr. L. J. Mackintosh, Clover Cot. at the request of Mr. J. F. Rock, collaborator of the Bureau of Plant Industry.

38733. ABIES SPECTABILIS Lambert. Pinaceæ. **Fir.**

(*Abies webbiana* Lindl.)

"A lofty evergreen tree, met with in the Himalayas from the Indus to Bhutan; in the northwest Himalayas between 7,000 and 13,000 feet; in the inner ranges of Sikkim and Bhutan, between 9,000 and 13,000 feet; and in the outer ranges not below 10,000 feet. This tree yields a white resin which is sometimes medicinally used in India. The resin, mixed with oil of roses, when taken internally produces intoxication. This mixture is used externally for headaches, neuralgia, etc. The timber made from this tree is not durable when exposed to the weather, but seems

38733 to 38741—Continued.

to last well in the form of shingles in Sikkim, whence it is sometimes exported to Tibet for roofing. At Murree shingles are said to last 8 to 10 years and at Kulu 3 to 6 years. It is also much used for construction purposes. Very little information exists regarding the rapidity of its growth. The bark is used for roofing shepherds' huts, and it is also made into troughs for the salt given to the sheep grazing on the high Himalayas." (*Watt, Dictionary of the Economic Products of India, vol. 1, p. 5.*)

38734. ACER HOOKERI Miq. Aceraceæ. **Maple.**

"This species, which is a native of the eastern temperate Himalayas, is found growing at altitudes of 8,000 to 10,000 feet around Sikkim and Bhutan. Plants with copper-colored foliage are not uncommon around Darjiling. This tree attains a height of 40 to 50 feet." (*Watt, Dictionary of the Economic Products of India, vol. 1, p. 69.*)

38735. ALBIZZIA CHINENSIS (Osbeck) Merrill. Mimosaceæ.
(*Albizzia stipulata* Boiv.)

See S. P. I. No. 25782 for previous introduction.

Concerning this plant, Watt (*Commercial Products of India*), under *A. stipulata*, says: "All Indian species afford gum, more or less copiously, from wounds on the stem, and though little is known for certain of the specific differences of these gums, that of *A. stipulata* is reputed to be especially valued as a size in the manufacture of Nepal paper. The bark is said to be a fish poison; the leaves of most species are regarded as useful foddors, and in some instances the trees are specially grown on that account, but, according to Mr. Hartless, the stipules and young leaves of this species are poisonous to cattle. The timber is very soft. By far the greatest interest in the species of *Albizzia* centers in this species, which is now very extensively grown as a shade tree for tea both in Assam and Darjiling. It is known as the *sau* in the former Province and the *kala-siris* in the latter. Its chief value turns on the nitrating warts formed on its roots."

38736. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ. **Bamboo.**

"A common bamboo in the eastern Himalayas from Kumaon to Assam. It is generally a tall grass, 40 to 60 feet in height, but sometimes found as a long and tangled bush. The young shoots are used as food, being boiled and eaten in Sikkim, Bhutan, and Assam. The halms are large, 3 to 6 inches in diameter, rather hollow, and not always straight, but they are used for every variety of purpose. The bamboo grows gregariously on hillsides up to 3,000 feet. This bamboo is used by some tea planters for shading their estates from the hot and violent winds. This bamboo flowers every year, which is not the case with all others of this genus." (*Watt, Dictionary of the Economic Products of India, vol. 3, p. 71.*)

38737. NYSSA SESSILIFLORA Hook. f. and Thoms. Cornaceæ.

"This is a large tree found in the forests of the Sikkim Himalayas above 5,000 feet; also in Martaban between 4,000 and 6,000. The wood is gray, soft, and even grained, and is used for house building and other purposes about Darjiling." (*Watt, Dictionary of the Economic Products of India, vol. 5, p. 438.*)

38738. QUERCUS sp. Fagaceæ. **Oak.**

38733 to 38741—Continued.

38739. *TRACHYCARPUS MARTIANA* (Wall.) Wendl. Phœnicaceæ. Palm.

"This species is found growing in the temperate Himalayas at altitudes of 6,000 to 8,000 feet, and from Nepal eastward to the Khasia Hills at altitudes of 4,000 to 5,000 feet. It is also found growing at Burma at altitudes between 6,000 and 6,500 feet. The trunk is 20 to 50 feet long and slender, clothed beneath the crown with persistent leaf sheaths. The younger parts are softly furfuraceous hairy. The leaves are 4 to 5 feet in diameter, subglaucous beneath, cut about half way down into linear two-lobed segments. The flowers are yellow, ovaries villous. Drupe 1 to 3½ inches long, dirty blue in color." (*Hooker, Flora of British India, vol. 6, p. 436.*)

38740. *TERMINALIA TOMENTOSA* (Roxb.) Wight and Arn. Combretaceæ.

38741. (No. 17.) (Undetermined.)

38742 to 38751. *PANAX QUINQUEFOLIUM* L. Araliaceæ. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From China. Presented by His Excellency Tsao Julin, twice Minister for Foreign Affairs, through Dr. Paul S. Reinsch, American minister, Peking, China; at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture.

See S. P. I. Nos. 37870 and 37871 for other varieties and for description.

Quoted notes by Tsao Julin.

38742. "Seeds of the wild ginseng from Linkianghsien."

38743. "Seeds of the wild ginseng from Kwantien. Located in Fung-huang Subprefecture, Shengking Province. Latitude 40° 42' N. and longitude 124° 49' E."

38744. "Seeds of the cultivated ginseng from Kwantien."

38745. "Seeds of cultivated ginseng from Fushun. Located northeast of Mukden. Latitude 41° 53' N. and longitude 123° 51' E."

38746. "Seeds of cultivated ginseng from Chianhsien, located in Shengking Province, Manchuria, in Hsingking Subprefecture."

38747. "Seeds of cultivated ginseng."

38748. "Seeds of cultivated ginseng from Antuhsien."

38749. "Seeds of cultivated ginseng from Linkianghsien."

38750. "Seeds of cultivated ginseng from Tunghwahsien, located in Hsingking Subprefecture, Shengking Province, Manchuria, east of Mukden. Latitude 41° 37' N. and longitude 128° 7' E."

38751. "Seeds of cultivated ginseng from Fusung."

38752 to 38755. *ORYZA SATIVA* L. Poaceæ. **Rice.**

From India. Presented by Mr. H. G. Carter, economic Botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received July 3, 1914. Quoted notes by Mr. Carter.

38752. "(No. 35958, Bengal, India.) *Kalajira*. From the district agricultural officer, Mymensingh, Bengal Province."

38753. "(No. 36241, Bombay, India.) *Dhundhari*. From the district agricultural overseer, Broach, Bombay Province."

38752 to 38755—Continued. (Quoted notes by Mr. H. G. Carter.)

38754. "(No. 36249, Burma, India.) *Nakerijea*. From the deputy commissioner, Akyab, Burma Province."

38755. "(No. 36319, Hyderabad, India.) *Kamod*. From Hyderabad, Hyderabad Province."

38756. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. **Taro.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder, through Mr. Chester J. Hunn, assistant horticulturist, Hawaii Experiment Station. Received July 6, 1914.

Kai koi o Ewa.

38757. *PSIDIUM CATTLEIANUM* Sabine. Myrtaceæ. **Guava.**

From Santa Barbara, Cal. Presented by Mr. G. P. Rixford, San Francisco, Cal. Received at the Plant Introduction Field Station, Chico, Cal.

Var. *lucidum* Hort.

"Seed of a yellow guava, supposed to be a little hardier than the ordinary form." (*R. L. Beagles.*)

38758 and 38759.

From Kew, England. Presented by the director, Royal Botanic Gardens, Kew, England.

38758. *ACACIA RETINODES* Schlecht. Mimosaceæ. **Wirilda.**

This everflowering acacia is a native of Victoria and South Australia, where it grows along the river banks. It does well in moist places, but never grows beyond the size of a small tree, usually attaining a height of 20 to 25 feet. The wood is prettily grained, tough, and durable; furnishes a good gum arabic. (Adapted from *Maiden, Useful Native Plants of Australia*, and *Mueller, Select Extra-Tropical Plants.*)

38759. *ESCALLONIA PTEROCLADON* Hooker. Escalloniaceæ.

"A small, decidedly hardy, much-branched shrub, native of western Patagonia, 4 or 5 feet high, with spreading branches. It is a bushy plant with leaves like a small-leaved myrtle and abundant, very pretty, Epacrislike, fragrant flowers, white, tinged with red. The old wood is clothed with loose, cracked papyraceous bark and the branches are straight, rigid, singularly angled, and winged with vertical alæ (wings) which are sinuate and downy or fringed at the edge." (*Curtis's Botanical Magazine*, pl. 4827.)

38760. *COTONEASTER FRIGIDA* Wall. Malaceæ.

From Los Angeles, Cal. Seed collected by Mr. P. H. Dorsett, of the Bureau of Plant Industry, at Mr. Huntington's place, Los Angeles, Cal., November 11, 1911. Received at the Plant Introduction Field Station, Chico, Cal.

"A large, rounded, deciduous shrub, 15 to 20 feet high, or a small tree; branchlets at first covered with pale down, becoming smooth. Leaves 3 to 5 inches long, 1 to 2 inches wide, narrowly oval or obovate, deep dull green and smooth above, pale and very woolly beneath when young, becoming almost smooth by autumn. Flowers white, one-third of an inch across, produced very numerous in flattish corymbs 2 inches or more across, terminating in short,

38760—Continued.

leafy twigs; flower stalks very woolly. Fruits in large clusters, each fruit about the size of a pea, rich, bright red.

"Native of the Himalayas; introduced in 1824, and perhaps the most striking of all the cotoneasters. The splendid clusters of 'berries' wreathing the branches make some of the most brilliant pictures of autumn and early winter. Near London, owing to the attacks of birds, they disappear usually before Christmas, but in country places are occasionally seen hanging until February. The species is the most robust in the genus, making, if left to itself, a huge bush 20 feet high and as much through, consisting of numerous branching stems; but if kept to one stem when young, and the lower branches removed, it will make a pretty round-headed tree with a well-shaped trunk. There is a fine specimen of this kind in the Victoria Park at Bath whose trunk is 6 feet or so high and 1 foot or more thick. No hardy shrub more beautiful than this thrives in town gardens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409-410.*)

The wood of this small tree is attracting considerable attention in England as a source of wood for the manufacture of heads for golf sticks.

38761. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*Prunus sargentii* Rehder.) Amygdalaceæ. **Sargent's cherry.**

From Jamaica Plain, Mass. Presented by Dr. C. S. Sargent, Arnold Arboretum. Received July 6, 1914.

"This species is considered by Wilson valuable as a stock for the Japanese cherries." (*Sargent.*)

Distribution.—A large tree, often 75 feet high and 3 feet in diameter, found in Chosen (Korea) and the islands of Hokkaido, Hakodate, and Hondo, in Japan.

"A deciduous tree, 40 to 80 feet high, with a trunk sometimes 3 feet in diameter; young shoots smooth. Leaves obovate to oval, drawn out at the apex into a long, slender point, rounded, sometimes slightly heart-shaped at the base, sharply toothed, 2 to 4 inches long, about half as wide, quite smooth on both surfaces, often reddish when young; stalk smooth, one-half to 1 inch long, with a pair of glands near the blade. Bracts red, oblong, one-half inch long, edged with small glandular teeth. Flowers $1\frac{1}{4}$ to $1\frac{1}{2}$ inches across, of a lovely deep blush color, produced two to six together in short-stalked umbels, each flower with a stalk 1 to $1\frac{1}{4}$ inches long; petals obovate, notched at the broad apex; calyx tubular, with five ovate, pointed lobes one-fourth inch long, smooth and entire; stamens deep rose. Fruit a small black cherry, one-third inch wide.

"Native of Japan, introduced by Sargent to Kew in 1893. This splendid cherry, probably the finest of the true cherries as a timber tree, is also one of the most beautiful in its blossom. It flowers in April. The seeds germinate freely after lying dormant a year." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, 250-251, under P. sargentii.*)

38762. ANNONA MURICATA L. Annonaceæ. Guanábana.

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul. Received July 10, 1914.

"*Guanábana*, a fruit growing wild throughout the coastal region of Ecuador, on a very large tree. Evidently it is closely related to the cherimoya." (*Goding.*)

38763. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

From Rangoon, Burma, India. Presented by Rev. William H. S. Hascall.
Received July 14, 1914.

See S. P. I. Nos. 24450, 33094, and 38299 for previous introductions and description.

38764. OSMELIA sp. (?) Flacourtiaceæ. **Lubi lubi.**

From Catanduanes, Philippine Islands. Presented by Mr. E. H. Koert, superintendent, Bicol Farm, through Mr. Paul Popenoe, Washington, D. C. Received July 9, 1914.

"Seeds of a plant which possesses high value for food both for man and beast. In its wild state it appears to prefer places rather heavily mulched."
(*Koert.*)

38765 to 38776.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received July 2, 1914.

38765. ANDROPOGON ERIANTHOIDES F. Muell. Poaceæ. **Satin-top grass.**
See S. P. I. No. 19254 for previous introduction.

38766. ALLOTEROPSIS ECKLONIANA (Nees) Hitchcock. Poaceæ. **Grass.**
(*Bluffia eckloniana* Nees.)

Distribution.—A compactly tufted perennial grass growing from 1 to 3 feet tall, found in the Kalahari region and in the vicinity of Durban in South Africa.

38767. ERAGROSTIS CURVULA (Schrud.) Nees. Poaceæ. **Grass.**
See S. P. I. No. 21313 for previous introduction.

Distribution.—A densely tufted perennial grass with open, nodding panicles, growing about 2 feet high in the Kalahari region of South Africa and extending southward to the Cape of Good Hope.

38768. ERAGROSTIS POA Stapf. Poaceæ. **Grass.**

Distribution.—A densely tufted perennial grass about 2 feet high, found in moist places in the Caledon division of the coast region and in Bechuanaland in the Kalahari region of South Africa.

38769. FINGERHUTHIA AFRICANA Lehm. Poaceæ. **Grass.**

Distribution.—A densely tufted grass resembling timothy in habit and appearance, found in Little Namaqualand, in the Kalahari region and in the Transvaal in South Africa.

38770. ISCHAEMUM GLAUCOSTACHYUM Stapf. Poaceæ. **Grass.**

Distribution.—A slender perennial grass growing about 3 feet high, found along the Pinaars River in the Transvaal, South Africa.

38771. PANICUM MAXIMUM Jacq. Poaceæ. **Guinea grass.**

38772. PANICUM NIGROPEDATUM Munro. Poaceæ.

Distribution.—A perennial grass growing 1 to 2½ feet high, found in the Kalahari region of Africa and northward to the upper Zambezi region.

38765 to 38776—Continued.

- 38773.** CHAETOCCHLOA AUREA (Hochst.) Hitchc. Poaceæ.
(*Setaria aurea* Hochst.)

Distribution.—A perennial grass growing 6 feet tall, with dense panicles covered with yellowish or bright orange bristles, found in the Kalahari region of South Africa and in tropical Africa and Asia.

- 38774.** CHAETOCCHLOA LINDENBERGIANA (Nees) Hitchc. Poaceæ.
(*Setaria lindenbergiana* Stapf.)

See S. P. I. No. 34817 for previous introduction.

- 38775.** CHAETOCCHLOA NIGRIROSTRIS (Nees) Skeels. Poaceæ.
(*Setaria nigrirostris* Dur. and Schinz.)

- 38776.** CHAETOCCHLOA SULCATA (Aubl.) Hitchc. Poaceæ.
(*Setaria sulcata* Raddi.)

38777. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Lima, Peru. Procured from Señor J. A. MacKnight, director, Escuela Normal de Varennes. Received July 15, 1914.

38778. PRUNUS ARMENIACA L. Amygdalaceæ. Apricot.

From Somma Vesuviana. Presented by Dr. Gustav Eisen, Rome, Italy. Cuttings received July 17, 1914.

"*Pelese* apricot. Size, large; slightly ovoid. Deep crease between the cheeks, one of which is larger than the other. Skin smooth, without spots. Color, orange chrome, with carmine flush. Seed medium, with a small projection or hump. Flesh very firm; ripens evenly all around and shows no unripe side. Flavor very fine. Sweetness medium (the specimen having been picked while unripe). Leaves pointed. I consider this apricot one of the finest, if not the finest, I have come across. It should be a splendid shipper, and if the sweetness is increased by allowing the fruit to ripen more, it should prove a very desirable table fruit, superior to the *Royal*. An average fruit displaced 53 c. c. water when immersed in a graduate." (*Eisen*.)

38779. LITCHI CHINENSIS Sonnerat. Sapindaceæ. Litchi.
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Presented by Mr. Chester J. Hunn, assistant horticulturist, Hawaii Agricultural Experiment Station. Received July 20, 1914.

"A small, bushy tree, with handsome dense foliage, native of China. It blossoms in the dry season (about February), producing sprays of pale-green flowers, and ripens its fruit about June. The fruit, produced in clusters, is of the size and form of a large plum, with a rough, thin, scalelike rind, which becomes of a beautiful red tinge, gradually turning to a dark-brown color before it is quite ripe. The jellylike pulp or aril which covers the seed is of a translucent whiteness and of an agreeable refreshing flavor. This fruit, represented by different varieties of varying quality, is grown to great perfection about Calcutta and elsewhere in India and is commonly sold in the bazaars when in season. Cameron says it thrives up to 3,500 feet in South India, giving at Bangalore two crops of fruit a year (in May and December). It is grown successfully in Mauritius, but curiously enough it is rarely met with in Ceylon,

38779—Continued.

though introduced here as early as 1802. The tree flourishes and produces fruit at Peradeniya, but the variety here grown is obviously an indifferent one. There are several varieties in cultivation, distinguished by size and shape of fruit, quality of pulp, and size of seed. Litchi fruits are dried and preserved in China and Cochin China, whence they are exported to Europe and America. Dried litchis are not unlike raisins, both in appearance and taste. The tree may be increased by seed, but budding or grafting should be adopted to propagate the best varieties." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

For an illustration of the litchi tree as grown in California, see Plate I.

38780. HORDEUM VULGARE L. Poaceæ.**Barley.**

From Amoy, China. Presented by Mr. Lester Maynard, American consul. Received July 16, 1914.

38781 to 38844.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 10, 1914. Quoted notes by Mr. Meyer.

38781. OPHIOPOGON JAPONICUS (L. f.) Ker-Gawler. Liliaceæ.

"(No. 2112a. Tahuashan, Shensi, China. December 29, 1913.) A liliaceous herbaceous perennial, found in shady nooks on rocky places. Of value possibly in the hardy border in shady places."

38782. BRASSICA PEKINENSIS (LOUR.) Skeels. Brassicææ. Pe-tsai.

"(No. 2052a. Tsaochowfu, Shantung, China. March 11, 1914.) A remarkably fine variety of winter pe-tsai, of very white color and possessing a mild, sweet flavor. Weighs up to 10 pounds apiece. Chinese name *Ta pai ts'ai*, meaning 'large white vegetable.' See former notes [S. P. I. No. 36113] as to cultivation."

38783. BRASSICA NAPIFORMIS (Paill. and Bois) Bailey. Brassicææ.**Turnip-rooted Chinese cabbage.**

"(No. 2053a. Village of Tchungko, near Tai'anfu, Shantung, China. March 21, 1914.)"

38784 and 38785. RAPHANUS SATIVUS L. Brassicææ.**Radish.****38784. "(No. 2054a. Sianfu, Shensi, China. January 30, 1914.)"**

A Chinese winter radish of a beautiful bright red color; shape round and flattened; size medium large. A very attractive-looking winter vegetable. Chinese name *T'ieh hung tan lo po*, meaning 'iron-red ball root.'

38785. "(No. 2055a. Sianfu, Shensi, China. January 30, 1914.)"

A variety of Chinese early summer radish of bright red color and of elongated shape. Can be eaten fresh or stewed. Chinese name *Yeh chi hung shui lo po*, meaning 'wild-pheasant red-winter root.'

38786. DAUCUS CAROTA L. Apiaceæ.**Carrot.**

"(No. 2056a. Sianfu, Shensi, China. January 30, 1914.) A long, blood-red carrot. Of special value for pickling purposes on account of its attractive color. Thrives best on deep, rich, sandy soils which retain moisture well. Chinese name *Hung t'iao lo po*, meaning 'red-stick root.'



THE FIRST CHINESE LITCHI TREE (*LITCHI CHINENSIS* SONNERAT) TO FRUIT IN THE UNITED STATES. (SEE S. P. I. NO. 38779.)

Although the famous Afong litchi tree has borne more or less regularly in Honolulu for the past twenty years, most of the attempts which have been made to grow this species in California and Florida have failed. This illustration, according to Mr. Hadley, shows a seedling introduced by Reasoner Bros., of Oneco, Fla., now growing on the Hadley place in Santa Barbara, Cal. It was 9 feet high and had a spread of 13½ feet at the time the photograph here reproduced was taken, October 23, 1914. In 1914 it bore and ripened several fruits. In 1915 it bloomed but failed to fruit. It was not injured by the freeze of 1913, although to just how low temperatures it was subjected is not known. A report from India indicates that 21° F. will injure the foliage, whereas a similar report from South China is to the effect that 24° F. injured large trees severely. The freeze of February 3, 1917 (temperature 26° F.), at Miami, Fla., killed 10-year-old trees nearly to the ground. (Photographed by Wilson Popenoe, October 23, 1914; P16216FS.)



AN ORCHARD OF THE LARGE-FRUITED CHINESE HAWTHORN (*CRATAEGUS PINNATIFIDA* BUNGE) NEAR TAIANFU, SHANTUNG, CHINA. (SEE S. P. I. No. 38796.)

An extensive orchard of large-fruited Chinese hawthorn trees, showing the dense and low branching habit of this tree. There is such a great demand for these fruits that the farmers are steadily increasing their plantings. The hawthorns (or haws) have never been considered by Americans as valuable fruit trees, although there are species which bear distinctly fine flavored fruits. The existence in China of these orchards of a large-fruited grafted variety, as described by Mr. Frank N. Meyer, suggests the possibility of improving our own American hawthorns and selecting and grafting the best flavored, largest fruited seedlings. The jelly made from the fruit of this Chinese species is considered by Americans in China a distinct delicacy. (Photographed by Frank N. Meyer, March 29, 1914; P13074FS.)

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)**38787.** ALLIUM SCHOENOPRASUM L. Liliaceæ. **Chives.**

“(No. 2057a. Sianfu, Shensi, China. January 30, 1914.) A superior variety of chives, much used, forced in darkness as a winter vegetable. Eaten with fried meats and as a savory in soups; considered to be very healthful. Might possibly be a profitable crop in America when supplied to the Hebrew and Chinese colonies in eastern American cities. Chinese name *Chiu ts'ai tzü.*”

38788. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

“(No. 2058a. Feicheng, Shantung, China. March 26, 1914.) A very elongated variety of Chili pepper, locally much dried and kept for winter use. Is used as a condiment in soups and with noodles when ground and mixed with sesame oil and a little salt, creating a good appetite that way. Chinese name *Ch'ang la chiao*, meaning ‘long chili pepper.’”

38789 to 38792. ZEA MAYS L. Poaceæ. **Corn.**

From Peking, China. Collected April 28, 1914.

38789. “(No. 2059a.) A variety of flint maize, of golden-yellow color, said to ripen early. Chinese name *Wu yüch hsien yü mi*, meaning ‘fifth moon new imperial grain.’”

38790. “(No. 2060a.) A rare variety of flint maize of grayish color, said to ripen early. Chinese name *Wu yüch hsien yü mi*, meaning ‘gray imperial grain.’”

38791. “(No. 2061a.) A rare variety of flint maize of violet-purple color. Said to have come from Japan. Chinese name *Tzü yü mi*, meaning ‘violet imperial grain.’”

38792. “(No. 2062a.) Mixed varieties of flint maize said to have come from Japan. Chinese name *Tsa jih pên yü mi*, meaning ‘mixed Japanese imperial grain.’”

38793. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

“(No. 2063a. Provinces of Honan, Shensi, Shansi, and Shantung, China. December, 1913, to April, 1914.) Collected from fruits of cultivated varieties. To be sown to obtain primarily pollen-bearing trees.”

38794. PYRUS CHINENSIS Lindl. Malaceæ. **Pear.**

“(No. 2064a. Provinces of Honan, Shensi, Shansi, and Shantung, China. December, 1913, to April, 1914.) Mixed varieties of Chinese pears obtained from fruits of cultivated varieties. To be sown to obtain new varieties possibly.”

38795. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Malaceæ. (*Pyrus cathayensis* Hemsl.) **Quince.**

“(No. 2065a. Sianfu, Shensi, China. January 19, 1914.) Mixed varieties of Chinese quinces. To be sown like S. P. I. No. 38794. See S. P. I. No. 35639 for remarks.”

38796. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

“(No. 2066a. Provinces of Honan and Shantung, China. February and March, 1914.) Mixed varieties of Chinese haw fruits. To be sown out for stocks. The seeds may remain dormant for one or two years.”

For an illustration of a hawthorn orchard in China, see Plate II.

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38797 and 38798. *THUJA ORIENTALIS* L. Pinaceæ. **Arbor vitæ.**

From Chaoyi, Shensi, China. Collected February 7, 1914.

38797. "(No. 2067a.) A remarkable form of the oriental arbor vitæ, of flattened globular shape and of very dense growth. A rare tree! Of value for cemeteries and for places of dignity. Specially suited to mild-wintered, semiarid climes."

38798. "(No. 2068a.) A conical form of the oriental arbor vitæ, of somewhat less dense growth than S. P. I. No. 38797. Of like value."

For an illustration of the arbor vitæ as grown in China, see Plate III.

38799. *PYRUS* sp. Malaceæ. **Pear.**

"(No. 2069a. Kwanyunting, Honan, China. December 20, 1913.) A small species of pear of round-elongated shape with long peduncle. Color russet brown. Becomes soft and mushy when ripe. Chinese name *T'ang li*, meaning 'sugar pear.'"

38800 to 38802. *GLEDITSIA SINENSIS* Lam. Cæsalpiniaceæ. **Soap bean.**

38800. "(No. 2070a. Siaufu, Shensi, China. January 7, 1914.)

A large-podded variety of the Chinese soap bean. These Chinese Gleditsias often grow to very large size, becoming quite old and at times making beautiful, well-rounded heads of dense branches and foliage. The conspicuous pods persist on the trees all through the winter. These trees are marvelously drought resistant and do not object to a certain amount of alkali. Recommended as an ornamental park and shade tree for the mild-wintered, semiarid sections of the United States. The Chinese find use for the pods, when sliced up, as a substitute for soap for washing their hair and certain fabrics. They call them *Tsao chio*, meaning 'black horns.' To insure a quick germination, scratch the seed or immerse for a second or so in boiling water."

For an illustration of the soap-bean tree in China, see Plate IV.

38801. "(No. 2071a. Lingpao, Honan, China. December 24, 1914.)

The ordinary Chinese soap bean, as seen everywhere along the roads in Honan and Shensi. The young trees often have their trunks covered with big spines, which often have totally disappeared, however, when the trees are old. For further remarks, see S. P. I. No. 38800."

38802. "(No. 2072a. Puchowfu, Shensi, China. February 9, 1914.)

A rare variety of Chinese soap bean, having long, slender pods of cylindrical shape. For further remarks see S. P. I. No. 38801. Chinese name *Hsiang ya tsao chio* meaning 'elephant's trunk soap bean.'"

38803. *JUNIPERUS CHINENSIS* L. Pinaceæ. **Juniper.**

"(No. 2075a. Village of Nantotchu, Shensi, China. January 10, 1914.) A vigorous-growing form of the North Chinese juniper recommended like S. P. I. No. 38804. Chinese name *Hsüeh po*, meaning 'red conifer.'"

38804. *JUNIPERUS CHINENSIS* L. Pinaceæ. **Juniper.**

"(No. 2074a. Siaufu, Shensi, China. January 25, 1914.) A juniper of tall, but graceful growth, apparently a form of *Juniperus chinensis*. Able



ARBOR VITÆ (THUJA ORIENTALIS L.) IN SHENSI, CHINA. (SEE S. P. I. NO. 38798.)

A single specimen of conical form, called by the Chinese *Weng pai shu*, meaning "water-jar conifer," referring to its outlines, which seem to resemble certain types of water jars. Of value as an evergreen for cemeteries and for places of dignity. Especially suited to mild-wintered semiarid climes. (Photographed by Frank N. Meyer, August 15, 1914, near Chaoyi, Shensi, China; P13157FS.)



AN OLD SOAP-BEAN TREE (*GLEDITSIA SINENSIS* LAM.) NEAR TIENTANGYI, SHENSI, CHINA. (SEE S. P. I. No. 38800.)

A large old tree found in a dry place. The dense head of branches is characteristic of this species of honey locust as seen on the Sianfu plain. It is a long-lived beautiful shade tree with long stout spines and well-rounded head of dense branches and foliage. It is remarkably resistant to drought and a valuable ornamental park and shade tree for the semiarid sections of the United States. The large thick pods, which contain considerable quantities of saponin, are sliced and used as a substitute for soap. No. 38800 is a large-podded variety of this interesting tree. (Photographed by Frank N. Meyer, January 23, 1915; P12160FS.)

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

to withstand considerable drought and alkali, and recommended as a very ornamental evergreen for parks and gardens in the mild-wintered, semiarid sections of the United States."

38805. *TOONA SINENSIS* (Juss.) Roemer. Meliaceæ.
(*Cedrela sinensis* Juss.)

From Changli, Chihli, China. Secured by Mr. Frank N. Meyer. from Mrs. Mary Clemens. Collected November 1, 1913.

"(No. 2076a.) The well-known Chinese cigar-box wood, of which the Chinese eat the young sprouts like spinach. The trees become quite old, grow to large size, and withstand drought and alkali to a considerable extent. Recommended as a shade and avenue tree for the mild-wintered sections of the semiarid belt in the United States. Chinese name *Hsiang ch'un shu*, meaning 'sweet chun tree.' Obtained from Mrs. Mary Clemens at Tientsin, who collected these seeds at Changli."

38806. *PAULOWNIA FORTUNEI* (Seem.) Hemsley (?). Scrophulariaceæ.

"(No. 2077a. Village of Nantotchu, south of Sianfu, Shensi, China. January 21, 1914.) A Paulownia growing into a medium-sized tree, able to withstand drought and a certain amount of alkali. For further information, see S. P. I. No. 38184."

38807. *LIGUSTRUM QUIHOUI* Carr. Oleaceæ.

Privet.

"(No. 2078a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A privet found in rocky banks and in between pebbles and rocks, growing into a small or medium-sized bush. Bears masses of small black berries, that set off well the small evergreen foliage. Is much utilized by the Chinese upon which to graft *Olea fragrans*. Of value as a hedge and border shrub, especially for the mild-wintered, semiarid parts of the United States. Chinese name *Tung ch'ing chih*, meaning 'wintergreen.'"

38808 and 38809. *LESPEDEZA* sp. Fabaceæ.

From Tahuashan, Shensi, China. Collected December 29, 1913.

38808. "(No. 2079a.) A shrubby Lespedeza, growing 3 to 4 feet in height, found on rocky mountain slopes at altitudes of 3,000 to 4,000 feet. Of value possibly for forage purposes and as a cover shrub on sandy wastes."

38809. "(No. 2080a.) A small, shrubby Lespedeza, found on rocky mountain sides at about 3,000 feet elevation. Of value possibly for forage purposes and as a cover shrub on sandy wastes."

38810. *TILIA MONGOLICA* Maxim. Tiliaceæ.

Linden.

"(No. 2081a. Tahuashan, Shensi, China, December 29, 1913.) A small-leaved linden occurring on rocky mountain sides. In the higher altitudes and in the more exposed places it remains a shrub, but when found in sheltered localities grows to be a tall tree. Of value possibly as a hardy shade and park tree for northern localities. Collected at 5,000 feet altitude. Chinese name *Mi tuan shu*."

38811. *BERBERIS* sp. Berberidaceæ.

Barberry.

"(No. 2084a. Tahuashan, Shensi, China. December 29, 1913.) A barberry of medium tall growth, found on stony mountain slopes. Bears very large red fruits, which may prove to be of value for preserving purposes. Collected at an altitude of about 6,000 feet."

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38812. *HYDRANGEA BRETSCHNEIDERI* Dippel. *Hydrangeaceæ*.*Hydrangea*.

“(No. 2085a. Tahuashan, Shensi, China. December 29, 1913.) A vigorously growing *Hydrangea*, mostly found between boulders or rocks on somewhat moist soils. Of value possibly as an ornamental park shrub for northern regions.”

38813. *VIBURNUM* sp. *Caprifoliaceæ*.

“(No. 2086a. Tahuashan, Shensi, China. December 29, 1913.) A *Viburnum*, found as undergrowth between tall, open trees. In habit resembling *Viburnum opulus* but of looser growth and thinner branches. Of value possibly as an ornamental park shrub for northern regions.”

38814. *LONICERA PERICLYMENUM* L. *Caprifoliaceæ*. *Honeysuckle*.

“(No. 2087a. Tahuashan, Shensi, China. December 29, 1913.) A twining honeysuckle found between scrub in shady places. The flowers are borne in terminal bunches and are surrounded by a typical large circular involucre. Of value as a porch or pillar vine in gardens and parks.”

38815 and 38816. *LONICERA* spp. *Caprifoliaceæ*. *Honeysuckle*.

From the mountains near Nantotchu, Shensi, China. Collected January 21, 1914.

38815. “(No. 2088a.) An evergreen, trailing honeysuckle bearing black berries, found on well-sheltered, rocky banks. Of value for covering waste places.”

38816. “(No. 2089a.) A bush honeysuckle. See S. P. I. No. 37545 for previous introduction.”

38817. *EXOCHORDA RACEMOSA* (Lindl.) Rehder. *Rosaceæ*.
(*Exochorda grandiflora* Lindl.)

“(No. 2090a. Tahuashan, Shensi, China. December 29, 1913.) A medium tall, sturdy shrub, found here and there in great masses in rocky crevices at altitudes between 3,000 and 5,000 feet. Of value as an ornamental garden shrub, especially for rockeries, and for semi-arid regions.”

38818. *CLEMATIS* sp. *Ranunculaceæ*. *Clematis*.

“(No. 2091a. Tahuashan, Shensi, China. December 29, 1913.) A climbing clematis found in between shrubbery and running over same. Bears apparently large flowers; possesses somewhat glossy foliage. Collected at an altitude of 4,500 feet.”

38819. *ELSHOLTZIA STAUNTONI* Benth. *Menthaceæ*.

“(No. 2092a. Tahuashan, Shensi, China. December 28, 1913.) A woody labiate, growing from 1½ to 2 feet in height, found amidst stony débris at altitudes between 2,000 and 3,000 feet. Of value possibly as a rockery shrub and along open borders.”

38820. *ALBIZZIA* sp. *Mimosaceæ*.

“(No. 2093a. Near Taianfu, Shantung, China. March 22, 1914.) A silk-flower tree having whitish blossoms and large doubly pinnate leaves. Found on rocky, sterile, mountain slopes. Of value as a soil binder in dry regions. For further information see S. P. I. No. 38285.”

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38821. *ROSA* sp. Rose.

"(No. 2094a. Tahuashan, Shensi, China. December 29, 1913.) A shrubby rose, of which the young twigs are reddish colored and bear very broad, reddish spines, like *Rosa hugonis*. The old fruits are black. Collected on stony places at an altitude of about 5,000 feet."

38822. *CELTIS SINENSIS* Pers. Hackberry.

"(No. 2095a. Near Mienchih, Honan, China. February 20, 1914.) A hackberry, growing into a medium-sized tree, producing a dense head of branches. Found in rocky cliffs. Of value as a shade tree for semi-arid climes."

38823. *ROSA MULTIFLORA CATHAYENSIS* Rehd. and Wils. Rosaceæ. Rose.

"(No. 2096a. Tahuashan, Shensi, China. December 29, 1913.) A semievergreen, trailing rose, found on rocky places and among low scrub. Leaves dark, glossy green; apparently very floriferous. Of value possibly in breeding experiments."

38824. *CARAGANA* sp. Fabaceæ.

"(No. 2097a. Tahuashan, Shensi, China. December 29, 1913.) A peculiar species of *Caragana* of very erect growth, found on semishady rocky mountain slopes, at altitudes of over 5,000 feet. Of value as a garden and park shrub for northern regions."

38825. *ZANTHOXYLUM ALATUM* Roxb. Rutaceæ.

"(No. 2098a. Mountains near Nantotchu, south of Sianfu, Shensi, China. January 21, 1914.) A Chinese pepper bush having semipersistent pinnate leaves, of which the midribs are winged. Of loose and open growth and having long, overhanging branches. Found beneath the shelter of various trees. Of value possibly as an ornamental park shrub for the mild-wintered regions of the United States."

38826. *JASMINUM* sp. Oleaceæ. Jasmine.

"(No. 2099a. Near Nantotchu, Shensi, China. January 21, 1914.) A jasmine, growing to 1 to 3 feet in height, having erect, bright-green branches and bearing black berries. Found on dry and sterile mountain slopes, between scrub. Of value possibly as a rockery shrub and along borders and pathways in gardens and parks."

38827. *SMILAX VAGINATA* Decaisne. Smilacaceæ.

"(No. 2100a. Tahuashan, Shensi, China. December 29, 1913.) A peculiar liliaceous shrub having strong, but brittle, erect branches of green color, growing to 3 to 5 feet in height. Bears small clusters of blue-black berries. Found on shaded mountain slopes and as undergrowth beneath trees. Deciduous. Of value as a ground cover beneath tree growth for southern parks."

38828. *SYRINGA AMURENSIS* Rupr. (?) Oleaceæ. Lilac.

"(No. 2101a. Tahuashan, Shensi, China. December 29, 1913.) A tree lilac, found in great masses here and there on rocky mountain slopes, at altitudes between 3,000 and 5,000 feet. Of value as a stock for standard lilacs and for hybridization purposes."

38829. *SYRINGA* sp. Oleaceæ. Lilac.

"(No. 2102a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A lilac of small and slender growth found on a stony mountain slope. See S. P. I. No. 37544 for previous introduction."

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)**38830.** SYRINGA VILLOSA Vahl.

Lilac.

“(No. 2103a. Tahuashan, Shensi, China. December 29, 1913.) A small lilac of very sturdy growth, found in rocky cliffs at altitudes of 4,000 to 6,000 feet. Of value as a garden and park shrub for the northern sections of the United States.”

38831. THUJA ORIENTALIS L. Pinaceæ.

Arbor vitæ.

“(No. 2104a. Mountain near Nantotchu, Shensi, China. January 21, 1914.) The ordinary oriental arbor vitæ, collected from specimens found growing on exposed rocky places. For trial in sections north of the present limits of this tree. Also to be tested in very dry localities. Chinese name *Mien po*, meaning ‘soft conifer.’”

38832. KOLKOWITZIA AMABILIS Graebner. Caprifoliaceæ.

“(No. 2105a. Tahuashan, Shensi, China. December 29, 1913.) A shrub, growing from 4 to 6 feet in height, found on rocky places, bearing small, spiny fruits. See S. P. I. No. 37480 for previous introduction.”

38833 to 38835. EUONYMUS spp. Celastraceæ.

From Tahuashan, Shensi, China. Collected December 29, 1913.

38833. “(No. 2106a.) A shrubby cardinal’s-cap having long, thin branches, bearing small fruits, hanging down on long peduncles. Found in between bowlders and rocks.”

38834. “(No. 2107a.) A shrubby cardinal’s-cap of more robust growth than S. P. I. No. 38833, also having larger fruits. Found as undergrowth beneath tall trees on rocky places.”

38835. “(No. 2108a.) A cardinal’s-cap having large, fleshy fruits; grows into a medium-sized shrub; found on somewhat shady places.”

38836. CELASTRUS ANGULATUS Maxim. Celastraceæ.

Bittersweet.

“(No. 2109a. Tahuashan, Shensi, China. December 30, 1913.) A species of bittersweet of semitrailing, shrubby growth, found on partly shaded places in between scrub. Quite ornamental when covered with its masses of yellow capsules, out of which peep the scarlet-orange coated seeds.”

38837. PAEDERIA FOETIDA L. Rubiaceæ.

“(No. 2110a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A slender, semiwoody climber, found on rocky mountain slopes in between tall scrub; bears bunches of yellowish berries.”

38838. COCCULUS sp. Menispermaceæ.

“(No. 2111a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A trailing herbaceous vine, bearing bluish berries; found on open stony places.”

38839. OPHIOPOGON JAPONICUS (L. f.) Ker-Gawler. Liliaceæ.

“(No. 2113a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) An Ophiopogon, with long, slender leaves, remaining green all winter. Bears long spikes of black berries. Found on mountain slopes of decomposed rock between low scrub. Of value as an edging plant along pathways and as a ground cover in shady places for the mild-wintered sections of the United States.”

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38840. ASPARAGUS sp. Convallariaceæ. **Asparagus.**

“(No. 2114a. Chaoyi, Shensi, China. February 7, 1914.) A rare species of asparagus of somewhat trailing or twining growth; found in a sandy loess bank.”

38841. ANEMONE sp. Ranunculaceæ. **Anemone.**

“(No. 2115a. Tahuashan, Shensi, China. December 29, 1913.) A tall-growing anemone, found amidst bowlders and rocks on somewhat sheltered places at altitudes between 2,000 and 4,000 feet. Apparently ornamental.”

38842. TRICHOSANTHES KIRILOWII Maxim. Cucurbitaceæ. **Gourd.**

“(No. 2116a. Maochinchen, Shensi, China. February 17, 1914.) A gourd, grown as an ornamental, also used as a medicinal simple, called *Kua lü*. See S. P. I. Nos. 36118 and 38489 for previous introductions.”

38843. ACER sp. Aceraceæ. **Maple.**

“(No. 2082a. Tahuashan, Shensi, China. December 29, 1913.) A maple, growing to be a medium-sized tree, having a scaly, somewhat rosy colored bark. Leaves small, trifoliate and hirsute; coloring up in fall to a rosy wine red. Wood very hard and used for posts and pillars. Collected at about 5,000 feet elevation. The seeds may remain dormant for a long time.”

38844. CRATAEGUS sp. Malaceæ. **Hawthorn.**

“(No. 2083a. Tahuashan, Shensi, China. December 29, 1913.) A shrubby hawthorn, found on rocky mountain slopes. Collected at an altitude of over 5,000 feet. Of value possibly as a park shrub in northern climes.”

38845 and 38846. ORYZA SATIVA L. Poaceæ. **Rice.**

From Valencia, Spain. Presented by Mr. Eduardo E. Monteraso, Estacion Arroceria de Sueca. Received July 20, 1914.

38845. *Amonquili*.

38846. “*Benloch*. This variety is cultivated in this region at the present time, although three years ago *Amonquili*, now no longer cultivated, was the variety raised.” (*Monteraso*.)

38847 to 38849. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Experiment Station. Received July 16, 1914.

38847. *Aweoweo taro*. Furnished by Mr. V. S. Holt, Waianae.

38848. *Keokeo*. Secured from the Waterhouse Co., Honolulu.

38849. *Uluala*. Secured from the Waterhouse Co., Honolulu.

38850 and 38851.

From Buenos Aires, Argentina. Presented by the director general, Botanic Garden. Received July 10, 1914.

38850. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook. Papayaceæ.

See S. P. I. Nos. 3534 and 30586 for previous introductions and description.

38850 and 38851—Continued.

38851. GLEDITSIA AMORPHOIDES (Griseb.) Taub. Cæsalpinaceæ.
(*Garugandra amorphoides* Griseb.)

See S. P. I. Nos. 8934 and 33965 for previous introductions and description.

38852. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Ekatarinodar, Kuban Government, Russia. Secured by Mr. E. Brown, of the Bureau of Plant Industry, from Mr. A. N. Rockel. Received July 3, 1914.

"This is the best alfalfa region in southern Russia, where it has been cultivated for 30 years. Seed is said to have been first brought from Turkestan. In the southern part of the district where the soil is deepest, alfalfa lasts 10 to 12 years. In the northern part the soil is shallower, and alfalfa does not usually last over 4 or 5 years." (*Brown.*)

38853. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ. Grape.
(*Vitis caribaca* DC.)

From Herradura, Pinar del Rio, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 23, 1914.

"(No. 1, July 17, 1914.) A vigorous, rapid-growing vine, occurring in the mountains of this Province. These cuttings were obtained from a plant growing in the garden of Prof. F. S. Earle, who considers the species to be of great interest and value for use in developing a race of grapes which can be successfully grown in strictly tropical regions, and he recommends that careful attention be devoted to the hybridization of this species with some of the northern cultivated grapes. In Prof. Earle's garden the vine has completely covered a cashew tree 20 or 25 feet in height and produces fruit very similar in appearance to the wild grape of the North. The bunches are 3 to 5 inches in length, loose, the berries deep purple in color, and about three-eighths of an inch in diameter. They are used here for making jelly and grape juice." (*Popenoe.*)

38854. OCHROMA LAGOPUS Swartz. Bombacaceæ.

From Ceylon. Presented by Mr. J. T. Crawley, director, Estacion Experimental Agronómica, Santiago de las Vegas, Cuba. Received July 17, 1914.

"A very valuable plant of large growth; the wool produced by the fruit is textile, and the wood of the trunk is very light. It is employed in Cuba among other purposes for sustaining on the water the nets used for fishing, instead of cork." (*Crawley.*)

38855 and 38856.

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 24, 1914. Quoted notes by Mr. Meyer.

38855. SAXIFRAGA sp. Saxifragaceæ. Saxifraga.

"(No. 1220. June 14, 1914.) A wild plant, offered for sale in the streets of Peking. Said to be ornamental, having rose-colored flowers. Loves somewhat moist, shady situations. Chinese name *Ssü chi hai fang*, meaning 'four-season begonia.'"

38855 and 38856—Continued. (Quoted note by Mr. F. N. Meyer.)**38856.** PRUNUS TOMENTOSA Thunb. Amygdalaceæ. **Cherry.**

“(No. 2117a. June, 1914.) Stones of the North China bush cherry, a fruiting shrub of great promise for the cooler, semiarid sections of the United States. Chinese name *Suan t'ao* or *Suan ying t'ao*, meaning ‘sour cherry.’”

38857 and 38858.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received July 23, 1914. Quoted notes by Mr. Mead.

38857. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. **Cassava.**
(*Manihot utilissima* Pohl.)

“*Yeruti* (shorter and smaller canes). In June, 1913, I started a Paraguayan on a small chacra belonging to myself, situated at Caballero, about 50 miles south of Asuncion. That month he planted 3 hectares of maize. At the last cultivation of said crop, about October 20, he planted, as is customary here, mandioca or cassava, as you call it, between rows. I have just returned from a two-weeks' trip to this same place, and on June 1 I dug up 100 plants, weighing the tubers. From these weights, as an average of the whole, the crop was 33,500 kilos per hectare. All of this mandioca will not be used this year, and all that is left in the ground until next year will produce nearly double the weight. According to my figures, that date is 7 months 11 days from time of planting, but they have been digging and using the same mandioca since the middle of April. The varieties planted are called in Guarany *Mandio Yeruti* and *Mandio Concepcion*, both of them sweet varieties, and differing, in that the *Concepcion* resists drought better. I can not give you any statistics as to chemical properties, but I have seen the practical results of feeding, it being the staff of life here for the family and for farm animals. The starch content is very high also, great quantities being used for making almidon or mandioca flour or starch. The plants need a sandy and very loose soil, but not too rich, or they will all run to stalk.”

38858. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

“The yerba industry is one of the most prosperous in all this district, and it is getting better every day.”

38859. ACHRAS ZAPOTA L. Sapotaceæ. **Sapodilla.**
(*Achras zapota* L.)

From Port of Spain, Trinidad, British West Indies. Presented by Dr. J. I. Senior, through Mr. A. J. McConnico, American consul. Received July 23, 1914.

“Some time before I left Trinidad I came across a sapodilla tree which has enormous fruits, quite the largest I have ever seen. As none were ripe, I had no opportunity of testing the quality.” (*Frank Evans.*)

“It may not be out of the way to mention that I imported this plant from Curacao, Dutch West Indies, where the sapodilla grows to perfection in all the different and best varieties; among many that I imported only two of them produce such very large fruits.” (*Senior.*)

38860. FERONIELLA LUCIDA (Scheff.) Swingle. Rutaceæ. **Rutaceæ.**
(*Feronia lucida* Scheff.)

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received July 24, 1914.

For description, see W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.

38861. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. **Cassava.**
(*Manihot utilissima* Pohl.)

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received July 23, 1914.

"*Concepcion* (long thick canes)."

For description, see S. P. I. No. 38857.

38862. HYMENAEA COURBARIL L. Cæsalpiniaceæ. **Guapinol.**

From San Jose, Costa Rica. Presented by the Department of Agriculture. Received July 16, 1914.

See S. P. I. No. 38565 for previous introduction.

"One of the most beautiful trees of the *tierra caliente* of the Pacific coast, with low trunk and flattened forking, and with leaves composed of two leaflets and imitating a deer's skull. Its fruits are short, thick pods, chocolate color, enclosing variegated seeds surrounded by a dry white powder, used as food by the Indians. The wood is hard and used in the construction of various articles as, for example, mills for grinding cane." (*Pittier, Plantas Usuales de Costa Rica.*)

38863. STIZOLOBIUM sp. Fabaceæ.

From Schoeneberg, Berlin, Germany. Presented by Prof. Dr. G. Schweinfurth. Received July 16, 1914.

"Probably from Tabora, German East Africa, but there is no definite information on this point. This *Stizolobium* has short, gray, appressed pubescence on the pods, and the seeds are pale gray, thickly spotted, and clouded with brown. Both the pods and the seeds resemble very closely some of the hybrids obtained between the Lyon bean and the Florida velvet bean. This suggests that the present *Stizolobium* may likewise be a hybrid." (*C. V. Piper.*)

38864 and 38865. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From General Roco, Rio Negro, Argentina. Presented by Mr. Walter Fischer, director, Experiment Station, General Roco. Received July 24 1914.

"It is customary in this valley, where everything is grown under irrigation and where four cuttings of alfalfa are made per season, to save the second cutting for the seed crop when seed is desired. The object of this is to get a crop more free of weeds than the first cutting would be, and in which there is very often quite a large amount of *trebol de olor* (*Melilotus parviflora*, I believe). As a rule, however, there are very few weeds in any of the alfalfa fields here. These seeds are as they came from the machine, with only the coarse chaff removed." (*Fischer.*)

38864. No. 1. From the first cutting.

38865. No. 2. From the second cutting.

38866. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchc.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received July 24, 1914.

- "The seed of this plant matures very irregularly, and I fear much of this seed was unavoidably collected immature. Out here it seems to thrive best in moist clayey loam soils (riversides), but it is apt to become infested with the maize stalk borer." (*Evans.*)

38867. ORYZA SATIVA L. Poaceæ.**Rice.**

From Saloniki, Greece. Presented by Mr. G. Bie Ravndal, American consul general, Constantinople. Received July 16, 1914.

"*Saloniki.* European Turkey grows very little rice; since Macedonia has been taken from the empire by the allied Balkan States, practically none at all. Though all Constantinople was carefully searched for it, not a sample of any sort of rice grown in Turkey in Europe could be obtained here. Inquiries made of the British consul at Adrianople, charged with American interests, produced no better result, and only from the American consul at Saloniki could any information and a sample be secured at all. According to his reply to my request, rice is grown in the region of Vodena, territory now belonging to Greece, near Saloniki, the annual production of which is estimated at from 30 to 40 tons. Almost the entire yield is consumed in Vodena. Some 900 to 1,000 tons are grown in the region of Strumitza and from 500 to 600 tons in Ichtib, formerly forming a part of European Turkey and now under the sovereignty of Bulgaria and Serbia, respectively. The crop grown at Ichtib is considered of best quality. The soil of Vodena is ordinary earth through which water runs continually. The season of sowing is April; of harvesting, October. The quantity of yield to the dönüm (which is equivalent to 1,600 square piks=856.48 square yards) is from 300 to 800 okes (846.50 to 2,257.50 pounds) of unshelled rice. One hundred okes (282.19 pounds) will give from 50 to 55 okes (141 to 155.20 pounds) of shelled rice. It seems that a record of the cost of production is not obtainable from the growers in these regions. The produce is sold according to the prevailing market prices. From 8 to 10 okes (22.50 to 28.20 pounds) of seed are necessary for one dönüm (856.48 square yards). Owing to the abundance of marshy ground essential for rice cultivation in the region of Vodena, the possibilities for the development of this industry are considerable." (*Ravndal.*)

38868 to 38880. COIX spp. Poaceæ.**Job's-tears.**

From Burma, India. Presented by Mr. H. G. Carter, economic botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received July 20, 1914. Quoted notes by Mr. Carter, except as otherwise indicated.

38868 and 38869. COIX LACRYMA-JOBI GIGANTEA (Koenig) Stapf.

38868. "Var. *aquatica*. No. 36288, from the district commissioner, Pegu, Burma."

38869. "Var. *aquatica*. No. 36289, from the district commissioner, Pegu, Burma."

38870. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf.

"No. 36323, from the superintendent and political officer, Southern Shan States, Taungyi, Burma."

38868 to 38880—Continued. (Quoted notes by Mr. H. G. Carter.)**38871 to 38874.** COIX LACRYMA-JOBI MA-YUEN (Romanet) Stapf.

“From the superintendent and political officer, Southern Shan States, Taungyi, Burma.”

38871. No. 36324.**38873.** No. 36326.**38872.** No. 36325.**38874.** No. 36327.

“The fully cultivated and edible form, *Mayuen*, is grown (so far as India is concerned) in the Central Provinces, Sikkim, the Khasi Hills, Burma, and the Shan States, and outside of India it appears to be cultivated in Tonkin, China, and the Malaya, but apparently nowhere else. In the elongated semipyriform states of cultivated *C. lacryma-jobi* there is a further peculiarity, viz, a portion at the base of the fruit spathe becomes constricted into a well-marked annular disk. The condition with a soft and striated shell and basal annulus appears to constitute the variety known to botanists as *Mayuen*, a name given in honor of the Chinese general who is supposed to have first pointedly directed attention to the plant.” (*Watt, Commercial Products of India*, which see for discussion of the plant as a crop.)

38875 to 38880.

“From the superintendent and political officer, Southern Shan States, Taungyi, Burma.”

38875. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf.

No. 36328.

“In the variety known as *stenocarpa* the capsular spathe is elongated until it becomes cylindrical, but when cultivated the tubes (so formed) change in color to chalky white or become almost straw colored.” (*Watt, Commercial Products of India*.)

38876. COIX LACRYMA-JOBI L.

No. 36329.

38877 to 38879. COIX LACRYMA-JOBI MA-YUEN (Romanet) Stapf.**38877.** No. 36331.**38879.** No. 36333.**38878.** No. 36332.**38880.** COIX LACRYMA-JOBI L.

“No. 36339. This shows a transitional form of variety *stenocarpa* passing into variety *monilifer*.”

“The flattened spheroidal form, the connecting link between *C. lacryma-jobi* and var. *stenocarpa*, is the special bead form. It is a wild plant met with chiefly in Burma, the Malaya, China, and Japan, and has been named by me var. *monilifer*.” (*Watt, Commercial Products of India*.)

38881 and 38882. PASSIFLORA MALIFORMIS L. Passifloraceæ.**Passion fruit.**

From Bogota, Colombia. Presented by Mr. T. A. Thomson, American minister, who obtained them from Mr. F. L. Rockwood, clerk of the legation, Bogota. Received July 24, 1914. Quoted notes by Mr. Rockwood.

38881 and 38882—Continued. (Quoted notes by Mr. F. L. Rockwood.)

38881. "No. 1. *Kuruba amarilla*, yellow kuruba, is a prolific bearer and a standard fruit in the market of this capital. The fruits are used in the same manner as strawberries for the table. It is a climbing vine and has an attractive flower."

38882. "No. 2. *Kuruba indio*, Indian kuruba. Its name is taken from the frequency with which it is met around the huts of the Indians in the Andes. A brilliant scarlet flower and green-colored fruit which is liked by the Indians and eaten without any preparation. Seldom, if ever, found in the market. These fruits are mixed with the yellow when procuring them from the mountain by parties sent out for them."

38883 to 38887.

From Esperanza, Sonora, Mexico. Presented by Mr. W. W. Mackie, director. Yaqui Valley Experiment Station. Received July 22, 1914. Quoted notes by Mr. Mackie, except as otherwise indicated.

"Gathered in Merv, Transcaspia, Turkestan, in 1911. These seeds came from selections out of three years of crops, during which time I have had them under observation. The climate for the first part of the year in the Yaqui Valley is very similar to the summer of Turkestan, where I obtained these seeds."

38883. BETA VULGARIS L. Chenopodiaceæ. Beet.

"The beets produced from these seeds are very vigorous, hardy, and drought resistant. The leaves are large and tender and are much used for greens in Turkestan. The flesh is tender, sweet, and light red in color. The root grows to an immense size and is eaten greedily by stock. For three seasons this beet has regularly produced an abundance of plump seeds of high viability in June from seeds planted in the preceding fall. This seeding of beets the first year from seed sometimes occurs at intervals in individuals when subjected to drought and again irrigated, thus starting a new or second growth, but this Turkestan beet produces seed from every beet regularly in June."

38884. CUCURBITA PEPO L. Cucurbitaceæ. Pumpkin.

"Grown for three years at the experiment station at Merv. When planted in March immense crops were produced in June. With the beginning of the rainy season in July another crop is planted, producing fine crops in December. The soil is a dark-red clay. Other pumpkins do not produce such good crops, nor do they so well withstand the heat and drought. The rind is hard and greenish in color. It is a good keeper, lasting for months in this warm climate."

38885. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. Barley.

"White Turkestan barley gathered in Merv, Transcaspia, Turkestan, in 1911. The barley itself is of the 6-rowed *nutans* type and has a marked flesh-colored aleurone layer, such as is characteristic of barleys of Asiatic origin; in fact the flesh-colored appearance is more pronounced than we have ever noticed in any similar barley before. This barley really is strange to us. It is irregular in size and form and has a very low albumen content' (due no doubt to the skinning off of the germ or embryo by too close thrashing). The taste and flavor are remarkably agreeable. If any of this barley is malted, we should be pleased to receive a 5-pound

38883 to 38887—Continued. (Quoted notes by Mr. W. W. Mackie.)

sample of the malt, since we are inclined to believe that this barley, under proper conditions as to cultivation and thrashing, would result in good malt. If this barley could possibly be grown on a rich, nitrogenous soil, so that the albumen content could be increased to about 13 per cent, it, in our opinion, would be by far the best barley for malting purposes among the samples sent.' (*Report of Wahl-Henius Institute of Fermentology.*)

"Our field tests show this barley to be very vigorous and hardy, with splendid germination. In height it is about 20 to 30 per cent shorter than the common California 6-rowed barley, but produces thicker and longer heads. It is nearly 3 weeks earlier in maturing. In other words, it is a quicker growing variety. On account of its propensity to rust, I would advise that it be planted inland, away from the influence of the seacoast fogs. It appears to be entirely suited to the arid irrigated regions of the Southwest. All our grains are grown entirely without rain by the aid of irrigation, even to sprouting the seed. The *White Turkestan* yields far better than other varieties tested."

38886 and 38887. *HORDEUM VULGARE NIGRUM* (Willd.) Beaven. **Barley.**

38886. "*Late Black Turkestan* barley gathered in 1911. This barley was secured by me in Samarkand, Turkestan, where the winters are quite severe, with considerable snow. The thermometer often goes far below zero. Our tests at the experiment station show it to be vigorous and hardy, but three weeks later than all other barleys. It behaves much like winter wheat which lies beneath the covering of snow during the winter. This barley would probably do well in the colder regions of the United States. It yields about the same as common or California barley."

38887. "*Early Black Turkestan* barley. This barley is a selection from the *Early White Turkestan*, which it resembles in every particular except color."

38888. *PERSEA AMERICANA* Miller. Lauraceæ.

(*Persea gratissima* Gaertn. f.)

Murrieta avocado.

From Pasadena, Cal. Presented by Mr. R. J. Mather. Received July 30, 1914.

"The *Murrieta* avocado is the only one of the large-fruited, thick-skinned type that ripens in the fall, as far as the author is aware, and this fact makes it of special importance. Few others are on the market at the same time. It is of the round type and is an ideal shipper. At the present time it is rather difficult to propagate (because the trees are growing in very shallow soil underlain with bedrock, which condition may affect the vigor of the trees and through that the vitality of the buds), but this may be overcome in the future.

"Form, obliquely roundish; length, $3\frac{3}{4}$, diameter $3\frac{1}{2}$ inches; weight, 16 to 20 ounces; apex slightly depressed; base rounded; cavity furrowed, narrow, very shallow, and abrupt; stem stout, truncate; surface undulating to slightly rough; color, yellowish green with numerous medium, rounded, greenish-yellow dots; skin medium thick, tough, finely granular, separating readily from the flesh; flesh creamy yellow, slightly greenish near the skin; texture fine grained,

38888—Continued.

smooth, buttery; fiber, none; flavor rich, very nutty, and pleasant; quality extra good; seed large, spherical, tight in cavity; seed cavity large; season September and October at Los Angeles, Cal." (*K. A. Ryerson, University of California Journal of Agriculture, No. 4, p. 83, 1913.*)

38889. TRITICUM AESTIVUM L. Poaceæ.**Wheat.**(*Triticum vulgare* Vill.)

From Esperanza, Sonora, Mexico. Presented by Mr. W. W. Mackie, director, Yaqui Valley Experiment Station. Received July 22, 1914.

"*Turkestan* wheat gathered in 1911. These seeds came from selections out of three years of crops, during which time I have had them under observation. The climate for the first part of the year in the Yaqui Valley is very similar to the summer of *Turkestan* where I obtained these seeds. This wheat was secured on the irrigated lands of the Merv Oasis in Transcaspiæ, where it is grown mainly by irrigation. It somewhat resembles *Chul* wheat, which was secured in the Valley of the Syr Darya farther north. In *Turkestan* it yields well and is very hardy and vigorous in the face of severe dry winds and drought. In the Yaqui Valley, however, it is entirely consumed with rust, as is *Chul* wheat. We lie 30 miles inland from the Gulf of California." (*Mackie.*)

38890 and 38891.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received July 30, 1914.

38890. ARTOCARPUS INTEGRÆ (Thunb.) L. f. Moraceæ. Jack fruit.

See S. P. I. Nos. 6451 and 27170 for previous introductions and description.

"A very large tree, native of South India and Malaya, introduced and cultivated in Ceylon, where it has become seminaturalized. The enormous fruits, a single one of which may weigh over 100 pounds, are borne on the trunk and older branches, sometimes at the base of the trunk or even under ground. It is usually oblong and irregular in shape (sometimes almost round), being always green, with the rind consisting of somewhat hexagonal knobs. This fruit forms a very important article of food with the natives, whilst some Europeans also relish it when cooked in curries. When ripe, the fruit has an overpowering odor, and the stronger the latter the better the quality of the fruit, the former not being disliked by those who relish the latter. With the exception of the rind and core, the whole of the fruit is eaten, the white or cream-colored, soft, flaky pulp being used either raw, or boiled, or fried, and used as vegetable for curries, etc. The large, albuminous, datelike seeds are roasted and esteemed in curries. The timber is excellent for cabinetwork, building, etc., and is much used in Ceylon; lemon yellow at first, it turns with age to a very dark tint like mahogany, to which it is but little inferior. The tree is propagated by seed and is suited to moist or semidry districts up to 2,000 feet elevation." (*Macmillan, Handbook of Tropical Gardening.*)

38891. GUILANDINA BONDUC L. Cæsalpiniaceæ.(*Caesalpinia bonducella* Fleming.)

See S. P. I. Nos. 33570 and 34671 for previous introductions and description.

38892 to 38968.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Quoted notes by Messrs. Dorsett, Shamel, and Popenoe, except as otherwise indicated.

38892. *ERIOCHLOA SUBGLABRA* (Nash) Hitchc. Poaceæ.

(*Monachne subglabra* Nash.)

Capim Angolinha.

"*Capim Angolinha*, or 'small Angola,' as the name signifies. This somewhat resembles the common *Angola* or *Para* grass, but is characterized by finer growth. It is not grown so extensively as *Angola* in the region around Bahia, and little is known concerning its probable value, but it is considered worthy of a trial in this country."

Plants.

38893 to 38907. *SACCHARUM OFFICINARUM* L. Poaceæ. **Sugar cane.**

"Obtained from the Centro Agrícola, at Bahia, Brazil, through the courtesy of Dr. V. A. Argollo Ferrão."

38893. Cayana seedling No. 1.

38900. Cayana seedling No. 8.

38894. Cayana seedling No. 2.

38901. Cayana seedling No. 9.

38895. Cayana seedling No. 3.

38902. Cayana seedling No. 10.

38896. Cayana seedling No. 4.

38903. Cayana seedling No. 11.

38897. Cayana seedling No. 5.

38904. Cayana seedling No. 13.

38898. Cayana seedling No. 6.

38905. Cayana seedling No. 14.

38899. Cayana seedling No. 7.

38906. Cayana seedling No. 17.

38907. Seedling of *Manteiga*, meaning "butter."

38908. *ANANAS SATIVUS* Schult. f. Bromeliaceæ.

Pineapple.

"These plants are of the variety commonly cultivated in the vicinity of Bahia, Brazil, where they are known under the name of *Abacaxi*. The pineapples of this region are of such excellent quality that they have become, along with those of Pernambuco, famed throughout Brazil. During our stay in 1913-14 we were impressed by their excellence and thought it desirable to try the variety in North America, to see if it would retain its quality in other regions. By some the superiority of Bahia and Pernambuco pineapples is considered due to the peculiarly favorable conditions of climate and soil rather than to any superiority of the varieties cultivated."

38909 to 38922. Poaceæ.

Bamboo.

"A collection of bamboos obtained from the Centro Agrícola at Bahia, Brazil, through the courtesy of Dr. V. A. Argollo Ferrão. This collection has been assembled by Dr. Argollo from southern Europe as well as local sources."

38909 to 38911. *BAMBOS* sp.

38909. B. 1.

38911. B. 3.

38910. B. 2.

38912 and 38913. *PHYLLOSTACHYS* spp.

38912. *PHYLLOSTACHYS SULFUREA* (Carr.) A. and C. Rivière.

"This has yellow stems scarcely so robust as typical *P. mitis*, but otherwise almost identical." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 151-152.*)

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38913. *PHYLLOSTACHYS PUBERULA NIGRA* (Lodd.) Houzeau.

(PHYLLOSTACHYS NIGRA Munro.)

"Stems varying from 10 to 20 feet high in different parts of the country and from one-half inch to 1½ inches in diameter, very hollow; at first green, they become with age quite black, the branchlets usually mottled. Leaves in plumelike masses, usually 2 to 3½ inches long, one-fourth to five-eighths inch wide (sometimes larger), of thin texture, dark green above, rather glaucous beneath, smooth on both surfaces, the margins roughened with minute teeth; secondary veins 3 to 6 each side of the midrib. When quite young there is a slight downiness at the base of the midrib beneath. The leaf sheath is terminated by a few erect bristles.

"Native of China and Japan and one of the most elegant of bamboos; very distinct because of its black stems. It is quite a hardy species when once established, although it grows much larger in hotter climates. It is the oldest of *Phyllostachys* in English gardens and according to Loudon was 7 feet high in the Horticultural Society's gardens in 1837." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 152.)

38914. *ARUNDINARIA HINDSII* Munro.Received as *Bambos erecta*.

"The stems tufted, 8 to 10 feet high, round, quite erect, up to 1 inch diameter, dark olive green, at first covered with a waxy bloom; joints often 8 to 10 inches apart; central pipe large. Branches erect, forming dense clusters at each joint. Leaves mostly erect, dark green above, rather glaucous beneath, smooth on the surfaces, but with numerous bristlelike teeth on one margin and a few scattered ones on the other; the longest are 8 to 9 inches long, the broadest three-fourths to 1 inch wide; the average width is from one-fourth to five-eighths inch, tapered at the base, the apex long, tail-like. Secondary veins 4 to 6 each side the midrib.

"Native of Japan, cultivated in England since about 1875. It flowered in 1910 and 1911. It is one of the least elegant of bamboos, similar in foliage to *Arundinaria graminea* but less copiously leafy and with darker leaves. The stems and leaves are also stouter and darker green, the habit is less dense, and the plants do not run so rapidly." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 216.)

38915. *SASA TESSELLATA* (Munro) Makino and Shibata.

(BAMBUSIA TESSELLATA Munro.)

"Stems 2 to 3 feet high, one-eighth to one-sixth inch in diameter, with a very small hollow up the center; the joints 1 to 3 inches apart. Stem sheath persistent, 8 to 10 inches long, clasping not only that part of the stem above the joint from which it springs but also portions of the two or three stem sheaths above it; it is fringed with hairs. Leaves somewhat ribbed, of varying size, the largest 18 inches long and 3 to 4 inches wide in the middle; abruptly tapered at the base, very slenderly pointed, dark green above, glaucous beneath. The larger leaves have 15 to 18 secondary veins at each side of the midrib, which is yellow, and tucked under one side of the midrib, especially toward the base, is a line of pale hairs.

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

“Native of China, cultivated in England since 1845, probably before. It is the most striking of dwarf bamboos, with larger leaves than any other, tall or dwarf, and forms broad, rounded masses, the outer stems of which arch outward to the ground, and out of which spring each summer the spikelike new growths. It has never been known to flower under cultivation. Very hardy. It differs from *A. palmata* in the dwarfer habit but larger leaves.” (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 219, under *Arundinaria ragamowski*.)

38916 and 38917. BAMBOS sp.

38916. B. 4.

38917. B. 5.

38918. BAMBOS AUREA-STRIATA Regel.

38919 and 38920. PHYLLOSTACHYS spp.

38919. PHYLLOSTACHYS AUREA A. and C. Rivière.

“Stems pale yellowish green, 10 to 15 feet high in this country, stiffly erect, growing in tufts and spreading slowly, the joints often 5 or 6 inches apart, except at the base, where they are crowded. Beneath each joint there is a curious swollen band, about one-fourth inch wide, which distinguishes this from all other hardy bamboos. Leaves 2 to 4½ inches long, one-third to seven-eighths inch wide, broadly tapered at the base, slenderly pointed, dark green above, glaucous beneath, smooth on both surfaces, minutely toothed on the margins; secondary nerves 4 or 5 each side the midrib; stalk one-sixth inch or less long; the leaf sheath surmounted by two tufts of bristles at the summit.

“Native of Japan, cultivated in Europe since the ‘seventies’ of last century. It flowered at Bitton with Canon Ellacombe, and with the late Signor Fenzi, at Florence, in 1876. It is a pleasing bamboo if planted in a goodly sized mass, although not so graceful as the majority. It is only likely to be confused with *P. mitis*, which is, however, a taller bamboo without the crowded joints at the base of the stem and without the swollen band beneath the joint, which is so distinctive a character in *P. aurea*. (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 149-150.)

38920. PHYLLOSTACHYS BAMBUSOIDES MARLIACEA Houzeau.

(*Phyllostachys quilioi marliacea* Bean.)

“Stems 18 to 20 feet high in this country, three-fourths to 1½ inches thick at the base, deep green. Branches long; stem sheaths pinkish when young, conspicuously mottled with deep purple. Leaves among the largest in the hardy Phyllostachys group, varying from 2½ to 6 inches long, one-half to 1½ inches wide (occasionally they are even larger), bright green above, glaucous beneath; smooth except for some down at the base of the midrib beneath; one margin toothed; secondary veins 5 to 7 each side of the midrib; leaf sheath with a conspicuous tuft of bristles at the top, one-fourth to one-half inch long.

“Native of Japan, introduced into France by Admiral Du Quilio in 1866. It is one of the finest of the hardy bamboos,

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

very hardy and free growing. *P. viridi-glaucescens* is the only species with which, in the adult stage, it is likely to be confused, and from that species it is distinguished by the mottled leaf sheaths (in *P. viridi-glaucescens* they are simply striated or tinged with purple), by the larger leaves, and longer branches.

“Var. *marliacea* (*P. marliacea* Mitford). Marliac's bamboo. A form distinguished by the curious wrinkling of the stems, especially towards the base. It does not appear to be so vigorous as the species, and behaves more like *P. mitis* in regard to hardiness.” (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152, under P. quilloi.*)

38921. ARUNDINARIA SIMONII VARIEGATA Hooker.

“Stems up to 18 feet high, round, very hollow, from 1 to 1½ inches in diameter at the base, the outer ones arching outwards. Stem sheaths rather persistent, the largest 8 to 10 inches long, purplish when young, hairy at the margins, very glazed within. Leaves narrow oblong, broadly wedge shaped at the base, with long, tapered points, 3 to 12 inches long, one-third to 1½ inches wide, vivid green above, glaucous on one side of the midrib beneath, rather greener the other; secondary veins 4 to 7 each side of the midrib.

“Native of China, introduced to France by M. Simon in 1862. A very vigorous bamboo, which spreads rapidly by means of its underground suckers, and, with the exception of *A. fastuosa*, the tallest of our hardy sorts. It bears some resemblance to that species (but differs in the more persistent stem sheaths, in the lack of short, crowded branches at each joint, and in its less tufted habit, as well as in its rampant underground suckers). *A. simonii* flowered all over the country between 1903 and 1905. For many years previous to these dates odd stems had flowered and occasionally borne seed without any damage to the plants, but then came the flowering of the entire plants, none of which ever recovered. In gardens now *A. simonii* is only known by small plants raised from the seed then obtained.

“Var. *variegata* Hooker (*Bambusa albo-striata* Hort.). In this variety some of the leaves are striped with white, the leaves so marked being very small and narrow. The full-sized green leaves do not differ from those of the type. This variety has not yet flowered, except partially, in this country. It is of little value.” (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 219.*)

38922. BAMBOS sp.**B. 6.****38923 to 38927. MUSA PARADISIACA SAPIENTUM (L.) Kuntze.** Musaceæ.**Banana.**

“Presented by Dr. V. A. Argollo Ferrão.

“A collection of bananas from Bahia, Brazil. This collection comprises the most important varieties cultivated at Bahia.”

38923. Anã or *d'Agua*.

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38924. "*Maçã* (apple). A dessert banana, one of the most popular of all, and one of the commonest in the markets. Said to do best on sandy soil, the fruits being hard and of poor texture on clayey soil. It fruits in less time than most other varieties."

38925. "*Prata* (silver). A medium-sized banana, white fleshed, and of good quality. One of the favorites among the natives."

38926. "*São Thomáz*. A short, very plump variety, produced in short, compact bunches. It is usually baked or cooked in some form."

38927. "*Maranhão*. This is also known as *Poucos e Boas* (few and good). A long, slender fruit, usually eaten cooked. The bunches are slender and produce fewer fruits than the average."

38928 to 38942. CITRUS spp. Rutaceæ.

Plants.

38928. CITRUS SINENSIS (L.) Osbeck. Navel orange.

Presented by Dr. V. A. Argollo Ferrão.

"*Laranja selecta de umbigo*."

38929. CITRUS SINENSIS (L.) Osbeck. Navel orange.

"This tree was presented by Col. Demetrio Luiz de Souza, of Cruz do Cosme, one of the suburbs of Bahia. Col. Demetrio is one of the most successful propagators of the navel orange, and annually buds considerable numbers. This specimen is a selected bud chosen from his nursery."

38930. CITRUS SINENSIS (L.) Osbeck. Navel orange.

"A navel orange tree budded from tree 1-1-3 in the grove of Dr. Fortunato da Silva, at Cabulla, Bahia. The bud was inserted on a 1-year-old budded navel obtained for us by Dr. V. A. Argollo Ferrão. For description of this selection, see S. P. I. No. 37754, under which bud wood from the same tree is listed."

38931. CITRUS LIMETTA Risso. Sweet lime.

"A budded tree of the *lima doce*, or sweet lime, from the grove of Dr. Fortunato da Silva, Cabulla, Bahia. The sweet lime is popular among Brazilians; in form it is broader and shorter than a lemon, and the pulp, while very juicy, is almost devoid of acidity. It is eaten out of hand or is used to prepare a refreshing drink. It is hardly likely that it could vie in popularity with either the lime or lemon in the United States."

38932. CITRUS sp. Lime orange.

"Budded tree of the *laranja lima*, or lime orange. Bud wood was obtained from the grove of Col. João de Teive e Argollo at Agua Comprida, about 12 miles from Bahia, and the buds inserted on navel-orange stock. This fruit is described under S. P. I. Nos. 37784 to 37786."

38933. CITRUS LIMETTA Risso. Sweet lime.

"Budded tree of the sweet lime; buds taken from tree 1-1-7 in the grove of Col. Frederico da Costa, Matatu, near Bahia. See S. P. I. No. 37773 for description."

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)**38934 to 38937.** CITRUS SINENSIS (L.) Osbeck.

Plants.

38934.

Navel orange.

"A young budded tree of navel orange No. 2-11-1, taken from the grove of Col. Frederico da Costa at Matatu, near Bahia. This type of fruit is described under S. P. I. No. 37776."

38935.

Navel orange.

"Young budded tree of navel orange No. 2-9-5, from the grove of Col. Frederico da Costa at Matatu, near Bahia. This selection is described under S. P. I. No. 37768."

38936.

Selecta orange.

"*Laranja selecta*, obtained from Dr. Miguel de Telve e Argollo's place, Roma, Bahia. See S. P. I. No. 36947 for description of this variety."

38937.

Orange.

"The tree from which this bud was taken is growing in the orchard of Col. Demetrio Luiz de Souza, at Cruz do Cosme, near Bahia. Col. Demetrio says that it was budded from a navel tree, but it has evidently reverted and is now producing seedy oranges without navels, but otherwise of the same character as the Bahia navel orange. It is interesting because of this fact, and should be planted in Florida or California to see if it will maintain its present character."

38938 to 38940. CITRUS sp.

Plants.

38938. "Seedlings of *laranja africana*, a large, pummelolike fruit, which is used here principally as stocks for budding to the navel orange. It is not common in this region."

38939. "*Laranja tanja*, another large citrus fruit, resembling a poor pummelo in character. It is used as stock on which to bud the navel orange and for this purpose is considered good, though it is not as widely used as *laranja da terra*, or bitter orange."

38940. "The *limão doce*, or sweet lemon, a fruit which is popular in this region. It resembles an ordinary lemon, but is of a very sweet flavor and entirely devoid of acid."

38941 and 38942. CITRUS NOBILIS DELICIOSA (Tenore) Swingle.

Plants.

Tangerine.

38941. "A tree of the common tangerine grown at Bahia, which does not appear to be different in any important respects from some of the tangerines cultivated in the United States. It should be tried in California or Florida in comparison with local tangerines to prove its quality."

38942. "The *laranja cravo*, apparently very similar to the tangerine, if not identical with it. It is popular in Bahia, and is generally said to be larger and slightly different from the tangerine, though it appeared to us that the two names were used rather loosely and sometimes even applied to the same thing. For trial in California and Florida."

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38943. SPONDIAS sp. Anacardiaceæ.

"A tree presented by Dr. V. A. Argollo Ferrão. The species is one common at Bahia and is esteemed in this region. Its fruits have not been seen by any members of our party, hence its identity can not be determined, but it is probably one of the commoner tropical species. The fruits are said to be the size of hen's eggs, orange yellow in color, and of good flavor."

Plant.

38944. PSIDIUM ARAÇA Raddi. Myrtaceæ.

Guava.

"An uncommon species of guava, known here as *Araça*, presented by Dr. V. A. Argollo Ferrão. It is said to have a large fruit and few seeds. The leaves are different in character from most of the guavas. Should be tried in California and Florida."

Plants.

38945. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. Lumbang.
(*Aleurites triloba* Forst.)

"One of the candle-nut or wood-oil trees, found growing in a garden near Bahia. The tree was full of fruit at the time of our visit. Should be tried in comparison with the wood-oil trees now being sent out by this office."

Plants.

For an illustration of the lumbang tree growing in Brazil, see Plate V.

38946. PANICUM sp. (?) Poaceæ.

"*Capim cayana*. A forage grass grown in this region. This is a large, coarse grass grown in very low and wet lands. It can be rooted from single-eye cuttings and grows very rapidly. Should be given a trial in moist regions of the South."

Plants.

38947 to 38968. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.

(*Manihot utilisima* Pohl.)

Cassava.

"A collection of varieties of mandioca or cassava presented by Dr. V. A. Argollo Ferrão. This set includes varieties which have been assembled at the Centro Agricola from all parts of Bahia State and should be of interest for trial in the southern United States. The varieties, as a rule, vary but little in appearance and are difficult to tell apart in some cases. Those which have the word *aipim* before the varietal name are sweet cassava and are eaten boiled as a vegetable without previous treatment. Others are bitter and are used for the preparation of cassava meal; they must be treated before using to remove the prussic acid."

Plants.

38947. No. 1. *Mulatinho*.

38953. No. 9. *Landy*.

38948. No. 2. *Aipim Pacara*.

38954. No. 10. *Vassoura*.

38949. No. 4. *Aipim Varudo*.

38955. No. 11. *Prato Cheio*.

38950. No. 6. *Aipim Paraguay*.

38956. No. 12. *Itapicuru*.

38951. No. 7. *Gamadura*.

38957. No. 13. *Saracura*.

38952. No. 8. *Aparecida*.

38958. No. 14. *Milagrosa*.



THE LUMBANG (*ALEURITES MOLUCCANA* (L.) WILLD.) GROWING IN BAHIA, BRAZIL.
(SEE S. P. I. No. 38945.)

An oil-nut tree growing beside the road on the plantation of Coronel Frederico da Costa at Bahia. The tree has pale-green foliage and the fruits contain nutlike seeds, from which lumbang oil is expressed. The kernel is somewhat poisonous, being strongly purgative in effect when eaten. Lumbang oil has been largely used in the manufacture of soap and is now being investigated as a possible paint oil. The tree is known in Hawaii as the kukui and as the candlenut in some other parts of the world. (Photographed by Messrs. Dorsett, Shamel, and Popenoe, December 25, 1913; P14568FS.)



THE QUEENSLAND NUT (*MACADAMIA TERNIFOLIA* MUELLER), AS GROWN IN CUBA.
(SEE S. P. I. No. 39144.)

This Australian tree has grown very well in southern California and in Florida, having produced good crops at about 7 years of age. The nuts are about the size of large marbles and of a most delicious flavor, resembling that of Brazil nuts, but more delicate. This tree (S. P. I. 21249) was introduced in the form of a seed from Brisbane in 1907 and planted out in Cuba in January, 1909, by H. A. Van Hermann, on whose estate it is standing. (Photographed by Wilson Popenoe, Santiago de las Vegas, Cuba, July 18, 1914; P16069FS.)

38892 to 38968—Continued.

38959. No. 15. <i>São Pedro Branca.</i>	38964. No. 20. <i>Rio de Janeiro.</i>
38960. No. 16. <i>Babu Branca.</i>	38965. No. 21. <i>Crioulinho.</i>
38961. No. 17. <i>Vassourá Molle.</i>	38966. No. 22. <i>Itaparica.</i>
38962. No. 18. <i>Babu Preto.</i>	38967. No. 23. <i>Mangue.</i>
38963. No. 19. <i>Tutano.</i>	38968. No. 24. <i>Gravatão.</i>

38969. PLAGIANTHUS BETULINUS A. Cunningh. Malvaceæ.

Ribbon wood.

From Epsom, Auckland, New Zealand. Presented by Mr. D. Petrie. Received July 25, 1914.

"From the southern part of our colony and should be hardy enough for your lowlands. The tree is dioecious and it would be interesting to note how many turn out male and how many female. The tree naturally grows on alluvial flats and by the side of streams that meander through such stations. I doubt if it would thrive anywhere else." (*Petrie.*)

"A tree, varying from 30 to 60 feet in height, with terminal panicles of white flowers. The young shrub forms a mass of tortuous interlacing branches. Leaves lobed or coarsely toothed. Petals rounded at the tips. North and South Island, Chatham Islands." (*Laing and Blackwell, Plants of New Zealand.*)

38970. FEIJOA SELLOWIANA Berg. Myrtaceæ.

Feijoa.

From Pasadena, Cal. Presented by Mr. D. W. Coolidge, Coolidge Rare Plant Gardens. Received at the Plant Introduction Field Station, Chico, Cal.

"This is a seedling from a fruit that measured $3\frac{1}{2}$ by $2\frac{1}{2}$ inches. Named *Feijoa macrocarpa* by Dr. Franceschi, of Santa Barbara, Cal." (*Coolidge.*)

38971 to 38973. LINUM spp. Linaceæ.

Flax.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received July 30, 1914.

38971. LINUM PERENNE L.

Var. *album* Hort.

A white form of the perennial flax, which grows about 2 feet high and is generally cultivated as an ornamental.

38972. LINUM GRANDIFLORUM Desf.

Var. *rubrum* Hort.

38973. LINUM USITATISSIMUM L.

38974. PRUNUS UMBELLATA Elliott. Amygdalaceæ.

Plum.

From Brooksville, Fla. Collected by Mr. William Gomme, assistant farm superintendent in charge, Plant Introduction Field Station, Brooksville, Fla. Received August 3, 1914.

"Seeds from Mr. Raymond Robbins, Snow Hill."

A tree, sometimes 15 to 20 feet high, with a short, often crooked or inclining trunk 6 to 10 inches in diameter, slender, unarmed branches forming a wide, compact, flat-topped head. Wood heavy, hard, close-grained, dark reddish

38974—Continued.

brown, with thick, lighter colored sapwood of about 30 layers of annual growth. The fruit is used in large quantities in making jellies and jams. Sandy bottom land and along the borders of the forest of long leaf pine, usually in the neighborhood of the coast, from South Carolina to western Louisiana and southern Arkansas. (Abridged from *Sargent, Trees of North America.*)

38975 and 38976. BELOU MARMELOS (L.) LYONS. Rutaceæ. Bâel.
(*Aegle marmelos* Correa.)

From Nyaunglebin, Burma, India. Presented by Rev. E. N. Harris, American Baptist Foreign Mission Society. Received July 30, 1914.

38975. "Small variety."

38976. "Large variety."

38977. TOLUIFERA PEREIRAE (Klotzsch) Baill. Fabaceæ.
(*Myroxylon pereirae* Klotzsch.) **Balsam of Peru.**

From Havana, Cuba. Presented by Mr. J. Pascual Baldwin, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received July 24, 1914.

Source of *balsamo blanco*, or *balsamito*.

38978. PRUNUS ARMENIACA L. Amygdalaceæ. Apricot.

From Somma Vesuviana, Italy. Presented by Mr. Gustav Eisen. Received July 27, 1914.

"*Pelese* apricot seeds from Somma Vesuviana." (*Eisen.*)

See S. P. I. No. 38778 for previous introduction and description.

38979 and 38980. BRACHYCHITON spp. Sterculiaceæ.

From Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie, Queensland Acclimatization Society. Received July 30, 1914.

38979. BRACHYCHITON ACERIFOLIUM Mueller.

Flame tree.

(*Sterculia acerifolia* Cunningh.)

This species of *Sterculia*, which is a native of New South Wales and Queensland, is a large evergreen tree reaching a height of about 60 feet. The wood of this species, as with all other *sterculias*, is soft and light and has but a very limited use. The flowers are brilliant scarlet in color and are produced in great abundance. This tree has been introduced into this country and may now be seen growing on streets and lawns in California. A gummy substance exudes from the trunk of this tree, which, of any of the well-known gums, most resembles the tragacanth. (Adapted from *Bailey, Cyclopedia of American Horticulture*, and *Maiden, Useful Native Plants of Australia.*)

38980. BRACHYCHITON LURIDUM Mueller.

(*Sterculia lurida* Muell.)

"This tree, which is commonly known as the *sycamore* or *hat tree*, is a native of northern New South Wales and Queensland. The timber is white, soft, not durable, is easily split, and is occasionally used for shingles. The bark of this tree yields a strong and valuable fiber, similar to bass, or Russian matting." (*Maiden, Useful Native Plants of Australia.*)

38981 and 38982. MANGIFERA INDICA L. Anacardiaceæ. Mango.

38981. From Santiago de las Vegas, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cuttings received August 4, 1914.

"(No. 5. July 30, 1914.) *Luisa*, a mango of the Philippine type of which the parent tree is growing in the Casa Vivienda garden at the Central Nueva Luisa, Jovellanos, Matanzas Province. Scions have been taken from the original tree and propagated by Mr. A. H. Van Hermann, of this place, from whom these cuttings were obtained.

"The Philippine mango as found here in Cuba is an entirely distinct race from the other mangos found on the island. The type can be distinguished from the others grown here by the pale, grayish mahogany color of the young leaves, the venation of the leaves, the slender, compressed fruits, terminating in a sharp point at the apex, and the thin husk which surrounds the seed.

"The *Cecil* mango of Miami, Fla., is a representative of this race and exhibits the characteristics which are noticeable here in Cuba. The race is believed originally to have come from the Philippines.

"While there is remarkably little variation among the seedlings of this race, there are frequently noticeable differences in the size, brightness of color, and flavor of the fruit. *Luisa* is described by Prof. F. S. Earle, who was, I believe, the first to observe it, as a fruit 4 to 5 inches in length, dull yellowish green in color, with little fiber and a remarkably good flavor. It is considered by Prof. Earle the best mango of the Philippine type which he has seen." (*Popenoe.*)

38982. From Havana, Cuba. Presented by Mr. Charles Hernandez, Director General of Posts and Telegraphs. Received August 3, 1914.

"From the mango grove in the Quinta Ariles near Cienfuegos. The most appreciated of all the kinds of mangos that grow on this island; it is very much looked for by the people of Cienfuegos, and therefore the consumption is limited to only that portion of the country." (*Hernandez.*)

38983. TRIFOLIUM SUBTERRANEUM L. Fabaceæ. Clover.

From Adelaide, Australia. Presented by Mr. W. Champion Hackett. Received July 29, 1914.

38984. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Valparaiso, Chile. Presented by Mr. Alfred A. Winslow, American consul.

"Seed of 1913-14 harvest." (*Winslow.*)

38985. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ. Jugu bean.

From Johannesburg, Transvaal, Union of South Africa. Presented by Mr. J. Burt Davy. Received August 1, 1914.

"Jugu beans; these are proving useful in our bush-veldt country (below 4,000-foot altitude) for stock food; they are crushed and fed to cattle and pigs.

38985—Continued.

Our natives are very fond of these beans, and when well cooked they are considered quite palatable by white people." (*Davy*.)

38986 to 38990.

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914. Quoted notes by Mr. Reed.

38986. *ALEURITES MOLUCCANA* (L.) Willd. Euphorbiaceæ. Lumbang.
(*Aleurites triloba* Forst.)

"A large tree, fruit fleshy, 2 inches long, containing one or two hard-shelled, oily seeds. Oil is extracted from the seeds, and the refuse is used as fertilizer in the Philippines."

38987. *CLITORIA TERNATEA* L. Fabaceæ. Butterfly pea.

"A climbing, somewhat woody vine, stems sometimes one-third of an inch in diameter. Flowers numerous, attractive, deep blue, pale blue, or white."

38988. *LACTUCA SATIVA* L. Cichoriaceæ. Lettuce.

"A variety introduced from China. It grew especially well at the Singalong Experiment Station. Leaves are light green and tender."

38989. *PASSIFLORA FOETIDA* L. Passifloraceæ. Passion fruit.

"A herbaceous ornamental vine with white or pinkish flowers about 1 inch in diameter. Introduced into the Philippines from tropical America."

38990. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

"A variety introduced from China. This variety was very productive of seed at the Singalong Experiment Station."

38991 to 39101.

From Darjiling, India. Collected by Mr. L. J. Mackintosh, Clover Cot, at the request of Mr. J. F. Rock, collaborator, of the Bureau of Plant Industry.

38991. *ACACIA CATECHU* (L. f.) Willd. Mimosaceæ. Catechu.

"This species of *Acacia* is a tree which attains a height of about 80 feet with a stem circumference of 9 feet. The wood is hard, heavy, extremely durable, and is used locally for underground posts particularly and for millwork. The extract prepared from the bark and the heartwood is one of the catechus of medicine or cutch of tannery. This tree may be found growing from India to East Africa at altitudes as high as 5,000 feet." (*Mueller, Select Extra-Tropical Plants, p. 3.*)

38992. *ACER* sp. Aceraceæ. Maple.

38993. *ACONITUM FEROX* Wallich. Ranunculaceæ. Aconite.

"This species is a native of the temperate subalpine Himalayas and may be found growing from Sikkim to Garwhal, at altitudes of 10,000 to 14,000 feet. The stem is 3 to 6 feet in length and is puberulous and leafy. The flowers are large and of a pale dirty-blue color. The five erect follicles are usually densely villous, and in some Garwhal specimens glabrous." (*Hooker, Flora of British India, vol. 1, p. 28.*)

38991 to 39101—Continued.

38994. *ACONITUM LURIDUM* Hook. f. and Thoms. Ranunculaceæ.

Aconite.

"This *Aconitum* is a native of the alpine east Himalayas and may be found growing around Sikkim at altitudes of 14,000 feet. The stem is 2 to 3 feet in length, slightly pubescent, and has very few leaves. The radical leaves are 2 to 3 inches in diameter. The flowers are dull red in color and the sepals are brown tomentose." (*Hooker, Flora of British India, vol. 1, p. 28.*)

38995. *ALBIZZIA* sp. Mimosaceæ.38996. *ALBIZZIA ODORATISSIMA* (L. f.) Benth. Mimosaceæ.

"This is a large, deciduous tree, met with in the sub-Himalayan tract from the Indus eastward, ascending to 3,000 feet in altitude. This tree yields a dark-brown gum in rounded tears, tasteless but soluble in water. The bark is boiled by the Gáro people, together with the leaves of the *Dúgál* (*Sarcochlamys pulcherrima*) and the yarn of their cloth, to give the latter a brownish color. As a medicine the bark is applied externally and is considered efficacious in leprosy and in inveterate ulcers. When boiled in *ghi* the leaves are used by the Santals as a remedy for coughs. The timber made from this tree is used in the manufacture of wheels, oil mills, and furniture. The timber is excellent for all purposes requiring strength and durability, and is considered one of the most valuable of jungle timbers." (*Watt, Dictionary of the Economic Products of India.*)

38997. *ALNUS NEPALENSIS* D. Don. Betulaceæ.

Alder.

"This tree, which is a native of the Himalayas, reaches a height of about 60 feet and may be found growing at altitudes between 3,000 and 9,000 feet. The bark of this *Alnus* is used for tanning and dyeing." (*Mueller, Select Extra-Tropical Plants, p. 33.*)

38998. *AMOORA ROHITUKA* (Roxb.) Wight and Arn. Meliaceæ.

"This is an evergreen tree with a large crown of branches, which is widely distributed over the Malay Archipelago and the Philippine Islands. The fruit is smooth, pale yellow or red in color, and from 1 to 1½ inches in diameter. It is rather soft and fleshy, 3-celled, and 3-valved. A sort of economic oil is extracted from the seed of this fruit." (*Hooker, Flora of British India, vol. 1, p. 559.*)

38999. *ANEMONE RUPICOLA* Camb. (?) Ranunculaceæ.

Anemone.

"This species of *Anemone* is a native of the inner alpine valleys of the Himalayas and may be found growing from Gores to Kashmir in Sikkim at altitudes of 12,000 to 15,000 feet. The radical leaves are long petioled, and the segments are more or less petioled and sharply incised or 3-lobed. The sepals are 1 to 1½ inches in length, broadly oval, and downy on the outside. The flowers, which are 1 or 2 in number, are large and very showy." (*Hooker, Flora of British India, vol. 1, p. 8.*)

39000. *BAUHINIA PURPUREA* L. Cæsalpiniaceæ.

Orchid tree.

A small to middle-sized tree; leaves coriaceous, glabrous, somewhat cordate, cleft one-third to one-half their depth, 9 to 11 nerved; lobes obtuse or somewhat acute; flowers in few-flowered axillary and terminal corymbs, fragrant; petals red, one streaked with white on the claw, oblanceolate, acute; fertile stamens, 3 to 4, very long, the rest sterile or abortive; pod 1 foot long. India, Burma, China. One of the finest flower-

38991 to 39101—Continued.

ing small trees in southern Florida. Flowers are borne in the greatest profusion, 3 to 5 inches across, varying in color from almost white to a shade of rich purple, and marked and shaded with many tones. The plant is robust and hardy, growing to a height of 15 feet in less than two years, and blooms all winter and spring. (Adapted from *Bailey, Standard Cyclopedia of Horticulture.*)

39001. BERBERIS sp. Berberidaceæ. **Barberry.**

39002. BETULA CYLINDROSTACHYA Wallich. Betulaceæ. **Birch.**

"A tree native of the Himalayas and may be found growing there at altitudes of 3,000 and 10,000 feet. It reaches a height of about 60 feet, and thrives well along forest streams. The wood is hard, strong, and durable." (*Mueller, Select Extra-Tropical Plants.*)

39003. BOSCHENIAKIA HIMALAICA Hook. f. and Thoms. Orobanchaceæ.

A parasite on Rhododendron roots.

"This is a plant 6 to 18 inches in height which inhabits the temperate and subalpine regions of the Himalayas at altitudes of 8,000 to 10,000 feet at Kumaon and 10,000 to 13,000 feet at Sikkim. The stem of this plant, which is often as thick as a man's thumb, is pale brown in color and is tuberous at the root. The scales are numerous and rigid and range from one-half to three-fourths inch in length. This species differs widely from the Asiatic species *B. glabra* in its much larger size, the flowers being twice as large and the fruit three times as large." (*Hooker, Flora of British India, vol. 4, p. 327.*)

39004. CERASTIUM sp. Silenaceæ.

39005. CHAEROPHYLLUM VILLOSUM Wallich. Apaceæ.

Distribution.—An herb growing about 4 feet tall, with long white hairs on the stem, found in the Himalayas at an altitude of 5,000 to 12,000 feet, and in the Khasi Hills, in India.

39006. CHRYSANTHEMUM ATKINSONI C. B. Clarke. Asteraceæ.

Chrysanthemum.

Distribution.—A strongly scented purple-flowered chrysanthemum found on the slopes of the Sikkim Himalayas, in northern India, at an altitude of 13,000 to 15,000 feet.

39007. CLEMATIS MONTANA Hamilton. Ranunculaceæ. **Clematis.**

"This species of Clematis is a woody climber which inhabits the temperate Himalayas from the Indus to Brahmaputra at altitudes as high as 12,000 feet. Always above 8,500 feet in Sikkim and in the Khasi Hills and Maniput, above 4,000 feet." (*Watt, Dictionary of the Economic Products of India.*)

"A deciduous climber of vigorous habit, growing at least 20 feet high; stems smooth except when quite young. Leaves composed of 3 leaflets on a common stalk 2 to 4 inches long, the leaflets short stalked, ovate to lanceolate, pointed, variously and unequally toothed, 1 to 4 inches long, half as wide. Flowers solitary, pure white, 2 to 2½ inches across, each borne on a smooth stalk 2 to 5 inches long. Sepals 4, spreading, oval. Seed vessel elliptical, surmounted by a plumose style, 1½ inches long. Native of the Himalayas, introduced by Lady Amherst in 1831.

38991 to 39101—Continued.

It is quite hardy near London, and is undoubtedly one of the loveliest of all climbers. The flowers appear in May, and being produced singly on long stalks, can only be confused with the white variety of *C. alpina*, and that is not only very different in habit and vigor, but has the petal-like parts of the flower characteristic only of the Atragene group. *C. montana* is a valuable plant for covering arbors, pergolas, and especially verandas, where its long shoots can be allowed to hang down and form a sort of curtain." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 363-364.*)

39008. COTONEASTER MICROPHYLLA Wallich. Malaceæ. Cotoneaster.

"This is an ornamental plant which has recently been introduced into our gardens. It is known as *Khariz lûni* in Kashmir and *Garri* in Kumaon. The wood of this species is used in the manufacture of walking sticks and baskets. When mixed with *Parretia* it is used in the construction of twig bridges in Kashmir. The fruit of this species is sweet." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, of low, spreading, or even prostrate habit, rarely more than 2 to 3 feet high unless trained. Branches often slender but rigid, woolly when young. Leaves one-fourth to one-half inch long, half or less than half as wide, ovate or obovate, deep glossy green above, grey and woolly beneath, pointed, rounded, or notched at the apex. Flowers white, one-third inch across, generally solitary (occasionally two or three). Fruit round, scarlet red, one-fourth inch in diameter. Native of the Himalayas up to 11,000 feet, introduced in 1824. This pleasing evergreen is nearly related to *C. buxifolia* on one side, and *C. thymæfolia* on the other. They may be forms of one species, but from *buxifolia* this and *C. thymæfolia* are distinguished by fewer flowers in the cluster and the dwarf habit. The present plant makes a very pretty covering for sloping banks, forming eventually a dense low thicket. Single plants make a pretty evergreen furnishing for the rock garden, but *C. thymæfolia* and *C. congesta* are to be preferred." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 413.*)

39009. CREMANTHODIUM OBLONGATUM C. B. Clarke. Asteraceæ.

"This is usually a robust species and is found growing in the Sikkim Himalayas, near the Tibetan frontier, at altitudes ranging from 12,000 to 16,000 feet. The leaves of this species are 2 to 2½ inches in diameter, pale beneath, with coarsely reticulated nerves. The petioles are stout, 1 to 2 inches in length, and not inflated at the base. The alternate nerves of the leaf distinguish this species from all others except *C. pinnatifidum*." (*Hooker, Flora of British India, vol. 3, p. 331.*)

39010. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ.

(*Erianthus fulvus* Nees.)

39011. POLLINIA FULVA (R. Br.) Benth. Poaceæ.

(*Pollinia cumingiana* Nees.)

"From the interior of Australia. It is a sweet perennial grass, of which the cattle are so fond that they eat it closely down, thus causing it to die out. It is easily raised by redissemination." (*Mueller, Select Extra-Tropical Plants, p. 181.*)

38991 to 39101—Continued.

39012. *ERIGERON MULTIRADIATUS* (Lindl.) Benth. Asteraceæ.

"This is one of the most beautiful of all the alpine Compositæ, but very variable and difficult to distinguish from forms of neighboring species, especially *E. alpina*. It is a native of grassy, wet places along the whole length of the Himalayan Range, from Kashmir, where it inhabits altitudes of 7,000 to 9,000 feet, to Sikkim, where it ascends to 12,000 feet. It is a pubescent or hirsute herb, in the small state 6 or 10 inches high, with simple scapelike leafy stems, and numerous radical leaves, and a branched leafy stem. The leaves are usually 4 to 8 inches long, oblanceolate, and narrowed into a rather long petiole." (*Curtis's Botanical Magazine*, pl. 6530.)

39013. *ERYTHRINA ARBORESCENS* Roxb. Fabaceæ.

"A small or moderate sized tree, found in the outer Himalayas from the Ganges to Bhutan up to 7,000 feet and also in the Kashmir Hills. It is chiefly remarkable for its brilliantly colored flowers, which are usually produced before the new leaves. The wood is rather durable, though light and somewhat open grained. It does not warp or split and takes a good varnish. It is used in the manufacture of light boxes, toys, scabbards, trays, and also for firewood." (*Watt, Dictionary of the Economic Products of India*.)

39014. *FRAXINUS FLORIBUNDA* Wallich. Oleaceæ.

Ash.

This *Fraxinus*, which is commonly known as the Nepal ash, is found growing in the Himalayas at altitudes ranging from 4,000 to 11,000 feet. This tree attains a height of about 120 feet, and the girth of stem is not uncommonly 15 feet. This tree not only serves as a timber tree but also as a fine avenue ornamental. The wood is very useful for oars, plows, and various other implements. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 233.)

"In 1876 the late Sir George King, then of the Calcutta Botanical Gardens, sent seeds of this fine ash to Kew. Of the trees raised one survives, which was cut to the ground in the winter of 1880-81, but is now about 15 feet high. Although it withstood the frosts of February, 1895, without injury and is now apparently perfectly hardy, its rate of growth with us is not such as to recommend it for general cultivation, except in the milder counties. It is one of the *ornus* group, and in the northwestern Himalayas, where it is native, reaches 80 to 100 feet in height. Its branches are without down and its leaves 10 to 15 inches long. Leaflets usually 7 or 9, oblong (terminal one obovate), tapered at both ends, 3 to 6 inches long, 1 to 2½ inches wide, sharply toothed, smooth above, downy beneath, chiefly on the midrib and veins. Main stalk grooved, stalk of leaflets one-fourth to one-half inch long. Flowers white, in large terminal panicles. It resembles some of the big-leaved forms of *F. ornus*, but the leaflets are normally much larger, more prominently ribbed beneath, and longer pointed. Introduced first, Loudon says, in 1822, but killed in the winter of 1836-37." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 568.)

39015. *GAULTHERIA NUMMULARIODES* Don. Ericaceæ.

Distribution.—A procumbent shrub with small white flowers and blue-black berries, found throughout the Himalayas at an altitude of 5,000 to 9,000 feet, on the Khasi Hills in India, and in Java.

38991 to 39101—Continued.

"A dwarf evergreen shrub, 4 to 6 inches high, forming dense tufts, and spreading by underground shoots; stems slender and wiry, covered with bristles, and bearing over their whole length leaves one-quarter inch, apart in two opposite rows. Leaves leathery, heart shaped, becoming smaller toward the tip of the shoot; one-quarter to five-eighths inch long, about the same wide; the lower surface and the margins are bristly, the upper side is dark, dull green and wrinkled, the lower one very pale polished green; stalk one-eighth inch or less long. Flowers produced singly in the leaf axils from the under side during August; corolla egg shaped, white or tinged with pink, scarcely one-quarter inch long.

"Native of the Himalayas; long cultivated, but still rare in gardens. It makes charming dense tufts of foliage and stems, but needs some shelter. At Kew it thrives well in a damp bed of peat in one of the recesses of the rock garden, where it has not suffered from cold since the frosts of February, 1895. Its roundish leaves, closely and regularly set in two rows, and gradually decreasing in size toward the end of the shoot, with the slender, conspicuously bristly stems, render it quite distinct from any other plant in cultivation. Increased by cuttings." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 580-581.*)

39016. *GENTIANA TUBIFLORA* Wallich. Gentianaceæ. **Gentian.**

Distribution.—A very low, tufted herb with large blue flowers, found in the alpine Himalayas and in Tibet.

39017. *GERBERA KUNZEANA* A. Br. and Asch.

39018. *GYNURA ANGULOSA* DC. Asteraceæ.

Distribution.—An herbaceous composite, sometimes 10 feet tall, with small flower heads and oblong leaves often 2 feet long, found on the temperate slopes of the Himalayas up to an altitude of 4,000 feet, and in the Khasi Hills, in India.

39019. *IRIS CLARKEI* Baker. Iridaceæ. **Iris.**

"*Iris clarkei* is obviously a member of the *sibirica* group, but differs from all the other species of that group, except *I. prismatica*, in the possession of a solid, as opposed to a hollow, stem. In all other respects it seems perhaps most closely related to the western Chinese members of the group, *I. forrestii* and *I. bulleyana*, with which it agrees in having leaves which are glaucous on the under side but polished and glossy above. The color of the flowers borne by this *Iris* varies greatly even in the wild state, as was proved by a second series of plants that I owe to the kindness of Mr. Cave. All shades of blue and purple may occur. In its native habitat, *I. clarkei* grows in ground that is swampy for half the year and frozen hard under snow during most of the remaining months. In cultivation it should naturally do best in damp soil, rich in humus, but for some reason or other it has proved difficult to keep, for many plants have died out after flowering. Seedlings are fairly easily raised, though the seeds do not germinate very readily and the plants are of somewhat slow growth.

"Apparently confined to a circumscribed area in the Sikkim and Bhutan region at a height of 6,000 to 11,000 feet." (Abridged from *Dykes, The Genus Iris, p. 29-30.*)

38991 to 39101—Continued.

39020. *JUNCUS GRISEBACHII* Buchenau. Juncaceæ.

Distribution.—A perennial *Juncus* growing about 2 feet tall, on the subalpine slopes of the Himalayas in Sikkim, Kumaon, and Bhutan, in northern India.

39021. *MALLOTUS* sp. Euphorbiaceæ.

39022. *MECONOPSIS WALLICHII* Hook. Papaveraceæ.

"This is undoubtedly one of the finest of the poppyworts in cultivation. It is an extremely handsome herbaceous biennial and is remarkable, being one of the few if not the only true blue-flowered poppy in cultivation at the present time. It attains a height of 4 to 7 feet and forms a perfect pyramid. It is exceedingly beautiful when in full flower. The blossoms are about 3 inches in diameter, broadly saucer shaped, pendent, and of a lovely shade of blue. The blooms always commence to open at the summit of the stem, then gradually from day to day expand, until the lowest and last bud is reached." (*The Garden, July 12, 1913.*)

39023. *MEIBOMIA TILIAEFOLIA* (G. Don) Kuntze. Fabaceæ.
(*Desmodium tiliaefolium* G. Don.)

Distribution.—A shrubby legume with lindenlike leaves and long racemes of large pink flowers, found in the temperate and tropical Himalayas up to an altitude of 9,000 feet in northern India.

"A semiwoody plant, which sends up annually from a woody rootstock a number of erect stems 2 to 4 feet high, more or less downy. Leaves trifoliolate, with a main stalk 2 to 3 inches long. Panicles terminal, 8 to 12 inches high, the lower section borne in the uppermost leaf axils. Flowers one-half inch long, varying from pale lilac to dark pink, borne on a slender stalk not quite so long as itself. Native of the Himalayas at 9,000 feet. It flowers from August to October, but needs a hot summer to bring out its best qualities. In cold, wet seasons the flowers do not open at all. Propagated by division of the rootstock in spring. The late Sir Henry Collett called this a 'protean plant'; the form in cultivation is one whose leaves are not very downy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 480, under Desmodium tiliaefolium.*)

39024. *MICHELIA LANUGINOSA* Wallich. Magnoliaceæ.

39025. *MICHELIA* sp. Magnoliaceæ.

39026. *MUCUNA IMBRICATA* DC. Fabaceæ.

39027. *CLEMATIS ZEYLANICA* (L.) Poir. Ranunculaceæ. Clematis.
(*Naravelia zeylanica* DC.)

"A scandent bush, very plentiful in the tropical Himalayas from East Nepal eastward to Bengal, Assam, and also distributed to Ceylon. Around Calcutta it is one of the most abundant of plants. A fiber is obtained from the stems of this species which is twisted into rough but very useful ropes." (*Watt, Dictionary of the Economic Products of India.*)

38991 to 39101—Continued.

39028. OPHIOPOGON INTERMEDIUS Don. Liliaceæ.

Distribution.—A low, herbaceous perennial with grasslike leaves and a slender scape of small white flowers, found on the temperate slopes of the Himalayas and on the Khasi Hills in India and in Ceylon.

Of possible value for cultivation in shady locations where grasses refuse to grow.

39029. OXYRIA DIGYNA (L.) Hill. Polygonaceæ.

"This species is commonly known as the mountain sorrel. It is a small plant with an acid flavor which occurs in the alpine Himalayas at altitudes of 10,000 feet. It is found in western Tibet up to an altitude of 17,500 feet and is distributed to the mountains of Europe, north Asia, and America. This plant is sometimes eaten as a cooling medicine, and in Chamba the leaves, which have a pleasant sorrel taste, are eaten raw." (*Watt, Dictionary of the Economic Products of India.*)

39030. PARNASSIA sp. Saxifragaceæ.

39031. PEDICULARIS CLARKEI Hook. f. Scrophulariaceæ.

"This more or less hirsute herb is found growing in the alpine Sikkim Himalayas at altitudes ranging between 12,000 and 13,000 feet. The stem is 16 to 20 inches in height and sometimes as thick as the middle finger. The corolla tube, which is rather longer than the calyx, is of a reddish or purplish color. The lower lip of the corolla is small, narrow, and shorter than the upper." (*Hooker, Flora of British India, vol. 4, p. 310.*)

39032. PEDICULARIS FLEXUOSA Hook. f.

Distribution.—An erect or decumbent herb growing 2 feet high, with pinnatifid leaves and bearing leafy spikes of rosy flowers, found on the alpine slopes of the Sikkim Himalayas in northern India at an altitude of 10,000 to 13,000 feet.

39033. PEDICULARIS LACHNOGLOSSA Hook. f.

Distribution.—An erect herb with a simple stem, narrow pinnatisect leaves, and racemes of small red-purple flowers, found at an elevation of 14,000 feet in the Lachen Valley of the Sikkim Himalayas in northern India.

39034. PEDICULARIS LONGIFLORA Rudolph.

Distribution.—A low herbaceous perennial with pinnatifid leaves and yellow flowers, found in the vicinity of Lake Baikal in Siberia.

39035. PEDICULARIS MEGALANTHA Don.

Distribution.—A low herb with pinnatifid leaves and lax racemes of yellow or rose-purple flowers, found on the temperate and subalpine slopes of the Himalayas at an altitude of 7,000 to 15,000 feet, from Kashmir to Sikkim, in northern India.

39036. PEDICULARIS MOLLIS Wallich.

Distribution.—An herbaceous annual 3 feet high with spikes of dark purple flowers, found in the alpine Himalayas in northern India and in Tibet at an altitude of 10,000 to 14,000 feet.

39037. PEDICULARIS SCHIZORRHYNCHA Prain.

39038. PENTAGONIA PHYSALODES (L.) Hierd. Solanaceæ.
(*Nicandra physaloides* Gaertn.)

38991 to 39101—Continued.

39039. *PHOTINIA INTEGRIFOLIA* Lindley. Malaceæ.

Distribution.—A tall shrub or small tree with corymbs of white flowers and blue berries, found on the lower slopes of the Himalayas up to an altitude of 7,000 feet and in the Khasi Hills in India.

39040. *PICEA SMITHIANA* (Wall.) Boiss. Pinaceæ.

(*Picea morinda* Link.)

"A lofty tree met with in the northwest Himalayas between 7,000 and 11,000 feet in Sikkim and Bhutan. The wood is white, with reddish brown tinge, and slightly harder than *Abies webbiana*. The wood is extensively used for packing cases, rough furniture, and planking. It crackles and sends out sparks when burning and is consumed very quickly but is much in demand for charcoal. The bark is used for roofing shepherds' huts, and the leaves are collected by the hill people as a manure and they are also used as litter for cattle." (*Watt, Dictionary of the Economic Products of India.*)

39041. *PICORRHIZA KURROA* Benth. Scrophulariaceæ.

"A low, more or less hairy herb, with a perennial woody, bitter rootstock, common in the alpine Himalayas from Kashmir to Sikkim at altitudes of 9,000 to 15,000 feet. The root of this species is used in medicine in cases of fever and dyspepsia and as an ingredient of various purgatives." (*Watt, Dictionary of the Economic Products of India.*)

39042. *PIPTADENIA OUDHENSIS* Brandis. Mimosaceæ.39043. *PIPTANTHUS NEPALENSIS* (Hook.) Sweet. Fabaceæ.

"A shrub, 6 to 10 feet high, possessing the habit of laburnum, native of the temperate Himalayas from Sikkim to Bhutan at altitudes ranging from 7,000 to 9,000 feet. The branches are downy, the stipules are small, connate, and amplexicaul. The leaflets are glabrescent, lanceolate, 2 to 4 inches in length, and narrowed at both ends. The flowers, which range from 12 to 20 in number, occur in subdense racemes." (*Hooker, Flora of British India, vol. 2, p. 62.*)

"A shrub or low tree with very pithy young shoots, naturally 8 to 12 feet high, but growing taller against walls, where it is generally placed in England. At Kew it is deciduous, but in milder climates it retains more or less foliage during the winter. Leaves alternate, consisting of three lanceolate, stalkless leaflets, 3 to 6 inches long, about one-third as wide, with a marginal nerve; smooth except when quite young, dark green above, glabrous beneath; the common leafstalk $1\frac{1}{2}$ to 2 inches long. Racemes stiff, erect, 2 to 3 inches long, and as much broad, hairy, and set with hairy bracts. Flowers pea shaped, $1\frac{1}{2}$ inches long, the stalk up to 1 inch long, and, like the brown calyx, very hairy; petals bright yellow. Pod 3 to 5 inches long, three-fourths inch wide.

"Native of the Himalayas, introduced to England in 1821. It thrives well against a wall, where it flowers in May, but is not permanently hardy in the open air at Kew. A shrub of exceptionally vigorous appearance, it is, nevertheless, not long lived. It is easily propagated by seeds, which it ripens in quantity, and owing to its dislike of root disturbance, should be grown in pots until planted in permanence. Its flowering sprays resemble those of the herbaceous genus *Thermopsis*. Wilson has

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recently introduced from China a *Piptanthus* almost or quite identical with *P. nepalensis*, which may, he thinks, prove hardier." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 194.*)

39044. PITTOSPORUM FLORIBUNDUM Wight and Arnott. Pittosporaceæ.

"A small tree found in the subtropical Himalayas from Sikkim to Garhwal, ascending to 5,000 feet in the hills. The medicinal virtues and the utilization of this plant have recently been brought to light. The bark is bitter and aromatic and is said by the natives to possess narcotic properties. The plant contains an aromatic resin, yellow in color, and having very tenacious properties. The wood is light colored, strong and tough, but of small size." (*Watt, Dictionary of the Economic Products of India.*)

39045. PLEUOSPERMUM APIOLENS C. B. Clarke. Apiaceæ.

Distribution.—A low herb with pinnate leaves, belonging to the parsnip family and having an odor similar to that of celery, found in the interior valleys of the Sikkim Himalayas in northern India at an altitude of 11,000 to 14,000 feet.

39046. PLEUOSPERMUM BRUNONIS (DC.) Bentham. Apiaceæ.

Distribution.—A low herb with pinnate leaves found on the slopes of the Himalayas from Kashmir to Nepal in northern India at an altitude of 9,000 to 14,000 feet.

39047. PLEUOSPERMUM HOOKERI C. B. Clarke. Apiaceæ.

Distribution.—A low herb belonging to the parsnip family, found on the slopes of the Sikkim Himalayas in northern India at an altitude of 10,000 to 16,000 feet.

39048. POLYGONUM VACCINIFOLIUM Meissner. Polygonaceæ.

"This is apparently a common Himalayan plant which has proved sufficiently hardy to bear the open air of this climate [England]. It is a low-growing, neat plant, and by its numerous slender stems trailing along the ground and rooting at the joints it soon forms a spreading, compact patch. The leaves are quite concealed by the copious spikes of bright rose-colored flowers, which continue blooming from August to November uninterruptedly. It is well adapted for the front part of rock work, in situations where it will not be subject to drought in summer. This plant promises to become a great favorite in our gardens as a bedding-out plant, especially where autumn flowers are desired. (*Curtis's Botanical Magazine, pl. 4622.*)

39049. RHEUM ACUMINATUM Hook. f. and Thoms. (?) Polygonaceæ.**Rhubarb.**

"This is the common rhubarb of the Sikkim Himalayas and very closely resembles in most respects the well-known *Rheum emodi*. It inhabits rocky places, often amongst bushwood in the subalpine and alpine regions of the Himalayas of Sikkim and East Nepal, at elevations of 9,000 to 13,000 feet. The stems are pleasantly acid, and, though more dry and stringy than those of *R. emodi*, may be used for tarts. The root is spongy and but slightly, if at all, medicinal." (*Curtis's Botanical Magazine, pl. 4877.*)

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39050. RHEUM NOBILE Hook. f. and Thoms. Polygonaceæ. **Rhubarb.**

"A handsome herbaceous plant, with a stem 3 to 4 feet high and as thick as the wrist at the base. It is found in the inner ranges of the Sikkim Himalayas at altitudes between 13,000 and 15,000 feet. The root resembles that of the medicinal rhubarb, but is spongy and inert. The acid stems are eaten both raw and boiled, and the dried leaves afford a substitute for tobacco." (*Watt, Dictionary of the Economic Products of India.*)

39051. RHODODENDRON ANTHOPOGON Don. Ericaceæ. **Rhododendron.**

"A small shrub, with very aromatic, strongly scented leaves, common at altitudes between 11,000 and 16,000 feet on the alpine Himalayas, from Kashmir to Bhutan, and distributed to central and northern Asia. The leaves of this plant are aromatic, and their smoke is considered by the natives to be useful in some diseases. They are supposed to contain stimulant properties and are collected and exported to the plains, where they are officinal. This is one of the species which is thought by the Bhutias to excite the headache and nausea which attends ascents to the high elevations of the eastern Himalayas." (*J. D. Hooker. In Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, 2 feet or less high, of compact habit; young branchlets hairy and covered with brown scurf. Leaves oval or ovate, 1 to 1½ inches long, one-half to three-fourths inch wide, dark, rather glossy green above, covered with brown scales beneath; stalk one-fourth inch long. Flowers sulphur colored, one-half to three-fourths inch across, produced in a small terminal cluster, 1 to 1½ inches wide. Corolla thin, almost transparent; tube hairy inside, expanding at the mouth into five wavy lobes; calyx lobes oblong, pale green, one-eighth inch long, fringed at the margin; stamens five (sometimes up to eight), very short, and included within the tube; flower stalk scaly, one-sixth inch or less in length. Flowers in April.

"Native of the high Himalayas from Cashmere eastward, up to 16,000 feet altitude, where it covers large areas; introduced in 1820. The whole plant has a strong, aromatic, slightly acrid odor, especially when crushed. It is an interesting little plant and one of the hardiest of Himalayan species, but not in any way showy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 341.*)

39052. RHODODENDRON ARBOREUM Smith. Ericaceæ. **Rhododendron.**

"A tree which often attains a height of 25 feet, common on the temperate Himalayas from the Indus to Bhutan, at altitudes between 5,000 and 10,000 feet. It is frequent on the Khasi Hills, between 4,000 and 6,000 feet, and occurs also on the hills of southern India and Ceylon, very abundant in Manipur, and on the Kareen Hills in Burma. The leaves of the young trees are poisonous and are used medicinally for headaches. The flowers have a sweet-sour taste and are said to make a good subacid jelly. They are, in some parts of the Himalayas, eaten by the natives, who become intoxicated if they consume a large quantity. The wood is soft, reddish white or reddish brown in color, and even grained, and apt to warp and shrink. The wood is chiefly used for fuel and charcoal, but it is also sometimes employed for building and for making dishes." (*Watt, Dictionary of the Economic Products of India.*)

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"A small evergreen tree ultimately 30 to 40 feet high, with a thick, sturdy trunk, the branches forming a head as wide as the tree is high, and reaching to the ground. Leaves narrowly oblong, tapering at both ends, 4 to 7 inches long, 1 to 2 inches wide, smooth above, covered beneath with a coat of silvery scales; stalk one-half to 1 inch long. Flowers blood red, borne in a compact hemispherical head, 4 to 5 inches through, sitting close on the terminal whorl of leaves. Corolla bell shaped, 1½ to 2 inches across; stamens 10; calyx very small; flower stalk downy.

"Native of the outer Himalayas, where it is widely spread; introduced in 1817. This species is one of the most variable of all rhododendrons, but the form just described, with crimson flowers and silvery undersurface of the leaves, may be taken as the type." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 342.*)

39053. RHODODENDRON ARBOREUM CAMPBELLIAE (Hook. f.) Vilmorin and Bois. Ericaceæ. **Rhododendron.**

"Flowers purplish rose; leaf reddish beneath." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 342.*)

39054. RHODODENDRON ARBOREUM Smith. Ericaceæ. **Rhododendron.**

See S. P. I. No. 39052 for description.

39055. RHODODENDRON BARBATUM Wallich. Ericaceæ. **Rhododendron.**

"A tree met with in the temperate Himalayas from Kumaon to Bhutan, at altitudes between 8,000 and 12,000 feet. The wood is pinkish red in color and shining and of slow growth. It weighs about 39 pounds to the cubic foot." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub or small tree, the bark peeling from the branches and leaving them blue-gray and smooth; winter buds viscid; branches yellowish, sometimes smooth, sometimes bristly. Leaves in a terminal cluster, oblong, heart shaped at the base, terminated by a short, fine point, 4 to 9 inches long, 1 to 3 inches wide, dark dull green and smooth above, pale and usually smooth beneath; stalk one-half to 1 inch long, conspicuously bristly on the upper side and at the base of the midrib. Flowers densely packed in a hemispherical truss about 4 inches wide, blood red. Corolla bell shaped, 1½ inches across, five lobed; stamens 10; calyx with five smooth, ovate lobes, one-fourth inch long.

"Native of the Himalayas up to 12,000 feet, introduced about 1849. This rhododendron is hardy in a sheltered spot at Kew, where it flowers in April. It is somewhat gaunt of habit, but worth growing for its marvelous richness of color. It is, of course, much finer in Cornwall and similar places. There is some variation in the bristliness of the stems and leaves. In one form the young wood is furnished with bristles, and the leafstalk is bristly all round; bristles up to one-half inch long." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 344-345.*)

39056. RHODODENDRON CAMELLIAEFLOSUM Hook. f. Ericaceæ. **Rhododendron.**

"This rhododendron is a native of the Nepal and Sikkim Himalayas at elevations of 9,000 to 12,000 feet. It usually grows on the limbs of lofty trees, where its branches hang down and are several feet in length. In looser forests, where light and air are better distributed, it is found

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growing on the ground and rocks. The stems are 2 to 6 feet in length and are as thick as a goose quill. The leaves are 2 to 3 inches in length, spreading, very thick and coriaceous, deep green above, and very stout. The flowers are 1½ inches in diameter, white, and of a very thick texture." (*Curtis's Botanical Magazine*, pl. 4932.)

39057. RHODODENDRON CAMPANULATUM Don. Ericaceæ.

Rhododendron.

"This is a large shrub found in the inner Himalayas from Kashmir to Bhutan, at altitudes between 9,000 and 14,000 feet. It occurs also on the outer ranges of the Chor and Kedarkanta and is very abundant in Sikkim. The leaves of this species are exported to the plains, where they are ground up with tobacco and used as snuff, which is said to be useful in colds and hemicrania. The wood is light pinkish in color and moderately hard." (*Watt, Dictionary of the Economic Products of India*.)

"An evergreen shrub of stiff, spreading habit, 6 to 12 feet high, more in diameter; bark peeling; young shoots smooth. Leaves oval, 3 to 5½ inches long, 1½ to 2½ inches wide; abruptly tapering at the apex, tapering, rounded, or slightly heart shaped at the base, smooth above, densely covered beneath with a red-brown felt; stalk one-half to 1 inch long, often reddish. Flowers rosy purple of numerous shades, 2 inches across, produced during April in rather loose clusters about 4 inches wide. Corolla broadly bell shaped, with 5 notched lobes, the upper ones dark purple spotted; calyx downy, small and scarcely lobed; stamens 10, smooth or sometimes downy towards the base; flower stalk about 1 inch long.

"Native of the interior Himalayas of Sikkim and Nepal; introduced in 1825. This is perhaps the hardiest and most satisfactory of Himalayan rhododendrons near London, where it flowers regularly and profusely. In very cold weather (and it withstands uninjured 32 degrees of frost) its leaves roll themselves up tightly, giving the shrub a very curious aspect. It is very variable in the color of the flowers, which are sometimes quite pale, sometimes of a bright bluish purple, sometimes lilac; in the amount of felt at the back of the leaf; and in the color of the leaf scales that accompany the young bursting shoots, which are sometimes rich crimson, sometimes green." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 347.)

39058. RHODODENDRON CAMPYLOCARPUM Hook. f. Ericaceæ.

Rhododendron.

"This is a small bush 6 feet high, roundish in form, of a bright, cheerful green hue, which, when loaded with its inflorescences of surpassing delicacy and grace, claims precedence over its more gaudy congeners and has been regarded by some as the most charming of the Sikkim rhododendrons. The plant exhales a grateful honeyed flavor from its lovely bells, and a resinous sweet odor from the stipitate glands of the petiole, pedicels, calyx, and capsules." (*Curtis's Botanical Magazine*, pl. 4968.)

"An evergreen shrub, 4 to 8 feet high, of neat, bushy habit. Leaves 2½ to 4 inches long, half as wide, heart shaped or rounded at the base, the apex with a short, abrupt tip, upper surface dark glossy green, lower one vividly blue-white; stalk one-half to 1 inch long, thickly set with

38991 to 39101—Continued.

stalked glands when young. Flowers pale yellow, slightly fragrant, in loose terminal clusters of 6 to 8; corolla bell shaped, $2\frac{1}{2}$ to 3 inches across; lobes five, rounded; calyx scarcely one-quarter inch across, the five shallow lobes edged with dark, stalked, viscid glands; flower stalk about 1 inch long, and, like the ovary and base of style, glandular; stamens 10, downy at the base.

"Native of the Sikkim Himalayas at 12,000 feet. Although not one of the hardiest species, it has lived outside in the sheltered Rhododendron Dell at Kew for over 20 years with no other protection than the situation affords. It is at present the best of the larger species with yellow flowers (apart from Azalea) in cultivation, although the color, in some forms especially, is too pale and sulphurlike to give hopes of founding upon it a race of golden-flowered kinds. Perhaps the finest example of this rhododendron is in the Earl of Morney's garden at Whiteway, in Devonshire, which, some years ago, was 8 feet high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 348.*)

39059. RHODODENDRON CILIATUM Hook. f. Ericaceæ. Rhododendron.

"This species grows in the Sikkim Himalayas in the inner ranges only, in wet, rocky places, rarely in woods, at elevations ranging from 9,000 to 10,000 feet. It is a small, very rigid shrub, growing in clumps 2 feet high, generally in moist, rocky places. The odor of this plant is faintly resinous and pleasant, and resembles in some respects *R. barbatum*, but it is widely different in stature and habit." (*J. D. Hooker, The Rhododendrons of Sikkim-Himalaya, pl. 24.*)

"An evergreen shrub of stiff, wide-spreading habit, rarely more than 3 to 4 feet high out of doors near London, but 9 feet high and twice as much in diameter in Cornwall; young branchlets covered with bristly hairs. Leaves oval or obovate, tapering sometimes equally to both ends, sometimes more gradually toward the base, 2 to 4 inches long, three-fourths to $1\frac{1}{2}$ inches wide, bristly on the upper surface and on the margins, scaly beneath; stalk bristly, one-fourth to one-third inch long. Flowers beautiful rosy red in bud, pale pink on opening, becoming almost white with age, $2\frac{1}{2}$ inches across, produced three to five in a cluster during March and April; corolla widely bell shaped, with broad notched lobes; calyx lobes rounded ovate, bristly on the margins, stamens 10, hairy at the base, flower stalks one-half inch long, bristly.

"Native of Sikkim, introduced to Kew in 1850. It is hardy there, but really needs milder conditions to bring out its best qualities. In Mr. Shilson's garden at Tremough, near Falmouth, some years ago I saw a specimen of the larger dimensions given above. Near London it needs a very sheltered position, and in such a spot, although it grows slowly, it frequently gives a very charming display in April if the weather be kind." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 350.*)

39060. RHODODENDRON ROYLEI Hook. f. Ericaceæ. Rhododendron.
(*Rhododendron cinnabarinum* Hook. f.)

"This is a shrub which attains a height of 4 to 8 feet, met with on the eastern Himalayas at elevations of 10,000 to 12,000 feet. The leaves are universally considered poisonous to cattle and goats. It is employed as fuel, but the smoke causes the eyes to inflame and the face to swell." (*Watt, Dictionary of the Economic Products of India.*)

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"An evergreen shrub, 6 to 10 feet high, somewhat thin and sparse of habit, the branches long and slender, scaly when young. Leaves 2 to 4 inches long, three-fourths to 1½ inches broad, oval, tapering about equally to each end, smooth, and of a grayish green metallic luster above, scaly beneath, and varying in color from glaucous green to reddish brown; stalk one-third inch long. Flowers funnel shaped and, like those of *Lapageria*, 1½ to 2 inches long, very variable in color, ordinarily of a dull cinnabar red, produced during May and June, from five to eight in terminal heads. In other forms the corolla is orange red outside, yellowish within, sometimes greenish. Calyx with four short, broadish lobes and one longer narrow one, or sometimes with all five nearly equal, scaly. Stamens 10, scarcely so long as the corolla, hairy at the base; flower stalk one-third inch long, scaly.

"Native of Sikkim and Bhutan; introduced in 1849. This distinct and striking species is chiefly remarkable for the variability of the color of its flowers and the under surface of its leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 351.*)

39061. RHODODENDRON DALHOUSIAE Hook. f. Ericaceæ.

Rhododendron.

"Of all the Sikkim rhododendrons this is perhaps the one which has excited the greatest interest, partly from the great size and beauty of the fragrant flowers and partly from the peculiar place of growth, generally in its native localities among moss, with ferns and Aroideæ, and upon the limbs of large trees. This rhododendron is a native of East Nepal, Sikkim, and Bhutan at elevations of 6,000 to 9,000 feet. It is a straggling bush, 6 to 8 feet high; the stems are clothed with a reddish papery bark, and the branches are straggling in distant whorls, each branch bearing its leaves and flowers only at the extremity, three to five in number, very large and fragrant." (*Curtis's Botanical Magazine, pl. 4718.*)

39062. RHODODENDRON FALCONERI Hook. f. Ericaceæ. **Rhododendron.**

"A moderate-sized tree or frequently a gregarious shrub, abundant in the eastern Himalayas from east Nepal to Bhutan at altitudes between 9,000 and 13,000 feet. The wood is of a reddish white color and shining, with a satiny lustre, takes a beautiful polish, is hard, and does not warp. It is easily worked and is not apt to split. It is admirably adapted for use in the parched and arid climate of Tibet, and the Bhutias make from it cups and spoons and many other useful domestic articles." (*Watt, Dictionary of the Economic Products of India.*)

"A large shrub or a small tree, ultimately over 30 feet high, with stiff, very thick, somewhat sparse branches, woolly when young. Leaves oval or oblong, 6 to 12 inches long, 2½ to 6 inches wide (sometimes larger); very stout, thick, and strongly veined, the upper surface dark green, curiously wrinkled, but otherwise smooth, the lower surface covered with a dense, rust-colored felt; stalk 1 to 2 inches long. Flowers about 2 inches across, creamy white, shaded with lilac and marked with a conspicuous dark-purple blotch at the base, fragrant, produced in spring in large terminal clusters 6 to 9 inches across, the flowers tightly packed. Corolla bell shaped, 2 inches long, its lobes varying in number from eight to ten;

38991 to 39101—Continued.

calyx scarcely observable; stamens 12 to 16, shorter than the corolla; style about as long as the corolla, stout, and surmounted by the large knoblike stigma; flower stalk downy, 1 inch long.

"Native of the Himalayas; introduced about 1850. This is one of the noblest of all the genus, but not very hardy. After many trials it has been given up at Kew as hopeless, the plants lingering for years, but always in a miserable condition. Yet in the Duchess garden at Belvoir Castle there is a specimen about 16 feet high now in perfect health, although it suffered in the great frost of February, 1895. But this garden is elevated and is in the form of an amphitheater facing south, a very favorable position compared with low-lying, flat country. In the south coast gardens in Ireland and in Cornwall it is perfectly at home." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 354.)

39063. RHODODENDRON FULGENS Hook. f. Ericaceæ. **Rhododendron.**

"A small tree or large shrub of the Nepal and Sikkim Himalayas, found at altitudes of 10,000 to 14,000 feet. The wood is of a gray color, darker in the center, and moderately hard and even grained." (Watt, *Dictionary of the Economic Products of India.*)

"An evergreen shrub, 6 to 12 feet high, with stiff branches and peeling bark. Leaves oval, 3 to 4 inches long, 1½ to 2 inches wide, rounded at the end except for a short, abrupt tip, somewhat heart shaped at the base, covered beneath with a thick, reddish brown felt. Flowers blood red, 1 to 1½ inches across, densely packed in hemispherical trusses 3½ inches wide. Corolla bell shaped, with five shallow, notched lobes; calyx very small, shallowly lobed; stamens 10, much shorter than the corolla, not downy.

"Native of Nepal and Sikkim at 10,000 to 14,000 feet; introduced about 1849. This species is very similar to *R. campanulatum* in foliage, but is not quite so hardy nor so free in growth. Its flowers are the richest red of any hardy species except *R. thomsoni* (which is of quite a different type) and *R. barbatum*. They appear during March and April and provide a feast of color unequalled in cold districts so early in the year. A suitable spot for it is some sheltered outskirt of woodland, especially where the flowers may be protected from early morning sunlight. At Kew the various titmice are very fond of pecking a hole through the base of the corolla, presumably to get at the honey. An ornamental feature of the plant is the crimson bracts that accompany the young growth in the spring." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 357-358.)

39064. RHODODENDRON GRANDE Wight. Ericaceæ. **Rhododendron.**

"A tree frequent in the Sikkim and Bhutan Himalayas at altitudes of 7,000 to 11,000 feet. The wood is of a yellowish color with a darker heartwood, shining, soft, and even grained." (Watt, *Dictionary of the Economic Products of India.*)

39065. RHODODENDRON LANATUM Hook. f. Ericaceæ. **Rhododendron.**

"This species of rhododendron is found on the rocky spurs of the humid mountains and gullies of the Sikkim Himalayas at elevations of 10,000 to 12,000 feet. It is a large shrub or small tree, with the trunk 6 inches in diameter at the stoutest part, irregularly and repeatedly branching. The branches are much gnarled and bare of leaves, and are

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covered with a dark-colored rugged bark, very different from the prevailing beautiful papery clothing of the genus. The flowers are a pale sulphur color." (*J. D. Hooker, Rhododendrons of Sikkim-Himalaya.*)

39066. RHODODENDRON LEPIDOTUM Wallich. Ericaceæ. **Rhododendron.**

"A shrub found on the temperate and alpine Himalayas, from Kashmir to Bhutan at altitudes between 8,000 and 15,000 feet. The medicinal properties of this plant are similar to those of *R. anthopogon* [S. P. I. No. 39051]." (*Watt, Dictionary of the Economic Products of India.*)

"A low, evergreen, sometimes nearly deciduous shrub, usually 1 to 2 feet high in this country, but said to be 4 feet high in the Himalayas; young wood, leaves, leafstalk and flower stalks dotted thickly with minute scales. Leaves oblong, 1 to 1½ inches long, about one-half inch wide, only hairy on the margins when young. Flowers rosy crimson, produced singly or a few together during June, each about 1 inch across, flat and saucer shaped, and borne on a stalk 1 to 1½ inches long; corolla tube very short, lobes rounded. Stamens about 10, hairy toward the base, not protruded; calyx lobes one-eighth inch long, rounded.

"Native of the lofty interior ranges of the Nepal and Sikkim Himalayas, up to 16,000 feet altitude, and in Yunnan. It is hardy at Kew, and one of the most distinct and interesting of dwarf rhododendrons. Sir Joseph Hooker mentions varieties with golden-yellow flowers and greenish yellow flowers, which do not appear to be in cultivation. Seeds are frequently borne." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 366.*)

39067. RHODODENDRON SETOSUM Don. Ericaceæ. **Rhododendron.**

"A small and elegant shrub found in Sikkim and Nepal at altitudes between 13,000 and 16,000 feet. The natives attribute the oppression and headaches attending the crossing of the loftiest passes to the strongly resinous odour of this rhododendron. A useful volatile oil of no less marked character than that of the American *Gaultheria* might probably be obtained from the foliage by distillation." (*Watt, Dictionary of the Economic Products of India.*)

"A dwarf evergreen shrub, 6 to 12 inches high, of close, bushy habit; young shoots densely clothed with pale bristles and minute down. Leaves oblong, tapered at the base, rounded at the apex, three-eighths to five-eighths inch long, bristly on the margins, very scaly above, rather glaucous and less scaly beneath. Flowers 3 to 8 in a terminal cluster; corolla 1 inch across, reddish purple, lobed to two-thirds of its depth; calyx comparatively large, scaly and downy, with five ovate lobes one-fourth inch long; stamens hairy at the base; flower stalk scaly, slender, one-fourth inch long.

"Native of the Himalayas up to 16,000 feet. The plant is very distinct in its bristly character and strong resinous odor. Introduced in 1825, this curious alpine species is now very rare. It thrives well in the Edinburgh Botanic Garden, but in the South misses its winter covering of snow and is often excited into growth too early." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 378-379.*)

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39068. RHODODENDRON WIGHTII Hook. f. Ericaceæ. **Rhododendron.**

"This species has very handsome trusses of large, pale yellow flowers. It is very rare in collections, although it has been in cultivation in this country for many years. It is found growing abundantly in woody valleys in the Himalayas and on the spurs of all the mountains at an elevation of 12,000 to 14,000 feet." (*Gardener's Chronicle*, May 31, 1913.)

"An evergreen shrub of bushy habit, and up to 10 feet high, with very leathery, dark-green leaves, 6 to 8 inches, sometimes more, long, 2½ to 3 inches wide, covered beneath with a reddish brown felt. Flowers bell shaped, pale yellow, blotched on the upper side with crimson, about 1½ inches across, the five lobes shallow, notched, and reflexed. Calyx lobes five, shallow, broadly triangular, and, like the flower stalk, which is 1½ inches long, hairy; stamens 10, shorter than the corolla, downy at the base; ovary clothed with a white felt; style smooth, much longer than the stamens.

"Native of the Himalayas up to 14,000 feet; very rare in cultivation, but existing in the open ground in Miss A. Mangles's collection at Littleworth, near Farnham, also at Kew (under glass). It is a rhododendron of great beauty and distinctness in its pale yellow flowers, which are borne as many as 20 together in rather loose heads." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 385-386.)

39069. RUBUS sp. Rosaceæ.**39070. SALIX TETRASPERMA** Roxburgh. Salicaceæ. **Willow.**

"This species is found in the mountains of India growing at altitudes of 2,000 to 7,000 feet. This thick-stemmed willow is worthy of a place on banks of watercourses. The twigs can be worked into baskets, the wood serves for gunpowder, and the foliage for cattle fodder." (*Mueller, Select Extra-Tropical Plants*, p. 488.)

39071. SALIX sp. Salicaceæ.**Willow.****39072. SAUSSUREA DELTOIDEA** (DC.) C. B. Clarke. Asteraceæ.

Distribution.—A composite growing 8 feet tall with panicles of large, purple flowers, found in the central and eastern Himalayas from Garwhal to Bhutan, in northern India, at an altitude of 6,000 to 11,000 feet.

39073. SAUSSUREA sp. Asteraceæ.**39074. SAXIFRAGA PURPURASCENS** Hook. f. and Thoms. Saxifragaceæ.**Saxifrage.**

"This beautiful and hardy species comes from the temperate regions of the Sikkim Himalayas, where it was discovered growing in wet places at an elevation of 10,000 to 14,000 feet. Though closely allied to the Himalayan *S. ligulata* and the Siberian *S. crassifolia*, it is extremely different from and far more beautiful than any of these species. Nothing, indeed, can exceed the bright glossy green of the leaves, which are elegantly margined with red, or the deep, bright, vinous red-purple of its scape and inflorescence." (*Curtis's Botanical Magazine*, pl. 5066.)

39075. SEDUM ASIATICUM (Don) Sprengel. Crassulaceæ.

"This species of *Sedum*, which is a native of the Himalayas, is cultivated in Europe and possibly in America. It reaches a height of 6 to 12

38991 to 39101—Continued.

inches, but seems to suffer from the wetness of an ordinary border in winter and should probably be wintered under glass. The leaves are opposite, linear, coarsely and irregularly toothed. The flowers, which occur in compact, globose cymes, are yellow in color and make their appearance in summer. In India it is said to have red flowers." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

39076. *SEDUM ROSEUM* (L.) Scopoli. Crassulaceæ.

"This Sedum is a neat-growing plant, suitable for rockeries or the front rows of borders. It reaches a height of 8 to 10 inches, the leaves are scattered and oblong, the flowers are greenish purple, in a terminal flat-topped cyme 1 inch across. This species of Sedum may be found growing in Europe, North America, and the Himalayas." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

39077. *SELINUM TENUIFOLIUM* Wallich. Apiaceæ.

"A hardy perennial herb with finely cut, fernlike foliage, and a stem about 8 feet high, branched, with numerous umbels of white flowers. The ultimate segments of leaves are narrowly lanceolate and acute. This plant was offered as a novelty in America in 1899 and later recommended as a foliage plant for single lawn specimens." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

39078. *SENECIO UNCINELLUS* DC. Asteraceæ.

(*Senecio densiflorus* Wall.)

Distribution.—A yellow-flowered shrubby sneezewort with white-woolly leaves, found on the lower slopes of the central and western Himalayas and on the Khasi Hills in India.

39079. *SENECIO RAPHANIFOLIUS* Wall. Asteraceæ.

(*Senecio densiflorus* Wall.)

Distribution.—A yellow-flowered herbaceous perennial of the aster family with lyrate-pinnatifid leaves and red pappus on the fruiting heads, found on the slopes of the central and eastern Himalayas in northern India at an altitude of 10,000 to 14,000 feet.

39080. *SENECIO SCANDENS* Buch.-Ham. Asteraceæ.

A woody climbing plant reaching a height of several yards, with slender, somewhat hairy branches. The leaves are rather small, grayish green, short stemmed, lance-elliptic and acute, with small triangular teeth on the margins, and are either simple or have 2 or 3 leaflets at the base. The yellow flower heads, about three-fourths of an inch wide, occur in lax terminal corymbs. The home of this species is in the Himalayas and in China. It should not be confused with the commonly cultivated *S. scandens* Hort., which is *S. mikanioides* Otto. (Adapted from *Bulletin of Miscellaneous Information, Royal Gardens, Kew, Appendix III, 1910, p. 82.*)

39081. *SENECIO* sp. Asteraceæ.

39082. *SORBUS INSIGNIS* (Hook. f.) Hedl. Malaceæ.

(*Pyrus insignis* Hook. f.)

Distribution.—A small tree, one of the most beautiful of the whole genus, found on the slopes of the Sikkim Himalayas at an altitude of 8,000 to 11,000 feet.

38991 to 39101—Continued.

39083. *POUPARTIA AXILLARIS* (Roxb.) King and Prain. Anacardiaceæ.
(*Poupartia fordii* Hemsl.)

39084. *STEPHANIA ROTUNDA* Lour. Menispermaceæ.

Distribution.—A climbing shrub with peltate leaves and umbels of small berries, found on the tropical and temperate slopes of the Himalayas in India, and in Siam and Cochin China.

"*Cu-mot-tu-nhien*. Twining shrubby stem, very long, unarmed, glabrous; leaves peltate, trigonal, rounded, pointed, glabrous, alternate, petioled; flowers dioecious, in compound lateral umbels; male flowers, calyx with six subacute spreading sepals, corolla none; the andrœcium is represented at maturity by a cylindrical column at the top of which is found a circular disk, bordered by an anther, unique in appearance, opening by a marginal, horizontal, and continuous fissure; female flower; calyx with one lateral sepal, corolla with two lateral petals; ovary unilocular, 1-ovuled; berry small, oval, monospermous. The large, rounded, wrinkled, tuberous root of rusty color, with filiform rootlets, is extremely bitter and tonic." (*Lanessan, Les Plantes Utiles des Colonies Françaises.*)

39085. *THALICTRUM FOLIOLOSUM* DC. Ranunculaceæ.

"This is an erect rigid shrub found in the temperate Himalayas at altitudes between 5,000 and 8,000 feet and in the Khasi Hills at 4,000 and 6,000 feet. The root of this plant is used in the preparation of various medicines for ague and as a tonic in convalescence from acute diseases. The root of this species contains a large quantity of berberine that is so combined as to be readily soluble in water." (*Watt, Dictionary of the Economic Products of India.*)

39086. *TRACHYDIUM OBTUSIUSCULUM* (DC.) C. B. Clarke. Apiaceæ.

Distribution.—An herbaceous perennial related to the parsnip, growing a foot high on the Sikkim Himalayas in northern India, at an elevation of 11,000 to 13,000 feet.

39087 to 39092. (Undetermined.)

39093. *OXYSPORA PANICULATA* (Don) DC.

39094. *HYMENODICTYON EXCELSUM* (Roxb.) Wallich.

39095. *VENTILAGO* sp.

39096. *MORUS* sp.

39097 to 39100. (Undetermined.)

39101. *STACHYS SERICEA* Wallich. Menthaceæ.

An erect herb, 2 to 4 feet in height, with usually simple stems; oblong, sharply toothed or crenate leaves; and purple-spotted pink flowers crowded in axillary whorls, forming more or less interrupted, long, terminal spikes. The plant is covered with long, silky hairs.

Distribution.—Western Asia to northern India.

39102 to 39141.

From Darjiling, India. Presented by Mr. G. N. Cave, Lloyd Botanic Gardens, through Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture.

39102. *AESCULUS ASSAMICUS* Griffith. *Æsculaceæ*.
(*Aesculus punduana* Wall.)

"This is a moderate-sized deciduous tree, found in northern Bengal, in the Khasi Hills, Assam, and Burma, ascending to 4,000 feet. The leaflets are five to seven, shortly petioled. Panicles narrowly lanceolate, nearly equaling the leaves, lower pedicels longer. Petals white and yellow. The wood is white, soft, and close grained, but very rarely used. It weighs about 36 pounds per cubic foot." (*Watt, Dictionary of the Economic Products of India.*)

39103. *ALBIZZIA ODORATISSIMA* (L. f.) Benth. *Mimosaceæ*.

For previous introduction and description, see S. P. I. No. 38996.

39104. *ALBIZZIA CHINENSIS* (Osbeck) Merrill. *Mimosaceæ*.
(*Albizzia stipulata* Boiv.)

"A large deciduous, fast-growing tree, met with in the subalpine tract from the Indus eastward, ascending to 4,000 feet in Oudh, Bengal, Burma, and South India. This tree is attracting considerable attention in Assam. It has been found that tea flourishes better under it than when exposed to the sun. The most favorable explanation of this fact is that the leaves manure the soil; the roots, which do not penetrate deep, tend to open up the soil, while the shade is not so severe as to injure the tea, the leaves closing at night and during the early morning. The gum which flows copiously from the stem is used by the Nepalese for sizing their 'Daphne' paper. The sapwood of this tree is large and white, while the heartwood is brown and generally not durable. The wood is used in the manufacture of cart wheels, wooden bells, and in Bengal it has been tried for tea boxes, for which purposes it will probably be well suited." (*Watt, Dictionary of the Economic Products of India.*)

39105. *BERBERIS NEPALENSIS* (DC.) Spreng. *Berberidaceæ*. **Barberry.**

"A shrub or small tree with large or small leaves, common on the outer Himalayas, from the Ravi eastward to the Khasi and Naga Hills, at altitudes above 5,000 feet. A yellow dye is extracted from this plant by the Bhutias and Nagas, but used only to a small extent. The wood, which has a handsome yellow color, is hard and might be used for inlaying." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, sometimes 20 feet high in the Himalayas, but rarely more than one-third as high in Britain. Leaves with as many as 25 leaflets, usually about 15. Leaflets dark, glossy green, obliquely ovate, lanceolate, $1\frac{1}{2}$ to $4\frac{1}{2}$ inches long, the lowest pair broader and shorter than the others, spine-toothed, of firm leathery texture. Flowers yellow, borne in slender racemes 6 to 12 inches long. Berries oval or nearly globose, about one-fourth inch in diameter, covered with blue-white bloom.

"Native of the Himalayas, this barberry is too tender to thrive well except in the milder parts of Britain or in exceptionally sheltered spots. At Kew it lives but a short time out of doors, although it has succeeded well in a sheltered spot in the gardens of Belvoir Castle for a good many

39102 to 39141—Continued.

years. It has by some authorities been united with *B. japonica*, but is sufficiently distinguished by its more numerous, smaller, even-sized, and more tapering leaflets and the brilliantly polished upper surface. For the milder counties it is a most desirable shrub, commencing to flower as early as October, but at its best in March and April. Several forms of it exist, some of which approach *B. japonica*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 245.*)

39106. *CORYLUS FEROX* Wallich. Betulaceæ.

"This is a small tree, native of Nepal and Sikkim, found growing at altitudes ranging from 8,000 to 10,000 feet. The fruit, which has an edible kernel, is covered with a prickly cup. The wood is pinkish white in color, moderately hard and even grained." (*Watt, Dictionary of the Economic Products of India.*)

39107. *CRACCA CANDIDA* (DC.) Kuntze. Fabaceæ.

(*Tephrosia candida* DC.)

This species, which is a close relation of *Tephrosia purpurea*, is a shrub which attains a height of about 10 or 11 feet. It makes a great deal of soft growth and covers the ground well. This shrub has been very well reported on in the east and in various parts of the West Indies. A characteristic feature is its long tap root. (Adapted from *Bulletin of the Trinidad Agricultural Society, August 12, 1912*, and *Hooker, Flora of British India.*)

39108. *DICENTRA THALICTRIFOLIA* (Wall.) Hook. f. and Thoms. Papaveraceæ.

"This species of *Dicentra* is a native of the temperate Himalayas and may be found growing from Nepal to Bhutan at elevations of from 4,000 to 8,000 feet and in the Khasi Hills at 5,000 feet. This plant is very similar to *D. scandens* and probably not specifically distinct, but the capsule is broader, three-fourths of an inch long, thick, fleshy, and very tardily dehiscent. The style is stouter and the seeds finely granulate near the hilum and coarsely so on the back. It is common in Sikkim, and the pods are drier and most dehiscent at higher elevations." (*Hooker, Flora of British India, vol. 1, p. 121.*)

39109. *DILLENIA PENTAGYNA* Roxb. Dilleniaceæ.

"A deciduous tree of Oudh, Bengal, Assam, Central, South and Western India, and Burma. In the younger trees the leaves are sometimes as much as 2 feet in length and the flowers, buds, and fruit, when green, are eaten by the natives. The tree flowers in March and April and later produces a berry which is said to have an agreeable acid flavor resembling that of *Grewia asiatica*. The wood is tough, moderately hard, and of a reddish gray color. The wood is used in the construction of ships, rice mills, and in the manufacture of charcoal, which is of very good quality. The leaves of this tree are sold in the bazaar at Poona as a substratum for thatching." (*Watt, Dictionary of the Economic Products of India.*)

39110. *ELAEOCARPUS SIKKIMENSIS* Mast. Elaeocarpaceæ.

"A tree native of the eastern Himalayas and found growing at Sikkim and Assam at elevations of about 5,000 feet. The leaves are glabrous, 8 inches long and 3 inches wide. The racemes are erect, half the length of the leaves, and the pedicels are thinly pilose. The flowers are about

39102 to 39141—Continued.

one-half inch in diameter, and the petals are cuneate and slightly silky at the back." (*Hooker, Flora of British India, vol. 1, p. 402.*)

39111. *ERIOBOTRYA PETIOLATA* Hook. f. Malaceæ.

"This plant is a native of the eastern Himalayas and is found growing in Sikkim and Bhutan at elevations of 5,000 to 9,000 feet. The leaves are firmly coriaceous and vary from 6 to 9 inches in length and 3 to 3½ inches in width. The panicles are from 3 to 6 inches in length and broad, branched from the base, very spreading and clothed with a rusty tomentum, as are the very young leaves on both surfaces. The flowers are one-half inch in diameter, shortly pediceled and not crowded." (*Hooker, Flora of British India, vol. 2, p. 370.*)

May possibly have some value as a stock for the loquat.

39112. *ERYTHRINA ARBORESCENS* Roxb. Fabaceæ.

"This is a small, moderate-sized tree, found in the outer Himalayas from the Ganges to Bhutan up to 7,000 feet in the Khasi Hills. This species is chiefly remarkable for brilliantly colored flowers. The wood is soft and slightly spongy." (*Watt, Dictionary of the Economic Products of India.*)

39113. *FICUS BENGALENSIS* Linn. Moraceæ.

Banyan tree.

"A large tree found in the subalpine tract and lower slopes of the Deccan and is so common in Mysore that it may be said to be characteristic of the arboreal vegetation in many parts of that province. This tree attains a height of 70 to 100 feet and sends down roots from its branches, thus indefinitely expanding its horizontal growth. This tree yields an inferior rubber, and lac is also collected from it. A coarse rope is prepared from the bark and the aerial roots. Paper is also reported to have formerly been prepared in Assam from the bark and to a small extent is still so prepared in Madras. The milky juice is externally applied for pain and bruises and as an anodyne application to the soles of the feet when cracked or inflamed. It is also applied to the teeth and gums as a remedy for toothache. The wood is of a grayish color, is moderately hard, and as it is durable under water it is used in the manufacture of well curbs. It is sometimes used for boxes and door panels." (*Watt, Dictionary of the Economic Products of India.*)

39114. *FICUS HOOKERI* Miquel. Moraceæ.

A tree occasionally found in the Sikkim Himalayas and the Khasi Hills at altitudes ranging from 1,000 to 6,000 feet. The leaves are thinly coriaceous, long petioled, broadly elliptic or subobovate, with a short, broad, obtuse, entire cusp. The base is rounded or slightly narrowed, 3-nerved, receptacles in axillary pairs. The large basal bracts are united in an entire cartilaginous cup which envelops the lower third of the ripe receptacle. (Adapted from *Hooker, Flora of British India, vol. 5, p. 505*)

39115. *FRAXINUS FLORIBUNDA* Wallich. Oleaceæ.

Ash.

"This is a large deciduous tree found growing in the Himalayas from the Indus to Sikkim, between 5,000 and 8,500 feet. A concrete, saccharine exudation called manna is obtained from the stem of this tree and is employed as a substitute for the officinal manna. The sugar contained in this exudation, called mannite, differs from cane and grape sugar in not being readily fermentable, though under certain conditions it does ferment and

39102 to 39141—Continued.

yields a quantity of alcohol varying in strength from 13 to 33 per cent. Like the officinal manna, this is used for its sweetening and slightly laxative properties. The wood is white with a reddish tinge, soft to moderately hard in structure, resembling in some respects the European ash. This tree is very valuable and is used in the manufacture of oars, jampan poles, ploughs, platters, spinning wheels, and for many other purposes." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. No. 39014 for previous introduction and description.

39116. GYNURA NEPALENSIS DC. Asteraceæ.

"A tall, handsome species, native of the temperate Himalayas from Kumaon to Bhutan at altitudes ranging from 2,000 to 5,000 feet and in the Martaban Mountains near Maulmein at altitudes of 4,000 to 5,000 feet. The lower portion of the stem is as thick as the little finger, and the leaves are 3 to 7 inches in length, acuminate, usually irregular, coarsely toothed, and broadly pubescent on both surfaces." (*Hooker, Flora of British India, vol. 3, p. 337.*)

39117. HYPERICUM OBLONGIFOLIUM Choisy. Hypericaceæ.
(*Hypericum cernuum* Roxb.)

"A glabrous shrub, 3 to 6 feet in height, native of the western temperate Himalayas from Kumaon to Sikkim at altitudes ranging from 5,000 to 7,000 feet. The branches of this species are cylindrical in form, glaucous when young, and the leaves, which are minutely dotted, are sessile and range from 1 to 3 inches in length. The cymes are 3 to 5 flowered and terminal, while the flowers are 2 inches in diameter, at first white, then gradually turning to yellow." (*Hooker, Flora of British India, vol. 1, p. 253.*)

39118. HYPERICUM PATULUM Thunb. Hypericaceæ.

"This is a small, glabrous shrub found growing throughout the temperate Himalayas from Bhutan to Chamba and in the Khasi Hills. The scented seeds of this species are employed as an aromatic stimulant in Patna, to which place they are exported from Nepal." (*Watt, Dictionary of the Economic Products of India.*)

"A dwarf shrub in this country [England], but said to grow as high as 6 feet in Japan and the Himalayas. Leaves 1 to 2½ inches long, ovate, deep green above, glaucous beneath. Flowers 2 inches across, borne in a cyme at the end of the shoot; petals bright golden yellow, overlapping, roundish; sepals broadly ovate, one-third inch long. Stamens in five bundles.

"Introduced to Kew from Japan by Oldham in 1862; a native of China and the Himalayas. The type is not absolutely hardy, and almost always has its stems cut back to ground level during the winter. These spring up again the following season from 1 to 2 feet high, and flower from July to October. After a few years the shoots are apt to become more and more weakly and it becomes necessary to renew the stock from cuttings. The only species with which it can be confounded are *H. hookerianum*, from which it differs in the branchlets being two-edged, especially just beneath the flowers; *H. lysimachioides*, which has narrow, linear-lanceolate sepals; and *H. uralum*, with flowers half the size." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 639.*)

39102 to 39141—Continued.

39119. *INDIGOFERA DOSUA* Hamilton. Fabaceæ.

"This is a shrub of the temperate, central, and eastern Himalayas from Simla to Bhutan and Assam at altitudes ranging from 6,000 to 8,000 feet. The flowers of this *Indigofera* are said to be eaten in Kangra as a potherb. This species is prized as fodder for sheep and goats, and buffaloes are also said to be very fond of it." (*Watt, Dictionary of the Economic Products of India.*)

39120. *JASMINUM HUMILE* Linn. Oleaceæ.

Jasmine.

"A small, erect, rigid shrub, native of the subtropical Himalayas from Kashmir to Nepal, at altitudes of 2,000 to 5,000 feet; found also in South India and Ceylon, from 2,000 to 6,000 feet. It is widely cultivated throughout the gardens in India. In the Kuram Valley a yellow dye is extracted from the roots, and it is curious that this fact should be unknown to the hill tribes in India, where the plant is equally abundant. A dyestuff, much used in Chittagong under the name of *juri* may, however, possibly be derived from this jasmine. Like many other jasmynes, this species bears flowers which yield an aromatic essential oil used in native perfumery. The milky juice which exudes on an incision in the bark of this plant is alleged to have the power of destroying the unhealthy lining walls of chronic sinuses and fistulas." (*Watt, Dictionary of the Economic Products of India.*)

"It is a dwarf plant with nearly always ternate leaves and one to four flowers on a stalk. It was cultivated by Capt. Tradescant in 1656, but being rather tender and not so ornamental as either *revolutum* or *wallichianum*, has probably disappeared from cultivation. It used to be known as *Italian jasmine*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 662.*)

39121. *LAUROCERASUS ACUMINATA* (Wall.) Roemer. Amygdalaceæ.

(*Prunus acuminata* Hook. f.)

Cherry.

Distribution.—An evergreen cherry 30 to 40 feet high with drooping racemes of yellowish white flowers, found on the temperate slopes of the Himalayas from Nepal to Sikkim in northern India at an altitude of 5,000 to 7,000 feet.

39122. *MALLOTUS NEPALENSIS* Muell. Arg. Euphorbiaceæ.

"This is a small tree of the central and eastern part of the Himalayas from Nepal to Sikkim and may be found growing at altitudes ranging from 5,000 to 7,000 feet and in the Khasi Hills at from 4,000 to 5,000 feet. The wood is white and soft and makes growth moderately fast, five rings to the inch radius." (*Watt, Dictionary of the Economic Products of India.*)

39123. *MEIBOMIA FLORIBUNDA* (G. Don) Kuntze. Fabaceæ.

(*Desmodium floribundum* G. Don.)

Distribution.—A shrubby legume with trifoliolate leaves and copious racemes of large pink flowers, found on the tropical and temperate slopes of the Himalayas up to an elevation of 7,000 feet and in the Khasi Hills in India.

39124. *MEIBOMIA TILIAEFOLIA* (G. Don) Kuntze. Fabaceæ.

(*Desmodium tiliaefolium* G. Don.)

"A large deciduous shrub of the Himalayas from the Indus to Nepal, found growing at elevations of from 3,000 to 9,000 feet. It is also said

39102 to 39141—Continued.

to be met with in Tavoy. The bark of this tree yields an excellent fiber which is extensively employed in rope making and in many parts of the Himalayas it is used for the manufacture of paper. The roots are considered carminative, tonic, and diuretic and are also used in cases of bilious complaints. The wood is of a yellowish brown color with a dark center. The leaves afford a useful fodder." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. No. 39023 for previous introduction and description.

39125. MICHELIA CATHCARTII Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood is a dark olive brown and moderately hard. The wood of this species is used for planking and would do well for tea boxes." (*Watt, Dictionary of the Economic Products of India.*)

39126. OSBECKIA STELLATA Don. Melastomaceæ.

"One of the 29 species of melastomaceous plants which are found in the Indian peninsula. They are mostly herbs, sometimes shrubs, and are worth cultivating on account of their beautiful flowers; otherwise they are of little economic value. This species is a small shrub, native of the eastern Himalayas and the Khasi Hills at altitudes ranging from 4,000 to 8,000 feet, common about Darjiling. The wood is light brown and moderately hard." (*Watt, Dictionary of the Economic Products of India.*)

39127. PIERIS VILLOSA Hook. f. Ericaceæ.

"This is a small tree resembling *P. ovalifolia* in leaves, flowers, and fruits. It is a native of the alpine Himalayas at altitudes ranging from 9,000 to 10,000 feet. The leaves are hardly more villous beneath than in some forms of *P. ovalifolia*. The calyx teeth are very narrow downwards, only shortly connate; the corolla is rather wider, but not definitely separated by the absence of horns at the apex of the filament." (*Hooker, Flora of British India, vol. 3, p. 461.*)

39128. PIPTANTHUS NEPALENSIS (Hook.) Sweet. Fabaceæ.

See S. P. I. No. 39043 for description.

39129. PITTOSPOBUM FLORIBUNDUM Wight and Arnott. Pittosporaceæ.

"A small tree found in the subtropical Himalayas, from Sikkim to Garhwal, ascending to 5,000 feet on the hills. The medicinal virtues and utilization of this plant have recently been brought to light. The bark is bitter and aromatic and is said by the natives to possess narcotic properties. The plant contains an aromatic resin, yellow in color and having very tenacious properties. The wood is light colored, strong and tough, but of small size." (*Watt, Dictionary of the Economic Products of India.*)

39130. RUBUS NIVEUS Thunb. Rosaceæ.

Raspberry.

"This is a large, rambling, very valuable plant met with in the temperate Himalayas, from Kashmir to Sikkim, at altitudes between 5,000 and 10,000 feet, and also on the Khasi Hills, in the western peninsula,

39102 to 39141—Continued.

on the higher Ghats from Kanara southward, in Burma and Ceylon. The fruit, which is red, orange, or of a glaucous blue-black color, is somewhat dry, but very palatable. Large quantities are imported into the bazaars of the hill stations for sale to Europeans. The fruit of this species is similar in flavor to the common English blackberry, but vastly superior and its cultivation might be rendered very productive. The use of this species as a hedge plant is also recommended." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. Nos. 32453 and 38574 for previous introductions.

39131. RUBUS PEDUNCULOSUS Don. Rosaceæ. **Raspberry.**
(*Rubus niveus* Wall.)

"A large, rambling shrub met with in the temperate Himalayas, from Kashmir to Bhutan, at altitudes between 6,000 and 10,000 feet on the west, and 5,000 to 11,000 feet on the east. This species yields a fruit which is very succulent and pleasantly tasted. It is yellowish or reddish brown in color." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. No. 38575 for previous introduction.

39132. RUBUS PANICULATUS Smith. Rosaceæ. **Raspberry.**

"A very rambling climber, which has all the parts, except the upper surface of the leaves, covered with a dense tomentum. It is found in the temperate Himalayas from Hazara to Sikkim, at altitudes between 3,000 and 8,000 feet, and in the Khasi Mountains between 4,000 and 5,000 feet. The fruit consists of numerous large, round, black drupes and is edible but insipid in flavor. The wood is soft and porous with very large medullary rays." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. Nos. 23870 and 38576 for previous introductions.

39133. SORBUS CUSPIDATA (Spach) Hedlund. Malaceæ.
(*Pyrus vestita* Wall.)

"A deciduous tree which is a native of the eastern Himalayas and may be found growing from Garhwal to Sikkim at altitudes between 9,000 and 10,000 feet. The fruit is edible and is sometimes used as food." (*Watt, Dictionary of the Economic Products of India.*)

"A deciduous tree of large size in a wild state, but rarely seen more than 35 feet high under cultivation. The habit is rather gaunt; branches few, thick, covered when young with a white wool, which afterwards falls away, leaving the shoots of a smooth, purplish brown. Leaves oval or ovate, 5 to 7 (sometimes 9) inches long by 2½ to 5 inches wide, the margins toothed, sometimes doubly so or slightly lobed; upper surface covered at first with a white cobweblike down, but soon becoming smooth, lower surface covered with a persistent thick felt, at first white or yellowish white, becoming grey later; nerves parallel, in 10 to 17 pairs; stalk one-third to 1 inch long. Flowers white, five-eighths inch across, produced in late May or early June in substantial corymbs 2 to 3 inches wide; petals woolly within; stalks and calyx very woolly.

"Native of the Himalayas, introduced in 1820, and the most striking in its foliage of all the whitebeam group. Although nearly a century has elapsed since it was first brought into cultivation, very few specimens of

39102 to 39141—Continued.

large size exist in this country [England]. The largest of these which I know is at Buckland St. Mary, Chard, which a few years ago was nearly 40 feet high. It grows well for some years, and then suddenly and without any apparent reason, sometimes in the middle of the summer, will droop and die." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 299, under Pyrus vestita.*)

39134. *SORBUS INSIGNIS* (Hook. f.) Hedl. Malaceæ.
(*Pyrus insignis* Hook. f.)

"A small, very robust tree, native of the Sikkim Himalayas at altitudes ranging from 8,000 to 11,000 feet. The branchlets are nearly as thick as the little finger, and the bud scales are rigid, chestnut brown in color and shining. The younger parts are clothed with long, rather silky, rusty brown wool, while the older parts are glabrous." (*Hooker, Flora of British India, vol. 2, p. 377.*)

39135. *SORBUS MICROPHYLLA* Wenzig. Malaceæ.
(*Pyrus microphylla* Wall.)

"This *Pyrus*, which is a native of the temperate Himalayas at altitudes of 10,000 to 14,000 feet, is possibly only a form or young state of *P. foliolosa* or *aucuparia*, but a very much more slender, subsucculent plant with more deeply serrate leaflets. The Sikkim variety of this plant has red flowers, and the fruits are white or pale blue in color." (*Hooker, Flora of British India, vol. 2, p. 376.*)

39136. *POUPARTIA AXILLARIS* (Roxb.) King and Prain. Anacardiaceæ.
(*Poupartia fordii* Hemsl.)

"This is a rather common tree at low altitudes in western Hupeh and in Szechwan, and is chiefly confined to the valleys. It grows from 15 to 25 meters tall and the trunk is often a meter in diameter near the base. The branches are massive and form an oval or rounded head; the bark is grey, deeply fissured and persistent; the leaves are deciduous. The flowers are polygamodiœcious; the male and female flowers are borne in many-flowered panicles which spring from the axils of scales and also from the axils of the lower leaves. The hermaphrodite flowers are much larger than the unisexual flowers, and are borne in short racemes which are commonly 1-flowered by abortion and never more than 3 or 4 flowered. The leafy shoots bearing panicles of unisexual flowers look very much like branches of *Rhus succedanea* L. The fruit of this tree is yellow, oval, from 2.5 to 3 cm. long, rounded on the summit. It is eaten by the Chinese. The vernacular name is 'Hsuan tsao.'" (*Sargent, Plantae Wilsonianae, vol. 2, p. 172-173, under Spondias axillaris.*)

39137. *STYRAX HOOKERI* Clarke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (*Watt, Dictionary of the Economic Products of India.*)

39138. *SYMPLOCOS THEAEFOLIA* Don. Symplocaceæ.

"An erect tree of the eastern Himalayas, from Nepal to Bhutan, occurring at altitudes between 4,000 and 6,000 feet. It is also common in

39102 to 39141—Continued.

the Khasi Hills and in Martaban. The leaves of this species are used as an auxiliary in dyeing with *Morinda tinctoria* and *lac*. The wood is white and soft and is used for fuel and for rough house posts." (*Watt, Dictionary of the Economic Products of India.*)

39139. TALAUMA HODGSONI Hook. f. and Thoms. Magnoliaceæ.

"One of the 15 species of Magnoliaceæ which are distributed throughout the Tropics of eastern Asia, Japan, and South America. This species is a native of India and may be found in the forests of the Sikkim Himalayas and the Khasi Hills at elevations ranging from 4,000 to 5,000 feet. The wood is very soft and even grained, and weighs about 21 pounds per cubic foot." (*Watt, Dictionary of the Economic Products of India.*)

39140. TRACHYCARPUS MARTIANA (Wall.) Wendl. Phœnicaceæ. Palm.

See S. P. I. No. 38739 for previous introduction.

39141. VACCINIUM GLAUCO-ALBUM Hook. f. Vacciniaceæ.

Distribution.—A shrub with large white persistent bracts under the pinkish flowers which are borne in dense racemes, found on the slopes of the Himalayas at an altitude of 7,500 to 10,000 feet, from Sikkim to Bhutan, in northern India.

"An evergreen shrub, 2 to 4 feet high; young stems smooth. Leaves stiff and hard in texture, oval or ovate, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, five-eighths to $1\frac{1}{4}$ inches wide; pointed, with bristlelike teeth on the margins, green and smooth above, of a vivid blue-white and slightly bristly on the mid-rib beneath. Racemes slightly downy, 2 to 3 inches long, produced from the leaf axils and conspicuous for their large, persistent, blue-white bracts, edged with bristles. Corolla pinkish white, one-fourth inch long, cylindrical; calyx smooth, shallowly lobed. Berries one-third inch in diameter, globose, black, covered with blue-white bloom.

"Native of the Himalayas at 9,000 to 10,000 feet altitude, only hardy in the milder parts of the kingdom. It is remarkable for the vivid blue-white bloom on the fruit, bracts, and under surface of the leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 626.*)

39142. COUMAROUNA ODORATA Aublet. Fabaceæ. Tonka bean.
(*Dipteryx odorata* Willd.)

From La Guayra, Venezuela. Presented by Mr. Thomas W. Voetter, American consul, who received them from the consular agent at Ciudad Bolivar. Received August 5, 1914.

For previous introduction and description, see S. P. I. No. 35904.

39143. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

From Johannesburg, Transvaal, Union of South Africa. Presented by Mr. J. Burt Davy. Received July 30, 1914.

"Known as *imboomba* among the Zulus and grown by them for food. It is said to be a rank grower and prolific bearer; the 49 seeds were taken from 3 pods. It is grown down the coast as far as Pondoland, and should prove useful in Florida and elsewhere in the Gulf States." (*Davy.*)

39144. MACADAMIA TERNIFOLIA Mueller. Proteaceæ.**Queensland nut.**

From Sydney, Australia. Purchased from Anderson & Co. Received at the Plant Introduction Field Station, Chico, Cal., August 4, 1914.

For description see S. P. I. No. 18382.

For illustrations of the tree, foliage, and flowers of the Queensland nut, see Plates VI and VII.

39145. MALUS SYLVESTRIS Miller. Malaceæ.**Apple.**

From Sophia, Bulgaria. Presented by Mr. Alaricus Delmard. Received August 11, 1914.

"Scions of the apples which have been found immune from *Schizoneura lanuginosa*. Dr. Lambreff informs me that he has experimented with these in orchards infested with that blight, and that while the other varieties all suffered, these have remained immune." (*Delmard*.)

39146. AMORPHOPHALLUS GIGANTEUS Blume. Araceæ.

From Medan, Deli, Sumatra. Presented by Mr. L. P. De Bussy. Received August 11, 1914.

Distribution.—An herbaceous perennial which sends up from a large bulb an enormous pinnatifid leaf and a purplish spathe 9 inches long surrounding a white spadix, which is followed by a large red fruit; found in Java and Borneo.

39147. GOSSYPIUM BARBADENSE L. Malvaceæ.**Cotton.**

From Lima, Peru. Presented by Mr. A. Martin Lynch. Received July 1, 1914.

"*Mit Affl* cotton."

39148. ORYZA SATIVA L. Poaceæ.**Rice.**

From Lima, Peru. Presented by Mr. A. Martin Lynch. Received July 30, 1914.

"Rice seed called *Carolina* in the northern part of Peru, and cultivated in the valley of Pacasmayo and Lambayeque." (*Lynch*.)

39149 to 39151. HORDEUM VULGARE L. Poaceæ.**Peruvian barley.**

From Peru. Presented by Mr. William W. Handley, American consul general, Callao, Peru. Received August 5, 1914. Quoted notes by Mr. Handley.

39149. "Peruvian barley grown in the southern district of Arequipa, Peru."

39150. "Peruvian barley grown in the southern district of Cuzco, Peru."

39151. "Peruvian barley grown in the southern district of Juliaca, Peru."

39152 and 39153.

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914. Quoted notes by Mr. Reed.

39152 and 39153—Continued. (Quoted notes by Mr. H. R. Reed.)

39152. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

"Spanish *Zarraceno* or *Candeal*. Grown in Cagayan Province. Introduced into the Philippines 50 years ago. Is planted at the end of the rainy season; is grown on highlands and matures in 90 days."

Candeal is recognized in Argentina, where it is commonly grown, as a variety of *T. durum* Desf. This number, however, is *T. aestivum* L.

39153. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

"A plant 3 to 9 feet high, flowers large, yellow. Is cultivated for ornamental purposes and grows wild in the Philippines. Samples of fiber were sent to cotton firms in the United States, and comments were very favorable."

39154. BAMBOS sp. Poaceæ. **Bamboo.**

From Burma, India. Presented by Rev. Robert Harper, American Baptist Mission, Pynmana. Received August 8, 1914.

"The bamboo from which I gathered the seeds was not very large, but it was tall and graceful. Several bunches were in seed, but I collected the best bunches." (*Harper.*)

39155. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Mount Coffee, Liberia, Africa. Presented by Mr. Henry O. Stewart. Received August 18, 1914.

39156. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914.

39157. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Stockholm, Sweden. Presented by Mr. Ernest L. Harris, American consul general. Received August 19, 1914.

"Alfalfa seed in this country is called *Blå Lucerne* or *Medicago sativa*. I have been informed that the same is imported from Germany, but that the actual country of origin is Hungary. Alfalfa is grown in Sweden, but the seed does not ripen. While still green it is cut and used as fodder or for mixing with other animal feeds." (*Harris.*)

39158 to 39162. ZEA MAYS L. Poaceæ. **Corn.**

From Yachowfu, China. Presented by Dr. Edgar T. Shields, West China Baptist Mission, who received them from Mr. Yoh Peh Yin, Lusan, near Yachow. Quoted notes by Dr. Shields.

39158. "No. 1. Yellow corn, planted about April 5, or may be planted 10 days earlier or later. They reckon that this is the very best variety for feeding cattle. The country people make corn cakes of the meal, mixing the same with boiling water and afterwards either baking or steaming the cake. They say that cakes made of this variety of corn digest more slowly than any of the other kinds, but the flavor of the cake is good. This corn ripens in about 100 days after planting. They plant from three to five grains in a hill, afterwards thinning it out to two stalks."



FOLIAGE AND FLOWERS OF THE QUEENSLAND NUT (*MACADAMIA TERNIFOLIA* MUELLER),
AS GROWN IN FLORIDA. (SEE S. P. I. NO. 39144.)

The leaves are evergreen and of a thick, tough character, giving the tree an attractive appearance.
(Photographed, natural size, by Wilson Popenoe, Miami, Fla., April 18, 1915; P16345FS.)



SPATHODEA CAMPANULATA BEAUV., A STRIKINGLY HANDSOME ORNAMENTAL TREE FOR FLORIDA. (SEE S. P. I. No. 39222.)

This tall, straight tree from western tropical Africa has succeeded remarkably well in India and Java as a shade tree. Originally brought from Jamaica by Mr. W. J. Matheson, it is now the largest specimen in the United States. With its large, bright orange-red flowers produced at the tips of the branches, it is very ornamental and conspicuous at a distance. (Photographed by Wilson Popenoe, at Four Way Lodge, the residence of Mr. Matheson, Coconut Grove, Fla., April 15, 1916; P16716FS.)

39158 to 39162—Continued. (Quoted notes by Dr. E. T. Shields.)

39159. "No. 2. White corn, planted about April 5. It has a finer taste and digests easier than No. 1."

39160. "No. 3. Red corn, planted about April 5. The taste resembles that of the yellow or No. 1 [S. P. I. No. 39158]. This is the best variety for making their whisky, which is a very intoxicating drink. Whisky is also made from No. 1, but this is the variety most used."

39161. "No. 4. Red and yellow striped. The same as No. 1, except for the color."

39162. "No. 6. White corn. This variety is to be planted 10 to 15 days later than the other varieties (which are planted about April 5). The taste is very good, and the corn is very gelatinous."

39163. NICOTIANA TABACUM L. Solanaceæ. Tobacco.

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914.

"A variety of tobacco commonly grown in Cagayan Valley. Plants grow 4 feet high, leaves large." (Reed.)

39164. PERSEA AMERICANA Miller. Lauraceæ. Avocado.
(*Persea gratissima* Gaertn. f.)

From Tumbala, Chiapas, Mexico. Presented by Mr. Stanford N. Moreson. Received August 26, 1914.

39165. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie. Received August 26, 1914.

"*Quacsofoca*. The standard fodder cane grown here for stock food purposes and known as the Indian cane. Amongst other seedlings tested for this purpose we have secured one that from all points is an improvement upon the old standard. I am sending some cuttings which you will be able later on to distribute to some of your Southern States. We have found it here of superior value from the standpoints of food value, softness, hardness against low temperatures, and weight per acre. It is a prodigious yielder." (Corrie.)

39166 and 39167. PENNISETUM spp. Poaceæ.

From Salisbury, Rhodesia. Presented by the Department of Agriculture. Received August 24, 1914.

39166. PENNISETUM SCHIMPERI Richard. Napier's fodder grass.

39167. PENNISETUM MACROURUM Trinius. M'fufu grass.

Distribution.—A perennial grass growing 3 feet or more high in the central and coast region of South Africa.

39168 and 39169.

From Sibpur, Calcutta, India. Presented by the superintendent, Royal Botanic Gardens. Received August 24, 1914.

39168. MEROPE ANGULATA (Willd.) Swingle. Rutaceæ.
(*Citrus angulatus* Willd.)

"A curious and as yet little known salt-resistant plant related to Citrus, of interest for trial as a stock. A small spiny tree bearing curious

39168 and 39169—Continued.

angular fruits and growing in the tidal swamps in southern Java; leaves coriaceous, thick, 3 to 5 by 1 to 1½ inches, borne on simple petioles; flowers white, 5 parted with 10 free stamens, pistil projecting beyond the stamens; fruits triangular, 1 to 2 inches long, in cross section approximately an equilateral triangle three-fourths to 1 inch on a side. This peculiar thick-leaved plant thrives in saline soils and is being tested as a stock for other citrus fruits by the U. S. Department of Agriculture." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2038.*)

39169. RUBUS ELLIPTICUS Smith. Rosaceæ.

Raspberry.

See S. P. I. No. 33342 for previous introduction.

39170 to 39172.

From Donga, Northern Nigeria, Africa. Presented by Rev. C. L. Whitman, Sudan United Mission, London, E. C., England. Received August 11, 1914. Quoted notes by Mr. Whitman.

39170. HOLCUS SORGHUM L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"Guinea corn. It is usually planted in May and harvested in December."

39171. SESAMUM ORIENTALE L. Pedaliaceæ.

Sesame.

(*Sesamum indicum* L.)

"Benise seed. This has a much shorter season than the guinea corn and is planted at various times. It is grown mostly by the Munshi tribe and is sold by them to the English trading firms. Only a very little is used for food."

39172. GOSSYPIUM sp. Malvaceæ.

Cotton.

39173. PERSEA AMERICANA Miller. Lauraceæ.

Avocado.

(*Persea gratissima* Gaertn. f.)

From Lumija, Chiapas, Mexico. Presented by Mrs. H. H. Markley. Received August 28, 1914.

"These are slightly pear shaped, 5 to 6 inches long and 10 inches in circumference at the largest part. The skin is very thin, tree a prolific bearer, growing 40 or more feet, symmetrical in shape, like a well-formed oak. Our temperature ranges from 70° to 100° F." (*Mrs. Markley.*)

39174. DIOSPYROS MACROPHYLLA Blume. Diospyraceæ.

Persimmon.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received August 31, 1914.

See S. P. I. No. 30521 for previous introduction.

"A tree 60 feet high, with dark terete branches. Leaves alternate, oval or oval oblong, acuminate at apex, rounded or subcordate at base, thinly coriaceous, nearly glabrescent below, with clear, slender, arching lateral veins, glabrous above, 3 to 10 inches long by 1½ to 4½ inches wide; petioles one-sixth to one-fourth inch long. Male flowers axillary, paniculate, one-fourth inch long, pubescent; panicles many flowered, 1 to 1½ inches long, ultimate pedicels mostly short. Calyx shortly 3 to 5 fid, globose urceolate, three-sixteenths inch long, lobes deltoid; corolla silky outside, ovoid in bud, shortly five lobed, tube very

39174—Continued.

crass and hard; stamens 12, unequal, in pairs, glabrous. Female cymes few flowered, short, calyx four to five fid, hairy on both sides, accrescent in fruit; fruit tomentose, subglobose, 1 inch or more in diameter.

"Java, in mountainous places, Blume. Local name, *Kitjallung*." (*Hiern, Monograph of the Ebenaceæ, p. 237, 1873.*)

39175. PRUNUS AVIUM L. Amygdalaceæ. Cherry.

From Rome, Italy. Presented by Dr. Gustav Eisen. Received August 24, 1914.

"*Marasca grossa di Firenze*, probably a seedling from *Marasca di Piedmonte*. Very large, dark brownish black, flesh very firm, very slightly adhering to the stone, which, however, separates readily. Subacid, sweet, and slightly astringent. Fine shipper. Suitable both for table and preserves. This cherry is larger than any I have seen in California, and, in my opinion, it is of exceptional qualities." (*Eisen.*)

39176. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. Wampi.
(*Clausena wampi* Oliver.)

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received August 22, 1914.

See S. P. I. Nos. 25546 and 31730 for previous introductions, and 38708 for description.

39177. CHLORIS VIRGATA Swartz. Poaceæ. Australian Rhodes grass.

From Burringbar P. O., New South Wales. Presented by Mr. B. Harrison. Received August 26, 1914.

Var. *decora*.

"This grass is a rapid grower and a heavy yielder of nutritious fodder. It attains the height of 3 and 4 feet, is relished by stock, and will retain its verdure when other grasses are dried up, and if cut before seeding makes palatable hay. According to analysis, it is one of the richest grasses we possess, either imported or indigenous. It is only quite recently that it has come into prominence, principally through the favorable reports from Queensland, where it is said to have succeeded wonderfully in clay-pan, wind-swept, and sun-scorched country where other grasses were difficult to establish. It is, however, a native of this State also, having been identified in 1904, and it will probably succeed even with a lighter rainfall and under more adverse conditions than the imported species (*C. gayana* and *virgata*) which have a great reputation as drought resisters. The seed is very light, is carried some distance by the wind, and the grass spreads rapidly." (*Harrison.*)

39178. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ. Bamboo.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden, at the request of Mr. J. L. Rock, Division of Forestry, Honolulu, Hawaii. Received August 27, 1914.

"It is a large bamboo that flowers sporadically and also gregariously. It occurs in the northeast Himalayas, Assam, the Khasi Hills, Sylhet, and

39178—Continued.

Upper Burma, and is distributed westward to the Sutlej, though beyond Nepal it is doubtfully indigenous. The culms run from 40 to as much as 80 feet in height and from 4 to 6 inches in diameter; the nodes are marked with root scars, the internodes are 12 to 20 inches in length and the walls half an inch thick. It is the common bamboo of Darjiling, the Duars, and Assam, and is universally employed for all kinds of basket and mat work. For building purposes it is not much esteemed. The young shoots are eaten as a vegetable, and in Assam a specially prepared substance known as *gass-tenga* is eaten as a luxury. The inner layer of the culm sheath is utilized for covering Burmese cigarettes. Referring to its straggling habit, Mr. Oliver says: 'When they have no trees to support them, the main stems bend over, forming impenetrable thickets, and the lateral branches ascend vertically, often forming shoots nearly as long as the main stems.' Mr. Manson alludes to the value of this species to the tea planters of the Darjiling district in shading their plantations from hot and violent winds." (*Watt, Commercial Products of India.*)

39179. PHYSALIS PERUVIANA L. Solanaceæ. Cape-gooseberry.

From Tolga via Cairns, Australia. Presented by Mr. J. A. Hamilton. Received August 25, 1914.

39180 and 39181. RUBUS sp. Rosaceæ.

From Srinagar, Kashmir, India. Presented by the director, Department of Agriculture. Received August 26, 1914.

39182 and 39183. MADHUCA spp. Sapotaceæ. Mahwa.

From Sibpur, Calcutta, India. Presented by the superintendent, Royal Botanic Gardens. Received August 24, 1914.

"It may be said that there are two great products of these trees [formerly known as *Bassia latifolia*, *B. longifolia*, and *B. malabarica*], the edible flowers and the oil-bearing seeds. A gum or gutta (the milky sap hardened) flows from incisions or abrasions on the stem. In some parts of the country ringing of the stem is practiced just on the setting of the fruits. When this is done the gum may be obtained in abundance. The bark is employed as a dye. The flowers, the oil, the spirits distilled from the flowers, and the bark are all used medicinally. Lastly the timber has some merit, but the trees, as a rule, are too valuable to allow their being killed for this purpose. The mahua [mahwa] shows its leaves from February to April. The cream-colored flowers appear in great clusters (of 30 to 50) near the ends of the branches, from March to April, and are soon followed by the young leaves. Preparatory to the harvest of flowers, the people clear the ground below the trees by burning the weeds and smoothing the soil. About March the flowers begin to come to maturity, and every morning just after sunrise the succulent corolla tubes fall in showers to the ground. This continues till the end of April, each tree yielding from 2 to 4 maunds (2½ to 5 bushels) of flowers, but usually the fall from a single tree is complete in about 7 to 10 days. A drying floor is prepared in a position central to a selected batch of trees. The ground is smoothed and beaten; on this the flowers as collected day by day are spread out to dry in the sun. In a few days they shrink in size, change in color to a reddish brown, and their peculiar sweet smell becomes more concentrated and the resemblance to that of *mice* more intense. But the mahua that is intended for sale is not

39182 and 39183—Continued.

dried to the same extent as that set apart for home consumption, and naturally so, since the loss in weight is considerable. But mahua is eaten extensively while fresh. In the dried form it is cooked and eaten along with rice and other grains or food materials. Before being eaten the dry corolla tubes are beaten with a stick to expel the stamens; the quantity required is then boiled for six hours or so and left to simmer until the water has been entirely evaporated and the mahua produced in a soft, juicy condition. Tamarind or sal (*Shorea robusta*) seeds and gram (chick-pea) are frequently eaten along with mahua. By the better classes it is fried with ghi (butter) or with mahua oil. It is extremely sweet, but the power to eat and digest this form of food is an acquired one, so that few Europeans are able to consume more than one flower without having disagreeable after effects. Sometimes the mahua is dried completely, reduced to a powder, and mixed with other articles of food. In that condition it is often baked into cakes. Sugar may also be prepared from the flowers, or they may be distilled and a wholesome spirit prepared, the chief objection to which is its peculiar penetrating smell of mice. Nicholls estimated that in the Central Provinces, 1,400,000 persons use mahua as a regular article of food, each person consuming one maund (1½ bushels) per annum, an amount that would set free about 1½ maunds of grain, or about 30 per cent of the food necessities of the people in question. This, the lowest estimate, comes to one quarter of a million pounds sterling which the trees present annually to these Provinces." (*Watt, Commercial Products of India*, which see for discussion of the spirit manufacture and the use and manufacture of oil and butter from the seeds.)

39182. MADHUCA INDICA Gmelin.
(*Bassia latifolia* Roxb.)

Distribution.—A tree 50 feet tall found throughout central India at an altitude of 1,000 to 4,000 feet.

39183. MADHUCA LONGIFOLIA (L.) Coville.
(*Bassia longifolia* L.)

Distribution.—A tree 50 feet tall found in Malabar and in Ceylon.

39184. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanical Station. Received August 12, 1914.

39185 and 39186.

From Asmara, Eritrea, Africa. Presented by the director, Government of the colony of Eritrea, Government Office, Bureau of Colonization. Received August 24, 1914.

39185. JUNIPERUS PROCERA Hochst. Pinaceæ. **East African cedar.**
See S. P. I. Nos. 22775 and 27505 for previous introductions and description.

"A tree attaining in Eritrea from 20 to 25 meters in height and 1 meter in diameter, with oval, open head; bark cracked into long narrow plates, boughs cylindrical. Leaves scalelike, small, in four series, semi-oval or lengthened linear in the same plant. Flowers diœcious. Fruit globose ovoid or depressed globose, 5 to 7 mm. in diameter, bluish black and pruinose at maturity. Wood with yellowish white sapwood,

39185 and 39186—Continued.

very distinct from the heartwood, which is colored dark red, odor very strongly aromatic, characteristic. This wood, compact, with fine grain and susceptible of beautiful polish, is largely used for the manufacture of furniture, doorframes, for beams which resist decay, and for the manufacture of pencils. For this last use Schweinfurth has found it superior to the American species, but so far as I know no experiments have been made. . . . The indestructibility of this wood is such that it resists intact the dissolving action of the atmospheric agents, of insects, and of fungi, even after several years, since the tree has been cut, fallen, and left in the forest." (*Adriano Fiori, Boschi e Piante legnose del l'Eritrea.*)

39186. ROSA ABYSSINICA R. Br. Rosaceæ.

Rose.

Distribution.—A white-flowered climbing rose, probably a form of the musk rose (*R. moschata* Miller), found in Abyssinia.

39187. RUBUS ROSAEFOLIUS Smith. Rosaceæ.

Raspberry.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received August 31, 1914.

"Seeds of our yellow-fruited Rubus. This variety is very scarce, probably because they are generally planted together with the common red variety with which it becomes cross-fertilized very easily, and the red predominates. I should therefore advise you to have these planted at a good distance from the red variety. The sowing of the yellow variety should be made in a rich soil and the plants cultivated in sheltered deep soil in the shade and well watered when in want of rain. The Rubus grows naturally by roots." (*Regnard.*)

39188 to 39190.

From Mayaguez, Porto Rico. Presented by Mr. W. E. Hess, plant propagator, Porto Rico Agricultural Experiment Station. Received August 29, 1914. Quoted notes by Mr. Hess.

39188. ACRISTA MONTICOLA Cook. Phœnicaceæ.

Palm.

"*Palma de Sierra.* The mountain palm of Porto Rico covers many mountain slopes, especially in the eastern part of the island between 2,000 and 3,000 feet above sea level. It apparently thrives in this very humid, cool atmosphere and usually forms a clear stand. This palm greatly resembles *Areca bauerii*, grown to a great extent as a decorative palm in greenhouses, and young plants of *Acrista* are equally attractive. The bud of the mountain palm furnishes a good cabbage, but is not as sweet as those of the royal palm. Its black fruits are the size of a cherry and are relished by hogs."

39189. AERIA ATTENUATA Cook. Phœnicaceæ.

Llume palm.

"The tallest of Porto Rico palms, reaching a height of 60 to 100 feet. Its foliage resembles the royal palm, but is shorter; the trunk never exceeds 6 to 8 inches in diameter. This palm is found only on limestone hills and usually feeds upon nothing but the humus collected in the cracks of these rocks. The large bunches of orange-red berries, which are the size of a small cherry, are very attractive and are fed to chickens and hogs."

39188 to 39190—Continued. (Quoted note by Mr. W. E. Hess.)**39190.** *CALATHEA LUTEA* (Aubl.) G. F. W. Meyer. Marantaceæ.**Pampano.**

"This is one of our finest native foliage plants, attaining a height of 10 to 12 feet; its dark-green leaf blades are oblong, round at the apex, 4 to 5 feet long, and 2 to 3 feet wide. The under side is covered with a blue powder. The graceful curved veins give a characteristic appearance. This plant likes rich soil and plenty of moisture. Planted with bananas and other foliage plants near a pond it will rival in beauty any of its neighbors."

39191. *SALIX* sp. Salicaceæ.**Willow.**

From Semipalatinsk, Siberia. Presented by Prof. N. E. Hansen, South Dakota Agricultural Experiment Station, Brookings, S. Dak.

"Cuttings from small trees I found growing along the creek about 80 miles southwest of Semipalatinsk. This is a very dry region with 8 inches of annual rainfall and the temperature ranging from 50° F. below zero in winter to 106° above in summer. The remarkable characteristic about this willow is that the young shoots can be tied into knots without breaking, so it should be a good basket willow and good for tying bundles of nursery stock." (*Hansen.*)

39192. *HORDEUM VULGARE* L. Poaceæ.**Barley.**

From Tripoli, Libya, Africa. Presented by Dr. F. Franceschi, Florence, Italy. Received September 3, 1914.

"A local variety, of which there is considerable export to Germany and England for beer factories; *Sxir* in Tripolino, *Orze* in Italiano." (*Franceschi.*)

39193. *TRITICUM AESTIVUM* L. Poaceæ. **Rivett's Red wheat.**(*Triticum vulgare* Vill.)

From Coggeshall, Essex, England. Presented by John K. King & Sons. Received September 2, 1914.

"Pedigree stock of Rivett's Red wheat."

39194. *ZIZIPHUS JUJUBA* Miller. Rhamnaceæ.**Jujube.**(*Ziziphus sativa* Gaertn.)

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received August 24, 1914.

"(Sample 119b. Peking, China. June 22, 1914.) A very large-fruited variety of jujube, passing under the trade name of *Hsiang tsao*, or 'rattling jujube,' referring to the fact that the seeds rattle when shaken. Officially known as *Ta yuan tsao*, or 'big round jujube.' These jujubes come from the vicinity of Paihsiangchen, southwestern Shansi; they are a rare delicacy in Peking, selling for 30 cents (Mexican) per catty. They are eaten stewed with sugar or honey as a compote with rice and also boiled in rice, the same as western people use prunes. Soaking in water over night improves their delicacy of flavor. Scions sent under No. 1140 [S. P. I. No. 38243]." (*Meyer.*)

39195. *PELARGONIUM* sp. Geraniaceæ.**Geranium.**

From Genoa, Italy. Presented by Mr. John E. Jones, American consul general. Received August 21, 1914.

"Cuttings of a new Pelargonium." (*Jones.*)

39196. BALANITES MAUGHAMII Sprague. Zygophyllaceæ.

From Swaziland, Africa. Presented by Mr. J. Burt Davy, botanist, Agricultural Supply Association, Johannesburg, Transvaal, Union of South Africa. Received September 1, 1914.

"The seed is considered a valuable oil seed in those parts of the country in which it grows; that is to say, at altitudes below 1,500 feet in the subtropical belt, but with a comparatively low rainfall, probably not more than 15 inches, this coming during the summer season. The tree is a handsome one, though not very large, and should be useful in Florida." (*Davy.*)

"This species of *Balanites* is a native of Portuguese East Africa and may be found growing in the Lebombo Mountains, the Madanda Forest, and by the Umbeluzi and Rovuma Rivers. It is a tree which reaches a height of about 50 feet, with irregular-shaped bole up to 1½ feet in diameter. According to the report of the Imperial Institute, the fruits of *Balanites maughamii* seem unlikely to be of economic value for export, owing to the difficulty of removing the external sugary pulp and extracting the kernel from the thick, fibrous shell in which it is inclosed, but may, however, be of considerable importance for local consumption. The oil obtained from these kernels is clear, yellow, and liquid, possessing no marked smell or taste and having the following constants: Specific gravity, 0.916; saponification value, 198.5; iodine value, 100. The oil, if produced on a commercial scale, would probably realize the current price of refined cottonseed oil, but it is thought that the difficulties mentioned above would prevent its production on a large scale. Judging from the localities where this species is known to occur, it might be expected to do well in tropical and subtropical countries with a well-marked dry season. It would not be advisable to plant it on a large scale, however, until a satisfactory method of extracting the kernel has been devised." (*Kew Bulletin of Miscellaneous Information, 1913, No. 4, p. 136.*)

39197. AMARANTHUS GANGETICUS L. Amaranthaceæ. Amaranth.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received September 4, 1914.

"Var. *tristis*. *Lal-sag*, a vegetable that we use here during our hot season; it should be sown in the summer, as it will not stand cold." (*Hartless.*)

39198. LUPINUS PILOSUS Murray. Fabaceæ. Lupine.

From Kymbila, German East Africa. Presented by Mr. Ad. Stolz. Received August 31, 1914.

"African lupine growing wild on sandy soil." (*Stolz.*)

Distribution.—An annual lupine with digitate leaves and large blue flowers, found in the countries bordering on the Mediterranean from Greece to Palestine.

39199 to 39218. ORYZA SATIVA L. Poaceæ. Rice.

From Buitenzorg, Java. Presented by the Botanic Gardens. Received September 8, 1914.

39199. *Berod.*

39200. *Pelak.*

39201. *Pandan.*

39202. *Glindoeran.*

39203. *Kawoeng.*

39204. *Balidjembel.*

39205. *Dyalen.*

39206. *Laradjawi.*

39199 to 39218—Continued.

39207. <i>Mamas.</i>	39213. <i>Molok.</i>
39208. <i>Kowel.</i>	39214. <i>Solo.</i>
39209. <i>Menoer.</i>	39215. <i>Rogol.</i>
39210. <i>Carolina.</i>	39216. <i>Walen.</i>
39211. <i>Baök.</i>	39217. <i>Osog.</i>
39212. <i>Sarilata.</i>	39218. <i>Gonde.</i>

39219 to 39222.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Cuban Agricultural Station, Santiago de las Vegas, Cuba. Received September 10, 1914. Quoted notes by Mr. Roig.

39219. *COPERNICIA GLABRESCENS* Wendland. Phœnicaceæ. Hat palm.

"Seeds of one of the Cuban hat palms called *yarey*, collected at San Juan de la Palma, Guantanamo, Oriente, Cuba. It is used mostly for thatching."

39220. *PERESKIA PORTULACIFOLIA* (L.) Haworth. Cactaceæ.

From Noraliche, Guantanamo, Oriente, Cuba.

39221. *STERCULIA CARTHAGINENSIS* Cavanilles. Sterculiaceæ.

Anacahuita.

"The most popular tree at Guantanamo. From the flowers a decoction is made against cough. The seeds are toasted and eaten like peanuts."

Distribution.—Tropical America, extending from southern Mexico to Brazil and naturalized in the West Indies.

39222. *SPATHODEA CAMPANULATA* Beauv. Bignoniaceæ.

From Santiago de las Vegas, Cuba.

See S. P. I. Nos. 9007 and 31953 for previous introductions and description.

For an illustration of this handsome ornamental tree, see Plate VIII.

39223 to 39226. *PASSIFLORA MALIFORMIS* L. Passifloraceæ.

Passion fruit.

From Bogota, Colombia. Presented by Mr. F. L. Rockwood, clerk of the legation. Received September 11, 1914. Quoted notes by Mr. Rockwood.

"In my opinion, the yellow *kuruba* will be a valuable addition to table fruits in the United States, for it grows in a fresh, cool climate, and it is the main market fruit of that class here. The red *kuruba* is not common, and the families that have it think it is the best, but it is not a prolific bearer and not so hardy. The indio [S. P. I. No. 38882], the yellow, and the red are all more or less of one family. A climbing vine, it covers walls, outhouses, and small buildings with evergreen, continually bearing fruit. The flowers are very handsome, and it is thought to be more or less a passion flower and fruit. The surroundings and conditions have turned it into a market fruit."

39223. "Yellow *kuruba*."

39224. "Native yellow *kuruba* of the finest quality."

39225. "The red *kuruba* is the most nearly perfect in both fruit and flower and is difficult to obtain. It is highly prized by families for decoration and table use and is not to be found on the market."

39226. "Red *kuruba*." See S. P. I. No. 39225.

39927. TRITICUM DICOCCUM Schrank. Poaceæ. Emmer.

From Bombay, India. Presented by Mr. Henry D. Baker, American consul, who secured it from Mr. Frank Harrison, Bombay. Received September 11, 1914.

"Seeds of wild Kathiawar wheat, which is supposed to be the original parent of all wheats in the world, from the district of Kathiawar, on the west coast of India, north of Bombay, and in the Bombay Presidency." (*Baker.*)

"This wheat grows wild in Kathiawar, a very dry tract on the west coast of India, north of Bombay. It is said that all wheats in existence can be traced back to this stock and that it spread from India westward via Chaldea (Mesopotamia) and Egypt thousands of years ago. Natives who eat this wheat declare it is more palatable and has a better food value than any of the modern varieties grown in India. It has great drought-resisting properties and should do well in the arid tracts of the Southern States of America. Natives collect this wheat in the jungle and separate it from the straw by treading, i. e. cattle are made to walk over it in a circle until the grain is separated from the straw. They then pass the grain through hand querns, in order to get rid of the chaff, or husk, which is very thick. We find, however, that a rice huller manufactured by an American firm will hull it in a most satisfactory manner." (*Harrison.*)

"A variety of white spring emmer, such as is commonly grown in our North-western States. It is interesting, however, to have the opinion of the natives concerning it." (*M. A. Carleton.*)

39228 to 39260. ZEA MAYS L. Poaceæ. Corn.

From Copacabana, Peru. Presented by Capt. James W. Tynan, Puno, Peru. Received September 15, 1914.

39228. Dark red.	39243. Red and white variegated.
39229. Red.	39244. Light variegated.
39230. Yellow.	39245. Dark red and yellow variegated.
39231. Yellow.	39246. White.
39232. Red and white banded.	39247. Maroon and white banded.
39233. Red and white variegated.	39248. Faint yellow.
39234. Yellow.	39249. Yellow and gray.
39235. White.	39250. Red and white banded.
39236. Orange endosperm.	39251. Yellow.
39237. Maroon and white banded.	39252. Red.
39238. Yellow.	39253. Maroon.
39239. Cream.	39254. Orange and yellow.
39240. Mottled yellow and black.	39255. Red pericarp.
39241. Blue and white aleurone.	39256. Cream.
39242. Cream.	39257. Light yellow.
	39258. Red and yellow variegated.
	39259. Dark yellow.
	39260. Cream.

39261. PHYLLANTHUS ACIDA (L.) Skeels. Euphorbiaceæ.

(*Phyllanthus distichus* Muell. Arg.)

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received September 17, 1914.

39261—Continued.

"*Grosella*. Grows on a tree 13 feet high and 4 or 5 inches in diameter, the branches beginning about 6 feet from the ground. The fruit grows from the branches direct, in small clusters, entirely separated from the leaf branch. The berry is prized very highly for jams and jellies." (*Goding.*)

For illustrations of the habit, fruit, and foliage of this tree as grown in Florida, see Plates IX and X.

39262. SACCHARUM OFFICINARUM × CILIARE. Poaceæ.

Sugar cane.

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, superintendent, Harvard Botanical Station.

"Cuttings of a hybrid cane, the result of a cross between our field sugar cane *Saccharum officinarum* L. ♀ and *Saccharum ciliare* ♂ (S. P. I. No. 17991.) In carrying on my hand hybridizing work (1909) among the canes I found *S. ciliare* in flower and used the pollen on one of my seedling varieties of *S. officinarum*, which resulted in the present cross. To be sure, it has no commercial value, as it contains but little sugar, but it may be of interest to know that the species will cross-fertilize." (*Grey.*)

39263. ALLIUM CEPA L. Liliaceæ.

Onion.

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul. Received September 19, 1914.

39264 to 39286.

From Buitenzorg, Java. Presented by Mr. T. E. Van der Stok, Chief of the Station for Selection of Annual Crops, Botanic Garden. Received September 8, 1914. Quoted notes by Mr. Van der Stok.

39264 to 39282. HOLCUS SORGHUM L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"Generally growing in the mountains on a very small scale."

- | | |
|---|--|
| 39264. <i>Gandroeng keu-peul.</i> | 39273. <i>Gandroeng goeweup.</i> |
| 39265. <i>Tjantel.</i> | 39274. <i>Gandroeng.</i> |
| 39266. <i>Tjantel oetjir.</i> | 39275. <i>Gandroeng sekoel.</i> |
| 39267. <i>Gandroeng.</i> | 39276. <i>Tjantel.</i> |
| 39268. <i>Gandroeng tarigoe or Padimekah.</i> | 39277. <i>Gandroeng titinggi.</i> |
| 39269. <i>Gandroeng djebrag.</i> | 39278. <i>Gandroeng boerajot.</i> |
| 39270. <i>Gandroeng tjinde.</i> | 39279. <i>Gandroeng beureum.</i> |
| 39271. <i>Tjantel item.</i> | 39280. <i>Gandroeng degem.</i> |
| 39272. <i>Tjantel tjondro.</i> | 39281. <i>Gandroeng djabag.</i> |
| | 39282. <i>Gandroeng koempaj beureum.</i> |

39283 to 39285. CHAETOCHLOA ITALICA (L.) Scribner. Poaceæ. Millet.
(*Setaria italica* Beauv.)

"Generally growing in the mountains on a very small scale."

- | | |
|--|--------------------------------------|
| 39283. <i>Koenjit boentoet koetjing.</i> | |
| 39284. <i>Djawaowoet.</i> | 39285. <i>Koenjit ramo koetjing.</i> |

39264 to 39286—Continued. (Quoted note by Mr. T. E. Van der Stok.)

39286. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

"*Handjeli*. Generally growing in the mountains on a very small scale."

39287 to 39293.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Cuban Experiment Station. Received September 22, 1914.

39287 to 39290. COPERNICIA spp. Phœnicaceæ. Palm.

39287. COPERNICIA MACROGLOSSA Wendland.

Jata.

39288. COPERNICIA HOSPITA Martius.

Guano hediondo.

39289. COPERNICIA GLABRESCENS Wendland.

Hat palm.

Yarey. See S. P. I. No. 39219 for previous introduction.

39290. COPERNICIA HOSPITA Martius.

Guano espinoso.

39291. PAUROTIS WRIGHTII (Gris. and Wendl.) Britton.

(*Copernicia wrightii* Gris. and Wendl.)

Miraguano espinoso.

"*Paurotis* is a monotypic genus, inhabiting swamps and hammocks along the Chockoloskee River in southwestern Florida and Andros Island, Bahamas (where it is called *Spanish-top*), and it is frequent in Cuba." (Britton, *North American Trees*, p. 141, 1908.)

39292. INODES BLACKBURNIANA (Glazebrook) Cook.

Palma cana.

39293. COCCOTHRINAX MIRAGUAMA (H. B. K.) Beccari.

Yuraguana.

39294. AMARANTHUS VIRIDIS L. Amaranthaceæ.

From Chosenholme, Wonsen, Chosen (Korea). Presented by Mr. C. F. S. Bilbrough. Received September 14, 1914.

"*Byam*, used as a vegetable in Burma, boiled like spinach. I do not know if this is used or known in Europe." (Bilbrough.)

39295. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.

(*Prunus microphylla* Hemsl.)

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Mr. C. A. Purpus. Received September 15, 1914.

"From a shrub loaded with ripe fruits. I have opened several and found the kernels sound as an apple, which is a great exception." (Purpus.)

39296. CEREUS sp. Cactaceæ.

Pitahaya.

From Guatemala City, Guatemala. Presented by Mr. S. Billow. Plants received September 25, 1914.

"The fruiting season is now over." (Billow.)



TREE OF *PHYLLANTHUS ACIDA* (L.) SKEELS, GROWING IN FLORIDA. (SEE S. P. I. NO. 39261.)

This tree stands on the place of C. B. Douglas at Miami, Fla. The clustering of the shoots at the end of the branches gives it the appearance of having pinnately compound leaves. The leaves are in reality simple and alternate. The tree is an attractive ornamental in Florida, aside from the fact that it produces large quantities of peculiarly acid fruits. (Photographed by Wilson Popenoe, June 23, 1915; P16366FS.)



FRUIT AND FOLIAGE OF *PHYLLANTHUS ACIDA* (L.) SKEELS, AS GROWN IN FLORIDA. (SEE S. P. I. No. 39261.)

A close view of the fruit on the tree shown in Plate IX. The fruit is pale green, round, ribbed, and very acid, with a single hard seed in the center. When cooked with sugar this fruit is said to make an excellent preserve. Its prodigious bearing capacity would seem to entitle it to more serious attention than it appears to have been given in Florida. This fruit is also known as *Phyllanthus distichus* and *Cicca disticha*. (Photographed by Wilson Popenoe, Miami, Fla., June 23, 1915; P16367FS.)

39297. ANNONA CHERIMOLA Miller. Annonaceæ. Cherimoya.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, U. S. Army, retired. Received September 19, 1914.

39298 to 39302.

From Salisbury, Rhodesia. Presented by Mr. H. Godfrey Mundy, Government Agriculturist and Botanist, Department of Agriculture. Received September 21, 1914. Quoted notes by Mr. Mundy, except as otherwise indicated.

39298. SECURIDACA LONGIPEDUNCULATA Fresenius. Polygalaceæ.

"The Rhodesian violet tree."

"A much-branched shrub 8 to 10 feet high with violet flowers in terminal racemes, found in Abyssinia, the Mozambique district, and in Upper and Lower Guinea. The bark of this plant affords the *Buaze* fiber of Zambesiland." (*Oliver, Flora of Tropical Africa, vol. 1, p. 134, 1868.*)

39299. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"Grown by the natives here."

39300. BOLUSANTHUS SPECIOSUS (Bolus) Harms. Fabaceæ. Wistaria tree.

(*Lonchocarpus speciosus* Bolus.)

See S. P. I. No. 21808 for previous introduction.

39301. CLITORIA TERNATEA L. Fabaceæ.

"A blue-flowering creeper, indigenous to India."

39302. THUNBERGIA sp. Acanthaceæ.

"A very handsome blue-flowering native *Thunbergia*, also a creeper."

39303. NICOTIANA TABACUM L. Solanaceæ. Tobacco.

From Guatemala City, Guatemala. Presented by Mr. S. Billow. Received September 17, 1914.

"A short time ago I noticed several plants growing in a little park near this city. I secured some of the seed. I questioned the gardener in charge about how the plants came there and he said they were volunteers; one of the laborers stated he used the leaf for smoking, and it was very strong. As far as I can tell there was no plant disease, but I noticed a large number of green insects which attacked the leaves." (*Billow.*)

39304 to 39308.

From Ogbomoshu, Nigeria. Presented by Rev. George Green, M. D., Southern Baptist Mission. Received September 14, 1914.

39304. PHASEOLUS sp. Fabaceæ.

"Bean, grows on vines, native of Nigeria, West Africa." (*Green.*)

39305. PHASEOLUS LUNATUS L. Fabaceæ. Butter bean.

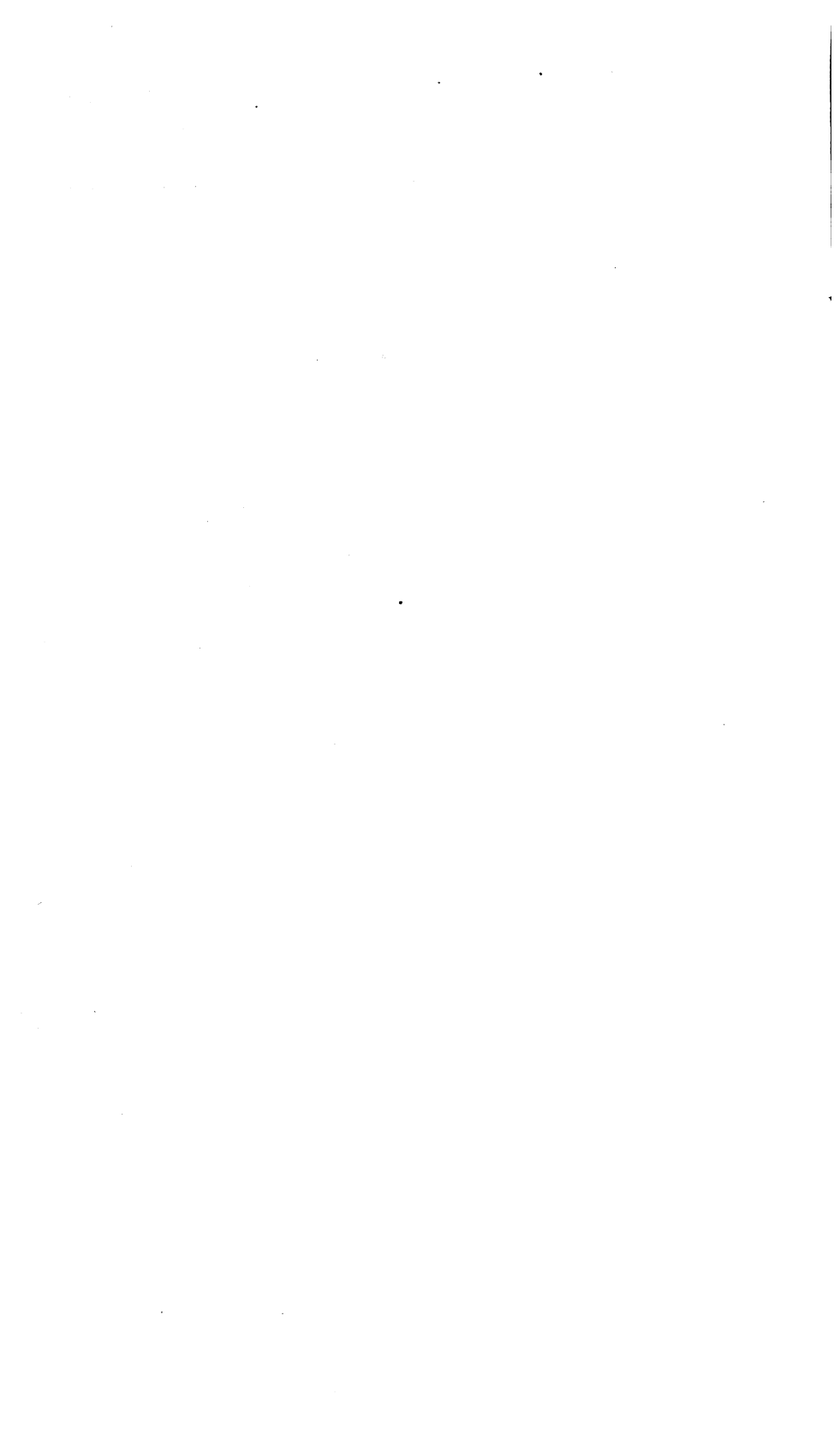
Native (?).

39306. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

Native black-eye pea.

39307 and 39308. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)



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