

Issued May, 1922.

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

WILLIAM A. TAYLOR, *Chief of Bureau*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1918

(No. 55; Nos. 45972 to 46302.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1922.



FOREIGN-PLANT INTRODUCTION MEDAL.

The work of Mr. Frank N. Meyer, Agricultural Explorer of the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry for 13 years, is mainly recorded in the pages of these inventories. His descriptions of plant material which he discovered and sent in close with this fifty-fifth number of the inventories, and it seems appropriate to include in it a cut of the medal which his associates had struck and which is presented each year for distinguished service in the field of plant introduction. This has been made possible by means of a bequest which Mr. Meyer left to his associates in this office. The scene on the obverse of the medal is taken from the bas-relief of what is believed to be the earliest monument to plant introduction. It is on the wall of the palace of Queen Hatshepsut of Thebes, built about 1570 B. C., and portrays the queen's gardeners loading a boat with seeds and potted plants of the incense tree, to secure which they made an expedition to the land of Punt. On the reverse side is shown a branch of the white-barked pine (*Pinus bungeana*) and one of the Chinese grafted jujube (*Zizphus jujuba*), with whose introduction into America Mr. Meyer's name should always be associated. The Chinese inscription is from the poem of Chi K'ang, a poet of the Tang Dynasty, 618 A. D., and, freely translated, carries the thought: "In the glorious luxuriance of the hundred plants he takes delight." The first medal was awarded to Mr. Barbour Lathrop, whose personal support of the policy of plant introduction is recorded frequently in the early publications of this office (P26490FS.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1918 (NO. 55; NOS. 45972 TO 46302).

INTRODUCTORY STATEMENT.

It seems appropriate in this inventory in which are described in his own words the last of Mr. Frank N. Meyer's introductions from China, to give a brief statement regarding his agricultural explorations. These inventories have been the chief medium of publicity through which his discoveries have been made known to the horticultural world. All the plants which he found and imported he described, and the descriptions have appeared in the volumes of this serial publication. These descriptions are not long, but in almost every case they characterize very well the plants and point out the particular value which they are likely to have in America. In this respect they are remarkable and deserve the study of agricultural explorers who may come after him.

Mr. Meyer's first expedition to China covered the period from July, 1905, to July, 1908, and included explorations in Manchuria, Chosen (Korea), and the Chinese Provinces of Chihli, Shansi, Shantung, Honan, Hupeh, and Kiangsi. This period is represented by the introductions which will be found scattered between the numbers 16909 and 24596. His second expedition was from August, 1909, to April, 1912, and numbers between 26131 to 34183 give the descriptions of his collections in England, Belgium, France, Germany, Russia, Crimea, Caucasus, Russian Turkestan, Chinese Turkestan, and Siberia. His third expedition was in Siberia and in the Chinese Provinces of Shantung, Shansi, Shensi, Kansu to the borders of Tibet, Honan, Kiangsu, Anhwei, and Chekiang during the period from November, 1912, to December, 1915, and he describes his introductions under numbers to be found between 35253 and 43022. His fourth trip included Japan and the Chinese Provinces of Shantung, Kiangsu, Honan, Hupeh, Hunan, and Anhwei during the period from October, 1916, until his death in June, 1918, and the

descriptions appear between numbers 45022 and 46718. An outline map has been prepared giving Mr. Meyer's routes of travel during the 13 years of his work as an agricultural explorer (figs. 1 and 2). In addition to the living plant material which Mr. Meyer collected, there are to his credit in the collection of this office 1,740 photographs, which constitute a unique set of illustrations of the agriculture of the Chinese, in particular portraying the crop plants upon which this remarkable people has lived for 40 centuries. Those of them which illus-

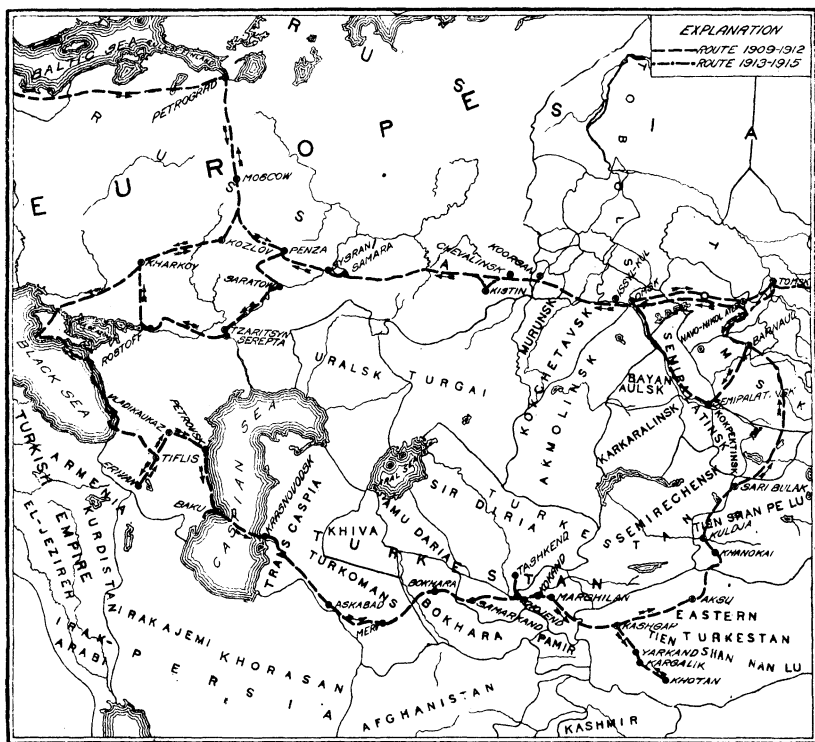


FIG. 1.—Map of Russia and Turkestan, showing the agricultural explorations of Frank N. Meyer. Between 1909 and 1912 Mr. Meyer traveled extensively in these countries hunting for new fruits, forage plants, and other crops for trial in the United States. His second journey to this region, between 1913 and 1915, was less extensive; on this trip only the northern portion of the region above shown was covered.

trate plants destined to become widely used in this country will doubtless come to be published as historic evidences of their first discovery. As accounts of Mr. Meyer's life have been published elsewhere (see *Asia* for January, 1921; *The Journal of Heredity* for June, 1919, and April, 1920; *The National Geographic Magazine* for July, 1919; and *De Aarde en haar Volken*, January to April, and July and August, 1919), and as plants which he introduced will record better than words can his accomplishments, it would hardly

seem appropriate here to more than record the fact that his death occurred on the night of June 2, 1918. He was lost from a river steamer on the Yangtze near the little town of Wuhu. His body was later recovered and buried in the cemetery in Shanghai.

Mr. Meyer left a bequest of \$1,000 to his associates in the Office of Foreign Seed and Plant Introduction, which they have used in the striking of a medal to be known as the Frank N. Meyer Memorial

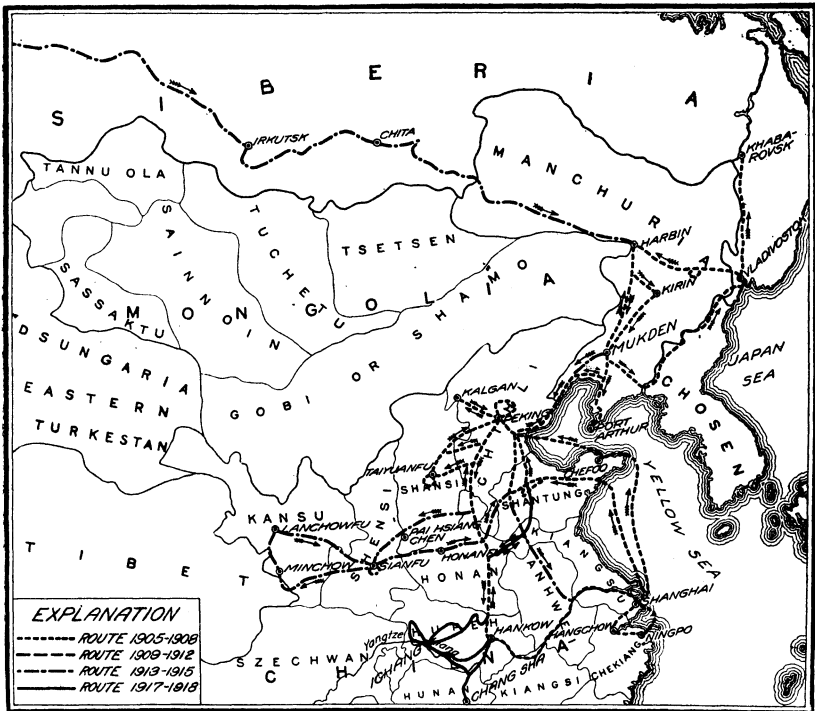


FIG. 2.—Map of eastern Asia, showing the agricultural explorations of Frank N. Meyer. Between the years 1905 and 1919 Mr. Meyer made four trips into eastern Asia in search of new fruits, vegetables, and other economic plants for introduction into the United States. Because of the small size of the map it has been impossible to show each trip entirely and clearly; therefore, after the first trip only such portions of his route are shown as involve territory not traversed previously. This map is shown on a somewhat larger scale than that used for figure 1.

Medal to be awarded under the auspices of the American Genetic Association for distinguished services in the field of foreign-plant introduction (Pl. I). In this way it is hoped to emphasize the importance of this kind of exploration, a work which yields not only ideas but concrete living things that enrich our lives, change our foods, and make more beautiful our surroundings. May it encourage young men with the mental and physical equipment for such work to enter the field and enrich the agriculture of the country by bringing into it the

thousands of new plants which the man of the coming centuries is going to need and use.

A number of valuable plant introductions are described in this inventory. In his remarkable work, "Farmers of Forty Centuries," King calls attention to the fact that the Chinese pay 28 cents a pound for the young shoots of a certain species of clover, or six times as much as they do for any other vegetable. It is not only eaten fresh but dried and used in soups. In view of the value placed upon the fat soluble vitamine which occurs in green leafy vegetables it has seemed worth while to introduce this species (*Astragalus sinicus*, No. 45995) for experimental purposes.

Mr. Barbour Lathrop, during his last trip to Japan, discovered that among the Japanese of all social classes the mitsuba (*Deringa canadensis*, No. 46137) was a common and universally appreciated vegetable. It is a strange circumstance that, although this species is found wild in the woods of the Atlantic coast and as far west as the Mississippi and has for a century or more been cultivated extensively in Japan, no attempt has ever been made to utilize it in America until Mr. Lathrop called attention to it. It is more easily grown than celery, has a characteristic flavor of its own, and would doubtless fit easily into the menu of those who once become familiar with its taste.

In the hammock lands of southern Florida, where every year hundreds of acres are devoted to the raising of early potatoes for the northern market, February frosts or flooding from unusually heavy rains make potatoes a precarious crop. On these lands the tropical yautia grows and produces amazingly, not being affected by flooding and recovering quickly from frost injuries. The tubers when properly prepared form a delicate vegetable, comparing in this respect with the best potatoes. The introduction of a new variety (No. 46030) whose tubers have yellow flesh instead of white and a more mealy character, which make it preferred to all others in Porto Rico, is worthy of special mention. It is known in Guadeloupe as the malanga coloré.

The Australian casaba (No. 46029), which produces fruits the size of a cucumber that are esteemed very highly in Australia for pies and are eaten there fresh with sugar, might be worth testing in our own casaba-melon areas.

The Puget Sound region seems to be one in America where Himalayan plants are most at home, and Dr. Cave's collection of seeds from Darjiling has in it several unusually interesting species. The giant lily (*Lilium giganteum*, No. 46085), which grows to 12 feet in height and bears fragrant yellow-throated blooms; the Nepal lily (*L. nepalense*, No. 46086) with deep maroon-purple, almost

black-throated flowers which, if it were hardier in England, would be, it is reported, the most popular of all the oriental lilies; the large mountain-cherry tree (*Prunus cerasoides*, No. 46093), which makes a brilliant show with its rose-red flowers and may have value because of its acid fruits; the remarkable *P. napaulensis* (No. 46094), a small tree which bears racemes of flowers 10 inches long that produce cherries an inch in diameter and which should appeal strongly to the cherry breeder; an edible *Pyrularia* with fruit 2 inches long (*Pyrularia edulis*, No. 46095); the Javanese sumach (*Rhus javanica*, No. 46096), which colors up beautifully in our autumn and is much hardier than its name would indicate; and a large-fruited *Solanum* (*Solanum khasianum*, No. 46103); these form part of this remarkable collection by Dr. Cave.

Through Dr. Safford's investigations the sacred earflower of the ancient Mexicans (*Cymbopetalum penduliflorum*, No. 46206) has been, so to speak, rediscovered, and it can not fail to be of interest to grow in Florida this remarkable plant, the fragrant flowers of which were dried and used by the ancient Mexicans in flavoring their cocoa and other foods before the advent of cinnamon and the other East Indian spices.

Mr. P. J. S. Cramer has sent in from Buitenzorg a collection of seeds of leguminous plants (Nos. 46243 to 46248) which are grown for forage purposes in Java and can scarcely fail to be of value in southern Florida.

What the behavior in America will be of the Transvaal yellow peach (No. 46239), which Mr. Pole Evans says is peculiarly free from the diseases of that region, remains to be seen, but peach growers can hardly fail to be interested in it.

The possibility that some day the delicious lychee may be commercially grown in Florida is still alluring, though its behavior has not been entirely satisfactory there. Possibly its near relative, *Alectryon subcinereum* (No. 46299), which its sender, Dr. Proschowsky, has fruited at Nice, may be a suitable stock upon which to grow it.

The great interest in the avocado and the occurrence of natural hybrids between the Guatemalan, Mexican, and West Indian forms, which are growing side by side in our Miami garden, have made it seem worth while to gather together all the species of the genus *Persea* for study. *Persea azorica* (No. 45997) from Ponta Delgada is one of these.

That the fruiting and early spring-flowering shrubby cherry (*Prunus glandulosa*, No. 46003) from Ichang may prove its usefulness and finally find a place in the dooryards of the Atlantic coast region, where its flowers and its purple-black cherries will be appreciated, was one of Mr. Meyer's last wishes.

The Feijoa from Paraguay has been a successful introduction and has established itself in thousands of our gardens. Possibly the "Nyandú-aphisá" (*Britoa sellowiana*, No. 46024), a fruiting shrub from the same region, may be equally successful.

The common habit of budding all species of East Indian mangos upon seedlings of the common turpentine mango may prove to be inadvisable. It is possible even that the relatives of the mango, such as *Mangifera longipes* (No. 46022) from Malakka, may have value for stock purposes.

If *Sabinea carinalis* (No. 46026) has not been already tested in California it should be, according to Mr. Jones, of the island of Dominica, for it has showy scarlet flowers and is particularly suited to the dry, hot hillsides which abound in California. How much frost it will stand is yet in question.

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

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 17, 1921.

INVENTORY.¹

45972. EDGEWORTHIA CHRYSANTHA Lindl. Thymelæaceæ.

(*E. papyrifera* Zucc.)

From China. Plants presented by Mrs. L. J. Doolittle, Washington, D. C.
Received April 4, 1918.

"*Mitsumata*. From Kiangsi Province, South China. A rare tree with very fragrant yellow flowers appearing in April." (*Mrs. Doolittle*.)

45973 and 45974.

From Batum, Russia. Presented by the superintendent of the Botanic Gardens. Received April 9, 1918.

45973. BERBERIS JAPONICA BEALEI (Fortune) Skeels. Berberidaceæ.

Barberry.

A stiff evergreen shrub native to China, often 10 feet in height, with thick, unbranched stems. The pinnate leaves, 1 to 2 feet long, are made up of 7 to 13 obliquely ovate, dark dull-green leaflets 8 inches long and 6 inches wide, having four to six large spiny teeth along each margin. The delightfully fragrant lemon-yellow flowers are borne in a cluster of several slender erect racemes 6 to 9 inches long and are followed by oblong purple berries half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 244.)

45974. VIBURNUM DILATATUM Thunb. Caprifoliaceæ.

"This is one of the best hardy shrubs for the garden. It grows to only 4 or 5 feet in height and is certain to turn out a full display of bloom every year. The flowers are white, produced in dense corymbs, and are followed by an abundance of bright coral-red berries. The foliage is fine and so far has not been troubled with any insects or fungus enemies." (*The American Florist*, vol. 15, p. 123.)

For an illustration of this shrub in fruit, see Plate II.

¹ All introductions consist of seeds unless otherwise noted.

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

45975. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received April 10, 1918.

"The oil palms I introduced here commenced to fruit when I had not yet my own garden in Sumatra at my disposition. I have planted in several Government rubber estates, where no other oil palms are in the neighborhood, plats of 5 to 10 palms, each plat descending from one seed bearer. I send you with this mail some seeds of *Bundi D*, tree No. 13. You will notice that this variety has a very thin shell, so that you may crack it with the teeth." (Cramer.)

45976 to 45979.

From India. Seeds presented by Mr. George F. Mitchell, Washington, D. C., who obtained them from Dr. G. H. Cave, curator, Lloyd Botanic Garden, Darjiling, India. Received April 10, 1918. Quoted notes by Mr. Mitchell.

45976. CORYLUS FEROX Wall. Betulaceæ. Filbert.

"This nut comes from Sikkim and is like a hazelnut. Dr. Cave thinks it will take about 10 years to bear. The natives of Sikkim praise it very highly."

For previous introduction, see S. P. I. No. 41812.

45977. DECAISNEA INSIGNIS (Griffith) Hook. f. and Thoms. Lardizabalaceæ.

"A bush from northern Sikkim that bears wonderful fruit about as big as one's thumb and about 4 inches long. Dr. Cave sent a man to Sikkim specially to procure the seed of this fruit."

This is one of the most remarkable of Indian botanical discoveries, both in structure and appearance, and is further notable as yielding an edible sweet-fleshed fruit. It is a native of the humid forests of Sikkim and Bhutan at altitudes of 7,000 to 9,000 feet above the sea. The trunk or trunks, for sometimes several spring from the ground from a common root, are 6 to 10 feet high, as thick as one's arm, and very brittle; the pale bark is covered with lenticels; the pith is very large; the branches are few, subterminal, and erect; the compound leaves are terminal and axillary; the many-flowered horizontal racemes are a foot long, and the drooping, green flowers are 1 inch long, on slender pedicels as long as themselves. (Adapted from *Curtis's Botanical Magazine*, pl. 6731.)

45978. HOLBOELLIA LATIFOLIA Wall. Lardizabalaceæ.

"Grows in Darjiling, and is a vine bearing a nice fruit, purple in color, the size of a man's thumb, with subacid pulp. The flower is also very showy. The native name of this fruit is *gophila*."

45979. MAGNOLIA CAMPBELLII Hook. f. and Thoms. Magnoliaceæ.**Magnolia.**

"Indigenous to the eastern Himalayas, but grows at 8,000 feet altitude. Requires a moist, cool climate."

A deciduous tree, occasionally 150 feet in height, found in the Himalayas in India at altitudes of 8,000 to 10,000 feet. The oval leaves, 6 to 10 inches long, are smooth above and covered beneath with appressed hairs. The fragrant cup-shaped flowers, 6 to 10 inches across and varying in color from rose to deep crimson, are produced in the spring before the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 67.)



A HANDSOME RED-BERRIED SHRUB FROM EASTERN ASIA. (*VIBURNUM DILATATUM* THUNB., S. P. I. No. 45974.)

A fine *Viburnum* requiring less moisture than most other species and therefore suited for dooryard use. It blooms profusely in June, trusses being produced from short twigs down the side as well as at the top of the branch. The flowers are pure white. The bright-red berries that follow the flowers almost literally cover the bush. Hardy throughout the Eastern States. (Photographed by Peter Bisset, Allegheny, Pa., September 11, 1916; P20597F'S.)



A FIELD OF GENGE CLOVER IN EASTERN CHINA. (ASTRAGALUS SINICUS L., S. P. I. No. 45995.)

This clover is extensively grown in China as a manure crop on the low rice fields. The whole crop is plowed under in early summer, immediately before the planting of the rice. It is also used as human food. (Photographed by F. N. Meyer, Mokanshan, Chekiang, China, April 4, 1908; P5437FS.)

45980 and 45981.

From Adelaide, South Australia. Presented by Mr. J. F. Bailey, director, Botanic Garden. Received April 1, 1918.

"These seeds were obtained from the Macdonnell Range through Dr. E. Angus Johnson, of this city." (*Bailey*.)

45980. LIVISTONA MARIAE F. Muell. Phœnicaceæ. **Palm.**

An erect palm with fan-shaped leaves divided into narrow plicate segments. This palm was found in the Glen of Palms in the Macdonnell Range, and seems to be very little known. (Adapted from *Bentham, Flora Australiensis, vol. 7, p. 146.*)

45981. MACROZAMIA MACDONNELLII F. Muell. Cycadaceæ.

An erect palmlike plant with pinnate leaves 2 to 4 feet long having linear segments inserted at a very oblique angle, sometimes almost transverse.

This species is referred to *M. fraseri* Miq. in Bentham, *Flora Australiensis, vol. 6, p. 253*, but at the Adelaide Botanic Garden is considered to be distinct.

45982 to 45987.

From Cartagena, Colombia. Procured by A. J. Lespinasse, American consul. Received April 12, 1918. Quoted notes by Mr. Lespinasse.

45982. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon-pea.**

"*Huandul*. Grown in the Departments of Bolivar and Atlantico."

"The pigeon-pea, or guandul, supposed to be a native of India, is cultivated widely for food in the Tropics and Subtropics. It is perennial in frostless regions, but is usually cultivated as an annual. About ten months are required to mature the seed. Frost kills the plants. There are many varieties of pigeon-peas, some suitable for food and some not. Being a legume, the crop is valuable for soil improvement as well as for the seed. The plant develops into a large, semiwoody bush reaching the height of from 5 to 10 feet. When grown for seed, plant two or three seeds in each hill, in 4-foot rows, and 3 feet apart in the row, thinning later to one plant in a hill. Pigeon-peas are resistant to excessive rains in the Tropics, and the seed does not rot when planted, as is the tendency with some other leguminous crops. Although the skin of the pigeon-pea is a little tough, the flavor is good. The peas are cooked like ordinary shelled beans, that is, soaked over night and then parboiled 10 to 15 minutes with a little soda in the water; boiling for one hour or a little more after this usually cooks them completely." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 4364G.

45983 and 45984. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

45983. "*Zaragoza* (white). Grown in the Departments of Bolivar and Atlantico."

45984. "*Zaragoza* (red). Grown in the Departments of Bolivar and Atlantico."

45985. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

"White and red beans (large). Grown in the Departments of Tolima and Huila."

45982 to 45987—Continued.

45986. PISUM SATIVUM L. Fabaceæ. **Garden pea.**
 "Arbejas. Grown in the Departments of Tolima and Huila."

45987. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**
 "Frijol Pequeno (cabeza negra). Grown in the Departments of Bolivar and Atlantico."

45988. JUGLANS sp. Juglandaceæ. **Walnut.**

From Ecuador. Obtained by Dr. Frederic W. Goding, American consul general at Guayaquil. Received April 12, 1918.

"Nuts from a native walnut of Ecuador. This tree is fairly common in the valleys among the Andes, usually where the cinchona trees are to be found." (Goding.)

45989. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
 (*Prunus persica* Stokes.)

From Spain. Procured by the American consul at Bilbao. Received April 13, 1918.

Peach seeds introduced for breeding experiments being carried on in this Department.

45990. DIOSCOREA ALATA L. Dioscoreaceæ. **Yam.**

From Trinidad, British West Indies. Tubers presented by Mr. J. B. Rorer, Board of Agriculture, Port of Spain. Received April 20, 1918.

"A large white yam of good quality. When boiled and mashed it can scarcely be distinguished from good white potatoes similarly prepared. Individual tubers are said often to exceed 20 pounds in weight, where the season is long enough." (R. A. Young.)

45991 to 45994. DIOSCOREA spp. Dioscoreaceæ. **Yam.**

From Mayaguez, Porto Rico. Tubers presented by Mr. C. F. Kinman, horticulturist, Porto Rico Agricultural Experiment Station. Received April 25, 1918. Identified by Mr. O. W. Barrett, of this Bureau. Descriptions prepared by Mr. R. A. Young, of this Office.

45991. DIOSCOREA ESCULENTA (LOUR.) Burkill. **Yam.**

"A rather small, smooth-skinned yam, called in Porto Rico 'potato yam.' Said by Mr. C. F. Kinman to have come from Africa. The tubers, when well grown, average about 12 ounces in weight. The skin somewhat resembles that of the white potato. The flesh is usually white, slightly mealy when cooked and mashed, and is sweet. These qualities appear to be variable, and while the yam is sometimes very good it is occasionally very poor. Of possible value for central and southern Florida."

45992. DIOSCOREA TRIFIDA L. f. **Yampi.**

"A root-covered, white, sweetish yampi. Usually of very good quality, though somewhat fibrous. The tubers are said to average about three-quarters of a pound each when well grown. This yampi may prove of value on the peninsula of Florida."

45993. DIOSCOREA ROTUNDATA Poir. L. **Yam.**

"Guinea. A popular, white-fleshed yam said to commonly reach a weight of 6 pounds or more in Porto Rico and to be of good quality. It thrives there in heavy clay soil and with a rather small amount of rain."

45991 to 45994—Continued.**45994. DIOSCOREA BULBIFERA L.****Yam.**

"The aerial tubers of this yam are somewhat better for food than the ground tubers, according to Mr. C. F. Kinman. The flesh is yellow and rather strong flavored, often practically inedible. The aerial tubers are very tough skinned and keep for a long time."

45995. ASTRAGALUS SINICUS L. Fabaceæ.**Genge clover.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received April 15, 1918.

Late Giant variety. A field crop very extensively grown for human food and partly as a source of soil nitrogen; it is closely allied to our alfalfa. Tender tips of the stems are gathered before the stage of blossoming is reached and served as food after boiling or steaming. It is known among foreigners as 'Chinese clover.' The stems are also cooked and then dried for use when the crop is out of season. Wealthy Chinese families pay an extra high price for the tender shoots when picked very young, sometimes as much as 20 to 28 cents per pound in our currency. (Adapted from *King, Farmers of Forty Centuries*, p. 128.)

For illustrations of a field of this clover and of a single plant, see Plates III and IV.

45996. ZEA MAYS L. Poaceæ.**Corn.**

From Torreon, Coahuila, Mexico. Presented by Mr. Carlos Gonzales. Received April 16, 1918.

"*Maiz de tiempo*, or *maiz pepitilla*."

Introduced for the breeding experiments of the Bureau of Plant Industry.

45997. PERSEA AZORICA Seubert. Lauraceæ.

From Ponta Delgada, Azores. Presented by the American consul. Received April 16, 1918.

A medium-sized tree found in the forests of all the islands of the Azores, especially in the island of Pico, at altitudes of 1,000 to 2,500 feet. The leaves are oval, with wedge-shaped bases and hairy margins. The fruits are quite small and egg shaped. (Adapted from *Seubert, Flora Azorica*, p. 29.)

For previous introduction, see S. P. I. No. 43480.

45998. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.**Coral tree.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received April 19, 1918.

A low tree found in northern India, from Kumaon to Sikkim and in the Khasi Hills, up to an altitude of 7,000 feet. The light-green pinnate leaves are made up of three leaflets 5 to 7 inches long and nearly as broad. The racemes of vivid scarlet flowers, sometimes 15 inches long, appear during the hot season while the tree is still leafless. The lanceolate, curved, brownish pubescent pods contain 2 to 10 large dull-black seeds. The wood is white, soft, and light and is used for making boxes and toys. (Adapted from *Brandis, Indian Trees*, p. 227.)

45999 to 46001.

From Richmond, Jamaica. Presented by Rev. H. B. Wolcott. Received April 20, 1918. Quoted notes by Mr. Wolcott.

45999 and 46000. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

45999. "Large, oval; good quality."

46000. "Small, round; good quality."

46001. *HIBISCUS SABDARIFFA* L. Malvaceæ.

Roselle.

"The red sorrel with us fruits in November and December and at no other time, no matter when sown. Seeds sown in April and transplanted in June make good-sized shrubs in good soil."

46002 and 46003.

From Ichang, Hupeh, China. Roots and cuttings collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 25, 1918. Quoted notes by Mr. Meyer.

46002. *ROSA* sp. Rosaceæ.

Rose.

"(No. 1302. March 4, 1918.) A shrubby rose with small foliage, sending up many stems of bright-green color, which are very spiny. Said to bear single, medium-sized flowers of flesh color. Grows to a height of about 6 feet; thrives well in stiff clay soil, and resists great humidity and high temperatures. Of value possibly in breeding experiments and as a stock for roses in warm climates. Obtained from the garden of the Roman Catholic Convent at Ichang."

46003. *PRUNUS GLANDULOSA* Thunb. Amygdalaceæ.

Cherry.

"(No. 1303. March 4, 1918.) *Gai yuen tao*. A spreading shrub, with many slender twigs, growing to a height of 3 to 5 feet; flowering early in spring, with a multitude of small, rosy white flowers which are followed by an abundance of small fruits of purple-black color and of fresh sour taste. These tiny cherries lend themselves well to be made into excellent preserves and are so utilized by the Roman Catholic missionaries in the southwest part of Hupeh, where this bush cherry is found very frequently in gardens. Since this species of *Prunus* thrives in regions with high summer temperatures and great humidity it probably will succeed in the South Atlantic and Gulf States. By selection and hybridization larger fruited forms should be developed and a new fruiting shrub for the home garden would be the result. Obtained from the garden of the Roman Catholic Convent at Ichang."

46004. *JUGLANS REGIA* L. Juglandaceæ.

Walnut.

From Seharumpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received April 25, 1918.

Kashmir walnuts introduced for breeding experiments being carried on by the Bureau of Plant Industry.

46005. *APHLOIA THEAEFORMIS* (Vahl) Bennett. Flacourtiaceæ.

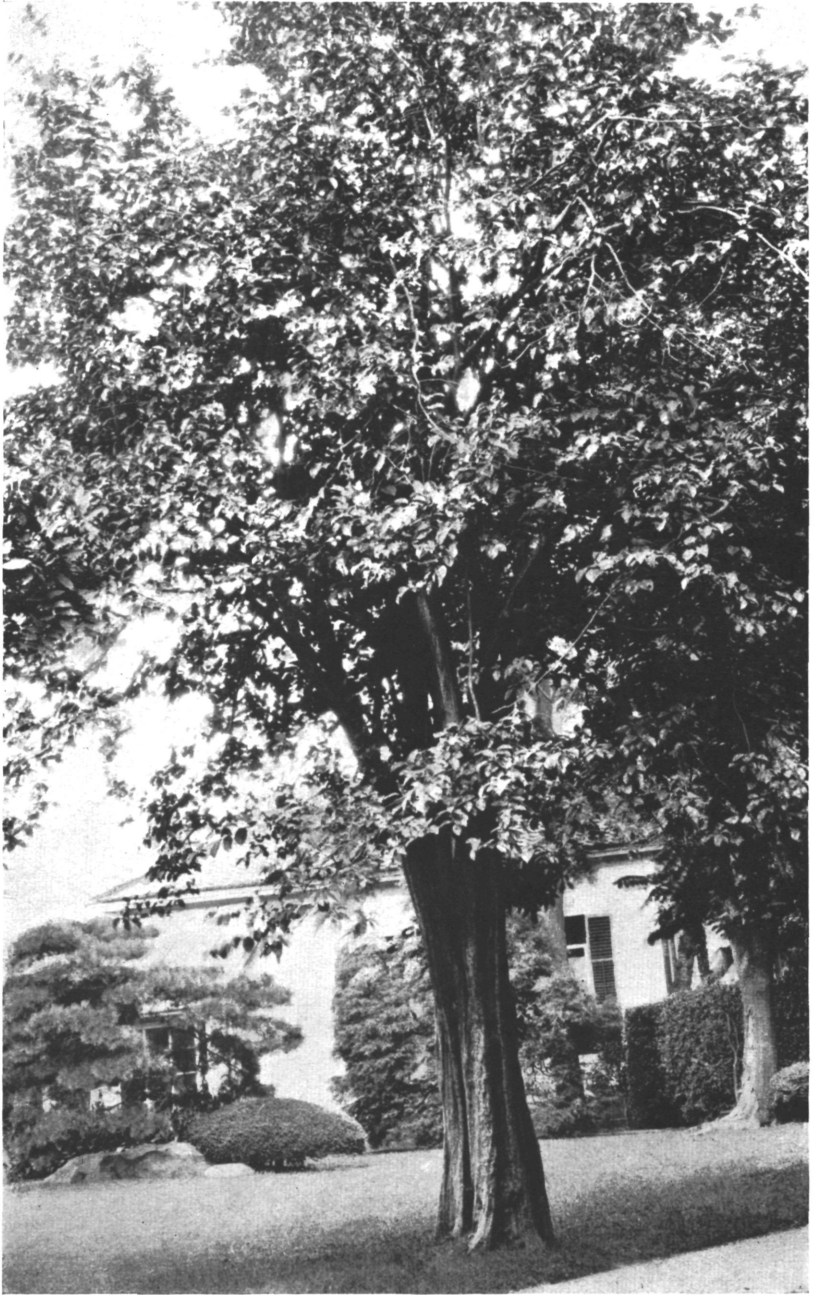
From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Experiment Station at Ivoloïna, Tamatave. Received April 25, 1918.

An erect, much-branched shrub native to Madagascar, Mauritius, and the Seychelles Islands. The alternate leaves are deeply pinnatifid on the young shoots, with one to three pairs of obtuse ascending lobes; on the mature



THE GENGE CLOVER GROWN AS A VEGETABLE IN CHINA. (ASTRAGALUS SINICUS L., S. P. I. NO. 45995.)

King, in his *Farmers of Forty Centuries*, draws attention to the fact that the Chinese grow this clover not only as a source of soil nitrogen but for human food. For this purpose they cultivate it in specially prepared beds and gather the shoots before the stage of blossoming is reached and prepare them by boiling or steaming them. The stems are also cooked and dried for winter use. When picked very young these clover shoots bring the highest price of any vegetable, as much as 28 cents gold per pound. The reason for this fact is worthy of investigation by physiologists. (Photographed by Frank N. Meyer, Mokanshan, Che-liang, China, April 22, 1908; P5138FS.)



THE CHINESE QUINCE TREE. (CHAENOMELES SINENSIS (THOUIN)
KOEHNE, S. P. I. No. 46130.)

A handsome ornamental park tree introduced into Europe from China as early as the eighteenth century, now much grown on the Riviera. The tree shown is in the grounds of the American Embassy in Tokyo. It is a long-lived species of quince bearing fruits sometimes as much as 7 inches in length with a very waxy highly scented skin. Frank N. Meyer, who secured the seeds of S. P. I. No. 46130 in Ichang, China, reported that the fruits are only used by the Chinese there as room perfumers and suggests the tree be tried as a stock for pears in the Southern States. Possibly it may be useful for breeding purposes also. (Photographed by F. N. Meyer, Tokyo, Japan, September 14, 1915; P12355FS.)

branches they are oblong, entire or crenate, 1 to 4 inches long. The yellowish flowers, half an inch broad, are borne singly or in small fascicles in the axils of the leaves. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 12.)

46006. LIVISTONA HOOGENDORPII Andre. Phœnicaceæ. Palm.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received April 12, 1918.

Livistona hoogendorpii is quite distinct from its allies, *L. chinensis* and *L. rotundifolia*. It is more dwarf in stature, with leafstalks covered with stout brown spines and the leaf blade divided almost from its base. (Adapted from *The Garden*, vol. 25, p. 392.)

46007 to 46018.

From Colombia. Purchased by Mr. Claude E. Guyant, American consul at Barranquilla. Received April 12, 1918.

A collection of various kinds of legumes introduced for experimental purposes. Quoted notes by Mr. Guyant.

46007. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

"*Guandul*."

For previous introduction, see S. P. I. No. 45982.

46008. CICER ARIETINUM L. Fabaceæ. Chick-pea.

"*Garbanzo* (de Honda), Chick-pea from Honda."

46009. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.

(*Lens esculenta* Moench.)

"*Lentejas*. Lentils."

46010 to 46012. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

46010. "*Zaragoza* (blanca). White."

46011. "*Zaragoza* (caraotas)."

46012. "*Habas* (blancas). Horse beans, white." [Note.—These were Lima beans, not horse beans, *Vicia faba*.]

46013 to 46016. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46013. "*Zaragoza* (blanca). White."

46014. "*Frisol* (bolon). Kidney bean, round."

46015. "*Frisol* (rojo). Kidney bean, red."

46016. "*Frisol* (de Santander). Kidney bean from Santander."

46017. VICIA FABA L. Fabaceæ. Broad bean.

"*Habas* (negras). Horse bean, black."

46018. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"*Frisol* (ojos negros). Kidney bean, black eye."

46019 to 46023.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received April 16, 1918.

46019. DEGUELIA TRIFOLIATA (Lour.) Taub. Fabaceæ.

(*Derris uliginosa* Beith.)

A robust climbing shrub with glabrous branchlets and leaves, found from India to China and throughout the Malayan Archipelago to Aus-

46019 to 46023—Continued.

tralia. The compound leaves are made up of three to five somewhat coriaceous, ovate leaflets 2 to 4 inches long, and the rose-red flowers are produced in branched racemes 4 inches long. (Adapted from *Hooker, Flora of British India, vol. 2, p. 242.*)

46020 and 46021. *LANSIUM DOMESTICUM* Jack. Meliaceæ. **Langsat.**

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh. The flavor is highly aromatic, at times slightly pungent. Each of the five segments of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten fresh, but is also said to be utilized in various other ways." (*Wilson Popenoe.*)

46022. *MANGIFERA LONGIPES* Griffith. Anacardiaceæ.

A large evergreen tree from the Malay Peninsula, related to the mango. The lanceolate, coriaceous leaves are 6 to 10 inches long and 1 to 3 inches wide. The panicles of white flowers with yellow veins are branched and longer than the leaves. (Adapted from *Hooker, Flora of British India, vol. 2, p. 15.*)

46023. *PANGIUM EDULE* Reinw. Flacourtiaceæ. **Pangi.**

A quick-growing, spreading tree with very large heart-shaped leaves, found on the Malay Peninsula. The large rusty-brown woody fruits are the size of small coconuts and contain numerous large seeds. The seeds are said to be poisonous until boiled and macerated in water, when they become edible. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 578.*)

46024 and 46025.

From Puerto Bertoni, Paraguay. Presented by Dr. M. S. Bertoni. Received April 17, 1918. Quoted notes by Dr. Bertoni.

46024. *BRITOA SELLOWIANA* Berg. Myrtaceæ.

"*Nyandú-aphisá.* A shrub growing to a height of 2 to 4 meters. The edible fruits are sweet, but slightly acid. The plant has withstood a temperature of -4° C."

46025. *GUAREA GRANDIFOLIA* DC. Meliaceæ.

"A small or medium-sized tree of rapid growth. It is a good shade plant for coffee and is ornamental because of its dense crown of large leaves."

46026. *SABINEA CARINALIS* Griseb. Fabaceæ.

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator of the Botanic Gardens. Received April 19, 1918.

"This small tree is known locally as *Bojs Charibe* and is one of the most showy of our native plants. It is a very fine flowering tree, and I have seen nothing in the Tropics to surpass it as a mass of color. If grown on fairly

good land it will not make a good show, but if planted on a dry, rocky hillside, where it will be scorched by the sun for a period of three or four months each year, it makes a marvelous display of flowers. It would probably succeed in the hot parts of California." (*Jones.*)

A shrub or small tree with abruptly pinnate leaves having six to eight pairs of oblong leaflets. The large bright-scarlet flowers are borne in fascicles of three to five and appear before the leaves. (Adapted from *Grisebach, Flora of the British West Indian Islands, p. 183.*)

46027. CHENOPODIUM BONUS-HENRICUS L. Chenopodiaceæ.

Good King Henry.

From Ireland. Presented by the director of the Dublin Royal Botanic Garden. Received April 22, 1918.

An herbaceous perennial, 2 to 3 feet tall, often cultivated for the large triangular leaves, which are used like spinach.

46028. SOLANUM ACULEATISSIMUM Jacq. Solanaceæ.

From San Jose, Costa Rica. Fruits presented by Mr. A. Tonduz, Ministerio de Hacienda y Comercio. Received April 30, 1918.

A spiny undershrub 1 to 2 feet high, widely distributed in the Tropics. The few-flowered axillary cymes of snow-white flowers 1 inch across are followed by globose orange or yellow fruits often 2 inches in diameter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 6, p. 3184.*)

46029. CUCUMIS MELO L. Cucurbitaceæ. Australian casaba.

From Burringbar, Australia. Presented by Mr. B. Harrison. Received April 30, 1918.

"I am inclosing seeds of the Australian casaba, the correct name of which I do not know, but which I believe originally came from India. It is a most prolific plant, bearing cream-colored fruit about the size of a cucumber. It is sometimes called the 'apple melon' and is quite popular here, being very palatable when eaten with sugar or made up into pies. It is hardy, prolific, and early, and should thrive well throughout the United States." (*Harrison.*)

46030. XANTHOSOMA sp. Araceæ. Yautia.

From San Juan, Porto Rico. Tubers presented by Mr. W. J. McGee, chief, Bureau of Chemistry, Experiment Station. Received May 2, 1918.

"A small-growing yautia which produces edible, yellow-fleshed corms; they are mealy and dry and rich in flavor when cooked. The cormels or lateral tubers, are usually too small for table use. The very young leaves are often used for greens, called *calalou* in the French West Indies. The leaves are acrid and require parboiling with a little baking soda or cooking with fat meat. The plant seldom exceeds 3 feet in height. The leaf blade is narrowly sagittate, with a broad sinus; basal veins naked for one-fourth of an inch; marginal vein one-eighth of an inch or less from edge of blade. Petiole green; sinus wings glaucous, tinged with purple, with an irregular greenish white stripe next to the margin; margin of wing pink. The prominent whitish stripe on the wing of the petiolar sinus is an easy distinguishing character. In Guadeloupe this yellow variety is called *malanga coloré*, or colored eddo, and is said to be more highly esteemed than the white-fleshed yautias. It is eaten baked, boiled, fried, etc." (*R. A. Young.*)

46031 to 46046.

From Caracas, Venezuela. Presented by Dr. H. Pittier. Received April 23, 1918.

46031 to 46037. *RICINUS COMMUNIS* L. Euphorbiaceæ. **Castor-bean.**

"These varieties have not as yet been generally distinguished by the people at large here, so they have no distinctive names." (*Pittier.*)

46031. No. 1. Seed three-fourths of an inch long by half an inch broad; light gray with irregular dark-brown longitudinal markings.

46032. No. 2. Seed three-eighths of an inch long by one-fourth of an inch broad; dark gray with brown markings.

46033. No. 3. Seed half an inch long by one-fourth of an inch broad; dark gray with dark-brown, rather regular markings.

46034. No. 4. Seed three-eighths of an inch long by one-fourth of an inch broad; light gray with few, narrow, irregular, brownish markings.

46035. No. 5. Seed half an inch long by three-eighths of an inch broad; dark gray with numerous irregular dark-brown markings.

46036. No. 6. Seed five-eighths of an inch long by three-eighths of an inch broad; reddish gray with narrow streaks of reddish brown.

46037. No. 7. Seed three-eighths of an inch long by one-fourth of an inch broad; dark gray with nearly black markings.

46038 to 46046. *TRITICUM AESTIVUM* L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

"A collection of the native varieties of wheat with their common names. They come from the State of Trujillo in the Venezuelan Andes, where they are extensively cultivated from 1,000 meters upwards." (*Pittier.*)

46038. "*Blanco.* Cultivo del Distrito Bocono."

46039. "*Cariaco.* Cultivo del Distrito Bocono."

46040. "*Cariaco.* Distrito Urdaneta."

46041. "*Macarrón.* Cultivo del Distrito Bocono."

46042. "*Nortero.* Cultivo del Distrito Bocono."

46043. "*Pelón.* Distrito Urdaneta."

46044. "*Raspudo* or *Caña morada.* Distrito Urdaneta."

46045. "*Salmerón.* Cultivo del Distrito Bocono."

46046. "*Salmerón.* Cultivado en la 'Cristalina,' Distrito Trujillo."

46047 and 46048.

From San Lorenzo, Tolima, Colombia. Presented by Mr. M. T. Dawe, Estacion Agronomica Tropical. Received May 1, 1918.

46047. *ATTALEA* sp. Phœnicaceæ. **Coquito palm.**

Introduced for tests of oil-producing seeds of various kinds.

46048. *ELAEIS MELANOCOCCA* Gaertn. Phœnicaceæ. **Noli palm.**

"A palm with practically no stem, the leaves, 8 to 10 feet long, being borne within 2 to 3 feet of the ground. The fruits, which are compressed, irregular, and orange-red in color when ripe, are borne in dense clusters. Two classes of oil are obtained—red oil from the coating of the seeds and a clear oil from the kernels. The latter is very much prized as a cooking oil. The palm is common in the low lands among flooded areas under conditions similar to those of our flooded bottom lands along the Mississippi and other Gulf coast rivers." (*H. M. Curran.*)

For previous introduction, see S. P. I. No. 43001.

46049. ACACIA MELLIFERA (Vahl) Benth. Mimosaceæ.

From Cairo, Egypt. Presented by Mr. T. W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 4, 1918.

A shrub or small tree, native to the Niger and Upper Nile valleys and said to yield a gum like gum arabic. The smooth leaves, as broad as long, not exceeding 1 to 2 inches, are made up of two pairs of pinnae, each having a pair of obliquely obovate-oblong entire leaflets. The fascicled spikes of yellow flowers are longer than the leaves and produce pale sinuous pods 1 to 2 inches long. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 340.*)

46050. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

From New York, N. Y. Purchased from S. Rosen. Received May 11 and 17, 1918.

For previous introduction, see S. P. I. No. 45982.

46051 to 46055. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From China. Presented by Mr. F. J. White, Shanghai Baptist College. Received April 27, 1918. Quoted notes by Mr. White.

"The seeds that I had myself were all lost while I was in America, so that I am unable to vouch for the authenticity of these seeds, but they are probably all right. I think you will find some of them very good if any are like the ones that I had. The large, round, flat squash is very prolific, very hardy, and very good in quality."

46051. "Squash; long, round."

46052. "Squash; round, bell shaped."

46053. "Squash; round, flat, No. 1."

46054. "Squash; round, flat, No. 2."

46055. "Squash; round, flat, No. 3."

46056. ZEA MAYS L. Poaceæ. Corn.

From Guadalajara, Jalisco, Mexico. Presented by the estate of Diego Moreno. Received May 4, 1918.

"*Maiz pepitilla.* For sowing it is necessary to have grain which produces many shoots, and for this reason it is sown here in two ways—one at a distance of 1 meter (39.37 inches) apart, three grains in a hill; the other, one grain for every 25 cm. (9.84 inches), the latter being the better method. In both cases the furrows are a distance of 84 cm. (33 inches) apart. On coming up, the plant is very slender, but after reaching a height of 25 cm., it becomes very graceful and robust. In hot lands or along the coast it yields in three months, in moderate temperature in six months, and in cooler lands from seven to eight months. It is very well adapted to lands where the rainfall is not abundant, for it is more drought-resistant than any other variety. The stalk grows more than that of other corn, and generally each stalk bears two ears if the land is ordinary and three and more ears when the land is very good. Another of the advantages which it has is that the ear rots less than that of any other variety, because the leaves inclose it perfectly at the end and do not permit water to enter when it is mature. The cob of the ear is very slender and the corn very high, for which reasons it yields much. When the yield is good it generally weighs 70 kilograms to the hectoliter (about 55 pounds to the bushel) and even 72 kilograms (56.5 pounds) when the yield is very good. This corn is appreciated because it contains much starch; when made into meal for use in the preparation of tortillas

it swells and gives better results than any other kind, thus it has a greater value than other varieties. As it contains less oil than other varieties, it is not good for fattening hogs, but is suitable for other animals." (*Moreno.*)

46057. LUPINUS CRUCKSHANKSII Hook. Fabaceæ. **Lupine.**

From London, England. Purchased from Messrs. Watkins & Simpson, Ltd., Covent Garden. Received May 4, 1918.

Obtained for the experiments of the Office of Forage-Crop Investigations.

A somewhat woody perennial, up to 5 feet high, native to the Andes of Chile. The seven to nine leaflets are lanceolate, obtuse, and glaucous underneath. The large fragrant flowers are white with a yellow standard, turning violet with age. (Adapted from *Curtis's Botanical Magazine*, pl. 3056.)

46058. ROSA CHINENSIS Jacq. Rosaceæ. **Rose.**

From Hertford, England. Plants purchased from Paul & Sons, Cheshunt Nurseries. Received May 16, 1918.

"*Ard's Rover.* A semiclimbing rose of the *Rosa chinensis* type. Flowers very large, dark red, abundantly produced. Useful for breeding red varieties." (*Dr. Walter Van Fleet.*)

46059 and 46060.

From London, England. Purchased from Messrs. Watkins & Simpson, Ltd., Covent Garden. Received May 4, 1918.

Obtained for the experiments of the Office of Forage-Crop Investigations.

46059. LUPINUS DOUGLASSII Agardh. Fabaceæ. **Lupine.**

An herbaceous perennial from a slightly woody base, found along the coast of California from San Francisco to Los Angeles. The pubescent leaves have seven to nine oblanceolate leaflets 1 to 2 inches long. The large blue or purple flowers are scattered or subverticillate on long-peduncled terminal racemes. (Adapted from *Brewer and Watson, Botany of California*, vol. 1, p. 117.)

46060. LUPINUS POLYPHYLLUS Lindl. Fabaceæ. **Lupine.**

Variety *moerheimii*. This handsome and useful lupine differs from the true polyphyllus forms in its manner of growth, this being very much more compact and erect. One other point of difference worthy of note is that the lower flowers, which are the first to open, are very long lived and remain fresh until practically all the blooms have expanded. In *Lupinus polyphyllus* the lower flowers begin to fade some time before the topmost flowers have opened. *L. moerheimii* is very free flowering and of a beautiful bright-pink hue. (Adapted from *The Gardeners' Magazine*, vol. 51, p. 613.)

46061. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. **Tu-chung.**

From China. Procured by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 9, 1918.

"A Chinese caoutchouc tree, found wild on densely forested mountain slopes in southwestern Shensi and southeastern Kansu; also much cultivated in gar-

dens and planted here and there along roadsides. This tree has the peculiar property of exhibiting rubberlike threads of shining whitish color when pieces of bark or leaf are snapped across, but it shows this peculiarity more strongly in its winged fruits. On this account it is called *Shih mien shu*, meaning 'stone-cotton tree,' reference being made apparently to the resemblance of this caoutchouc or rubber to asbestos. This tree reaches a height of 80 feet and seems to grow best when sheltered by other trees. It might prove of value as a quick-growing ornamental tree for parks in those sections of the United States where the winters are not too severe." (*Meyer.*)

For previous introduction, see S. P. I. No. 40028.

46062 and 46063.

From China. Collected in Kih sien, Honan Province, by Mr. G. D. Schlosser, at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 9, 1918.

46062. *CELTIS SINENSIS* Pers. Uimaceæ.

Hackberry.

A tree, native to China and Japan, growing to a height of 30 feet. The broadly ovate leaves, 2 to 4 inches long, are cordate at the base and acuminate at the apex, with a serrate-dentate margin. The dull orange-red fruits are borne on stout pedicels. This tree has proved hardy at the Arnold Arboretum, Jamaica Plain, Mass. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 2, p. 710.*)

46063. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

Introduced for experiments in producing a blight-resistant stock for cultivated varieties of pear and for hybridizing, in an effort to produce blight-resistant varieties.

46064 to 46073.¹

From Santos, Brazil. Procured by Mr. C. F. Deichman, American consul. Received May 9, 1913. Quoted notes by Mr. Deichman.

46064 to 46072. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46064. "No. 1. *Mulatinho claro* (brown bean; light color)."

46065. "No. 2. *Mulatinho oscuro* (brown bean; dark color)."

46066. "No. 4. *Vermelho* (red bean)."

46067. "No. 5. *Amarello* (yellow bean)."

46068. "No. 6. *Preto* (black bean)."

46069. "No. 7. *Branco grande* (white bean; large)."

46070. "No. 8. *Branco miudo* (white bean; small)."

46071. "No. 9. *Manteiga* (butter bean)."

46072. "No. 10. *Pintado* (spotted bean)."

46073. *VIGNA SINENSIS* (Tornier) Savi. Fabaceæ.

Cowpea.

"No. 3. *Fradino* (dwarf or French bean)."

¹ Introduced for use in a large series of experiments in testing and breeding varieties of South American legumes for the purpose of selecting or developing superior strains suited to the various conditions obtaining in different parts of the United States.

46074 and 46075.

From Brisbane, Australia. Presented by Mr. L. G. Corrie. Received May 2, 1918.

46074. *Gossypium barbadense* × *hirsutum*. Malvaceæ. **Cotton.**

"*Jones's hybrid*. This variety was first observed in numerous fields of cotton in 1906. and, as far as can be surmised, is a sport originating from a Sea Island variety (Seabrook) and an Upland type (Russell's Big Boll)." (Quoted from an article by Mr. D. Jones in the *Queensland Agricultural Journal for March, 1916, p. 153.*)

46075. *Ricinus communis* L. Euphorbiaceæ. **Castor-bean.**

"*Bancroft's hybrid*." Seed an inch long by five-eighths of an inch broad; light gray with irregular reddish brown markings. Introduced for experiments in testing the oil content of various forms.

46076. *Solanum tuberosum* L. Solanaceæ. **Potato.**

From Bogota, Colombia. Tubers presented by Mr. Jorge Ancizar. Received May 7, 1918.

"*Papa criolla*. Tubers shaped like the common potato, but only about an inch in shortest diameter. The Creole potatoes come out in three months and are delicious fried with their skins." (*Ancizar.*)

For previous introduction, see S. P. I. No. 44580.

46077 to 46079.

From Cheshunt, Hertford, England. Plants purchased from Paul & Sons. Received May 9, 1918. Quoted notes by Dr. Walter Van Fleet.

46077. *Rosa foetida* Herrmann. Rosaceæ. **Rose.**
(*R. lutea* Mill.)

"*Austrian Brier*. Single bloom. Supposed to be a garden representative of *Rosa foetida*, probably very near the type. Shrub 5 to 6 feet tall, branches slender, arching, and armed with short prickles, flowers 2 or more inches in diameter, bright golden yellow, in sparse clusters. Desirable for breeding yellow-flowered varieties."

46078. *Rosa chinensis* Jacq. Rosaceæ. **Rose.**

"*Red-Letter Day*. Garden form of *Rosa chinensis*. Dwarf shrub with erect stems growing about 2 feet high. Flowers single or semi-double, intense scarlet-crimson, best of its color. Desirable for breeding."

46079. *Rosa* sp. Rosaceæ. **Rose.**

"*Mrs. Emily Gray. Jersey Beauty* × *Rosa pernetiana. Jersey Beauty* has for parents *Rosa wichuraiana* and *Perle de Jardines*, the latter a yellow-flowered form of *R. odorata*. *Mrs. Emily Gray* is said to be the best yellow-flowered form of the *wichuraiana* type that has been developed. Desirable for breeding."

46080 to 46110.

From Darjiling, India. Presented by Dr. G. H. Cave, director, Lloyd Botanic Garden. Received May 11, 1918.

46080. *Boehmeria macrophylla* D. Don. Urticaceæ.

A pretty shrub with narrow, dentate leaves 6 to 12 inches in length and very long, drooping flower spikes. It is a native of Upper Burma and northeastern India, where it ascends to an altitude of 4,000 feet. The wood is light reddish brown and moderately hard, and the bark

46080 to 46110—Continued.

yields a good fiber which is used for ropes and fishing lines. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658, 1902.)

For previous introduction, see S. P. I. No. 44860.

46081. CALLICARPA RUBELLA Lindl. Verbenaceæ.

An erect, single-stemmed shrub up to 20 feet in height, native of northern India and China. The branches and leaves are horizontal, the latter being cordate-oblong, softly pubescent above and tomentose beneath, with crenate-serrate margins. The small cymes, 2 inches across, of pink flowers are followed by small purple berries. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 569.)

46082. CRACCA CANDIDA (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.).

A shrubby perennial, 4 to 7 feet high, with soft pubescent leaves and white flowers, native to the northern part of India up to an altitude of 3 000 feet. It is used as a cover crop and as a green manure. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 39.)

46083. FRAXINUS FLORIBUNDA Wall. Oleaceæ.

Ash.

"This is a large deciduous tree found growing in the Himalayas from 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 mannite, contained in this exudation, differs from cane and grape sugar in not being readily fermentable, although under certain conditions it does ferment and 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 and 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, sampan poles, plows, platters, spinning wheels, and for many other purposes." (*Watt, Dictionary of the Economic Products of India*, vol. 3, p. 442.)

46084. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook.)

Cherry laurel.

A tree, 30 to 40 feet high, found in the temperate portions of the central and eastern Himalayas, at altitudes of 4,000 to 7,000 feet. The branches are slender, with flat, smooth leaves 4 to 7 inches long, and yellowish white flowers one-fourth to one-third of an inch across in many-flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

For previous introduction, see S. P. I. No. 44092.

46085. LILIUM GIGANTEUM Wall. Liliaceæ.

Lily.

A tall lily, up to 12 feet in height, found in the Himalaya Mountains from Kumaon and Gurhwal to Khasi and Sikkim in India. The 12 to 20 scattered, deep-green leaves are 12 to 18 inches in diameter on petioles a foot long at the base of the stem, reducing in size toward the top. The 6 to 12 deliciously fragrant flowers are 6 inches long and nearly as broad. The waxy segments of the perianth are purplish green outside, citron yellow changing to white inside, with purple midribs. The stamens are yellow. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1877.)

46080 to 46110—Continued.

46086. *LILIUM NEPALENSE* D. Don. Liliaceæ.

Lily.

The beautiful reflexed flowers are very striking in appearance, being citron yellow toward the edge and deep maroon-purple or almost black within. If *L. nepalense* were only a little hardier it would doubtless be the most popular of all the oriental lilies. It is a native to the Himalayan region. (Adapted from *The Garden*, vol. 78, p. 159.)

46087. *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, which is moderately hard, is a dark olive brown. The wood of this species is used for planking and would do well for tea boxes." (*Watt, Dictionary of the Economic Products of India*, vol. 5, p. 241.)

For previous introduction, see S. P. I. No. 41814.

46088. *MICHELIA EXCELSA* Blume. Magnoliaceæ.

A tall tree found at an altitude of 5,000 feet on the Himalayas and in the Khasi Hills in India. The twigs, the under sides of the leaves, and the flower buds are covered with soft, silky, brown pubescence. The leaves are oblong and acute, and the white flowers are 5 inches across, with about 12 segments to the perianth. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

46089. *MICHELIA LANUGINOSA* Wall. Magnoliaceæ.

A medium-sized tree with grayish white, tomentose twigs, native to India on the temperate slopes of the Himalayas up to an altitude of 7,000 feet. The oblong or lanceolate leaves, 10 inches long and 3 inches wide, on short petioles, are glabrous above and white tomentose underneath. The white flowers, 4 inches across, have about 18 perianth segments varying from obovate and obtuse outside to lanceolate and acute near the center. The fruit is densely woolly. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

46090. *MUCUNA MACROCARPA* Wall. Fabaceæ.

A woody climber found on the lower slopes of the Himalayas and in the Khasi Hills up to an altitude of 6,000 feet. The leaves are made up of three subcoriaceous, ovate leaflets, 6 to 8 inches long. The fascicled racemes of purple flowers, 3 inches long and 2 inches wide, are followed by pods 1½ feet long by 2 inches wide, containing 8 to 12 flattened-orbicular seeds. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 186.)

46091. *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 feet. The wood is gray, soft, and even grained, and is used for house building and other purposes about Darjiling. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 438.)

46092. *PODOPHYLLUM EMODI* Wall. Berberidaceæ.

May-apple.

This plant is herbaceous, about a foot in height, with only two leaves, which are alternate on long stalks, palmately three to five lobed, purple spotted, and glabrous. The flower is solitary, axillary, or raised above the axil, nodding, cup shaped, white or pale rose colored. The berry is

46080 to 46110—Continued.

deep red in color and though described as tasteless is, it is said, sometimes eaten. (Adapted from *Gardeners' Chronicle*, 2d ser., vol. 18, p. 241.)

46093. PRUNUS CERASOIDES D. Don. Amygdalaceæ.
(*P. puddum* Roxb.)

A large tree, making a brilliant appearance when in flower, native to northern India at altitudes of 3,000 to 8,000 feet. The leaves are ovate to lanceolate, 3 to 5 inches long, with doubly serrate margins. The flowers, which appear before the leaves, are either solitary or in umbels and are rose-red or white. The acid fruits, on prominently thickened pedicels, are oblong and have a thin yellowish or reddish flesh. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314.)

46094. PRUNUS NAPAULENSIS (Seringe) Steud. Amygdalaceæ. **Cherry.**

A small tree native to the temperate Himalayas at altitudes of 6,000 to 10,000 feet. The leaves are 4 to 6 inches long, broadly lanceolate with a sharp point, and crenate on the margins. The racemes, often 10 inches long, of white flowers, are followed by globose fruits nearly three-fourths of an inch in diameter with smooth, thick-walled stones. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 316.)

46095. PYRULARIA EDULIS (Wall.) DC. Santalaceæ.

A medium-sized thorny tree native to the tropical slopes of the Himalayas up to an altitude of 5,000 feet. The leaves are 3 to 7 inches long, rather fleshy, oblong, with entire margins. The staminate flowers are in racemes, and the pistillate are solitary, producing edible pear-shaped drupes, 2 inches long. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 230.)

46096. RHUS JAVANICA L. Anacardiaceæ. **Sumac.**
(*R. semialata* Murray.)

"A sumac, found on stony mountain slopes, in ravines, and in wild places; growing into a tall shrub or a small tree. Leaves large, light green, pubescent, winged. Fruits borne in large spikes; berries coated with a sticky whitish wax which burns readily. The Chinese do not seem to utilize this wax in any way. Of value as an ornamental park shrub for the mild-wintered sections of the United States." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 40716.

46097. ROSA MACROPHYLLA Lindl. Rosaceæ. **Rose.**

A shrub native to the Himalayas and western China, becoming 8 feet or more in height, with erect stems and arching branches usually furnished with straight prickles up to half an inch in length. The leaves, which are composed of 5 to 11 leaflets, are up to 8 inches in length. The deep-pink or red flowers are up to 3 inches in width and are produced singly or in clusters of varying number. The elongated, pear-shaped fruits are bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 433.)

For previous introduction, see S. P. I. No. 43900.

46098. ROSA SERICEA Lindl. Rosaceæ. **Rose.**

The flowers are slightly cupped, pale pink or blush, almost white in the center, and the leaflets are small, with several deep serratures at the apex. (Adapted from *Journal of Horticulture*, vol. 43, p. 7.)

46080 to 46110—Continued.

46099. *RUBIA CORDIFOLIA* L. Rubiaceæ. **Madder.**

An herbaceous creeper with perennial roots, which is met with in the hilly districts of India from the northwestern Himalayas eastward and southward to Ceylon. The Manjit root or East Indian madder is obtained for the most part from this species and is much employed by the natives of India for dyeing coarse cotton fabric or the threads from which it is woven various shades of scarlet, coffee brown, or mauve. The East Indian madder of commerce consists of a short stalk from which numerous cylindrical roots, about the size of a quill, diverge. These are covered with a thin brownish pulp which peels off in flakes, disclosing a red-brown bark marked by longitudinal furrows. Many different methods are used for dyeing with this madder, a short account of which may be found in Watt, Dictionary of the Economic Products of India, from which this description is adapted.

For previous introduction, see S. P. I. No. 39656.

46100. *SAMBUCUS ADNATA* Wall. Caprifoliaceæ. **Elder.**

An ornamental perennial allied to the elderberry, with cymes of fragrant white flowers, 10 inches across, followed by bright-red fruits.

For previous introduction, see S. P. I. No. 41596.

46101. *SAMBUCUS JAVANICA* Reinw. Caprifoliaceæ. **Elder.**

"This is a very widely distributed species ranging from the Malayan Archipelago to central Japan and western China and also found in eastern Africa. It is characterized by the slender-pediceled flowers, the presence of conspicuous abortive flowers, and the very wide and loose inflorescence with the longer rays subthyrsoid. It has red fruits and shows a tendency to have the upper leaflets more or less adnate to the rachis and sometimes decurrent." (*Sargent, Plantae Wilsonianae, vol. 1, p. 307.*)

For previous introduction, see S. P. I. No. 39671.

46102. *SAURAUJA NAPAULENSIS* DC. Dilleniaceæ.

A medium-sized tree found at altitudes of 5,000 to 7,000 feet in the Himalayas. The young parts of the tree are covered with scurfy tomentum mixed with brown scales. The leaves, 10 inches long and 4 inches wide, are grouped at the ends of the branches and are oblong-elliptic in outline with deeply serrate margins. The pink flowers, half an inch across, occur in axillary panicles and are followed by green, edible, sweet fruits with mealy flesh. (Adapted from *Hooker, Flora of British India, vol. 1, p. 286.*)

46103. *SOLANUM KHASIANUM* C. B. Clarke. Solanaceæ.

An herbaceous perennial from the Khasi Hills in India, with stout stems densely covered with yellow hairs and having straight prickles two-thirds of an inch long. The leaves, 7 inches long by 5 inches wide, are deeply lobed, hirsute, and prickly on both surfaces. The flowers, nearly an inch broad, are borne in lateral 1 to 4 flowered racemes, and the globose fruits are an inch in diameter. (Adapted from *Hooker, Flora of British India, vol. 4, p. 234.*)

46104. *SORBUS CUSPIDATA* (Spach) Hedl. Malaceæ.
(*Pyrus vestita* Wall.)

A deciduous tree which is a native of the eastern Himalayas and may be found growing from Gurhwal to Sikkim, at altitudes between 9,000

46080 to 46110—Continued.

and 10,000 feet. The fruit is edible and is sometimes used as food. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 377.*)

For previous introduction, see S. P. I. No. 39133.

- 46105. SORBUS FOLIOLOSA** (Wall.) Spach. Malaceæ. **Mountain ash.**
(*Pyrus foliolosa* Wall.)

A small tree with densely woolly young shoots, found on the temperate slopes of the Himalayas. The pinnately compound leaves, 4 to 6 inches long, are made up of five to nine pairs of linear-lanceolate, obscurely serrate, coriaceous leaflets. The compound, tomentose corymbs of white flowers are followed by very small ovoid fruits. (Adapted from *Hooker, Flora of British India, vol. 2, p. 376.*)

- 46106. SORBUS INSIGNIS** (Hook. f.) Hedl. Malaceæ. **Mountain ash.**
(*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.*)

For previous introduction, see S. P. I. No. 39134.

- 46107. STYRAX HOOKERI** C. B. Carke. 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, vol. 6, pt. 3, p. 385.*)

For previous introduction, see S. P. I. No. 41815.

- 46108. SYMLOCOS THEAEFOLIA** D. 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 common also in the Khasi Hills and in Martaban. The leaves of this species are used as an auxiliary with *Morinda tinctoria* and lac in dyeing. The wood is white and soft and is used for fuel and for rough house posts. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 3, p. 400.*)

- 46109. VIBURNUM ERUBESCENS** Wall. Caprifoliaceæ.

A tall shrub or small tree common on the Himalayas up to an altitude of 10,000 feet. It has small ovate leaves, 3 inches long and 1 inch wide, and small pendulous corymbs of white flowers. The red, ellipsoid fruits are one-fourth of an inch long. (Adapted from *Hooker, Flora of British India, vol. 3, p. 7.*)

- 46110. ZANTHOXYLUM OXYPHYLLUM** Edgeworth. Rutaceæ.

An alternate-leaved shrub, with hooked prickles, native to the temperate and subtropical slopes of the Himalayas at altitudes of 4,000 to 9,000 feet. The pinnately compound leaves, about a foot long, have 3 to 10 pairs of ovate to elliptic leaflets with crenate-serrate margins. The flowers occur in many-branched umbellate cymes; and the tubercled fruits, the size of a pea, open transversely, showing the black seeds. (Adapted from *Hooker, Flora of British India, vol. 1, p. 294.*)

46111 to 46118. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Reading, England. Tubers presented by Sutton & Sons. Received April 20, 1918.

46111. Sutton's *Harbinger*.

46112. Sutton's *Gladiator*.

46113. Sutton's *Early Ashleaf*.

46114. Sutton's *Drummond Castle*.

46115. Sutton's *Edinburgh Castle*.

46116. Sutton's *Berwick Castle*.

46117. Sutton's *Carrisbrooke Castle*.

46118. Sutton's *Dunnottar Castle*.

46119. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. Tu-chung.

From Suilokuo, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

An interesting deciduous tree somewhat resembling an elm in habit and foliage. The leaves and bark contain a remarkable substance resembling rubber.

For previous introduction and description, see S. P. I. No. 46061.

46120. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

The *yang-tao*, as this deciduous climber is known in Szechwan Province, where it is native, has attracted considerable attention from travelers and missionaries in China, because of the high quality of its fruits and the ornamental value of the plant. Single plants often grow 30 feet in length, so that the vine will cover large areas of trellis. The leaves have a plushlike texture and an unusual dark-green color. The young shoots are bright pink and villous pubescent. The size and regular spacing of the leaves make this climber valuable where large areas of foliage are desired. The flowers are buff yellow to white, fragrant, and large size, being from 1 to 1½ inches in diameter. The abundance of these flowers adds greatly to the beauty of this plant and enhances its value as an ornamental. The following account of the fruit was written by Mr. Wilson while in China:

"Fruits abundantly produced, ovoid to globose, russet brown, more or less clothed with villous hairs. Flesh green, of most excellent flavor, to my palate akin to that of the gooseberry, but tempered with a flavor peculiarly its own."

The fruit is excellent when fresh, and it also makes very fine jam and sauce. Full information is lacking in regard to the fruit grown outside of China; some fruits received from California, however, bear out the high praise given the fruit by travelers. While this plant is not hardy in regions of severe winters, the rapid growth in the spring will make it a valuable ornamental, even in those regions where it is killed to the ground each winter. Vines have lived and made excellent growth near Washington during the

past eight years, but have not fruited. As an ornamental alone it is a very valuable vine. See David Fairchild, "Some Asiatic Actinidias," in Bureau of Plant Industry Circular No. 110, pp. 7-12.

For previous introduction, see S. P. I. No. 45588.

46121. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"(No. 146b. Hingshanhsien, Hupeh, China. December 27, 1917.) A large specimen fruit. Used as perfumers; also to give flavor to alcoholic drinks." (Meyer.)

46122. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From Concepcion, Paraguay. Presented by Mr. T. R. Gwynn. Received June 15, 1918.

"Seeds of a squash which the Indians grow in this country. The plant is identical with the 'white bush scallop' squash; the fruit is somewhat smaller, of the same shape, and yellowish when mature." (Gwynn.)

46123. CITRUS MEDICA L. Rutaceæ. Citron.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"(No. 148b. Ichang, Hupeh, China. December 21, 1917.) *Foo-tao* or *Foo-sohtao*. Used as perfumers; also to give flavor to alcoholic drinks." (Meyer.)

46124. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Grafted plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution.

A perfect-flowered variety which was grown from seed received under S. P. I. No. 21781. The original plant of this introduction was sent to Mr. William Hertrich, San Gabriel, Calif. Scions from this plant were presented by him during the summer of 1917.

For description, see No. 46120.

46125 to 46130.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918. Numbered May, 1918.

46125. CITRUS sp. Rutaceæ.

"(155b. Ichang, Hupeh, China. December 21, 1917.) A hybrid of pummelo *Hsiang gan tze* and sweet orange (?) said to have come from Szechwan."

46126. CITRUS AURANTIUM L. Rutaceæ.

"(156b. Across the Yangtze near Ichang, Hupeh, China. December 22, 1917.) A bitterish orange resembling a large lemon called *Tsen tze*. Scions sent under No. 1297 [S. P. I. No. 45941.]"

46125 to 46130—Continued.

46127. CITRUS sp. Rutaceæ.

“(157b. Changyanghsien, Hupeh, China. December 9, 1917.) An orange resembling a lemon. Chinese name *Ba ehr gan*. Scions sent under No. 1291 [S. P. I. No. 45934].”

46128. CITRUS ICHANGENSIS Swingle. Rutaceæ.

Ichang lemon.

“158b. Various types from divers localities.”

46129. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Malaceæ.
(*Pyrus cathayensis* Hemsl.)

“(159b. Ichang, Hupeh, China. December 21, 1917.) *Mu kua*. Used as a room perfumer.”

46130. CHAENOMELES SINENSIS (Thouin) Koehne. Malaceæ.

(*Pyrus sinensis* Poir.)

Chinese quince.

“(160b. Ichang Hupeh, China. December 31, 1917.) *Mu li*. It might possibly prove a good stock for loquats and pears in the Gulf States. Used as a room perfumer.”

For an illustration of a full-sized tree, see Plate V.

46131. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Plants grown from the seed of S. P. I. No. 21781 sent to the Plant Introduction Field Station, Chico, Calif., by Mr. William Hertrich, San Gabriel, Calif., in the summer of 1917. Numbered for convenience in recording distribution.

For previous introduction, see S. P. I. No. 46124.

46132. CITRUS sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

“Large fruit, about 4 inches in diameter.” (W. T. Swingle.)

46133 to 46135.

From New South Wales, Australia. Presented by Mr. B. Harrison, Buringbar. Received June 15, 1918.

46133. CHAETOCHELOA NIGRIROSTRIS (Nees) Skeels. Poaceæ. Grass.
(*Setaria nigrirostris* Dur. and Schinz.)

A hardy tufted grass which has made good growth. Although the leaves are a little hard, there is a very large quantity in proportion to the stem; appears to be a quick succulent grower; carries a good quantity of seed; and grows well in New South Wales. (Adapted from an article by E. Breakwell, in *Agricultural Gazette, New South Wales, Feb. 2, 1916.*)

46134. GOSSYPIUM sp. Malvaceæ.

Cotton.

“*Harrison's Hybrid*. A most prolific variety hybridized by myself from Caravonica and Indian Burhi. The cotton is of splendid quality. From a 3-year-old tree.” (Harrison.)

46135. OPUNTIA sp. Cactaceæ.

Cactus.

“A spineless and seedless cactus which has been produced by me after several years of careful cultivation and which should prove of real value

46133 to 46135—Continued.

in the semiarid sections of the United States. Stock eat it with great avidity even when grass is abundant; and as it is closely related to the sweet-leaf cactus (*Opuntia cochinelifera*), its feeding value is much greater than the other varieties commonly used for fodder." (*Harrison.*)

46136. PISTACIA CHINENSIS Bunge. Anacardiaceæ.**Chinese pistache.**

From Changsha, Hunan, China. Purchased from Mr. J. H. Reisner, University of Nanking, Nanking, through Mr. Nelson T. Johnson, American consul. Received at the Plant Introduction Field Station, Chico, Calif., June 20, 1918.

"*Huang lien shu.* A very promising shade tree for those sections of the United States where the summers are warm and the winters but moderately cold. The young leaves are carmine red and the fall foliage gorgeously scarlet and yellow. The wood, which is very heavy and not often attacked by insects, is employed in the manufacture of furniture. From the seeds an oil is obtained which is used for illuminating purposes. The young, partly expanded foliage buds are sparingly eaten when boiled, like spinach. The staminate trees invariably grow larger and more symmetrical than the ones that bear the pistillate flowers." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 45593.

46137. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ. Mitsuba.
(*Cryptotaenia canadensis* DC.)

From Yokohama, Japan. Presented by Mr. Barbour Lathrop. Received June 20, 1918.

This plant, which is allied to celery, parsnips, and carrots, has been cultivated by the Japanese for many generations. Mr. Lathrop, in sending in seed purchased from the Yokohama Nursery Co., says: "Mitsuba, they say, costs less than udo, and far more of it is consumed by the poor. Every part of the plant is eaten, and its leaves, stems, and roots are cooked as desirable edibles. They say also that the stems, besides being cooked, are eaten as celery is with us. Like udo, it grows in light, rather poor soil; is planted from seed, but requires less care in growing, and reaches the market at far less expense. To use their own expression, 'Mitsuba is popular with everybody from the highest rank to the lowest.'" Mr. Lathrop also procured the following statement from the Yokohama Nursery Co. on its culture and uses:

"Sow the seed any time from September to about the middle of April in rows about 1½ to 2 feet apart, somewhat thickly in bands 5 to 6 inches wide, and cover lightly with soil. After the seedlings are an inch or so tall, thin out to 2 to 3 inches apart; they grow best in partially sheltered moist places. In central Japan, where the climate is mild, the seed is usually sown in spring, from about March until May, between the furrows of wheat, barley, or beans, which give enough shade to the young seedlings; if the seed be sown in full exposure after May it will not germinate, so it is essential to sow the seed before the weather gets too warm. After wheat, barley, or beans are harvested the ground should be hoed and manured with liquid oil cake or bone meal, to invigorate the roots. After the leaves and stalks die, from about December, the roots can be dug and brought into the forcing frame or malt bed; or they can be left alone in the field, and just before the new growth begins to show early in spring, heap up 5 to 6 inches of soil, in the same manner as asparagus is cul-

tivated. They are fit for market when the young sprouts begin to break through the surface of the soil. The roots, being perennial, can be used over and over again for two to three years after the stalks are cut off, but, as the roots are also edible, it is usual to dig up the whole plant; moreover, the young stalks keep better with the roots on.

"In cold regions, like Hokkaido or northern Hondo, the roots must be well covered with earth in winter. The seeds collected from 1-year-old plants are considered to be worthless, as they give rise to plants which run to flowering shoots the first year. Properly, the seed should be collected from 2-year-old plants. The seed keeps its vitality for three years. Twenty pounds are required per acre. The average crop of last two seasons realized about \$200 per acre in Japan.

"As to soil, loam with plenty of moisture is preferable, but light black soil or any other light soil, provided the ground is not too dry, serves very well.

"Cooking methods: (1) The green leaves and stalks are eaten raw, with vinegar and sauce as a salad; also they are used as an ingredient in soups, imparting a good flavor. (2) The young blanched stalk is eaten raw like celery; or, after boiling, is eaten like asparagus, with sauce. Either way it is edible, skin and all. (3) The roots, after the young blanched stalks are cut off, are chopped into pieces about 1½ inches long and parched in a pan with lard or butter until they get quite tender; then sugar and soy is added according to taste. There are several other methods of cooking, but the above will be found the most suitable for the foreign palate."

Received as *Cryptotaenia japonica*.

For previous introduction, see S. P. I. No. 45247.

46138. HIBISCUS MACROPHYLLUS Roxb. Malvaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received June 22, 1918.

A tree or shrub of eastern Bengal and the Eastern Peninsula, the bark of which yields a strong cordage fiber valued by the Burmans. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 242.*)

46139. CITRUS sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

The fruit was decomposed and the label accompanying it illegible.

46140. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received June 25, 1918.

"A small wing-leaved tree of the legume family, producing an abundance of yellow flowers native to the East Indies and now common in most tropical countries. It produces a smooth cylindrical pod twice the thickness of the finger and sometimes 2 feet in length. The interior is divided into numerous transverse portions, each containing a seed embedded in pulp of a sweet taste, which forms an important laxative medicine. The leaves, as also those of *C. alata*, are used as a cure for ringworm." (*Smith, Dictionary of Popular Names of Economic Plants.*)

For previous introduction, see S. P. I. No. 33781.

46141 to 46145.¹ *PHASEOLUS COCCINEUS* L. Fabaceæ.**Scarlet Runner bean.**

46141. No. 1. Dark brown, mottled with white and light brown.
 46142. No. 2. Deep livid² or vinaceous brown, mottled with black.
 46143. No. 3. Livid brown, not mottled.
 46144. No. 4. Cinnamon or avellaneous, not mottled.
 46145. No. 5. Cinnamon or avellaneous, mottled.

46146. *SALVIA HISPANICA* L. Menthaceæ.

From Coyoacan, Mexico. Presented by Mrs. Zelia Nuttall. Received May 14, 1918.

An herbaceous perennial with ovate, serrate leaves and quadrangular spikes of blue flowers. The mucilaginous seeds are used in making the Mexican drink called "chia."

46147. *ASTROCARYUM POLYSTACHYUM* Wendl. Phœnicaceæ. **Palm.**

From San Jose, Costa Rica. Presented by Mr. Ad. Tonduz, Administracion General de la Tributacion Directa. Received May 16, 1918.

Coyolillo. "Palm fruits collected in the Barra del Colorado, Atlantic coast of Costa Rica." (*Tonduz*.)

"A palm, 6 to 10 feet in height, with irregularly divided leaves. The round fruits, covered with bristles, are clustered in peduncled cones. From the hot districts of both coasts. 'Coyolillo' is perhaps applied to other species." (*Pittier, Plantas Usuales de Costa Rica, p. 85.*)

46148 to 46150.

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received May 17, 1918. Quoted notes by Sr. Arias-Feraud.

46148. *ACHRAS ZAPOTA* L. Sapotaceæ. **Sapodilla.**
 (*A. zapota* L.)

"Nisberry seeds. This tree grows about 20 feet high and produces one of the best tropical fruits."

For previous introduction and description, see S. P. I. No. 44890.

46149. *ANNONA SQUAMOSA* L. Annonaceæ. **Sugar-apple.**

"Yellow anona seeds. Nice fruits."

46150. *CHRYSOPHYLLUM CAINITO* L. Sapotaceæ. **Caimito.**

"Purple *star-apple* seeds."

A handsome tropical American fruit and ornamental tree, evergreen, up to 50 feet high, with beautiful broad leaves, smooth and green above and silky and golden yellow on the under surface. Fruit the size of an apple with star-shaped core and purple flesh and skin. The pulp is said to be delicious if the fruit is left on the tree until ripe. Will not stand frost.

¹ See footnote on page 19.

² The names of colors accord with Ridgway's Color Standards and Nomenclature.

46151 to 46160.¹

From Peru. Presented by Luis Roos & Co., of Callao, Peru, through Mr. W. W. Handley, American consul. Received May 17, 1918. Quoted notes by Mr. Roos.

- 46151.** CICER ARIETINUM L. Fabaceæ. Chick-pea.
 "No. 1. *Garbanzos*. These are grown at Pacasmayo and Chincha."
- 46152.** LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.
 (*Lens esculenta* Moench.)
 "No. 3. *Lentejas*. These are grown at Trujillo."
- 46153.** PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.
 "No. 7. *Pallares*. These are from Chincha."
- 46154 to 46157.** PHASEOLUS VULGARIS L. Fabaceæ. Common bean.
46154. "No. 2. *Panamitos*. These are from Pacasmayo, the same kind of bean as grown at Chincha, but of a much better quality."
46155. "No. 5. *Negros*. These are from Chincha."
46156. "No. 6. *Bayos*. These are grown in the northern part of Peru, the principal market being San Pedro and Guadalupe (Pacasmayo)."
46157. "No. 9. *Cocachos*. These are from Chincha."
- 46158 and 46159.** PISUM SATIVUM L. Fabaceæ. Garden pea.
46158. "No. 10. *Alverja verde*. These are grown at Trujillo."
46159. "No. 4. *Alverja amarilla*. These are grown all over the northern part of Peru. Principal market, Pacasmayo."
- 46160.** VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.
 "No. 8. *Castilla*. These are grown at Casma."

46161 to 46163.¹

From Buenos Aires, Argentina. Procured by Mr. W. Henry Robertson. American consul general. Received May 18, 1918. Quoted notes by Mr. Robertson.

- 46161.** PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.
 "*Porotos manteca*."
- 46162.** PHASEOLUS VULGARIS L. Fabaceæ. Common bean.
 "*Porotos saltenos*."
- 46163.** VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.
 "*Porotos tapes*."

46164 to 46166.¹

From Montevideo, Uruguay. Presented by Mr. Domingo Basso, through Mr. William Dawson, American consul. Received May 18, 1918. Quoted notes by Mr. Basso.

¹ See footnote on page 19.

46164 to 46166—Continued.

46164 and 46165. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46164. "*Reyna*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as 'Poroto (bean) de la Reyna.'"

46165. "*Aguila*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as 'Poroto (bean) Aguila.'"

46166. *VICIA FABA* L. Fabaceæ. Broad bean.

"*Sevilla*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as '*Haba* (bean) *Sevilla*.'"

46167 to 46177.¹

From Puerto Cabello, Venezuela. Procured by Mr. Frank A. Henry, American consul. Received May 21, 1918. Quoted notes by Mr. Henry.

46167 and 46168. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.

46167. "*Quinchonchos*." 46168. "*Quinchonchos mulatos*."

46169 to 46171. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

46169. "*Tapiramos blanquina*." 46171. "*Tapiramos blancos*."

46170. "*Tapiramos cocineras*."

46172 and 46173. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46172. "*Caraotas negras*." 46173. "*Caraotas rosadas*."

46174. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"*Chicharos*."

46175. *VIGNA CYLINDRICA* (Stickm) Skeels. Fabaceæ. Catjang.

"*Frijoles blancos*."

46176 and 46177. *VIGNA SINENSIS* (Turner) Savi. Fabaceæ. Cowpea.

46176. "*Frijoles bayos*." 46177. "*Frijoles morados*."

46178 to 46183.¹

From Maracaibo, Venezuela. Purchased by Mr. Emil Sauer, American consul. Received May 21, 1918. Quoted notes by Mr. Sauer.

46178. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"*Caraotas coloradas*."

46179 to 46181. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46179. "*Caraotas negras*." 46181. "*Caraotas pintadas*."

46180. "*Caraotas bayas*."

46182 and 46183. *VIGNA SINENSIS* (Turner) Savi. Fabaceæ. Cowpea.

46184 to 46191.¹

From Georgetown, British Guiana. Purchased by Mr. G. E. Chamberlin, American consul. Received May 21, 1918.

46184. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.

46185. *DOLICHOS LABLAB* L. Fabaceæ. Purple bonavist bean.

¹ See footnote on page 19.

46184 to 46191—Continued.

46186. *DOLICHOS LABLAB* L. Fabaceæ. Bonavist bean.
 Variety unknown.
46187. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
46188. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
46189. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46190. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46191. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
 Also known as "Black-eyed bean."

46192. *HIBISCUS MACROPHYLLUS* Roxb. Malvaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 22, 1918.

A shrub or small tree, native to India, sparsely covered with brown, villous, tufted hairs. The orbicular-cordate leaves, about 6 inches across, with petioles 8 inches long, are usually entire and are covered underneath with dense hairs. The many-flowered terminal cymes are made up of purple flowers 4 inches in diameter. (Adapted from *Hooker, Flora of British India, vol. 1, p. 337.*)

46193 to 46203.¹

From Antofagasta, Chile. Procured by Mr. Thomas W. Voetter, American consul. Received May 22, 1918. Quoted notes by Mr. Voetter.

46193. *PHASEOLUS COCCINEUS* L. Fabaceæ. Scarlet Runner bean.
 "No. 8. *Pallares.*"
46194. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
 "No. 9. *Pallares achatados.* Probably from Peru."
- 46195 to 46202. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46195. "No. 1. *Bayos.*" 46200. "No. 6. *Frutillas* (strawberry)."
46196. "No. 2. *Burritos.*"
46197. "No. 3. *Caballeros.*" 46201. "No. 7. *Ovalitos.*"
46198. "No. 4. *Canarios.*" 46202. "No. 10. *Triguitos.*"
46199. "No. 5. *Coscorrones.*"
46203. *ZEA MAYS* L. Poaceæ. Corn.
 "Province of Tacna, Chile. Used for toasting and for making 'chicha,' a fermented beverage."

46204. *GARCINIA MANGOSTANA* L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received May 25, 1918.

"This delicious fruit is about the size of a madarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color with here and there a bright, hardened drop of the yellow juice, which marks some injury to the rind when it was young. As these mangosteens are sold in the Dutch East Indies, heaped up on fruit baskets, or are made into long, regular bunches with thin strips of braided bamboo, they are as strikingly handsome as anything of the kind can well be; but it is only when the fruit is opened that its real beauty is seen. The rind is thick and tough and

¹ See footnote on page 19.

in order to get at the pulp inside it requires a circular cut with a sharp knife to lift the top half off like a cap, exposing the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is of a most delicate pink color and is studded with small yellow points formed by the drops of exuding juice. As you lift out of this cup, one by one, the delicate segments, which are the size and shape of those of a mandarin orange, the light pink sides of the cup and the veins of white and yellow embedded in it are visible. The separate segments are between snow white and ivory in color and are covered with a delicate network of fibers, and the side of each segment where it presses against its neighbor is translucent and slightly tinged with pale green. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him the more, and he invariably stops to admire the rapidly deepening color of the cut rind as it changes on exposure to the air from light pink to deep brown. The texture of the mangosteen pulp much resembles that of a well-ripened plum, only it is so delicate that it melts in your mouth like a bit of ice cream. The flavor is quite indescribably delicious and resembles nothing you know of; and yet it reminds you, with a long aftertaste, of all sorts of creams and ices. There is nothing to mar the perfection of this fruit, unless it be that the juice from the rind forms an indelible stain on a white napkin. Even the seeds are partly or wholly lacking, and when present they are so thin and small that they are really no trouble to get rid of. Where cheap and abundant, as in Java, one eats these fruits by the half peck and is never tired of them; they produce no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*David Fairchild.*)

46205. PHYLLOSTACHYS sp. Poaceæ.

Bamboo.

From Indio, Calif. Plants presented by Mr. Bruce Drummond, Government Date Garden. Received May 3, 1918.

"A package of the rhizomes from the giant bamboo that we have here at the garden. This is the bamboo growing on Mr. W. S. Tevis's place at Bakersfield, Calif. Plants were obtained by Mr. Rixford and sent to us in 1913. It is doing fine, and is the only bamboo we have here that is making a rapid spread.

"I have great hopes of the future use for this bamboo, even though it does not get higher than 20 or 25 feet. I think that we can utilize the canes in holding up the clusters of dates, which will be very necessary as our palms get older. It makes its growth in the early part of April." (*Drummond.*)

46206. CYMBOPETALUM PENDULIFLORUM (Dunal.) Baill. Annonaceæ.

Sacred earflower.

From Coban, Guatemala. Purchased from Mr. R. S. Anderson. Received May 3, 1918.

"A shrub or small tree with distichous, subsessile, oblanceolate leaves, solitary flowers borne on long slender peduncles issuing from the internodes of the smaller branches; sepals broadly ovate or suborbicular, cuspidate, reflexed at length; outer petals similar to the sepals but much larger; inner petals thick and fleshy, their margin involute, causing them to resemble a human ear. The pungently aromatic flowers when fresh are greenish yellow, with the inner surface of the inner petals inclining to orange color, at length turning brownish purple or maroon, breaking with a bright orange-colored fracture. The tree is planted for the sake of its fragrant flowers, the petals of which are dried and are used medicinally as well as for imparting a spicy flavor to food. They

were used by the ancient Mexicans, before the introduction of cinnamon and other spices from the East Indies, for flavoring their chocolate. This species is native to the mountains of southern Mexico and Guatemala." (W. E. Safford.)

46207 to 46217.¹

From Sao Paulo, Brazil. Procured by Mr. R. L. Keiser, American consul, from the Industrias Reunidas F. Matarazzo. Received May 25, 1918.

46207 to 46216. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46207. <i>Branços.</i>	46212. <i>Manteiga.</i>
46208. <i>Canario.</i>	46213. <i>Mulatinho.</i>
46209. <i>Cavallo brancos.</i>	46214. <i>Pretos.</i>
46210. <i>Cavallo marrão.</i>	46215. <i>Riscados.</i>
46211. <i>Cavallo mulatinho.</i>	46216. <i>Roxo.</i>

46217. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

Frade.

"The seed transmitted is that known as *feijão secca*, or dry beans. The State of Sao Paulo produces two crops of beans annually, these being distinguished as wet and dry according to the season of growth. The *feijão mulatinho* produces three crops annually, maturing rapidly. The transportation for any considerable distance or the storage of the wet crop is difficult, owing to its tendency to damage by worms. The dry crop is practically free from this defect." (Keiser.)

46218. DIOSCOREA BULBIFERA L. Dioscoreaceæ. Yam.

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, Hawaii Agricultural Station. Received May 27, 1918.

Obtained for testing at various points in the South. Mr. Higgins states that it is not generally grown in Hawaii.

46219. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato.

From Mayaguez, Porto Rico. Cuttings presented by Mr. T. B. McClelland, Agricultural Experiment Station. Received May 27, 1918.

"I am sending you cuttings of the sweet potato known locally as 'Mameya.'" (McClelland.)

46220. LANSIUM DOMESTICUM Jack. Meliaceæ. Langsat.

From Buitenzorg, Java. Presented by the Botanic Garden. Received May 27, 1918.

A moderate-sized ornamental tree, native to the Malay Peninsula. It bears long pendent clusters of closely packed berries which have a thin tough skin inclosing opaque aromatic juicy pulp. The berries are pale yellow when ripe and are said to be much relished in their native country, being "eaten fresh or variously prepared." It has been described as one of the finest fruits of the Malay Peninsula. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, 2d ed., p. 168.)

¹ See footnote on page 19.

46221. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Lawang, Java. Presented by Mr. M. Buysman, Experiment Station.
Received May 27, 1918.

"I have just sent you some seeds of a very good variety of *Annona squamosa*. Whether this will prove to come true from seed I do not know, but I think it might be tried." (*Buysman*.)

46222. CASSIA HIRSUTA L. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 28, 1918.

An ornamental shrubby or subshrubby plant. The finely cut pinnate leaves and short racemes of yellow flowers are quite attractive.

46223. ORYZOPSIS MILIACEA (L.) Benth. Poaceæ. Grass.

From Adelaide, South Australia. Purchased from E. & W. Hackett, Ltd.
Received May 29, 1918.

"A tufted perennial with loose, open panicles with spreading branches. A form with numerous sterile lower branches of the panicle is sometimes cultivated for ornament." (*A. S. Hitchcock*.)

46224. CORIARIA THYMIFOLIA Humb. and Bonpl. Coriariaceæ.

From Auckland, New Zealand. Presented by Mr. G. J. Clapham, Kohu Kohu. Received May 29, 1918.

A South American plant, the bark and roots of which are rich in tannin; the fruit is said to be rather poisonous.

For previous introduction and description, see S. P. I. No. 42817.

46225. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Yokohama, Japan. Presented by Mr. Barbour Lathrop. Received June 3, 1918.

Introduced for the experiments of the Office of Drug-Plant and Poisonous-Plant Investigations and not for general distribution.

46226 to 46234.¹

From Valparaiso, Chile. Presented by Mr. L. J. Kenna, American consul general. Received June 5, 1918.

46226. CICER ARIETINUM L. Fabaceæ. Chick-pea.
Garbanzo. (1917 crop.)

46227. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.
(Lens esculenta Moench.)
Lentejas de Chillan. (Crop of 1917.)

46228. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.
Pallares. (Crop of 1917.)

46229 to 46232. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.
46229. *Bayos.* (Crop of 1917.)

46230. *Caballeros.* (Crop of 1917.)

46231. *Coscorones.* (Crop of 1917.)

46232. *Zurritos.* (Crop of 1917.)

¹ See footnote on page 19.

46226 to 46234—Continued.

46233 and 46234. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

46233. *Arvejas blancas*. (Crop of 1917.)

46234. *Petit pois*. (1917 crop.)

46235. *CACARA EROSA* (L.) Kuntze. Fabaceæ. Yam bean.
(*Pachyrhizus angulatus* Rich.)

From Kingston, Jamaica. Presented by Mr. William Harris, Government botanist and superintendent of Public Gardens, Hope Gardens. Received June 6, 1918.

A twining tuberous-rooted vine cultivated throughout the Tropics for its edible roots, which are very palatable and are prepared for use in a number of different ways.

For previous introduction, see S. P. I. No. 44916.

46236. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ. Sapote.
(*Lucuma mammosa* Gaertn. f.)

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

"The most important member of the genus is without doubt the sapote, or mamey sapote, a common fruit in Cuba, and not infrequently seen on the Central American mainland. It is said to prefer a deep, rich soil and a rainfall of about 70 inches per annum. The fruit is commonly elliptical and is about 6 inches in length. Within the thick woody skin, somewhat rough and rusty brown on the surface, is the soft melting flesh, of a beautiful reddish salmon color and of about the same consistency as a ripe cantaloupe. The large elliptical seed can be lifted out of the fruit as easily as that of an avocado; it is hard, brown, and shiny, except on the ventral surface, which is whitish and somewhat rough. To one unaccustomed to tropical fruits the flavor of the mamey sapote is at first somewhat cloying, because of its utter lack of acidity; when made into a sherbet, however, as is done in Havana, it is delicious and sure to be relished at first trial. Although natives of tropical countries commonly eat the fruit while fresh, it is also made into marmalade or used as a 'filler' in making guava cheese. The Cubans prepare from it a thick jam known as *crema de mamey colorado*, which is delicious. The fruits are picked when mature and laid away in a cool place to ripen, which takes about a week. If shipped as soon as picked from the tree they can be sent to northern markets without difficulty and are occasionally exported from Cuba and Mexico to the United States. The season of ripening is during the summer; in Costa Rica the tree is said to lose its foliage in the dry season, flowering at the same time. The seed contains a large oily kernel which has a strong smell and a bitter taste. According to Pittier, it is used in Costa Rica, after being finely ground, to prepare an exquisite confection; the same authority states that it is sometimes used by the Indians, after being boiled, roasted, and ground, to mix with cacao, imparting a bitter taste to the beverage. The foliage of the mamey sapote resembles that of the loquat (*Eriobotrya japonica*), except in its lighter color and entire margins. Propagation is by seed, young trees coming into bearing at the age of 5 to 7 years. Before planting it is well to remove the hard outer husk from the seed; it is then easily germinated by planting in light sandy loam, barely covering it with soil." (*Wilson Popenoe*.)

- 46237. ACHRAS ZAPOTA L.** Sapotaceæ. **Sapodilla.**
(*A. sapota* L.)
From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.
- 46238. MANGIFERA INDICA L.** Anacardiaceæ. **Mango.**
From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.
"Seeds of the best kind of mangos which we have here, called 'Calidad' (quality) mangos." (*Arias-Feraud.*)
- 46239. AMYGDALUS PERSICA L.** Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)
From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received June 8, 1918.
"*Transvaal yellow.* This variety is one of the hardiest we have in this country and the most immune to the more common fungous pests of the peach." (*Evans.*)
- 46240. LITCHI CHINENSIS Sonner.** Sapindaceæ. **Lychee.**
(*Nephelium litchi* Cambess.)
From Honolulu, Hawaii. Procured from Mr. Chang Chong, through Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received June 17, 1918.
The lychee is a small tree, native to China, with dense foliage of rich green shiny leaves, racemes of greenish flowers, and clusters of spherical fruit about 1 inch in diameter. Each fruit contains one seed in a firm jellylike whitish pulp or aril of delicious flavor. In China the production of dried lychee fruit is a large industry. (Adapted from *Wilcox, Tropical Agriculture, p. 125.*)
Excellent results are now being obtained in rooting the cuttings in a moist chamber.
For previous introductions, see S. P. I. Nos. 40916 and 40973.
- 46241. LAWSONIA INERMIS L.** Lythraceæ. **Henna.**
(*L. alba* Lam.)
From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 21, 1918. Numbered June, 1918.
An interesting shrub commonly known as henna, camphire, cypress shrub, or Egyptian privet, grown throughout India, Persia, Syria, and northern Africa, where its powdered leaves are used as a hair dye and as a cosmetic. It imparts a reddish orange color. Plants attain a height of 8 or 10 feet and bear smooth oval or lance-shaped entire leaves and panicles of small white sweetly scented flowers, which are used in perfumery. This species is reported as being a very useful and ornamental hedge plant. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 597.*)
- 46242. CHAYOTA EDULIS Jacq.** Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)
Fruits received in the autumn of 1916 from Mr. H. S. Zoller, Brooksville, Fla. Numbered, for convenience in distribution, June, 1918.

Zoller. A medium-sized, dark-green chayote; flat and broad pear shaped, noncorrugated, and almost free from spines.

46243 to 46248.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received May 21, 1918.

Legumes grown for green manure. Introduced for experimentation by the Office of Forage-Crop investigations.

46243. CASSIA PATELLARIA DC. Cæsalpiniaceæ.

A low, herbaceous perennial with somewhat the appearance of our common sensitive plant, *Cassia nictitans*.

46244. CASSIA PUMILA Lam. Cæsalpiniaceæ.

A spreading, subshrubby forage plant with numerous spreading stems about 1 foot long, distributed throughout tropical Asia and Australia.

46245. CROTALARIA ALATA Buch.-Ham. Fabaceæ.

A suberect undershrub, 1 to 2 feet high, with the stem and underside of the leaves covered with a short, silky pubescence. (Adapted from *Hooker, Flora of British India, vol. 2, p. 69.*)

46246. CROTALARIA USARAMOENSIS Baker f. Fabaceæ.

A spreading, herbaceous forage plant from Usaramo, German East Africa, closely allied to *C. lanceolata*. (Adapted from *Journal of the Linnean Society, vol. 42, p. 346.*)

46247. INDIGOFERA SUMATRANA Gaertn. Fabaceæ. Indigo.

This is the form of *Indigofera tinctoria* that was introduced from the East into the West Indies, and is the *I. tinctoria* of Lunan. If, therefore, it be deemed necessary to give this plant a separate name and to remove it from being one of the cultivated states of *I. tinctoria* L., then it will have to be called *I. sumatrana* Gaertn. In addition to India (where it is largely in use in the north from Bihar and Tirhut westward by north to the Punjab) it also occurs in tropical Africa and Formosa. It may be distinguished from the southern form of *I. tinctoria* by its leaflets, which are larger and ovate-oblong or oblong, instead of obovate or suborbicular. The pods in *I. sumatrana* are also shorter, thicker, and blunter at the apex, and are usually more numerous and straighter than in the Madras form. (Adapted from *Watt, Commercial Products of India, p. 663.*)

46248. INDIGOFERA SUFFRUTICOSA Mill. Fabaceæ.

(*I. anil* L.)

A copiously branched shrub, 3 to 5 feet high, with yellow pealike flowers, commonly cultivated as a dye plant throughout the Tropics. Said to be a native of tropical America. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 98.*)

46249 to 46259.¹

From Sao Paulo, Brazil. Presented by Mr. Robert L. Keiser, American consul. Received May 25, 1918.

¹ See footnote on page 19.

46249 to 46259—Continued.

- 46249 to 46258. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.
 46249. Branco. 46254. Manteiga.
 46250. Canario. 46255. Mulatinho.
 46251. Cavallo branco. 46256. Preto.
 46252. Cavallo marrão. 46257. Riscado.
 46253. Cavallo mulatinho. 46258. Roxo.
 46259. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.
Frade.

46260 to 46281.¹

From Rio de Janeiro, Brazil. Presented by Mr. R. P. Momsen, American vice consul, who obtained them from the Pan-America Hide Co. Received June 13, 1918.

46260. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.
Mangalo.
 46261. PHASEOLUS CALCARATUS ROXB. Fabaceæ. Rice bean.
Anão de China.
 46262. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.
De trepar da Hespanha.
 46263 to 46280. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.
 46263. Anão amarelo. 46273. De trepar branco sem filamento.
 46264. De segar preto.
 46265. Anão flageolet (green). 46274. De trepar mont 'odor.
 46266. Anão flageolet. 46275. Mulatinho.
 46267. De trepar manteiga preto. 46276. Manteiga.
 46268. De trepar anao grande. 46277. Branco.
 46269. Manteiga amarelo. 46278. Preto.
 46270. Anão cavallos. 46279. De trepar mangestant.
 46271. De trepar D. Carlos. 46280. Anão flageolet (marron).
 46272. De trepar marmoreado.
 46281. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.
Chicote nojens grandes.

46282 to 46293. ZEA MAYS L. Poaceæ. Corn.

From Panama. Presented by Mr. A. H. Verrill. Received June 18, 1918.

"While in the unexplored portion of the Darien district in Panama, I found the 'wild' Indians of the 'forbidden' country raising a number of interesting varieties of corn. These are all 'fixed' among the Indians and come true to seed, and several are used as sweet corn. These Indians consider corn as sacred and use great care in keeping the various kinds separate."

46282. Brown. 46288. Round, light orange.
 46283. White, purple spotted. 46289. Pure white.
 46284. Yellow. 46290. White, red striped.
 46285. Deep orange. 46291. Pink.
 46286. Deep red. 46292. Yellow and red barred.
 46287. Black. 46293. Freckled, brown.

¹ See footnote on page 19.

46294. MERRILLIA CALOXYLON (Ridley) Swingle. Rutaceæ.*(Murraya caloxylon Ridley.)***Katinga.**

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill. Received June 25, 1918.

"A short time ago I received two fruits of this species from Mr. Burkill in Singapore. I am sending you seeds from one of these fruits and I trust that they may reach you in a viable condition." (*Merrill.*)

A medium-sized tree with pale flaky bark, native to Siam. The compound leaves are made up of 13 oblanceolate leaflets on a winged rachis. The pale yellowish green flowers are followed by yellow citronlike fruits, 4 inches in diameter, with a thick skin and green, tasteless flesh. The tree is known as the *katinga* and is famous in the Malay region for its beautiful wood, which is of a light-yellow color with dark-brown streaks. It is fairly hard and takes a good polish. (Adapted from the *Journal of the States Branch, Royal Asiatic Society, vol. 50, p. 113.*)

46295. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. Ragi millet.

From Beira, Mozambique. Presented by Mr. William Humphreys, acting director of agriculture. Received June 25, 1918.

"Ragi millet is the only variety grown in this territory. It is grown only by natives for food purposes and, with the exception of pearl millet (*Pennisetum glaucum*), is practically the only millet grown here." (*Humphreys.*)

46296. CHENOPODIUM AMBROSIODES L. Chenopodiaceæ.

From Rio Grande, Brazil. Purchased from Mr. Samuel T. Lee, American consul. Received June 28, 1918.

Known in Brazil as "herva de Santa Maria" or "Mastruz." A viscid-glandular, rank-smelling, perennial herb, native to tropical America, but widely naturalized and growing abundantly in North America, especially in the eastern United States, as a coarse weed of the roadside and waste places. Its medicinal importance is due to the volatile oil which it contains. A very active anthelmintic is obtained when the bruised fruit or the expressed juice of the plant is used. It is frequently employed for the expulsion of lumbricoid worms, especially in children. (Adapted from *The National Dispensatory, p. 402.*)

See S. P. I. No. 45610 for previous introduction.

46297. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Division of Plant Breeding, Department of Agriculture. Received June 28, 1918.

"We received this variety from the Belgian Kongo in 1914 under the name of *Nsombo B.* The imported seeds were taken from one seed bearer. The plants grown from these seeds were planted in May, 1915, on a rubber estate, where no other oil palms were near, so that they could only fertilize each other. They are now commencing to bear fruit. We can not yet determine the value of the new variety from a commercial point of view." (*Cramer.*)

46298. CAREX PENDULA Huds. Cyperaceæ. Sedge.*(C. maxima Scop.)*

Grown at the Plant Introduction Field Station, Chico, Calif., from seed received from Dr. A. Robertson Proschowsky, Nice, France. Numbered for convenience in recording distribution.

"This is an evergreen plant and an interesting one. It has very attractive deep-green leaves 1 to 2 feet long and 1½ to 2 inches wide." (*Proschowsky*.)

46299. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.
(*Nephelium leiocarpum* F. Muell.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 28, 1918.

"Seeds from a young tree in my garden. It is the first time this species has flowered. The seeds are surrounded by a juicy, red-colored aril which is edible and of a pleasant sweet taste, only it is very small. If my young tree should flower again and produce seed, I shall, of course, be pleased to send more. It is an ornamental plant, like so many tropical evergreens, and absolutely hardy here. As I stated in my former letter, it may serve eventually as stock on which to graft *Nephelium longanum* or *Litchi chinensis*." (*Proschowsky*.)

For previous introduction, see S. P. I. No. 44520.

46300. ATTALEA sp. Phœnicaceæ. Coquito palm.

From the City of Mexico, Mexico. Presented by Mr. A. L. Herrera. Received June 5, 1918.

"An undescribed species, closely related to the cohune or corozo palm (*Attalea cohune*) of the Caribbean coast region of Central America; it differs from the cohune palm in the smaller and more rounded fruits and the thinner and more brittle shell of the seed. The seed contains a single kernel, smaller than that of the cohune palm. The kernels contain a high percentage of oil, said to be the equal of coconut oil, and suitable for the manufacture of similar products. The palm is said to grow in great abundance in the vicinity of Mazatlan, Sinaloa. The kernels are exported in considerable quantities from Mazatlan to Pacific ports of the United States for oil extraction." (*C. B. Doyle*.)

46301. ACROCOMIA TOTAI Mart. Phœnicaceæ. Palm.

From Asuncion, Paraguay. Presented by Mr. Henry H. Balch, American consul. Received June 19, 1918.

A small palm, rarely over 1 meter (39 inches) in height, with fruit clustered at the base.

For previous introduction, see S. P. I. No. 45483.

46302. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Asuncion, Paraguay. Presented by Mr. Henry H. Balch, American consul. Received June 19, 1918.

Large black seed with a few light-gray markings. Introduced for experiments to determine the oil content of different varieties of castor-beans.

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