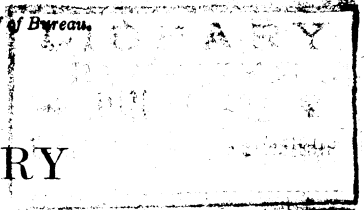


1257  
Issued May 20, 1922

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 OCTOBER 1  
TO DECEMBER 31, 1918.

(No. 57; Nos. 46588 to 46950.)



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1922

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# INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1918 (NO. 57; NOS. 46588 TO 46950).

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## INTRODUCTORY STATEMENT.

It might appear that a single one of these inventories contains enough experimental plant material to keep a corps of scientists busy for years. This is true, but the fact should not be lost sight of that these are new plants introduced for the use of an increasing number of amateurs of a great country. There are already 10,000 more or less trained experimenters scattered from Alaska to southern Florida who will look over the plants which are described here and wonder if some particular one may not add to his list of field or garden or dooryard plants. The work of testing a new plant requires years, land, money, and individual interest and attention; and the only way to do the work rapidly is to enlist the intelligent cooperation of a great many people.

A great many tropical species are represented here, and those who live in the North may wonder at this. It must not be forgotten that the plants which grow in the colder regions are those which have, by slow adaptation to the cold, crept out of the Tropics, and that there are ten times as many undiscovered useful plants remaining in the Tropics to-day as are to be found in the colder regions of the globe. The plant breeder is striving by means of his art to select the hardiest of these tropical species and adapt them for cultivation as far north as they will grow. This is a great field for research.

With the exception of a collection made by Wilson Popenoe in Mexico, all of the plants here described have come in from foreign friends of the work or through direct solicitation by correspondence.

Mr. Popenoe's collection covered by Nos. 46781 to 46787 includes the ilama, a rose-tinted fruit, which belongs in the class with the cherimoya and sugar-apple and is remotely related to the hardy papaw of the eastern United States (*Asimina triloba*). In view of the fact that triple hybrids combining three species of the genus *Annona*

have been produced and prove to be delicious new creations, the idea may not be fantastic that some one some day will bring hardiness into this remarkable tropical fruit through crosses with our hardy Asimina. Mr. Popenoe has discovered, in fact, a tropical species of the Annona family (*Sapranthus* sp., No. 46786) which curiously resembles the Asimina in the shape of its fruits, but is bright orange in color. This might bridge the gap between the Annona and the Asimina. Acres of the tropical papaya (*Carica papaya*) in southern Florida provide this fruit regularly to the southern markets, and a new variety (*Carica* sp., No. 46782), with an edible coating, or aril, around its seeds, can scarcely fail to be of interest to the public, which is rapidly growing fonder of this appetizing fruit. Much remains yet to be done in the improvement of this remarkable fruit tree. It is hard for one living in the North to realize the craving of one who lives in a region where the grape does not grow for its peculiar refreshing flavor. Mr. Popenoe has introduced another promising tropical grape called the totoloché (*Vitis* sp., 46787), which is related to the Muscadine and although still in the wild state bears clusters of berries half an inch in diameter.

Mr. J. Burtt Davy, who has contributed many new plants from South Africa, has sent in a collection (Nos. 46804 to 46820) which includes a sand binder from the Cape flats (*Acacia cyclops*, No. 46804); the kameel doorn, a shade tree from British Bechuanaland (*Acacia giraffae*, No. 46805); a pasture grass (*Eragrostis superba*, No. 46806); a hibiscus with deep-crimson flowers (*Hibiscus urens*, No. 46807); a beautiful blue-and-white Lobelia (*Lobelia erinus microdon*, No. 46808); the karree boom, a species of sumac which is reported to resemble the pepper tree so much used in California but to be hardier and even more ornamental in habit (*Rhus viminalis*, No. 46810); and a collection of the best yielding wheats from the western provinces of South Africa (Nos. 46812 to 46817).

During his trip to Europe on war work, Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, visited the Plant Breeding Institute of Prof. Biffen, of Cambridge, England, and sent in seed of the Yeoman wheat (No. 46797) which had been such a remarkable yielder in England; a preliminary test gave 96 bushels per acre. It is a cross between one of Prof. Biffen's varieties and the Red Fife wheat of Canada and may prove suited to some of our own wheat areas.

The success of the Federation wheat (No. 46794) on the Pacific coast has, I understand, been a matter of keen satisfaction to the Australian friends of that remarkable plant breeder, Farrar, whose work was so long in being recognized.

The development of Australia is bringing to the front many valuable new plants. This inventory chronicles the arrival of the elephant grass (*Pennisetum purpureum*, No. 46890), which yields there 30 tons of hay per acre; a hardier species of the river oak or Australian pine (*Casuarina cunninghamiana*, No. 46881) than the one which has been planted by the hundreds of thousands in southern Florida; a drooping-branched species of the she-oak (No. 46882), which is said to be most beautiful; and the edible canna (*Canna edulis*, No. 46821), which is grown in Australia for the production of arrowroot and which has already shown remarkable adaptability to cultivation on the Everglades of Florida, a single plant having produced 80 pounds of tubers.

The problem of having green leafy vegetables throughout the summer in tropical regions is a difficult one, and the introduction from Yucatan of the chaya (*Jatropha urens*, No. 46862), a rapid-growing bush or small tree with succulent leaves which are cooked and eaten with eggs, like spinach, is worthy of particular mention. The idea of a dooryard tree from which a mess of greens can be picked strikes us as strange, because we have always gotten our tender leaves from low-growing plants; but there is no reason for discrimination against the tree.

The guarana (*Paullinia cupana*, No. 46863) is a tropical species of Paullinia from Para, where the seeds, which contain 5 per cent of thein, are used to make a beverage. The searchers for this alkaloid may find this species a valuable source.

In the tropical vegetable garden of the future the yam (*Dioscorea alata*, No. 46768) will not be omitted, and those varieties which rival the best potato in flavor and texture will come into favor. Already, discriminating growers in Florida are beginning to grow several of the introduced varieties.

Mrs. Nuttall, whose acquaintance with the Indian food plants of Mexico is exceptional, recommends from her own personal experience the huauhtzontli (*Chenopodium nuttalliae*, Nos. 46632 and 46633) as a delicious dish when prepared in Mexican fashion. As the species seems to be very easily grown in the Southwest, the gardeners of that region may find in it a desirable new vegetable.

There is something fascinating to a child and to many grown-up people in a gourd. The most brilliantly colored one which I have seen is the *Trichosanthes quinqueangulata* (No. 46642) from the Philippines. It is about the size of those baubles which are hung on Christmas trees, and being beautiful carmine-red in color and lasting for months it is most attractive and should be grown in the South and shipped north at Christmas time.

Citrus growers in California and Florida will await impatiently the fruiting of the Vermilion orange or Chu kaa (*Citrus nobilis*, No.

46646), of Swatow. Atherton Lee predicts that if this orange succeeds as well in this country as it does in South China it will rival the Navel, the Valencia, and the Satsuma in popularity. As Mr. Lee has been studying citrus canker in the Orient, and as he finds this variety resistant to that disease, its thorough trial by citrus growers is desirable.

The Chinese jujube has proved such a success in the irrigated valleys of California and in Texas that the fruiting of the strictly tropical species (*Ziziphus mauritiana*, No. 46720) at Miami, Fla., is being watched with considerable interest. The same propensity to bear large crops seems to characterize this tropical species as it does the Chinese one, and it would not be surprising if this species should become a common fruit tree wherever it can be grown.

The night-blooming cereus is one of those plants the flowering of which is an event in anyone's garden. A species from Colombia (*Cereus* sp., 46721), with blood-red flowers the size of a saucer, should attract the attention of greenhouse owners and may lead to races having all sorts of delicate-colored flowers.

*Artemisia cina* (No. 46712) is the plant which yields the vermifuge known as wormseed. It is a wild species in Russian Turkestan. Its introduction into this country and cultivation at Chico, Calif., would seem to indicate the possibility of a commercial crop in this important drug plant, since its wide use in the treatment of hogs has created a large demand for it.

Prof. Sargent has selected as one of the loveliest of all flowering trees, *Malus arnoldiana* (No. 46698), a hybrid between *M. pulcherrima* and *M. cerasifera*, both of which are probably of hybrid origin.

It is now over a century since the tomato came into notice as the "poison love apple" which everyone was cautioned not to eat. Its relative from Colombia (*Solanum quitoense*, No. 46947), with fruits the size of small oranges which are used there for flavoring preserves, seems to have been left untested, although it is worthy of trial wherever it will grow.

The extent to which trees and shrubs can be used as forage for cattle has not been thoroughly investigated anywhere, although in India a species of jujube is thus used, and in Brazil a species of sensitive plant (*Schrankia leptocarpa*, No. 46719) is employed. The recommendation of Sr. Argollo Ferrão is sufficient to make it worth while testing this plant seriously on the Everglades of southern Florida.

The spectacular development of the Balsa wood industry, which has grown almost overnight into a very important factor in the refrigeration business, would seem to make it worth inquiry as to whether the New Zealand cork-wood tree (*Entelea arborescens*, No.

46749), which produces wood little more than half as heavy as cork, might not be useful for the same purposes.

The tropical jack-fruit tree is hardy in southern Florida, but its fruits are of little value. If its near relative (*Artocarpus odoratissima*, No. 46635), which Wester declares has deliciously flavored fruits, should prove as hardy, it might add another valuable tree to the list of those which the southern Florida grower can have about his home.

The South African amatungulu (*Carissa grandiflora*), which was introduced by Lathrop and Fairchild from Natal in 1902, has become the favorite hedge plant of southern Florida. Its relative, *Carissa carandas* (No. 46636), which bears black instead of crimson fruits, is said by Wester to be one of the best small fruits which has been introduced into the Philippines in recent years. What may be done with it in Florida, or whether hybrids of these various species of *Carissa* can be made, remains for the plant breeders to determine.

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 30, 1921.*



# INVENTORY.<sup>1</sup>

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## 46588. *PISTACIA CHINENSIS* Bunge. Anacardiaceæ.

### Chinese pistache.

From Chico, Calif. Collected by Mr. R. L. Beagles, of the Bureau of Plant Industry. Received October 19, 1918.

"Seeds gathered at the Plant Introduction Field Station, Chico, Calif., from trees which were grown from seeds collected in China by Mr. Frank N. Meyer, received here in 1908, and assigned S. P. I. No. 21970." (*Peter Bisset.*)

## 46589 to 46594.

From Bender Abbas, Persia. Received May 9, 1918, without name of sender or information other than the numbers given here. Numbered October 1, 1918.

### 46589. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

### Barley.

(84604 No. 80.)

### 46590 to 46594. *TRITICUM AESTIVUM* L. Poaceæ.

### Wheat.

(*T. vulgare* Vill.)

"A collection of Persian wheat varieties, probably of hybrid origin. All samples are awned and have brown, pubescent glumes and soft, white kernels." (*J. A. Clark.*)

46590. (84604 No. 80.)

46593. (84607.)

46591. (84605 No. 78.)

46594. (84606.)

46592. (84604 No. 81.)

## 46595. *PENTSTEMON PALMERI* A. Gray. Scrophulariaceæ.

### Beardtongue.

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

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<sup>1</sup> All introductions consist of seeds unless otherwise noted.

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



"*Pentstemon palmeri*, from the western and southern slopes of the San Francisco Mountains of Arizona, is one of the best and most promising native species of this useful genus of ornamental plants. It withstands droughty conditions well and responds remarkably to good treatment. In nature the spikes stand 4 to 6 feet high, and the plant is reduced to little more than a rosette of basal leaves at the close of the long, dry, late summer and autumn. Under conditions at Chico, Calif., the flowering stems may stand 6 to 7 feet high, and the plants go into winter with a vegetative growth of 18 inches or more. Its abundant glaucous green foliage, long spike (2 to 3 feet) of large light-pink flowers opening progressively from below, together with its very robust habit, make it a desirable acquisition to our long list of pentstemons. It has good seed habits and if started early in flats and transplanted into the open in early spring it will blossom sparingly the same year." (*David Griffiths.*)

### 46596 to 46629.

From Ecuador. Seeds and tubers collected by Dr. J. N. Rose, associate curator, National Herbarium, Washington, D. C. Received September 25, 1918. Quoted notes by Dr. Rose. Numbered October, 1918.

**46596 to 46607.** *ZEA MAYS* L. Poaceæ.

**Corn.**

"No. 10a. Various samples of corn obtained from Indians in the Ambato market."

46596. "Maroon."

46597. "Reddish brown."

46598. "Dark red-brown."

46599. "Light red-brown."

46600. "Light brown."

46601. "Light brown shading to cream."

46602. "Yellow; kernel short and thick."

46603. "Yellow; kernel long and slender."

46604. "Light yellow; kernel broad."

46605. "Light yellow; kernel wedge shaped."

46606. "Cream color."

46607. "Nearly white."

**46608 to 46610.** *OXALIS TUBEROSA* Molina. Oxalidaceæ.

**Oca.**

46608. "No. 19a. Tubers of an elongated form from Ambato."

46609. "No. 19b. Tubers of a red form obtained at Huigra."

46610. "No. 19c. Tubers of a yellow form."

**46611.** *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

**Pumpkin.**

"No. 23. *Zafallo*. Fruit very large and sometimes weighing 100 pounds. Used like our pumpkin."

**46612.** *DOLICHOS LABLAB* L. Fabaceæ.

**Bonavist bean.**

"No. 24: 24121. *Avilla*; a legume. Seed brown with large white aril."

**46613.** *FRAGARIA CHILOENSIS* (L.) Duchesne. Rosaceæ.

**Strawberry.**

"No. 26. Strawberries from the Guayaquil market. A very large strawberry which grows in the dry plains without irrigation. It ought to do well in Texas and southern California."

## 46596 to 46629—Continued.

46614. *OPERCULINA* sp. Convolvulaceæ.

"No. 28: 22115. A vine running over bushes about Guayaquil."

46615. *Gossypium* sp. Malvaceæ.

Cotton.

"No. 29: 22105. Wild cotton in swamps about Guayaquil. Also cultivated."

46616. *Sida* sp. Malvaceæ."No. 30: 22172. *Sida* at Huigra; has pretty violet flowers."46617. *CARDIOSPERMUM* sp. Sapindaceæ.

"No. 31: 22172. From Huigra. A vine."

46618. *CARDIOSPERMUM* sp. Sapindaceæ.

"No. 32. From Guayaquil."

46619. *ONOSERIS SPECIOSA* H. B. K. Asteraceæ.

"No. 33: 22125. A pretty asterlike plant from Huigra; flowers large, very beautiful."

46620. *HELIANTHUS* sp. Asteraceæ.

Sunflower.

"No. 34: 22231. From the mountains above Huigra. Altitude 6,000 feet."

46621. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"No. 35: 22104. Flowers small; on bushes about Guayaquil."

46622. *CUCURBITA FICIFOLIA* Bouche. Cucurbitaceæ."No. 37: 22223. *Tambo*. Resembles a small watermelon. Flesh white, sweetish; made into dulces and also eaten as a vegetable."46623. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ."No. 40: 22354. From Ambato. Called *chamburo* in Ambato, but a different species from No. 20 sent in from Huigra as *chamburo*; fruit small."46624. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"No. 41: 22338. Avocado from Ambato; fruit brownish to black, but sometimes green or red, 2½ to 4 inches long; a fine fruit but small."

"This variety apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe*.)

46625. *TROPÆOLUM TUBEROSUM* Ruiz and Pav. Tropæolaceæ. Anya."No. 47. Tubers of *Mushu* obtained in the markets of Ambato and Huigra."46626. *PHASEOLUS* sp. Fabaceæ.

"No. 59. Leguminous vine; near Huigra."

46627 and 46628. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

46627. "No. 60: 22299. A delicate vine."

46628. "No. 61: 22191. Tall vine; from Huigra."

46629. *PASSIFLORA SUBEROSA* L. Passifloraceæ.

"No. 62: 22249. Small greenish flowers and small purple fruit; near Huigra."

**46630. ANNONA SENEGALENSIS Pers. Annonaceæ.**

From Ibadan, Southern Nigeria, Africa. Presented by the Director of Agriculture. Received October 3, 1918.

"Abo (wild sop) seeds."

*Annona senegalensis* varies greatly in size from a low shrub to a tree 20 feet high. The leaves are coriaceous and the flowers are borne singly on decurved pedicels. The edible fruit is yellow or orange when ripe and from 1 to 2 inches in diameter. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 16.*)

See S. P. I. No. 38525 for previous introduction.

**46631. SOLANUM QUITOENSE Lam. Solanaceæ. Naranjilla.**

Plants grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seed received in June, 1917, from Dr. Frederic W. Goding, American consul general at Guayaquil, Ecuador. Numbered for convenience in distribution, October 31, 1918.

"The fruits of these plants are delicious for ices." (*Goding.*)

"A shrubby plant bearing fruits that resemble small oranges in size and color and possess a peculiar fragrance." (*Peter Bisset.*)

**46632 and 46633. CHENOPODIUM NUTTALLIAE Safford. Chenopodiaceæ. Huauhtzontli.**

From Mexico. Purchased through Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, Mexico. Received October 5, 1918. Quoted notes by Mrs. Nuttall.

**46632.** "Black-seeded form from Xochimilco which the agriculturists there consider the best. It is of last year's crop, which is particularly prized. Several Indians told me that huauhtzontli was considered 'more nourishing than meat.' My cook prepares it for me as follows: She makes bunches of the inflorescence, ties and boils them in water and salt, then scrapes the green seeds off and shapes the mass like a small flat croquette. puts a small piece of cheese in it, dips the whole in batter made of egg and a little flour, and fries like croquettes. Sometimes she makes what looks like an omelet in the same way."

**46633.** "Yellow-seeded form. This was grown near Coyacan, by an old Indian woman."

For previous introduction, see S. P. I. No. 46311.

**46634. DATURA FASTUOSA L. Solanaceæ. Datura.**

From Calcutta, India. Presented by Mr. H. G. Carter, of the Indian Museum. Received October 4, 1918.

"Variety *alba*. So far as our inquiries go, there is no material difference in medicinal properties between the different varieties of *Datura fastuosa*." (*Carter.*)

An annual, 4 to 5 feet high, native to India. The ovate-lanceolate, wavy margined leaves are 7 to 8 inches long. The trumpetlike flowers, 7 inches long, have an angled, purple calyx, and the corolla is usually violet, but is white or nearly so in the variety *alba*. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 2, p. 971.*)

## 46635 to 46642.

From the Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Zamboanga. Received October 7, 1918. Quoted notes by Mr. Wester except as otherwise indicated.

46635. *ARTOCARPUS ODORATISSIMA* Blanco. Moraceæ. Marang.

"I might mention that after four years I have renewed my acquaintance with the *marang*, and I want to reiterate that it is the best fruit of the genus that I have eaten. Indeed, it is a very delicious fruit indeed."

For previous introduction, see S. P. I. No. 36256.

46636. *CARISSA CARANDAS* L. Apocynaceæ. Natal plum.

"A thorny shrub from India, with plumlike black fruits having semi-transparent subacid flesh of very good flavor. A very good fruit eaten out of hand, and it would probably make a good preserve. One of the best small fruits introduced into the Philippine Islands within recent years."

For previous introduction, see S. P. I. No. 41506.

46637. *CITRUS* sp. Rutaceæ.

"*Bankit*, from Jolo, Sulu."

46638. *ERYTHRINA* sp. Fabaceæ.

"A giant tree from Lamao, Mindanao, attaining a height of 50 feet and a trunk diameter of 5 to 6 feet. Sometimes planted as shade for coffee."

46639. *FICUS* sp. Moraceæ.

Fig.

"Very ornamental, with drooping willowlike branches."

46640. *HETEROSPATHE ELATA* Scheff. Phœnicaceæ.

Palm.

"A tall, unarmed palm, with a slender, straight stem and long pinnate leaves, growing in protected situations and where the rainfall is evenly distributed. It is one of the most attractive and graceful palms that I have seen, and from my experience with it at Lamao it will make a good plant for the conservatory, and possibly a good house palm."

46641. *COLUBRINA ASIATICA* (L.) Brongn. Rhamnaceæ.

"A glabrous shrub with alternate leaves and axillary clusters of small greenish flowers having a fleshy disk in the calyx tube, suggesting the genus *Euonymus* or *Ceanothus*.

"This plant is widely spread in Polynesia and is found in India, Ceylon, Java, Borneo, New Guinea, Australia, and southwestern Africa. In Samoa and in Fiji the leaves are used for washing. They form a lather in water like soap. The vernacular name in Fiji signifies 'much lather' or 'big foam.' The special use to which it is devoted in Samoa is the cleansing and bleaching of the white shaggy mats which the natives make of the fiber of an urticaceous plant, *Cypholophus macrocephalus*." (Safford, *Useful Plants of Guam*, p. 246.)

46642. *TRICHOSANTHES QUINQUANGULATA* A. Gray. Cucurbitaceæ.

"A climbing annual vine with globose, carmine-colored fruits somewhat larger than an apple. The fruits keep indefinitely and retain their color for many weeks."

**46643 and 46644. NOTHOFAGUS spp. Fagaceæ.**

From Tapanui, New Zealand. Presented by Mr. H. R. Wright, Avondale, Auckland. Received October 10, 1918.

**46643. NOTHOFAGUS FUSCA** (Hook. f.) Oerst.

**Red beech.**

A large New Zealand tree often reaching a height of 100 feet and having a trunk diameter of 12 feet. The leaves, about 1½ inches long, are oblong-ovate with serrate margins. It is sparsely distributed throughout the islands in damp situations. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 133.*)

**46644. NOTHOFAGUS MENZIESII** (Hook. f.) Oerst.

**Silver beech.**

A large tree, up to 100 feet, with silvery bark. The shining, dark-green leaves, about half an inch long, are ovate with crenate margins. It is found on the subalpine slopes of the mountains. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 133.*)

**46645. SALVIA HISPANICA L. Menthaceæ.**

**Chia.**

From San Luis Potosi, Mexico. Procured by Mr. Cornelius Ferris, jr., American consul. Received October 8, 1918.

"This seed was obtained in the semitropical region of the State of San Luis Potosi and is known simply as *chia*. It is the kind used in making the drink called *chia*." (Ferris.)

**46646. CITRUS NOBILIS Lour. Rutaceæ.**

**King orange.**

From Kioto, Japan. Cuttings presented by Mr. H. Atherton Lee, Bureau of Plant Industry, United States Department of Agriculture. Received October 14, 1918.

"September 2, 1918. Bud sticks of the *Chu kaa* (Vermilion orange), a variety of *Citrus nobilis*. The fruits of the *Chu kaa* are smooth skinned, but easily peeled, as with the other mandarin varieties. The color is a light orange at the stem end, becoming a deeper orange, almost red, at the blossom end; flesh delicate with little or no rag; core very small. The shape is more nearly globose than that of most Mandarin varieties. The juice is as desirable in taste as that of any citrus fruit I have tasted. The fruit has few seeds, for the most part having no seeds or but one. One orange was found having three seeds. This variety is resistant to citrus canker. Should it be equally successful under conditions in the States as it is in Swatow it would easily rival the Washington navel, Valencia, and Satsuma in popularity." (Lee.)

**46647. MERRILLIA CALOXYLON (Ridley) Swingle. Rutaceæ.**

(*Murraya caloxylon* Ridley.)

**Katinga.**

From Manila, Philippine Islands. Fruits presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received October 15, 1918.

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; it is famous in the Malay region for its beautiful wood, which is light yellow with dark brown streaks, fairly hard, and takes a good polish. (Adapted from *The Journal of the States Branch, Royal Asiatic Society, vol. 50, p. 113.*)

## 46648 to 46659.

From Ecuador. Collected by Dr. J. N. Rose, associate curator, United States National Herbarium. Received October 18, 1918. Quoted notes by Dr. Rose.

**46648.** *PASSIFLORA LIGULARIS* JUSS. Passifloraceæ. **Granadilla.**

"No. 1. *Granadilla*. Common in the market of Guayaquil. Fruit orange-colored with a long stem. There are many species here; this is one of the best."

**46649.** *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Barley.**

"No. 5. *Cebada*. Sold in the markets of Guayaquil. Also sold in cracked form. Said to have been brought from the highlands of Ecuador."

**46650 to 46652.** *PHASEOLUS VULGARIS* L. Fabaceæ. **Common bean.**

**46650.** "No. 6. *Chola* or *Frijoles colorados*. Brownish colored. From Guayaquil."

**46651.** "No. 7. *Caballero*. White. From Guayaquil."

**46652.** "No. 8. *Bayo*. Light gray. From Guayaquil."

**46653.** *ZEA MAYS* L. Poaceæ. **Corn.**

"No. 10. Three ears of corn from Guayaquil."

**46654.** *AMARANTHUS* sp. Amaranthaceæ. **Amaranth.**

"No. 11. Flowers, leaves, and stem dark purple. From Huigra."

**46655 to 46657.** *SOLANUM TUBEROSUM* L. Solanaceæ. **Potato.**

**46655.** "No. 12. Yellow potato."

**46656.** "No. 13. White skin; called *blanca*. From Guayaquil."

**46657.** "No. 14. Brown skin; called *leona* or *leona blanca*. From Guayaquil."

**46658.** *CHENOPodium QUINOA* Willd. Chenopodiaceæ. **Quinoa.**

"No. 26. A large pigweed extensively cultivated in the high plateaus of South America. The seeds are eaten, prepared in various ways. Quinoa presents many color variations in the plants, as well as in the seeds, especially in the direction of reds and purples. The colored seeds are used almost exclusively for making *chicha*, or native beer. The white seeds are preferred for eating. A possibility of utilizing the quinoa in the United States lies in its use as a breakfast food. Some pronounce it as good as oatmeal, and one resident Scotchman even insisted that it was better! From a crop standpoint, too, the plant appears rather promising, being very vigorous and productive. It is of erect habit, has a strong central stalk, and forms compact heads, heavy with seeds. There is no reason why it should not be gathered and thrashed by machinery." (O. F. Cook.)

For previous introduction, see S. P. I. No. 41340.

**46659.** *OXALIS TUBEROSA* Molina. Oxalidaceæ. **Oca.**

"No. 19. *Oca*. A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food. Ocas are eaten raw, as well as cooked, and are also frozen and dried. Raw ocas, when first dug, have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun. The plant attains a height of 1 foot or more and has the general appearance of a large sheep sorrel. The flowers are yellow and the leaflets are folded at night or in wet weather, the same

**46648 to 46659—Continued.**

as in the sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. The tubers are very tender, crisp, and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. If the taste should prove acceptable, oca's might become very popular for salads and pickles. The nature and habits of the plant indicate that it may be adapted to acid soil, which would be a distinct advantage in some parts of the United States." (*O. F. Cook.*)

For previous introduction, see S. P. I. No. 41163.

**46660. LILIU COLUMBIANUM Hanson. Liliaceae. Lily.**

From Bellingham, Wash. Collected by Dr. David Griffiths, Bureau of Plant Industry. Received October 18, 1918.

"A valuable native lily of the northern Pacific coast region, growing under very variable conditions from northern California to far into Canada. Locally it is called tiger lily, but it is very different and can be readily distinguished from that species by an entire lack of stem bulblets. The species produces abundant seed, which germinates readily. This seed was collected near Bellingham, Wash., in September, 1918." (*Griffiths.*)

**46661. CASIMIROA EDULIS La Llave. Rutaceae. White sapote.**

From Altadena, Calif. Purchased from Mr. F. O. Popenoe, West India Gardens. Received October 19, 1918.

A large tree with palmately compound leaves of three to seven leaflets and small greenish yellow flowers. The fruit, about the size of an orange, is greenish yellow with a thick epicarp and usually has five seeds about an inch long. The fruit has a delicious flavor, somewhat suggesting that of a peach. It is used in Mexico as an aid in inducing sleep. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 680.*)

**46662 to 46693.**

From China, Japan, and Africa. Presented by Rev. G. D. Schlosser, Honan, China. Received October 1, 1918. Quoted notes by Mr. Schlosser.

**46662 and 46663. ACTINIDIA CHINENSIS Planch. Dilleniaceae. Yang-tao.**

**46662.** "From Chikung, China."

**46663.** "From South Honan, China."

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

**46664. ALLIUM CEPA L. Liliaceae.**  
"Onion."**46665. ALLIUM sp. Liliaceae. Onion.**  
"Chin ts'ai."**46666 to 46668. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceae.**  
**Pai ts'ai.**

**46666.** "Chinese small or leaf cabbage from Honan, China."

**46667.** "Large long-headed Chinese cabbage seed from Honan, China; collected in the spring of 1918."

**46668.** "Chinese cabbage seed from Honan, China."

## 46662 to 46693—Continued.

46669. *CARTHAMUS TINCTORIUS* L. Asteraceæ. "Chinese red dye plant. Also Chinese medicine; probably red saffron."
- 46670 to 46674. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon. "Excellent varieties of Chinese muskmelon."
46675. *EREMOCHLOA OPHITUROIDES* (Munro) Hack. Poaceæ. Grass. "Grass seed from Honan, China."
- 46676 to 46678. *HOLCUS SORGHUM* L. Poaceæ. Sorghum. (*Sorghum vulgare* Pers.)  
 46676. "White *kaoliang*. A tall grain similar to kafir corn."  
 46677. "Red *kaoliang*. From Honan, China."  
 46678. A red variety, slightly darker than S. P. I. No. 46677.
46679. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ. Adzuki bean. "A short, thick, red variety of the adzuki bean."
46680. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean. "A green variety of the mung bean, or green gram."
46681. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha. "Natal gooseberry or ground cherry; tart, but excellent for sauce. From Natal, South Africa."
46682. *PISUM SATIVUM* L. Fabaceæ. Garden pea. "Japanese peas. Cargoes of these are shipped to Seattle."
46683. *POLYGONUM TINCTORIUM* Lour. Polygonaceæ. "Lao lan. Blue dye plant from Honan, China."
46684. *PYRUS* sp. Malaceæ. Pear. "Wild pear seed; *tang li*; from Honan and northern Hupeh, China. Blight resistant."
46685. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean. "Castor-bean seed from Honan, China."
46686. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame. (*S. indicum* L.) "A black-seeded variety of Chinese sesame."
- 46687 to 46691. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.  
 46687. "Seeds flat, light yellow."  
 46688. "Seeds round, green."  
 46689. "Seeds small, flat, yellowish green."  
 46690. "Seeds small, flat, black."  
 46691. "Seeds large, round, black. The Japanese export much of this variety to Seattle."
- 46692 and 46693. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea. "Used by the Chinese as green string beans."  
 46692. "A small white variety of cowpea."  
 46693. "A mixture of several dark-colored varieties."



**46694. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.****Japanese apricot.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received October 19, 1918.

"The flesh of the fruits dissolved in tea is used for washing inflamed eyelids or when eyes get gummy; the acidity kills microbacteria." (*Iida.*)

"Although every American artist who visits Japan in the early spring comes away with the keenest appreciation of the remarkable beauty and picturesque character of the so-called 'flowering plums' of Japan, few of these artists appear to know anything about the fruit which is borne by these beautiful flowering trees. These fruits, which are properly classed by botanists with the apricots instead of with the plums, constitute a most unique food of the Japanese. Though sometimes eaten fresh, much as we eat our native American plums, they are usually pickled in brine and colored with leaves of the perilla plant and packed in boxes or other receptacles for household use. Great quantities of these pickled mumes are consumed in Japan. Their use is so common that they formed an important part of the army ration in the Russo-Japanese war, and it is said that they were often depended on to quench the thirst of the soldiers when on long marches. One's first impression of these Japanese pickles may be properly compared with one's first impression of the Spanish pickled green olive, which has now become so popular. Eaten with meats, they furnish an entirely new and appetizing flavor, one which, perhaps, is destined to become popular in America, certainly one which deserves our investigation. The trees are very hardy, and there are a great many varieties; when in flower they are very beautiful. Our horticulturists should study them." (*David Fairchild.*)

For an illustration of the flowers of the "mume," see Plate I.

**46695. BAILLONELLA TOXISPERMA Pierre. Sapotaceæ.****Djave.**

From Africa. Presented by Dr. F. Heim, Paris, France. Received October 19, 1918.

"Seeds from the Kongo, Africa; they are introduced into Europe for the first time." (*Heim.*)

A tree often 150 feet high, with a trunk diameter of 6 feet, and without branches for 75 to 90 feet. The wood is red, very compact, but easily worked. It is exported to Europe, where it is used for making railway coaches. The deeply ridged bark when wounded yields a glutinous white latex. The fruits are globular, about 3 inches in diameter, and contain one to three seeds from which the natives extract a fat. (Adapted from *Chevalier, Les Vegetaux Utiles de l'Afrique Tropicale Française*, vol. 9, p. 242.)

**46696. JACARATIA MEXICANA A. DC. Papayaceæ.****Bonete.**

From Yucatan. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica, Santiago de las Vegas, Cuba. Received October 22, 1918.

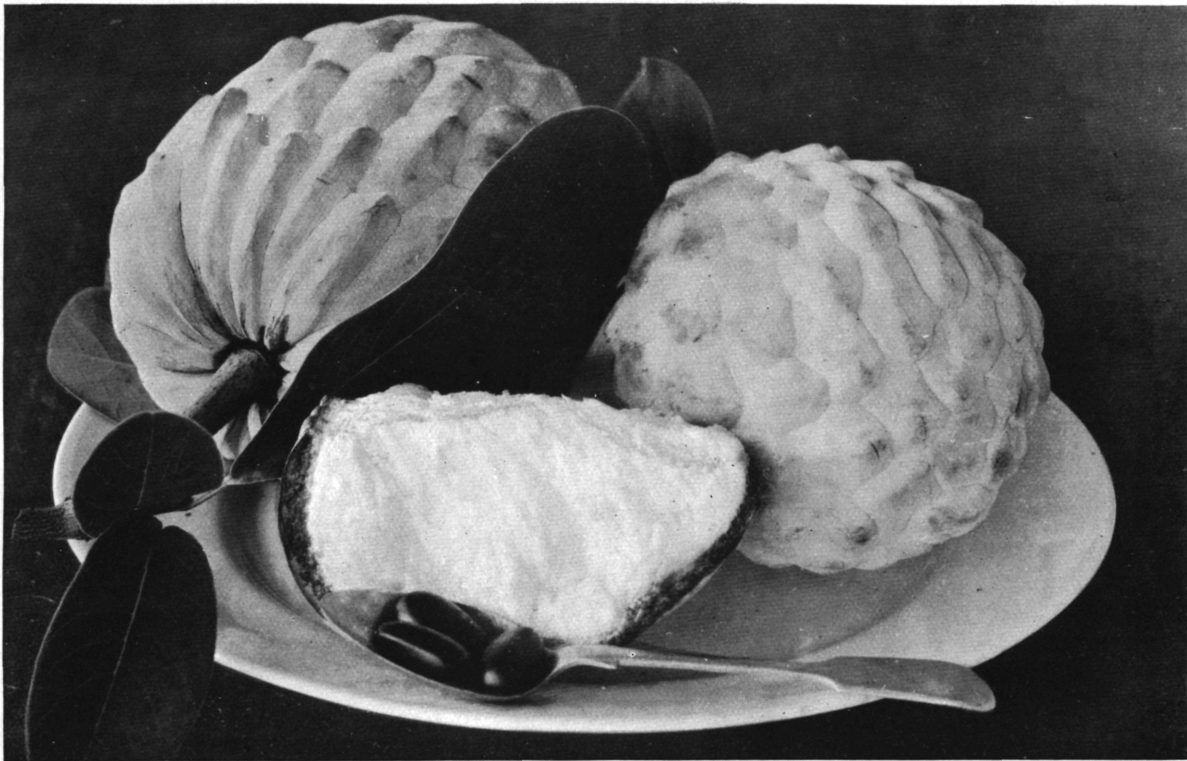
"Seeds of bonete from Yucatan. It produces edible fruits of a shape and taste much like *Carica papaya*. The bonete plant lives longer than the *papaya*." (*Calvino.*)

"A remarkable tree belonging to the same family as *Carica papaya*, but growing to a much greater size. The fruit, which is commonly called 'bonete' in



**A FLOWERING BRANCH OF THE JAPANESE APRICOT. (PRUNUS MUME SIEB. AND ZUCC., S. P. I. NO. 46694.)**

The flowering mume of Japan, often called erroneously the "flowering plum," is a distinct oriental species of apricot. It is considered by many Japanese artists more beautiful even than the flowering cherry, having a picturesque quality in its branching habit which makes it peculiarly adapted for portrayal on screens, etc. It flowers very early, and its fragrant blooms are often caught by late snowfalls. Its fruits are extremely acid and are pickled in Japan and candied in China. They form an important part of the Japanese soldier's ration and when served with meats are an appetizing relish. The tree is hardy, appears to be resistant to crown-gall and to the American peach borer, and deserves study as a stock. (Photographed, somewhat enlarged, by E. L. Crandall at Dr. Fairchild's place, "In the Woods," North Chevy Chase, Md., March 26, 1921; P26881FS.)



FRUITS OF THE ILAMA, ONE OF THE CUSTARD-APPLES. (*ANNONA DIVERSIFOLIA* SAFFORD, S. P. I. NO. 46781.)

The ilama, or papauce, as it is called in the State of Chiapas, can be termed the cherimoya of the tropical lowlands, for it is almost equal to the cherimoya in character and quality, yet it succeeds in the lowlands where the cherimoya can not be grown. (Photographed by Wilson Popenoe, Tapachula, Chiapas, Mexico, July 2, 1918; P17151FS)

tropical Mexico, is of a peculiar shape; oblong, pentagonal, five celled, containing a milky pulp. It is somewhat sweet and edible, in many places being prepared with sugar in the form of conserves. The leaves are compound and digitate, composed of seven distinct acute lobes." (W. E. Safford.)

**46697. LIVISTONA JENKINSIANA Griffith. Phœnicaceæ. Palm.**

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

Seeds of an East Indian palm, 20 to 30 feet tall, with a thick, round crown. The leaves are used for covering tops of boats and umbrellas.

For previous introduction and description, see S. P. I. No. 45591.

**46698 to 46703.**

From Jamaica Plain, Mass. Seeds collected at the Arnold Arboretum by Dr. Walter Van Fleet, of the Bureau of Plant Industry. Received October 28, 1918. Quoted notes by Dr. Van Fleet, except as otherwise stated.

**46698. × MALUS ARNOLDIANA Rehder. Malaceæ. Apple.**

"Hybrid of *Malus pulcherrima*, grown at the Arnold Arboretum; vigorous and very fruitful. May be useful as a stock for dwarfing commercial varieties of apples and for variety breeding."

Attention has been called to the hybrid crab apple, *Malus cerasifera*. This plant is probably one of the parents of another hybrid which sprang up spontaneously in the Arboretum many years ago and has been called *M. arnoldiana*. The other parent is probably *M. floribunda* [*M. pulcherrima*], itself believed to be a hybrid which originated in China. If this view of the origin of *M. arnoldiana* is correct, it is the offspring of two hybrids of different parentage and is a good illustration of what can be obtained by crossing and recrossing the crab apples. It is a low, broad, bushy tree with long, arching upper branches which are raised well above the general head of the plant and are wonderful objects when clothed from end to end with flowers and the blue sky is seen between. The flower buds, like those of *M. floribunda*, are of deep rose color and the petals, after the flowers open, gradually turn from rose color to white. The flowers, however, are as large as those of *M. cerasifera*, or nearly twice as large as those of *M. floribunda*, and the red fruits are intermediate in size between those of the parents. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, May 16, 1918.)

**46699 and 46700. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder. Malaceæ. Apple.**

**46699.** "Fruits from the best trees of this variety in the Arboretum. Fruits are of quite large size and good quality. Tree healthy and vigorous. For breeding and stock trials."

**46700.** "Handsome variety formerly considered a form of the Siberian crab, *M. baccata*, but considered by Prof. Sargent as being much nearer to *M. prunifolia rinki*. Good-sized fruits of fine quality. For breeding and stock trials."

**46701. MALUS TRANSITORIA TORINGOIDES Rehder. Malaceæ. Apple.**

"A large and vigorous variety of *M. transitoria*, with good-sized astringent fruits. For breeding purposes."

**46698 to 46703—Continued.****46702.** PYRUS SEROTINA Rehder. Malaceæ.**Pear.**

"The typical form of the species usually known as *P. chinensis*. Parent of the varieties *Golden Russet*, Chinese sand pear, *LeConte*, and others. Useful as a resistant stock and for breeding."

**46703.** PYRUS SERRULATA Rehder. Malaceæ.**Pear.**

"Tree grown from seeds received from China. Vigorous and possibly resistant to blight. Fruits small, late ripening, and barely edible. Of possible value as a stock for nonresistant pears and for breeding new varieties."

**46704 to 46707.**

From Los Banos, Philippine Islands. Presented by Mr. C. F. Baker, dean, College of Agriculture. Received October 29, 1918. Quoted notes by Mr. Baker.

**46704.** ANTEDESMA BUNIUS (L.) Spreng. Euphorbiaceæ.

"*Bignay*. Collected on the college farm."

A small evergreen tree, found in India, the Malay Archipelago, and China, with glabrous leaves and pubescent spikes of small flowers. The very juicy red fruits turn black when ripe, and are about a third of an inch in diameter. The bark of this tree yields a fiber from which rope is made, and the leaves are used as a remedy for snake bites. The wood, when immersed in water, becomes black and as heavy as iron. The fruits are subacid in taste and are used for preserving. (Adapted from *Brandis, Indian Trees*, p. 564, and from *Lindley, Treasury of Botany*, vol. 1, p. 75.)

For previous introduction, see S. P. I. No. 43544.

**46705.** CORDIA BLANCOI Vidal. Boraginaceæ.**Anonang.**

"*Anonang*. Collected on the college farm."

A medium-sized tree generally with a short and irregular trunk. The wood is soft and light and easily worked. It is clear yellow when first cut, changing to grayish brown. While not very durable, it is not attacked by pinhole beetles and is useful for posts and in light construction. The bast is used for making ropes. (Adapted from *Schneider, Commercial Woods of the Philippines*, p. 205.)

**46706.** PREMNA CUMINGIANA Schauer. Verbenaceæ.

"*Maquilio*. Collected on the college farm."

A Philippine shrub with stellate-pubescent, ovate, cordate leaves 9 inches long and ample pyramidal panicles of small flowers followed by fruits the size of a pea. (Adapted from *DeCandolle, Prodrômus*, vol. 11, p. 634.)

**46707.** QUERCUS BENNETTHII Miquel. Fagaceæ.**Oak.**

"*Catchan*. Collected on Mount Maquiling."

One of the largest of the Philippine oaks, reaching a diameter of more than 2 feet. The wood is moderately hard, heavy, pale yellowish brown, and has a fine texture. It seasons well if carefully stacked, but otherwise it is liable to split and warp. Useful for posts, beams, joists, rafters, and tool handles. (Adapted from *Schneider, Commercial Woods of the Philippines*, p. 98.)

**46708 to 46710.**

From Bahia, Brazil. Presented by Mr. H. M. Curran. Received October 30, 1918. Quoted notes by Mr. Curran.

**46708.** SYAGRUS CORONATA (Mart.) Becc. Phœnicaceæ. **Palm.**  
(*Cocos coronata* Mart.)

"Seeds of *Licori* palm, Jequie, Bahia, Brazil, September, 1918. A small, ornamental palm of dry, cool highlands. It yields edible kernels and oil in immense quantities."

**46709.** FEVILLEA sp. Cucurbitaceæ.

"Seeds of *andiroba* used for soap making; Rio Grunguy, Bahia, Brazil, September, 1918."

**46710.** ZEPHYRANTHES sp. Amaryllidaceæ.

"Jequie, Bahia, September, 1918. Bulbs of an ornamental pink flower, from 12 to 14 inches high. Flowers 4 to 6 inches long, four or five at apex of scape. Wild in dry, cool highlands in good woods mold."

**46711. BERBERIS PRUINOSA Franch. Berberidaceæ. Barberry.**

From San Rafael, Calif. Presented by Mr. R. H. Menzies. Received October 31, 1918.

"This barberry is one of the handsomest of the seventy-odd species I have under cultivation. It is the first to flower, the large clear yellow flowers being very showy. The white, powdery berries are borne profusely and are carried through the winter, a few remaining on the plant along with the next season's flowers. While an evergreen in California, it will probably be deciduous in the East; the foliage becomes very handsomely colored in the fall. I know of no barberry that puts on a greater growth almost from the start; my plant throws out new shoots each year all the way from 5 to 6½ feet from the base." (Menzies.)

**46712. ARTEMISIA CINA Berg. Asteraceæ. Wormseed.**

Grown from S. P. I. No. 42791 at the Plant Introduction Field Station, Chico, Calif. Received November 4, 1918.

Numbered for convenience in recording distribution.

The plant is a low and straggly undershrub, with erect branches, abounding in the deserts of Turkestan, where all the drug *santonica* is collected in July and August by natives. The drug is composed of the dried, unexpanded flower heads and it forms a greenish brown, glossy mass, having a strong, somewhat camphoraceous odor and a bitter taste. It is used as an anthelmintic, especially for roundworms.

For previous introduction, see S. P. I. Nos. 42682 and 42791.

**46713. CHENOPODIUM NUTTALLIAE Safford. Chenopodiaceæ. Huauhtzontli.**

From City of Mexico, Mexico. Purchased by Mrs. Zelia Nuttall. Received October 31, 1918.

"Seeds of the black variety which the agriculturists of Xochimilco consider the best." (Mrs. Nuttall.)

For previous introduction, see S. P. I. No. 46632.

**46714 to 46716.**

From Pretoria, South Africa. Presented by Mr. E. Percy Phillips, for the chief of the division of botany, Department of Agriculture. Received November 5, 1918. Quoted notes by Mr. Phillips.

**46714 and 46715.** *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

**46714.** "A. Sweet variety."

**46715.** "B. The wild melon and may be a bitter variety."

**46716.** *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ.

Gourd.

"C. The Kafir melon."

**46717. GOSSYPIUM NANKING** Meyen. Malvaceæ.

**Cotton.**

From Honan, China. Presented by Mr. G. D. Schlosser. Received October 1, 1918.

"The Chinese cotton is generally recognized as being inferior to the American. Whether it may have some superiority in the matter of adaptability to poorer soils I am unable to say. My friends here say they do not plant cotton on land that will grow anything else. The fiber is used for spinning in the hand fashion. The native cloth is all woven of this cotton." (*Rev. H. W. White.*)

For previous introduction, see S. P. J. Nos. 33798 and 33799.

**46718. PYRUS sp.** Malaceæ.

**Pear.**

From China. Seeds taken from fruits collected by Mr. Frank N. Meyer and forwarded to the Office of Foreign Seed and Plant Introduction after his death, without any notes. Received October 5, 1918.

**46719. SCHRANKIA LEPTOCARPA** DC. Mimosaceæ.

From Bahia, Brazil. Presented by Sr. V. A. Argollo Ferrão. Received November 5, 1918.

"Seeds of a wild sensitive plant that might be good for pasture for goats and sheep. It is a strong-growing small shrub, with the spines very much reduced, as compared with those of the common sensitive plant. The seeds are protected by a spiny fruit. The plant is not easily found, as the cattle eat it back closely. It grows in good soil and is found in low ground near rivers and small streams." (*Argollo Ferrão.*)

**46720. ZIZIPHUS MAURITIANA** Lam. Rhamnaceæ. **Indian jujube.**

(*Z. jujuba* Lam. not Mill.)

From Reunion Island. Presented by Mr. G. Regnard, Port Louis, Mauritius. Received November 5, 1918.

"Ziziphus from Reunion Island. This jujube is very sweet and is highly prized." (*Regnard.*)

For previous introductions, see S. P. I. Nos. 45625 to 45658.

**46721 to 46724.**

From Medellin, Colombia. Presented by Mr. W. O. Wolcott. Received November 8, 1918. Quoted notes by Mr. Wolcott.

**46721 to 46724—Continued.****46721.** *CEREUS* sp. Cactaceæ.**Night-blooming cereus.**

"The flat joints are from a species of night-blooming cereus which has an immense blood-red flower the size of a saucer. It opens only at night; the plant climbs on walls, or anything."

**46722 and 46723.** *CEREUS* sp. Cactaceæ.**Pitalla.**

"The seeds and the 3-cornered joints are from a cactus called *pitalla* (pronounced pea-tah-ya). The fruit grows as large as a good-sized potato and is covered with warts about one-fourth of an inch high. The inside pulp has a wonderful flavor and is very fine eating."

**46722.** Cuttings.**46723.** Seeds.**46724.** *PERSEA AMERICANA* Mill. Lauraceæ.**Avocado.***(P. gratissima* Gaertn. f.)

"Seeds from some very large and fine *aguacates*."

**46725. BROSIMUM ALICASTRUM Swartz. Moraceæ. Breadnut tree.**

From Cuba. Presented by Dr. Mario Calvino, director of the Agricultural Experiment Station, Santiago de las Vegas. Received November 8, 1918.

"Seeds of the *ramon de mejico*. It is a fine shade tree; and it is also an economic plant, for its leaves are eaten by cattle and its seeds are eaten readily by pigs."

For previous introduction, see S. P. I. No. 41880.

**46726. CUCUMIS MELO L. Cucurbitaceæ.****Muskmelon.**

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution. Received November 8, 1918.

"Seeds of an Armenian melon. It is a good bearer, and the fruits weigh from 15 to 20 pounds. The skin is rough, and greenish yellow in color. The flesh is white, solid, and firm, and very sweet. No doubt it would make a good keeper for late use." (*R. L. Beagles*.)

**46727. MILLETTIA PISCIDIA (Roxb.) Wight. Fabaceæ.**

From India. Presented by Mr. H. G. Carter, economic botanist of the Botanical Survey of India, Indian Museum, Calcutta. Received November 11, 1918.

"Pods and seeds of *Sohrumthein* collected by the Agricultural Inspector of Dhasi and Jaintia and Garo Hills, Shillong, Assam." (*Carter*.)

This woody climber, with whitish branchlets and odd-pinnate leaves, is a native of the forests of India, growing up to an altitude of 4,000 feet. The ovate-oblong, coriaceous leaflets are 3 to 4 inches long, and the snow-white flowers are borne in copious, laxly flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 107.)

**46728 and 46729.**

From Peking, China. Presented by Dr. Yamei Kin, who obtained them from Mr. H. L. Yang, Peking University. Received November 12, 1918. Quoted notes by Mrs. Kin.

**46728.** *CUCUMIS MELO* L. Cucurbitaceæ.**Muskmelon.**

"Seeds of a small white melon that is very prolific and has a fine-textured flesh, though not so highly flavored as the Honey Dew."



**46728 and 46729—Continued.****46729.** *DOLICHOS LABLAB* L. Fabaceæ.

"Seeds of the Manchurian green bean, which goes by the name of 'old woman's ear,' probably because it is very much broader and flatter than the usual string bean. It is noted for its late-maturing qualities, not being ready till the latter part of August and getting better with the cool autumn till the hard frost kills it. It also makes a delicious salt pickle and I imagine might be good for the salt-preserving method advocated by the United States Department of Agriculture. The bean itself is also eaten, but they say it is better green with the pod, like a string bean."

**46730 and 46731.**

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, horticulturist, Agricultural Experiment Station. Received November 13, 1918.

**46730.** *SOLANUM* sp. Solanaceæ.**Potato.**

"Tubers of the *oca* wild potato. Although I do not think that this potato will be able to compete with the common cultivated potato, it may prove useful in some places, such as the high mountain ranges in California, as well as some parts of the Hawaiian Islands and the Philippines." (*Schultz.*)

**46731.** *TILLANDSIA* sp. Bromeliaceæ.

"A small package of seed of one of the largest of the local tillandsias. I obtained them in the forest about 50 kilometers to the northeast of Tucuman." (*Schultz.*)

**46732 to 46740.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received November 13, 1918. Quoted notes by Mr. Wester.

**46732.** *CITRUS MIARAY* Wester. Rutaceæ.**Miaray.**

"With its willowy, slender, drooping branches and dense crown of dark-green foliage, the *miaray* is an exceedingly handsome ornamental tree. The fruit is about the size of a lime, usually growing singly in the axils of the leaves. It is pleasantly acid and may be used like the lime. The clean, vigorous growth of the tree indicates that it is likely to prove a desirable stock for other cultivated varieties of citrus fruits."

**46733.** *CITRUS WEBBERII* Wester. Rutaceæ.**Alsem.**

"*Calpi.* A shrubby tree with small, sharp spines. It has oblong-ovate, shining, dark-green leaves and solitary, sweet-scented, white flowers. The oblate fruits, 2 inches long by 2½ inches wide, are lemon yellow and have a thin skin, often loose like a mandarin orange. The flesh is whitish to grayish, very juicy and aromatic, with less rag than perhaps any other citrus fruit ever examined by the writer. The trees have a long flowering season, as fruits are offered in Manila throughout the summer to late in autumn."

**46734.** *COIX LACRYMA-JOBI* MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**

"*Adlay.* An edible variety of Job's-tears, cultivated in Mindanao."

**46735.** *CROTALARIA* sp. Fabaceæ.

"An annual plant up to 75 centimeters tall, with curious, rather attractive sepals that persist for many weeks. An interesting subject for a

**46732 to 46740—Continued.**

plant breeder of ornamentals. Native to Mindanao at an altitude of 400 to 700 meters."

**46736. FICUS sp. Moraceæ.**

"*Kalaput*. A small tree, used for live fence posts in Bukidnon, Mindanao, at an altitude of 400 to 700 meters. The fruits, which are bright red and about the size of small cherries, are produced in great profusion in the axils of the leaves and remain on the tree a long time, making this a very handsome ornamental. Likely to thrive in the very mild regions of the United States."

**46737. IPOMOEA NYMPHAEOLIA Blume. Convolvulaceæ. Morning-glory.**

"*Burakan*. A perennial, climbing vine of vigorous growth which is bronze colored when young. It has very large leaves, sometimes exceeding 20 centimeters in width, and white flowers. The vine is used for basketry and in southern Florida would make a good ornamental. It is a native of Mindanao up to an altitude of 650 meters."

**46738. ORANIA PALINDAN (Blanco) Merr. Phœnicaceæ. Palm.**

"*Banga*. A tall, unarmed palm, native to the interior of Bukidnon, Mindanao, growing at altitudes ranging from 300 to sometimes exceeding 500 meters. The trunk is straight and remarkably uniform in diameter, this rarely exceeding 18 centimeters. The leaves are pinnate and silvery beneath. The trunk of the mature palm is straight grained, easily split, and durable, and is used by the natives in making floors, fences, etc. An attractive ornamental."

**46739. TRICHOSANTHES sp. Cucurbitaceæ.**

"No. 1. A cucurbitaceous climbing vine with attractive foliage and roundish oblong fruits somewhat larger than a goose egg. The bright-red color of the fruits is retained for several weeks and is highly decorative. Found at an altitude of about 600 meters in the interior of Mindanao."

**46740. TRICHOSANTHES sp. Cucurbitaceæ.**

"No. 2. A cucurbitaceous climbing vine with attractive white flowers and oblong, orange-red fruits about 5 centimeters long. Native to the interior of Mindanao."

**46741. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.**

(*Prunus microphylla* Hemsl.)

**Mexican almond.**

From Indio, Calif. Fruits collected by Prof. S. C. Mason at the Indio Date Garden, grown from S. P. I. No. 39295. Received November 14, 1918.

The Mexican almond, found in the high mountain regions of Mexico, is a low, branching shrub with slender twigs without thorns. The leaves, usually less than 1 inch long, are narrowly elliptical to broadly lanceolate with crenate margins. The minute flowers, appearing before or with the leaves, are followed by densely rusty-pubescent oval fruits about half an inch long. The fruits are practically without flesh, and the thin dry skin splits open, exposing the stone. (Adapted from *Mason, Journal of Agricultural Research*, vol. 1, p. 175.)

**46742 and 46743.**

From Para, Brazil. Presented by Sr. J. Simao da Costa. Received November 14, 1918. Quoted notes by Sr. da Costa.

**46742.** *CECROPIA PALMATA* Willd. Moraceæ.

**Yaruma.**

"Seeds of what is called the trumpet tree, because it is hollow. It is a chronic harbor for ants and all sorts of pernicious insects. No experiments have been made as to the strength of the fiber which the bark contains."

**46743.** *EUTERPE OLERACEA* Mart. Phœnicaceæ.

**Assahy.**

"Seeds of a graceful, ornamental palm. The fruits contain hardly any oil and are made into a beverage and also into ice cream."

**46744.** *ENTEROLOBIUM* sp. Mimosaceæ.

From Bahia, Brazil. Presented by Mr. H. M. Curran. Received November 14, 1918.

"Seeds of a species of *Enterolobium* much like *E. saman*, but from dry regions. It is a handsome umbrella-shaped shade tree for Texas and California." (*Curran.*)

**46745 to 46748.** *PYRUS* spp. Malaceæ.

**Pear.**

From Jamaica Plain, Mass. Fruits collected at the Arnold Arboretum by Dr. W. Van Fleet, of the United States Department of Agriculture. Received November 15, 1918. Quoted notes by Dr. Van Fleet.

**46745 to 46747.** *PYRUS CALLERYANA* Decaisne.

**46745.** "Wilson No. 556a; pubescent form."

**46746.** "Wilson No. 556a; Bussey Hill."

**46747.** "Wilson No. 556a."

**46748.** *PYRUS SERRULATA* Rehder.

This species seems to be most closely related to *Pyrus serotina* Rehder. It differs, however, in its serrulate, generally broader leaves and in the smaller flowers with usually three or four styles and shorter petals, and in the smaller fruits. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 264.)

**46749 to 46752.**

From New Zealand. Presented by Mr. J. W. Poynton, Palmerston North. Received November 15, 1918. Quoted notes by Mr. Poynton.

**46749.** *ENTELEA ARBORESCENS* R. Br. Tiliaceæ.

**New Zealand cork.**

"Seeds of the *whaw* tree, the wood of which is but little more than half the weight of cork. Its distribution is very limited, as it is found only in isolated localities in the North Island and in one small area in the South Island. The seed vessels are very tough and are entirely surrounded by sharp needlelike spines which keep off birds and insects. The tree is very pretty, with a large, maplelike leaf and a pretty white flower. The leaves are evergreen. The tree grows to a height of 25 feet. It does not stand severe frosts, so should be sown only in the Southern States."

**46749 to 46752—Continued.**

**46750 to 46752.** PHORMIUM TENAX Forst. Liliaceæ. **New Zealand flax.**

"This seed is from a place called Wairoa, on the east coast of the North Island. It was collected for me by the manager of the largest flax mill there. Careful accounts were kept of the yield per ton of green leaf, and this seed is from the best plants, so it is of a fiber-producing strain."

**46750.** "From virgin plants not previously cut."

**46751.** "From plants after one cutting."

**46752.** "From plants cut more than once."

**46753 to 46760.**

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira, technologist of the Estacion Agronomica, Montevideo. Received November 16, 1918. Quoted notes by Sr. Silveira.

**46753 to 46756.** ARACHIS HYPOGAEA L. Fabaceæ.

**Peanut.**

**46753.** "Mani, variety *Brasil*."

**46754.** "Mani, variety *Brasil*."

**46755.** "Mani, variety *Paraguay*."

**46756.** "Mani, variety *Uruguay*."

**46757 and 46758.** HELIANTHUS ANNUUS L. Asteraceæ.

**Sunflower.**

**46757.** "Variety *Argentina*." **46758.** "Variety *del Pais*."

**46759 and 46760.** RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean**

**46759.** "Variety *sanguineus*." **46760.** "Variety *communis*."

**46761.** CARICA sp. Papayaceæ.

**Papaya.**

From Colombia. Presented by Dr. Carlos Urueta, minister of agriculture, Bogota. Received November 19, 1918.

"A wild variety of papaw from the tropical parts of Colombia." (*Urueta*.)

Judging from the seeds, this is the same species as that obtained by Mr. O. F. Cook at Ollantaytambo, Peru. See S. P. I. No. 41339.

**46762.** LYSILOMA SABICU Benth. Mimosaceæ.

**Sabicu.**

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received November 22, 1918.

The *sabicu* is a Cuban tree with twice-pinnate leaves composed of small, obliquely obovate leaflets. The flowers are in small, globular heads and the fruits are thin, flat pods. The tree is of great value for its dark-colored wood, which is very heavy and extremely hard and durable, making it valuable in ship-building. (Adapted from *Lindley, Treasury of Botany*, p. 704.)

**46763.** RHODODENDRON sp. Ericaceæ.

**Rhododendron.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received November 25, 1918.

Seeds of an apparently new species of *Rhododendron* collected by Mr. Forrest (No. 15977).

**46764. CORYNOCARPUS LAEVIGATA Forst. Corynocarpaceæ.****Karaka.**

From Honolulu, Hawaii. Presented by Mr. C. S. Judd, Superintendent of Forestry, Board of Commissioners of Agriculture and Forestry. Received November 25, 1918.

"Seeds of the *karaka* tree of New Zealand. This tree was introduced into these islands in 1878, when Mr. Francis Sinclair sent the seed of it from Auckland to Mrs. Valdemar Knudsen, who planted it at Halemanu, Kauai, Hawaii, at an altitude of 3,500 feet. The tree has thrived and forms a dense forest cover. It is considered a valuable addition to our list of water-conservation forest trees. The tree is not very long lived, but it perpetuates itself by abundant reproduction. The wood is soft and the foliage is relished by stock." (*Judd.*)

**46765. RUBUS sp. Rosaceæ.****Blackberry.**

From San Lorenzo, Colombia. Presented by Mr. M. T. Dawe. Received November 11, 1918.

"I am sending you to-day seeds of a large fruiting blackberry which grows at about 3,300 meters altitude on the Central Cordillera." (*Dawe.*)

Received as *R. bogotensis*, but it seems to be a different species.

**46766 and 46767. TRITICUM spp. Poaceæ.****Wheat.**

From Johannesburg, South Africa. Purchased from the Agricultural Supply Association through Mr. J. Burt Davy. Received November 28, 1918. Quoted notes by Mr. Davy.

"I have succeeded in obtaining in the Calvinia division of the Cape Province some very nice samples of two breeds of wheat, which have been grown there for a generation or more and which must be thoroughly acclimatized.

"The two varieties are known locally as *Golden Ball*, which is a durum type, and *Oude Baard*, a bearded, soft wheat. Both are good yielders, and the latter is said to be somewhat better in yield than the former, although somewhat less drought resisting.

"These wheats are grown in a region where the average rainfall for the last five years has been 3½ inches per annum, and the incidence of the rainfall is such that it is practically of no benefit to the crop. On the other hand, the soil temperature is extraordinarily high and the evaporation enormous, somewhere in the neighborhood of 108 inches per annum.

"The wheat is grown under what is known as the 'Zaaidam' system, which is identical with the basin-irrigation system of Upper Egypt. with this difference, that whereas the Egyptian plan deals with practically a constant water supply, the Zak River is very erratic in its flow, sometimes coming down in February and at other times, perhaps, in March, April, May, or June, and sometimes even as late as August or September. As a rule one can only count upon its coming down once in the year or at least being only once available for the crop during the season, though occasionally, in an exceptionally favorable season, the crop gets two irrigations.

"The land, being extraordinarily hard, is not plowed until the river comes down; the water is then allowed to stand on the land, in basins sometimes 1,500 acres in extent, for two to ten days, or even three weeks, according to the quantity of water available and the requirements lower down the stream. Storage

is effected by means of dams, sometimes 2 miles in length, thrown right across the river valley. By this means the soil is soaked to a depth of 6 feet or more. The water is then run off into the next dam, and as soon as the surface is dry enough the land is plowed and the seed is sown broadcast and harrowed in. The rest is left to nature.

"There is a good deal of brack in these soils (both sodium carbonate and sodium chlorid). On this account there is a possibility of the strains I am sending you being more alkali resistant than might otherwise be the case, but I have no actual proof that this is so. Under the circumstances, these wheats are grown with almost a minimum of moisture which would support a crop and, I think, should be suitable for cultivation in parts of the United States.

"It is, of course, possible that you will find that they correspond closely with types already grown in the United States, but as they are among the oldest types of wheat known in South Africa, they may have developed local peculiarities quite different from any possessed by your American wheats."

**46766. TRITICUM DURUM** Desf.

"*Golden Ball*. A durum wheat; not so good a yielder as *Oude Baard*, but more drought resistant."

**46767. TRITICUM AESTIVUM** L.

(*T. vulgare* Vill.)

"*Oude Baard*. A bearded, soft wheat; a better yielder than the *Golden Ball*, but not so drought resistant."

**46768. DIOSCOREA ALATA** L. Dioscoreaceæ.

**Yam.**

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

"The exact identity of this variety I am not able to state. It is beginning to be cultivated here under the name of Chinese yam." (*Higgins*.)

"A purple-skinned, somewhat dark-fleshed yam. When peeled, boiled, and mashed, seasoned with butter, and thoroughly beaten, this yam is much like mashed potato and is equally palatable. It is very smooth in texture when so prepared. It is also good when baked or when sliced and fried after baking or boiling. Like most other yams it should be peeled before boiling." (*R. A. Young*.)

**46769. ANANAS SATIVUS** Schult. f. Bromeliaceæ.

**Pineapple.**

From Berea, Africa. Presented by Mr. H. Rutter, acting curator, Municipal Botanic Gardens. Received November 1, 1916. Numbered December, 1918.

"Suckers of the Natal variety of pineapple, known locally as the Queen pine." (*Rutter*.)

"This pineapple is of delicious flavor. It averages from three-fourths of a pound for poor specimens to 3 or 4 pounds for choice ones." (*Daily Consular and Trade Reports, January 13, 1914*.)

**46770 to 46780.**

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received November 26, 1918. Quoted notes by Mr. Groff.

**46770 to 46779.**

"A collection of beans procured on the Canton markets."

## 46770 to 46780—Continued.

**46770.** SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

"No. 15036A. *Haak pei tseng tau*. One of the common beans of Kwangtung; said to be very nutritious. Planted in Kwangtung in March and April and again in August and September."

**46771.** VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"No. 15036B. *Mei tau*. Another common bean of Kwangtung; planted in March and April."

**46772.** PISUM SATIVUM L. Fabaceæ. Garden pea.

"No. 15036C. *Hohlaan tau*. A variety of pea grown widely in Kwangtung; said to have come originally from Holland, and for this reason called *Hohlaan tau*. The Chinese usually eat this pea with the pod, and it is highly prized by foreigners. It is planted in Kwangtung in October, November, and December."

**46773.** CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. Sword bean.

"No. 15036D. *To tau*. A very prolific vine, sometimes used as an arbor. The beans are edible, though the pods are large and tough. It is planted in Kwangtung in March and April."

**46774.** VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.

Yard Long bean.

"No. 15036E. *Haak tau*. A common bean of Kwangtung with edible seeds. It is planted in March and April and again in August and September."

**46775.** PHASEOLUS AUREUS Roxb. Fabaceæ. Mung bean.

"No. 15036F. *Luk tau*. Used for bean sprouts, bean curd, etc. Also used in flour. Planted in Kwangtung in March and April."

**46776.** SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

"No. 15036G. *Wong tau*. Used to make various bean products. Planted in Kwangtung in March and April."

**46777.** VICIA FABA L. Fabaceæ. Broad bean.

"15036H. *Chaam tau*. So called because it resembles a silkworm. It is used in a number of different ways and is planted in March and April."

**46778.** VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.

Yard Long bean.

"No. 15036I. *Tseng tau*. Used in various bean products and commonly grown in the north; planted in Kwangtung in March and April."

**46779.** PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ.

Adsuki bean.

"No. 15036J. *Hung tau*. Planted in Kwangtung in March and April."

**46780.** CASTANEA MOLLISSIMA Blume. Fagaceæ. Chestnut.

"When I was up the North River in March near Wushek I saw some fine specimens of chestnut. Through Mr. S. D. Williams, of the railway, I have now obtained a few of these nuts which I am sending under C. P. B. No. 15037."

**46781 to 46787.**

From Mexico. Collected by Mr. Wilson Popenoe and presented through Dr. H. J. Webber, director of the Citrus Experiment Station of the University of California. Received December 2, 1918. Quoted notes by Mr. Popenoe.

**46781.** *ANNONA DIVERSIFOLIA* Safford. Annonaceæ.

**Ilama.**

"*Papauce*. Collected at Tapachula, Chiapas, October 18, 1918. The tree strongly suggests *Annona squamosa* in appearance, but is easily distinguished by the leaflike bracts at the base of the branchlets. The fruit is much larger than that of *A. squamosa*, resembling more closely that of *A. reticulata*. It is generally heart shaped, up to 5 or 6 inches in length, with the carpellary areas indicated by incised lines on the surface, which is pale glaucous green in color. The skin is nearly a quarter of an inch thick, the flesh is said to be tinged with rose color when ripe, and the seeds are much larger than those of either *A. squamosa* or *A. reticulata*."

For previous introduction, see S. P. I. No. 36632.

For an illustration of the fruits of this *Annona*, see Plate II.

**46782.** *CARICA* sp. Papayaceæ.

"Collected at La Zacualpa, Chiapas, October 10, 1918. A wild carica common in this region. It is very similar to the papaya. The plants grow to a height of about 10 feet and resemble those of the papaya except in the distinctly darker color of the foliage and the less deeply lobed leaves. Staminate and pistillate flowers seem always to be produced on separate plants. The fruits are borne singly, not in clusters, as is often the case in the wild papayas of Florida. They are obovoid-elliptic in shape, 2 to 4 inches in length, orange-yellow in color when ripe, with a more pronounced aroma than in the papaya. The natives call them *melocotones*, or peaches. The flesh is about half an inch thick; each of the numerous seeds which fill the large cavity is inclosed in a translucent, whitish aril, which is the part eaten. The seeds do not adhere to the wall of the seed cavity, as in the papaya, but together with the arils surrounding them entirely fill the cavity. The flavor of the arils is sweet and aromatic, very pleasant, and quite distinct from that of the flesh of the papaya."

**46783.** *CHAMAEDOREA* sp. Phœnicaceæ.

**Palm.**

"From Pochutla, Oaxaca, August 18, 1918. This closely resembles the dwarf palm which I sent in from Guatemala last year under the name *pacayito*. It is abundant on cool, shady mountain sides in the coffee district above Pochutla, at altitudes of about 3,000 feet. When mature, the plant has a slender trunk, perhaps half an inch thick and 2 feet high. The leaves are 12 to 18 inches in length, rather finely pinnate, deep green, graceful, with the rachis stiff but arching slightly. As a house plant for the Northern States and for use in fern dishes it seems to me this plant possesses unusual possibilities, and I strongly recommend it for trial."

**46784.** *NICOTIANA TABACUM* L. Solanaceæ.

**Tobacco.**

"From the cafetal El Progreso, near Pochutla, Oaxaca; altitude, 2,000 feet. Collected August 15, 1918. A pink-flowered tobacco plant, of the type grown in this section of the country. It reaches a height of about 6 feet. I do not know that it has any particular value, but it might be



**46781 to 46787—Continued.**

planted experimentally somewhere in the United States to determine whether or not it possesses any unusual characteristics."

**46785. PASSIFLORA CILIATA Ait. Passifloraceæ.**

"From Puerto Mexico, Vera Cruz; collected September 9, 1918. The granadita, a passion vine which grows upon the beach in the vicinity of Puerto Mexico. Its fruits are unusually handsome and are sold in the market. They are produced upon slender stems about 4 inches long, and are round, an inch in diameter or slightly larger, and brilliant crimson scarlet in color. They are by far the showiest fruits of this genus which I have seen. The outer covering of the fruit is not hard; the seeds are surrounded by white, translucent pulp of slightly acid flavor. In quality this species is inferior to *Passiflora ligularis*, the flavor not being so aromatic and spicy. For the beauty of its fruits alone, however, it should be worth cultivating, and it would be an excellent species to cross with some of the larger fruited passifloras."

**46786. SAPRANTHUS sp. Annonaceæ.**

"From the mountains near Pochutia, Oaxaca; altitude, 3,000 feet. Collected August 18, 1918. A peculiar annonaceous fruit, which is rather common in the mountains. The tree is tall and slender and grows in the dense forest. The fruits are the size and shape of papaws (*Asimina triloba*); that is, oblong, about 3 to 4 inches in length, and 1½ inches in thickness. The flesh is bright orange color, and I do not believe it is edible; at any rate, it is not eaten by the natives of this region."

For an illustration of a cluster of fruits of this tree, see Plate III.

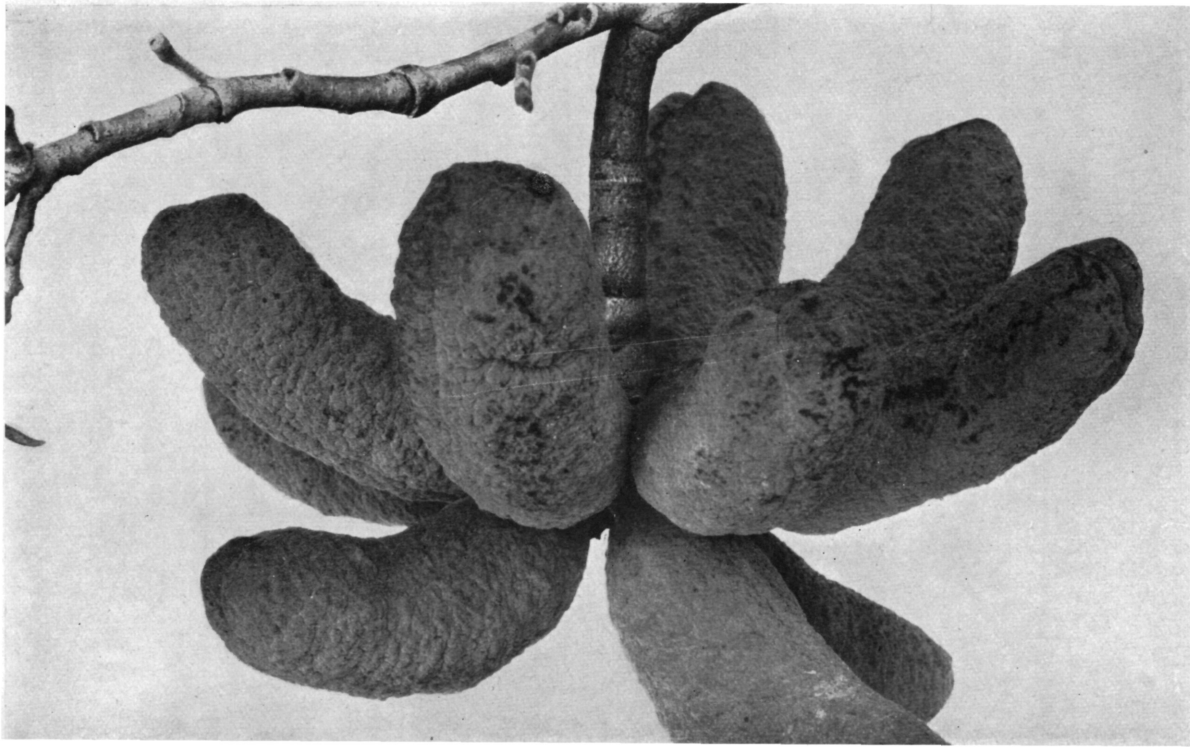
**46787. VITIS sp. Vitaceæ.****Grape.**

"*Totoloché*. Collected at Mogone, Oaxaca, October 1, 1918. A wild grape apparently belonging to the Muscadine group or closely related to it. The plant is said to be abundant in this region, but I have not seen it. The fruit is brought into town by the Indian women from San Juan Guichicovi. This impresses me as the best grape I have ever seen in the tropical lowlands, and I believe it has value. It should, at least, be of importance in connection with the development of a grape for cultivation in the Tropics. It is vastly superior to *Vitis caribaea*, the berries being of much larger size and better flavor. The bunches are usually small and rather loose, but sometimes contain as many as 50 berries and are quite compact. The individual berries are half an inch in diameter, sometimes larger, round, deep purple-maroon or purple in color when fully ripe. The skin is thick and tough, like that of the Scuppernong; it seems to me even thicker and tougher. The pulp is greenish, very juicy, containing two to four seeds, typically the latter number. While the *totoloché* appears to be most commonly eaten out of hand, it is also used in this region to make wine. When fully ripe the flavor is sweet, with a delicious aroma."

**46788. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen.**

From Port of Spain, Trinidad. Presented by Mr. Eugene André. Received December 2, 1918.

"Tubers of what are being grown here as Chinese eddoes. This aroid gives better results in poor, dry soil than the dasheen, the latter requiring well-watered, low-lying land for remunerative crops." (André.)



FRUITS OF AN INTERESTING RELATIVE OF THE ANONAS FROM GUATEMALA. (SAPRANTHUS SP., S. P. I. NO. 46786.)

The fruits are produced on a small tree 15 feet high, with immense, deep-maroon flowers, the outer petals of which are up to 4 inches long. The fruits are bright orange in color and resemble very much those of our own Asimina, or papaw. It may prove valuable in breeding work. (Photographed, natural size, by Wilson Popenoe, City of Guatemala, Guatemala, November 10, 1916; P16926FS.)



**THE FAMOUS SEALING-WAX PALM OF THE MALAY ARCHIPELAGO. (CYRTO-STACHYS LAKKA BECCARI, S. P. I. No. 46865.)**

This palm, which is scarcely known in America, merits trial in southern Florida and in our island possessions. The strong suckering habit lends this palm to mass effects that are usually difficult to attain in such stately subjects. The common name is apparently derived from the bright red sheaths. (Photographed by J. F. Rock, Singapore, Straits Settlements, September, 1920; P22622FS.)

"This variety, known in Trinidad as Chinese eddo, is very similar in appearance to what has been previously introduced in the United States as the Trinidad dasheen. The quality of the specimens received is excellent." (R. A. Young.)

**46789. ROSA GENTILIANA** Lev. and Van. Rosaceæ. **Rose.**

From England. Presented by Sir David Prain, director of the Royal Botanic Gardens, Kew. Received December 3, 1918.

"A plant grown from a cutting supplied by Sir William Thiselton-Dyer." (Prain.)

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. The numerous large white flowers are very fragrant, and the anthers are golden yellow. The species is easily distinguished by its glabrous, pale-gray shoots and the 3 to 5 foliolate leaves, which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Received as *Rosa cerasocarpa* Rolfe, which is referred to *R. gentiliana* in *Plantae Wilsonianae*.

**46790. DIALYANTHERA OTOBA** (H. B. K.) Warb. Myristicaceæ.  
(*Myristica otoba* H. B. K.)

From Colombia. Presented by Mr. M. T. Dawe, Estacion Agronomica Tropical, San Lorenzo. Received December 3, 1918.

"A few days ago, in a local market, I came across a kind of butter or fat, known as *otoba*, which the people here very much prize as a remedy for sores and skin diseases in cattle, and also for the eradication of ticks. I am also informed that persons suffering from eruptions take pills of this substance, it is said, with beneficial results. *Otoba* finds a ready sale in the local markets at from 30 to 50 cents per pound. The fat or butter is prepared from the seeds of *Myristica otoba*, a large forest tree of the Cordillera in this region, at about 5,000 feet altitude. The seeds when cut open have a distinct and agreeable odor which is imparted to the butter when prepared." (Dauce.)

**46791 to 46793.**

From Angola, Africa. Presented by Mr. J. Gossweiler, Servicos de Agricultura, Loanda. Received December 3, 1918.

**46791. ALBIZZIA WELWITSCHII** Oliver. Mimosaceæ.

An unarmed, tropical African tree, sometimes 80 feet high, with a spreading, truncate crown. The doubly pinnate leaves are made up of three to five pairs of pinnae, each bearing four to eight pairs of obliquely ovate, glabrous, shining leaflets from 1 to 2 inches long. The flowers are borne in axillary corymbs and are followed by thin, subcoriaceous, slightly curved pods 4 to 5 inches long. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 362.)

**46792. ALOE LITTORALIS** Baker. Liliaceæ.

Growing in the coast region of Angola, Africa, this aloe is a shrub often 10 feet tall with a simple trunk as thick as a man's arm. The leaves, arranged in dense rosettes, are sword shaped, 2 to 3 feet long, with spreading, horny, marginal teeth. The inflorescence is a panicle 4 to 5 feet long with branches of cylindrical racemes 1 foot long, densely crowded with the short-pedicel flowers. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 7, p. 467.)

**46791 to 46793—Continued.**

**46793.** *PACHYLOBUS EDULIS* MUBAFO (Ficalho) Engl. Balsameaceæ.  
(*Canarium mubafo* Ficalho.)

A tree found in the Cameroon Valley in Upper Guinea, Africa. The odd-pinnate leaves have 15 to 17 coriaceous, ovate leaflets 4 to 6 inches long. The small flowers are borne in rusty tomentose panicles collected near the ends of the branches. The oval, black fruits, about 3 inches long, have a pleasant taste. It is related to the Java almond and to the pili nut. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 327.*)

**46794 to 46799.** *TRITICUM AESTIVUM* L. Poaceæ. **Wheat.**  
(*T. vulgare* Vill.)

From England. Collected by Dr. William A. Taylor, chief, Bureau of Plant Industry, during his recent trip to England. Received December 5, 1918. Quoted notes by Mr. J. A. Clark.

**46794.** C. I. 6219. *Federation*. **46796.** C. I. 6221. *Onas*.

**46795.** C. I. 6220. *Boudicca*.

**46797.** "C. I. 6223. *Yeoman*. Obtained from Prof. Biffen, Cambridge, England, who originated the variety. He stated to Dr. Taylor that it was the result of a cross made between the Red Fife wheat of Canada and one of his own strains."

**46798.** "C. I. 6224. *Yeoman*. A sample of Yeoman wheat grown by Mr. Alfred Amos, Wye, Kent, England, from a field of about 2½ acres which Mr. Amos said yielded at the rate of 96 bushels per acre."

**46799.** "C. I. 6225. An unidentified club wheat."

**46800.** *RUBUS GLAUCUS* Benth. Rosaceæ. **Andes berry.**

From Palmira, Colombia. Cuttings presented by Mr. Charles J. Eder. Received December 6, 1918.

"I believe the natural habitat of this berry to be about 8,000 feet above sea level." (*Eder*.)

For previous introduction, see S. P. I. No. 45365.

**46801.** *DIOSCOREA ALATA* L. Dioscoreaceæ. **Yam.**

Tubers grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in distribution.

"A very prolific, white-fleshed yam, obtained in the spring of 1918 by David Fairchild from Prof. C. T. Simpson, Lemon City, Fla. It grows best in deep, light, sandy land. It is supposed to have come previously from the West Indies. The skin is without coloration, and the flesh remains snowy white when cooked. As compared with most other yams, it is very dry. It is well adapted for baking and for boiling and mashing; the mashing should be very thorough. It is best to pare yams before boiling." (*R. A. Young*.)

**46802 and 46803.**

From Ecuador. Cuttings collected by Dr. J. N. Rose, associate curator, United States National Herbarium. Received December 7, 1918.

**46802.** *NAGEIA* sp. Taxaceæ.  
(*Podocarpus* sp.)

"Huigra, November 4, 1918." (*Rose*.)

**46802 and 46803—Continued.**

**46803.** *PERSEA AMERICANA* Mill. Lauraceæ.  
(*P. gratissima* Gaertn. f.)

**Avocado.**

"No. 23556. Quito, altitude 9,500 feet. October 28, 1918." (*Rose.*)

"This variety apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe.*)

**46804 to 46820.**

From Johannesburg, South Africa. Presented by Mr. J. Burtt Davy. Received December 9 and 10, 1918. Quoted notes by Mr. Davy.

**46804.** *ACACIA CYCLOPS* A. Cunn. Mimosaceæ.

"Naturalized on the Cape Flats, where it has proved valuable as a sand binder. Should succeed equally well on the California coast."

For previous introduction, see S. P. I. No. 30777.

**46805.** *ACACIA GIRAFFAE* Willd. Mimosaceæ.

"*Kameel doorn.* A valuable timber tree for arid regions in the warm Temperate Zone. One of the few native trees in British Bechuanaland. The ripe pods are greedily eaten by stock. It thrives in sandy soil, attains a large size, and furnishes valuable shade. The wood is dark red-brown in color and is used by the Bechuanas for spoons, knife handles, etc. At one time this tree furnished all the fuel for Kimberly, Vryburg, and Mafeking."

**46806.** *ERAGROSTIS SUPERBA* Peyr. Poaceæ.

"A valuable pasture grass; somewhat ornamental also."

For previous introduction, see S. P. I. No. 44741.

**46807.** *HIBISCUS URENS* L. f. Malvaceæ.

"*Wilde Stok-roos.* Ornamental perennial from the Calvinia Division, Cape Province, with a rainfall of under 4 inches."

A strong-growing, shaggy plant with handsome, deep-crimson flowers which are produced throughout the whole summer. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 173.*)

**46808.** *LOBELIA ERINUS MICRODON* (DC.) Sond. Lobeliaceæ.

"An ornamental annual, entirely different in habit from the ordinary garden form, being erect instead of diffuse. The fragrant flowers present beautiful shades of blue and white."

**46809.** *MANIHOT GLAZIOVII* Muel. Arg. Euphorbiaceæ. Ceara rubber.

"From Knysna, Cape Province."

"Ceara rubber occupies the second rank, and it would undoubtedly be equal to Para rubber if the sap were collected by some method so that it would not include so much foreign stuff. Ceara rubber is very elastic, dry, and not sticky unless it is impure, but when impure the loss in bulk amounts often to 25 per cent. The tree grows to a height of about 30 feet with a round head. It has 3 to 7 lobed gray-green leaves, in shape and size resembling those of the castor-bean plant." (*Semmler.*)

For previous introduction, see S. P. I. No. 4264.

## 46804 to 46820—Continued.

## 46810. RHUS VIMINALIS Ait. Anacardiaceæ.

"*Karree boom*. A hardy, evergreen tree, withstanding the drought and frost of the upper karoo, which has an altitude of 4,600 feet and a rainfall of about 10 inches in summer only. It grows readily from seeds, cuttings, or poles or stumps set in moist ground and kept moist until growth starts. Plants have been known to make a growth of  $13\frac{1}{2}$  feet in three years. It prefers a thin, limestone soil, but thrives on other soils and attains a height of about 30 feet and a spread of the same distance. It is considered an excellent timber for gate and fence posts, poles having been found in good condition 25 years after they had been set in the ground. The wood is flexible and is considered excellent for yokes, keys, tobacco pipes, and furniture. Sheep and goats browse on the foliage, and the sweetish fruits are eaten by children and poultry. The *karree boom* makes a beautiful street and shade tree, being hardier and more ornamental than *Schinus molle*, which it resembles in habit. It should be tried in southern California, in Arizona, and in New Mexico. Sow seeds in the spring; plant cuttings or poles in midsummer."

## 46811. TRIFOLIUM ANGUSTIFOLIUM L. Fabacæ.

Clover.

"An annual, naturalized around Cape Town. It might succeed as a green-manure crop on sandy soils in California or other regions of winter rainfall."

For previous introduction, see S. P. I. No. 34196.

## 46812. TRITICUM DURUM Desf. Poacæ.

Wheat.

"South African durum, grown in the Cape Province from American seed."

## 46813 to 46817. TRITICUM AESTIVUM L. Poacæ.

Wheat.

(*T. vulgare* Vill.)

46813. "*Spring Early*. Bearded; white; excellent milling quality; splendid yielder. This variety has become very popular of late in the western provinces; origin unknown."

46814. "*Thew*. This wheat has withstood rust for several years in the western provinces and is giving encouraging results."

46815. "*Rietti*. Bearded; ear long and open, shedding rather too easily. It stools well and is a heavy yielder, especially in wet, late seasons; wonderfully rust resistant. The grain is dark, but the flour is very white, and the variety is greatly valued as a milling wheat. This is the most extensively grown wheat in the western provinces, though *Glujas Early* threatens to oust it from this position. It has not given very good results in the region of summer rainfall."

46816. "*Du Toit*. Beardless; small, white grain; a good milling wheat. This variety has been grown for a number of years in certain of the western-province districts."

46817. "*Glujas Early*. Beardless or semibearded; white; excellent quality; good yielder; does not shell out too easily. This is probably the most rust resistant of all the white varieties of wheat yet introduced into the western provinces and stands second only to *Rietti* in the acreage under cultivation in the principal wheat areas. It is annually gaining in popularity, with every prospect of ousting *Rietti* from the premier position. Now largely grown in the Transvaal also."

**46804 to 46820—Continued.****46818. VIRGILIA CAPENSIS (L.) Lam. Fabaceæ.**

"*Kearboom*, from Storms River, Cape Province. A small tree cultivated for its ornamental foliage and sweetly scented flowers. Its cultivation is most simple, but it dislikes drought and is subject to the red scale. The wood is rather light and soft and looks well when polished, but is subject to worm-eating. It is occasionally used for yokes, rafters, spars, fuel, etc."

**46819. CUCUMIS sp. Cucurbitaceæ.**

"Wild cucumber from the Kalahari Desert; said to be eaten by stock."

**46820. MUNDULEA SUBEROSA (Roxb.) Benth. Fabaceæ.**

"An ornamental, leguminous shrub from the warm-temperate, arid belt of the Transvaal."

**46821. CANNA EDULIS Ker. Cannaceæ.****Edible canna.**

From Honolulu, Hawaii. Tubers presented by the Agricultural Experiment Station. Received April 1, 1918. Numbered December 31, 1918.

This plant, which is exclusively cultivated in Queensland, grows to a great height, often rising to 8 or 9 feet. It has very large, broad, ribbed leaves; and as many as 15 to 20 stalks rise from a single stool, each stalk representing a large bulb. In the flowering season the plant sends up a long, straight spike, from the head of which bursts a beautiful bunch of bright-scarlet flowers having the appearance of those of the common canna, known as "Indian Shot," but far larger. The seeds do not often mature, however, as do those of the canna family generally. The bulbs, from which the arrowroot of commerce is prepared, form a compact mass on and near the surface of the soil, and so prolific is the plant that I have dug from a single stool as much as 60 and even 80 pounds of bulbs. (Adapted from *A. J. Boyd, Queensland Agricultural Journal, vol. 10, p. 32.*)

For further information regarding its cultivation and manufacture, see above reference.

"The rootstocks are edible and palatable when properly cooked. More culinary experimentation with them, however, will be required before any definite decision regarding their probable popularity can be made. In Hawaii, where the experiment station officials have been growing an acre of this *Canna edulis*, Mr. F. G. Krauss informs us they have eaten it after boiling for 30 minutes and then mashing it as one does boiled potatoes, and he declares it is a good substitute for the potato. In his opinion it outyields the potato two to one. The tops have been used as forage for cattle and swine." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 46313.

**46822 to 46831. × CASTANEA NEGLECTA Dode. Fagaceæ.**

From Cape Henry, Va. Collected by Mr. J. B. Norton, physiologist, of the United States Department of Agriculture. Received December 10, 1918.

Quoted notes by Mr. Norton.

"While at the Virginia Truck Experiment Station at Diamond Spring, Va., in 1918, I had occasion to make an observation trip through the dune and desert region inside Cape Henry. Along the inside edge of the big dune were large trees of many kinds being covered up by the encroaching sand; and along the foot of the dune I found empty chinquapin burs. No bushes suggesting chin-



quapins were present, but a search revealed that the burs had dropped from a tree fully 30 feet high growing well up on the slope. On the inner side of the dune are found the best trees, but as the advancing sand covers up the lower part of the tree all we see is the top, looking like a thicket of shrubby bushes. Sometimes the top is seen sticking out of the dune fully 40 or 50 feet above the 'desert' floor. In the 'desert' I could find only in rare instances trees that showed a main trunk undamaged by fire. Most individuals were shrubby growths from a large basal crown, often with two or more sets of fire-killed shoots of different ages among the living shoots. Cuttings were collected from several of these trees and shrubs, but until they are tested their relative merits will be uncertain. Some of the fire-burned shrubs may be better potentially than the large ones that escaped burning."

46822. "No. 1. From a tree back of old sand pit in the 'desert' country. Collected December 4, with Mr. L. B. Smith, of the Virginia Truck Experiment Station. Growing in very light shifting sand among scrub oaks. In some way this escaped the fires that caught all its neighbors. The trunk is large enough to yield a good post."

46823. "No. 2. From a tree pointed out by Mr. Moses Brown, the game warden of this vicinity, who said that he had in past years taken as much as 2 bushels of nuts from it. The nuts of this tree are larger than those on other trees in the 'desert,' according to Mr. Brown. Although the tree is a dwarf in the poor 'desert' sand, a good railroad tie could be made from the trunk."

46824. "No. 3. From a tree 10 inches in diameter growing near the pond in the edge of the dune back of a new pit about 100 yards southwest of the big tree (No. 7)."

46825. "No. 4. From a scrub tree in burned-over 'desert,' gathered as a check sample of the normal growth in this region. It is possible that some of these burned-over trees may be the best in growth."

46826. "No. 5. From a tree growing through the dune northeast of the big tree (No. 7) at a new pit. It stands 40 feet up the side of the dune and has branches 4 inches through and 12 feet high. It must be a large tree covered up, as it spreads over 30 feet of dune face."

46827. "No. 6. I have called this the evergreen tree, as its leaves were largely green and persistent at this date [December 6]. It stands well up on the dune face several hundred yards northeast of the big tree (No. 7). The nuts on this tree must be very large, as the hulls are much larger than those normally seen at Washington. The bur clusters are often 4 to 6 inches long."

46828. "No. 7. From the big tree found in October. As this now stands covered with 30 feet of sand, it is made up of two large branches 10 inches in diameter projecting 30 feet above the sand. Below the junction the trunk must be much larger. An old dead pine top just back of this tree indicates that the ground here is nearly at the base level of the 'desert.' This tree must have been at least 50 feet high."

46829. "No. 8. From a tree with an 8-inch clear trunk 12 feet high below the branches, found in the 'desert' scrub south of the big tree (No. 7)."

46830. "No. 9. From a tree with a 10-inch clear trunk projecting from the dune 30 feet up from the base; part of a tree top, its branches spreading out and making a veritable thicket on the dune, northeast of the big tree (No. 7)."

**46822 to 46831—Continued.**

**46831.** "No. 10. From the only tree found growing in moist soil, with surroundings indicating an old swamp. Blueberry and similar shrubs grew near this. This tree is almost 10 inches through at the base and would make good post wood."

**46832. RIBES VULGARE Lam. Grossulariaceæ. Garden currant.**

From Maidstone, England. Plants purchased from George Bunyard & Co. Received December 10, 1918.

*Transparent.* A currant of moderate growth, with long bunches of pleasantly flavored, large, yellow berries; an excellent exhibition variety. (Adapted from *Bunyard & Co.'s trade catalogue.*)

**46833. VITIS sp. Vitaceæ. Grape.**

From Southport, Conn. Cuttings presented by Mr. R. P. Wakeman. Received December 12, 1918.

"During the past few years I have brought a few seedling grapes to fruitage, and out of the lot one seems good enough to be considered an acquisition. It is white in color and between *Niagara* and *Green Mountain* in size. The bunches are of good size, but are not shouldered exactly like the *Niagara*. The berries have tender pulp and are very sweet. They ripen in southwestern Connecticut about September 6 and hang on well. It makes fine grape juice." (*Wakeman.*)

**46834 to 46853.**

From Jamaica Plain, Mass. Seeds of trees and shrubs from various sources presented by Prof. C. S. Sargent, Arnold Arboretum. Received December 12, 1917. Quoted notes from the Arboretum.

**46834. ABIES SIBIRICA NEPHROLEPIS Trautv. Pinaceæ. Fir.**

"Forma *chlorocarpa*. Green cone form from Japan. Wilson No. 10509."

**46835. ACANTHOPANAX sp. Araliaceæ.**

"Forrest No. 14853. A. No. 498."

**46836 and 46837. ACER sp. Aceraceæ. Maple.**

**46836.** "Forrest No. 14763. A. No. 508."

**46837.** "Forrest No. 15324. A. No. 509."

**46838. BETULA CHINENSIS Maxim. Betulaceæ. Birch.**

"Wilson No. 10707; from Japan."

**46839. BETULA SCHMIDTII Regel. Betulaceæ. Birch.**

"Wilson No. 10710; from Japan."

**46840. BETULA sp. Betulaceæ. Birch.**

"Forrest No. 15381. A. No. 552."

**46841. LARIX sp. Pinaceæ. Larch.**

"Green cone form from Japan. Wilson No. 10508."

**46842 to 46853. (Undetermined.)**

"Araliaceous trees and shrubs collected by the Forrest Expedition in 1918, eastern Asia."

"The 'A' numbers are the serial numbers under which the seeds were sent out. Where a 'Forr.' number is also given, Mr. Forrest had reason

**46834 to 46853—Continued.**

to suppose that the seed was that of a plant similar to one from which he had taken herbarium specimens perhaps at a considerably earlier date." (Extract from a letter of the *Director of Laboratory, Royal Horticultural Society Gardens, October 5, 1920.*)

**46842.** "Forr. No. 15045; A. No. 495."

**46843.** "Forr. No. 15046; A. No. 496."

**46844.** "Forr. No. 14852; A. No. 497."

**46845.** "Forr. No. 14683; A. No. 499."

**46846.** "Forr. No. 14940; A. No. 500."

**46847.** "Forr. No. 14969; A. No. 501."

**46848.** "Forr. No. 15212; A. No. 502."

**46849.** "Forr. No. 15342; A. No. 503."

**46850.** "Forr. No. 15353; A. No. 504."

**46851.** "Forr. No. 15789; A. No. 505."

**46852.** "Hills north of Tengyueh, 1917. A. No. 506."

**46853.** "Chungtien plateau shrub, 20 to 30 feet. A. No. 507."

**46854 to 46859. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.**

From India. Seeds presented by Mr. James A. Smith, American consul, Calcutta, who obtained them from the economic botanist of the Government of the United Provinces. Received December 19, 1918. Quoted notes by Mr. Smith.

**46854.** "No. 1. *Lakanio*. Good; mostly red flowers."

**46855.** "No. 2. *Gingorio*. Mostly white flowers."

**46856.** "No. 3. *Dhaturia*. Flowers white with pink and red tips; also pink flowers."

**46857.** "No. 4. *Dhoura Dhaturia*. White flowers tipped with red."

**46858.** "No. 5. *Horia*. Mostly white flowers; also some colored. Long pods, not round."

**46859.** "A mixed lot of colored varieties."

**46860. THEOBROMA CACAO L. Sterculiaceæ.****Cacao.**

From Grenada, British West Indies. Presented by Mr. J. C. Moore, superintendent, Agricultural Department. Received December 27, 1918.

"This variety is known locally as *Caracas*. The pods are a reddish claret color while young and until they commence to ripen." (*Moore.*)

**46861. LIVISTONA ALTISSIMA Zoll. Phœnicaceæ.****Palm.**

From Buitenzorg, Java. Presented by the director of the Botanic Gardens. Received December 27, 1918.

A graceful palm with a trunk about 8 inches in diameter and often 80 feet tall, and bearing globose fruits the size of small cherries. The natives value the exceedingly hard wood very highly and use it especially for rafters, which last for three generations. (Adapted from *Zollinger, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. 14, p. 150.*)

**46862. JATROPHA URENS L. Euphorbiaceæ.**

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. Mario Calvino, director, Experiment Station. Received December 30, 1918.

Variety *inermis*.

The *chaya* is a shrub with fleshy branches bearing palmate 3-lobed leaves, 12 to 25 centimeters wide, dark green in color. The flowers are small, white, very pretty, especially in the wild spiny variety. There are two types of *chaya*, one provided with stinging hairs and the other unarmed, except for one or two hairs on the peduncle or petiole. This latter type is the one cultivated in Yucatan for the leaves, which are eaten in the same way as spinach, especially with eggs and hash. These leaves are rather thick and keep easily for several days, so that they could become a winter export, if once they were known and appreciated in the North. The *chaya* is propagated by cuttings, choosing the tips of the branches, to avoid the heavy bark, which calluses with difficulty. (Adapted from *Revista de Agricultura Comercio y Trabajo, Cuba*, vol. 2, no. 8, p. 364.)

"*Chaya de Mexico*. The leaves are edible; the following is the result of an analysis of them made at our station during the rainy season: Moisture, 74.00 per cent; protein, 0.94 per cent; ether extract, 0.20 per cent; carbohydrates, 20.71 per cent; crude fiber, 2.25 per cent; ash, 1.90 per cent." (*Calvino*.)

**46863. PAULLINIA CUPANA Kunth. Sapindaceæ. Guarana.**

From Para, Brazil. Presented by Dr. J. Simao da Costa. Received December 30, 1918.

A climbing shrub with compound leaves made up of five, irregularly toothed leaflets. The small whitish flowers are borne in long racemes and are followed by 3-valved capsules about the size of filberts, each containing from one to three seeds. The pounded seeds are extensively used in Brazil as a nerve stimulant and restorative. The active principle is said to be the same as thein and is produced more abundantly than in any other plant, often as much as 5 per cent being found. The pounded seeds are formed into cylindrical cakes from which about a teaspoonful of powder is rasped off into a glass of cold water, making a refreshing and stimulating drink. (Adapted from *Lindley, Treasury of Botany*, p. 852.)

**46864. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.**

Plants grown from cuttings of S. P. I. No. 21781 sent to the Plant Introduction Field Station, Chico, Calif., by Mr. William Hertrich, San Gabriel, and grafted on seedlings of S. P. I. No. 46131. Numbered for convenience in recording distribution.

"The *yang-tao*, a deciduous climber, native to Szechwan Province, has attracted considerable attention because of the high quality of its fruits and the ornamental value of the plant. The leaves have a plushlike texture and an unusual dark-green color, while their large size and regular spacing add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across and are produced in great abundance. The fruits are ovoid to globose and about 2 inches long. The outside is russet brown and clothed with villous hairs. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is good when eaten fresh, and it also makes a very fine jam and sauce." (*David Fairchild*.)

**46865. CYRTOSTACHYS LAKKA Beccari. Phœnicaceæ. Palm.**

From Singapore, Straits Settlements. Presented by Mr. O. W. Barrett.  
Received December 30, 1918.

"Kredok."

A tall, slender palm, native to Borneo. The pinnately divided leaves, 3 to 5 feet long, are made up of leaflets 18 inches long and 2 inches wide, which are obliquely bifid at the apex. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 946.*)

For an illustration of this palm, see Plate IV.

**46866 to 46868. THEOBROMA CACAO L. Sterculiaceæ. Cacao.**

From Coban, Guatemala. Presented by Mr. Oscar Majus. Received December 30, 1918. Quoted notes by Mr. Majus.

46866. "No. 1. Fruits with a red husk."

46867. "No. 2. Fruits with yellow husks."

46868. "No. 3. Fruits with a green husk."

**46869 and 46870.**

From Ganganba, Portuguese West Africa. Presented by Mr. A. W. Bailey.  
Received December 30, 1918. Quoted notes by Mr. Bailey.

46869. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. Pearl millet.  
(*P. typhoideum* Rich.)

"Seeds of our giant African millet, called locally *Masangu*."

46870. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ.

"Seeds of the ground bean, which is used commonly for food both by natives and Portuguese. The local name is *viclu*. While these require a long season to mature, they may be used green as shell beans. The natives plant one in a hill. The plants do not require an excessively fertile soil."

**46871 to 46890.**

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received November 28, 1918. Quoted notes by Mr. Harrison, unless otherwise stated.

46871. ACACIA ANEURA F. Muell. Mimosaceæ. Wattle.

"*Mulga*. This is a dry-country species. The foliage is eaten by stock in dry weather."

46872. ACACIA HOMALOPHYLLA A. Cunn. Mimosaceæ. Wattle.

"Native name *yarran*. A dry-country species greatly used for fodder; stock eat it freely. The timber, which is fragrant for some years after being cut, is used for cabinet and ornamental work."

46873. ANGOPHORA SUBVELUTINA F. Muell. Myrtaceæ.

"Called here 'apple-tree.' A large, spreading tree with strong and durable timber which is used for wheelwright work and flooring boards. The foliage is used to feed stock in dry seasons."

46874 to 46880. ATRIPLEX spp. Chenopodiaceæ. Saltbush.

The saltbushes are herbaceous or shrubby, usually much-branched plants, and show remarkable adaptation to arid, saline, or alkali-impreg-

## 46871 to 46890—Continued.

nated soils. They are highly valued for districts where little or no other vegetation exists. The following descriptions, unless otherwise indicated, are adapted from Farmers' Bulletin 108, entitled "Saltbushes," by Dr. P. B. Kennedy.

**46874. ATRIPLEX CAMPANULATA Benth.**

A perennial, with a hard, almost woody stem and rather slender, procumbent branches extending to 1 or 2 feet, the whole plant being nearly glabrous or mealy white. It is closely related to *A. leptocarpa*, which it closely approaches in habit, foliage, and inflorescence. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 177.)

**46875. ATRIPLEX HALIMOIDES Tineo.**

Mealy or gray saltbush. A low-growing, shrubby, robust perennial about 1 foot high, with variable, ovate-lanceolate leaves which are covered with whitish, dustlike scales. It is native to the central desert regions of Australia, and there it affords excellent forage for both sheep and cattle, which fatten remarkably well on it.

**46876. ATRIPLEX HOLOCARPA F. Muell.**

Annual saltbush. A low, densely branching annual about a foot high, with larger and fewer leaves than the Australian saltbush (*A. semibaccata*). The seeds are surrounded by a brown, fibrous spongy covering and are readily blown about by the wind, so that the plant can soon become widely disseminated. It made excellent growth, under adverse conditions, on the experiment grounds at Abilene, Tex. In spite of the worst drought that has ever been known in that part of Texas, this plant continued to mature leaves and seeds throughout the entire summer.

**46877. ATRIPLEX LEPTOCARPA F. Muell.**

Slender saltbush. A much-branched trailing perennial, the whole plant covered with a glaucous bloom. The leaves are variable in shape, but mostly oblong, and from 1 to 2 inches in length. In Australia it is sometimes found carpeting the ground over considerable areas. Von Mueller says that its drought-resistant qualities are remarkable.

**46878. ATRIPLEX NUMMULARIA Lindl.**

Round-leaved saltbush. A tall, shrubby perennial, sometimes reaching a height of 10 feet, and covered all over with downy, whitish scales. The leaves are mostly round, rather thick, and toothed along the margins. It is extensively planted and highly valued in central Australia, live stock being exceedingly fond of it, and its drought-resisting qualities are remarkable.

**46879. ATRIPLEX SEMIBACCATA R. Br.**

Australian saltbush. A vigorous, rapid-growing, much-branched perennial which forms a dense mat over the ground to the depth of 1 to 2 feet. The leaves are small, about an inch long, and coarsely toothed along the margins. This plant has been known to flourish on the poorest and most stubborn arid soil, so impregnated with alkali that no other useful plant could grow. It seems to have a re-

## 46871 to 46890—Continued.

markable number of virtues, including great frost resistance, palatability, heavy yield, sand-binding qualities, and the habit of spreading freely. Sheep and hogs eat it freely, and a mixture of three parts of this forage with one part of common hay is readily eaten by horses and cattle.

**46880.** *ATRIPLEX* sp.

These seeds were received as *Atriplex angulata*, but they do not agree with previous samples of this species nor with the botanical description. They are very close to *A. truncata* A. Gray.

**46881.** *CASUARINA CUNNINGHAMIANA* Miquel. Casuarinaceæ.

"River oak. A tall, straight tree whose timber is light, tough, and strong and is used for bullock yokes, cricket bats, handles, staves, and fuel. The foliage is used for feeding stock."

**46882 and 46883.** *CASUARINA STRICTA* Ait. Casuarinaceæ.

**46882.** "Drooping she-oak. A useful timber and the best fodder tree for sheep and cattle in Australia."

**46883.** "Forest or drooping she-oak. Timber handsome, strong, and durable, used for veneers, cabinet work, staves, and shingles."

Received as *Casuarina quadrivalvis*, which is now considered to be a synonym of *C. stricta*.

**46884.** *CHLORIS VIRGATA* Swartz. Poaceæ.

"Australian Rhodes grass. It is suited for a wind-swept and sun-scorched district, and is a heavy yielder of a most nutritious fodder that is relished by all classes of stock."

**46885.** *EUCALYPTUS DIVERSICOLOR* F. Muell. Myrtaceæ.

"The *karri* of southwestern Australia. In favorable localities in humid valleys it attains a height of 400 feet and a diameter of 20 feet, with a trunk clear of branches for 300 feet. The timber is light colored, straight grained, and tough, and is used for large planks, spokes and felloes, shipbuilding, masts, and railroad ties."

**46886.** *EUCALYPTUS HEMIPHLOIA ALBENS* F. Muell. Myrtaceæ.

"A tree, growing to a height of 90 feet and with a diameter of 3 feet, suitable for cool climates. The foliage is used largely for feeding cattle and sheep during droughts. They eat it freely after the tree has been cut for a few days, as it seems to get sweeter. The timber is hard and durable."

**46887.** *EUCALYPTUS PAUCIFLORA* Sieber. Myrtaceæ.

"White gum. A tree reaching a height of 100 feet and a diameter of 4 feet. The foliage is eaten by cattle and sheep in dry seasons. The timber is used for building and fencing purposes. This species grows well in swampy lowlands and should thrive well in Florida."

Received as *Eucalyptus coriacea*, which is considered to be a synonym of *E. pauciflora*.

**46888.** *EUCALYPTUS OBLIQUA* L'Her. Myrtaceæ.

"A tree of rapid growth with a straight stem reaching a height of 300 feet and a diameter of 10 feet. The timber is very fissile and is used for buildings, fence rails, palings, and shingles. The bark is used for rough roofing and also in the manufacture of paper."

## 46871 to 46890—Continued.

46889. *EUCALYPTUS REDUNCA* Schau. Myrtaceæ.

"The mule gum tree of West Australia, the *wandoo* of the aborigines. It grows to a large size, often being 16 or 17 feet in diameter; it thrives in poor soil and in a cold, flat country. The light-colored timber is hard, heavy, tough, and durable, and is prized for wheelwright work, building purposes, and various implements."

46890. *PENNISSETUM PURPUREUM* Schum. Poaceæ.

Grass.

"Elephant grass. Grows to a height of 10 to 20 feet, is a heavy yielder, and is very drought resistant, being permanent when once established. It yields 30 tons per acre annually and can be cut several times a year. Plant 3 feet apart in rows 5 or 6 feet apart."

## 46891 and 46892.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 2, 1918.

46891. *ILEX PARAGUARIENSIS* St. Hil. Aquifoliaceæ.

Yerba maté.

For previous introduction and description, see S. P. I. No. 43456.

46892. *SALVIA GARDNERIANA* Hort. Menthaceæ.

Sage.

Received as *Salvia gardneriana*, which seems to be a horticultural name, being mentioned in the Standard Cyclopedia of Horticulture, as follows: "*S. Gardneriana* Hort., is offered in the trade."

## 46893 to 46895.

From Ecuador. Obtained by Dr. J. N. Rose, associate curator, United States National Herbarium. Received December 9, 1918. Quoted notes by Dr. Rose.

46893. *CUCUMIS ANGURIA* L. Cucurbitaceæ.

"Rose No. 23593. Seeds of a common yellow-flowered small vine growing prostrate in the grass and weeds along the coast of Ecuador. The specimens collected were obtained near Duran, November 8, 1918. It was found only in fruit. This is oblong in shape, about 1½ inches long, with a more or less muricated surface. Seeds and herbarium specimens were obtained."

46894. *DIOSCOREA* sp. Dioscoreaceæ.

"Tubers of a very beautiful vine found growing in a mountain valley below Huigra, Ecuador. It has showy purple leaves and is a rapid grower. Only immature flowers and leaf specimens were obtained in addition to these tubers."

46895. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"Seeds taken from fruits obtained in the Quito market."

"Seeds of a variety which apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe*.)



**46896 and 46897.**

From Zacuapam, Mexico. Presented by Mr. C. A. Purpus through the American consul at Vera Cruz. Received December 27, 1918.

**46896.** *CHENOPODIUM AMBROSIODES* L. Chenopodiaceæ.

An annual plant from 1 to 2 meters in height, with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are small and black. The whole plant has a pronounced odor. An infusion of the plant has been used in Europe with good results as a cure for nervous affections. (Adapted from *The Pharmaceutical Journal and Transactions*, 3d ser., vol. 9, p. 713.)

**46897.** (Undetermined.)

"Fruits of a valuable tree, belonging to the Anacardiaceæ and called here *cacao*. This has a beautiful purplish brown, extremely hard wood." (*Purpus*.)

**46898 to 46901. THEOBROMA CACAO L. Sterculiaceæ. Cacao.**

From the British West Indies. Presented by the Trinidad and Tobago Department of Agriculture. Received December 27, 1918.

Four lots of seeds and pods of cacao without information as to the different varieties. Given separate numbers for convenience in recording distribution.

**46902 to 46904.**

From Johannesburg, South Africa. Presented by Mr. J. Burt Davy. Received December 27, 1918. Quoted notes by Mr. Davy.

**46902.** *ELEPHANTORRHIZA ELEPHANTINA* (Burch.) Skeels. Mimosaceæ.  
(*E. burchellii* Benth.)

"The underground stem is used for tanning leather and dyeing stuffs a brown color."

**46903.** *MOMORDICA BALSAMINA* L. Cucurbitaceæ. **Balsam-apple.**

The balsam-apple is known to American gardeners as an ornamental annual vine. The palmately 3 to 5 lobed leaves are cordate-orbicular in outline, with acutely notched lobes. The solitary yellow flowers are nearly an inch across and the orange-colored fruit, 2 to 3 inches long, is ovoid and either smooth or tuberculate. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2060.)

"The balsam-apple grows in Syria and is famous for curing wounds. The unripe fruit is infused in sweet oil and exposed to the sun some days until it becomes red. This, applied on cotton to a fresh wound, is esteemed by the Syrians next to Balsam of Mecca." (*Hogg, The Vegetable Kingdom*, p. 334.)

**46904.** *PODALYRIA* sp. Fabaceæ.

"An ornamental leguminous shrub from the coastal districts of the Cape Province."

**46905 to 46942. NICOTIANA TABACUM L. Solanaceæ. Tobacco.**

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira. Received December 27, 1918.

"A collection of tobacco seeds, the result of three years of selection work with the best varieties sent to us from various localities." (*Silveira*.)

## 46905 to 46942—Continued.

46905. "No. 4a. *Maryland smoking*."
46906. "No. 8. *Zimmer Spanish*."
46907. "No. 8a. *Zimmer Spanish*."
46908. "No. 9. *Latakia*."
46909. "No. 10f. *Virginia*."
46910. "No. 10g. *Virginia*."
46911. "No. 10j. *Virginia*."
46912. "No. 12. *Canario Vuelta Abajo*."
46913. "No. 12a. *Canario Vuelta Abajo*."
46914. "No. 13a. *Habano Vuelta Abajo*."
46915. "No. 13d. *Habano Vuelta Abajo*."
46916. "No. 13e. *Habano legitimo*."
46917. "No. 14b. *Brasil*."
46918. "No. 14e. *Brasil*."
46919. "No. 15. *Del Pais*."
46920. "No. 22. *Rubio salteno*."
46921. "No. 27. *Canarias*."
46922. "No. 28. *Petizo criollo*."
46923. "No. 29. *Bacino*."
46924. "No. 30. *Chileno*."
46925. "No. 32. *Tropezut*."
46926. "No. 33. *Orinoco*."
46927. "No. 34. *Sumatra*."
46928. "No. 36. *Connecticut*."
46929. "No. 37. *Kentucky*."
46930. "No. 38. *Salonica*."
46931. "No. 40. *Belge*."
46932. "No. 41. *Comstock Spanish*."
46933. "No. 42. *Aurora*."
46934. "No. 43. *Habano seedleaf*."
46935. "No. 44. *Petit Habano*."
46936. "No. 45. *Canelle R*."
46937. "No. 46. *Big Habano*."
46938. "No. 49. *Blue Prior*."
46939. "No. 50. *Connecticut broad-leaf*."
46940. "No. 52. *Big Ohio*."
46941. "No. 1719. *Atyra Habano*."
46942. "No. 1720. *Barreiro Grande Habano*."

## 46943 to 46948.

From Colombia. Presented by Mr. M. T. Dawe, San Lorenzo. Received December 27 and 30, 1918. Quoted notes by Mr. Dawe.

46943 and 46944. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ.

46943. "A papaw with yellow fruits. The pulp surrounding the seeds is edible, but the flesh is eaten only in preserves. Found in Departamento de Caldas at an altitude of 6,000 to 7,000 feet."

46944. "Another form of the same species."

46945. *CARICA* sp. Papayaceæ.

"*Papayuela cimarron*. A papaw with red fruits found at Belalacazar in the Province of Caldas at an altitude of 6,000 to 7,000 feet. The seeds are surrounded by a sweetish pulp which is eaten. The flesh of the fruit is white and is not considered to be edible while raw, but a preserve is made of it."

"These seeds are apparently the same species as those obtained by Mr. O. F. Cook at Ollantaytambo, Peru (S. P. I. No. 41339). They are about twice as large as the seeds of the evidently closely related *Carica candamarcensis*." (*H. C. Skeels*.)

46946. *DUCHESNEA* sp. Rosaceæ.

"A wild strawberry with yellow flowers and spherical fruits of insipid taste. Central Cordillera at altitudes of 6,000 to 8,000 feet."

**46943 to 46948—Continued.**

**46947.** SOLANUM QUITOENSE Lam. Solanaceæ.

"*Lulo*. A plant found in the subtropical parts of Colombia. The edible fruit is employed for flavoring preserves, sweets, and the like."

**46948.** SOLANUM sp. Solanaceæ.

"A shrub of the habit of the tree tomato, bearing golden yellow fruits the size of duck eggs. It is not edible, but is used for killing cockroaches. From the Province of Caldas at an altitude of 6,000 feet."

**46949 and 46950.**

From Hongkong, China. Presented by Mr. W. J. Tutcher. Received December 30, 1918.

**46949.** CAESALPINIA VERNALIS Champ. Cæsalpiniaceæ.

An ornamental shrub, native of Hongkong, and climbing by the reversed prickles on the under side of the leaves. The leaves are bipinnate, being made up of 9 to 12 pairs of pinnæ, each bearing four to eight pairs of ovate leaflets 1 inch long. The lemon-yellow flowers are borne in racemes about 6 inches long. (Adapted from *Curtis's Botanical Magazine*, pl. 8132.)

**46950.** MUSSAENDA PUBESCENS Ait. f. Rubiaceæ.

A small, ornamental climbing shrub found on the island of Hongkong and in the Province of Yunnan, China. The ovate-lanceolate leaves are minutely pubescent, and the yellow flowers are borne in loose, few-flowered cymes. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 396.)

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