

Issued July 26, 1918

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

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO SEPTEMBER 30, 1915.

(No. 44; Nos. 40896 to 41314.)



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GOVERNMENT PRINTING OFFICE.
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1915 (NO. 44; NOS. 40896 TO 41314).

INTRODUCTORY STATEMENT.

This inventory covers the period between July 1 and September 30, 1915, and describes 419 introductions, the major part of which have been secured by correspondence.

There is, however, one notable collection, made by Mr. O. F. Cook in the Peruvian Andes, where he was sent as a representative of the Department of Agriculture on the Yale-National Geographic Society Peruvian Expedition to find out the character of the agriculture of the peoples who produced such remarkable terraced hillsides as those in the region back of Cuzco. (See *National Geographic Magazine*, vol. 29, pp. 474-534, May, 1916.) Mr. Cook's collections furnish striking evidence of the antiquity of these peoples, through the variety and character of their food plants, in particular their highly developed root crops, some of which appear to be nearly as important to the present inhabitants of this mountain region as does the potato itself. The great variety in shape and color of the potato, which is a staple crop there, and the distinctive names by which these many forms are known are further evidence of the age of the civilization through which this most remarkable of all food vegetables was introduced into universal cultivation. The immense value of this one Peruvian tuber, which has met with such success throughout the world, should encourage us to look more closely at the other root crops which were developed probably by the same people who developed the potato. Mr. Cook's collections will assist us in doing this and in discovering the regions in this country sufficiently similar climatically to that of the high Peruvian altitudes where these crops are grown to make it possible to establish these new root crops in America. Our high altitudes are unfortunately much warmer than the Peruvian in summer and incomparably colder in winter. Mr. Cook believes that the cool coastal climate of southern California ap-

NOTE.—This bulletin is intended for distribution to the agricultural experiment stations and the more important private cooperators of the Department of Agriculture.

proaches most nearly that of the Peruvian region of any in the United States. Of the collections listed in this inventory, the following deserve special mention here:

A cultivated variety of *Canna edulis* (Nos. 41100 and 41187) with green and white tubers and scarlet flowers, which deserves trial as a crop for the production of arrowroot; a wild strawberry (No. 41102) from an altitude of 8,000 feet, near Tocontoy, in which strawberry breeders may be interested; two species of *Escallonia* (Nos. 41105 and 41112), ornamental trees likely to thrive on the Pacific coast; a large tree species of *Solanum*, which in winter, when frosts are of almost nightly occurrence, produces large clusters of attractive pendent bell-shaped flowers, yellowish outside and rich violet within (No. 41106); an undescribed species of *Eugenia*, forming an extremely beautiful tree with fine glossy foliage contrasting with its light-colored, graceful trunk and branches (No. 41110); a handsome species of *Malaceæ* (*Hesperomeles*) having hollylike evergreen foliage and clusters of red berries (No. 41111); the Quita naranjo, a shrub bearing clusters of white flowers followed by orange-yellow fruits, which give it a remarkable resemblance to the orange tree and may make it valuable as an outdoor shrub and for greenhouse use as well (No. 41113); a shrub of the genus *Solanum*, producing clusters of attractive blue flowers, which it holds throughout the winter, even in dry exposed places where frosts occur every night (No. 41117).

The three varieties of *Manihot* which Mr. Cook has secured from the high altitudes (3,000 to 6,000 feet) in Peru and from the temperate region of Lima may prove so early maturing as to be of commercial importance in Mississippi and Louisiana, where the varieties that require a longer season are generally unsuccessful (Nos. 41103, 41121, and 41122).

The oca (*Oxalis tuberosa*, Nos. 41168 to 41176) is a tuber-bearing crop which in some districts of Peru stands second only to the potato in economic importance. There are many varieties of it, and it is eaten raw, cooked, or after being frozen and dried. It might become popular for salads or pickles, and, since its native habitat indicates that it may prove adapted to acid soils, it may possess certain distinct advantages for cultivation on soils not now occupied by any crop in this country.

The ullucu (*Ullucus tuberosus*, Nos. 41177 to 41184) is another tuber-bearing plant which is grown in the highlands of Peru and Bolivia and is represented by many varieties and is employed extensively in soups. It is a relative of the well-known Madeira vine, but the cultivated varieties do not grow so rankly as this species, resembling more in habit the sweet-potato vine.

Still another Andean tuber is the anyu (*Tropaeolum tuberosum*, Nos. 41185, 41186, and 41195), which is inferior to those already men-

tioned, according to Mr. Cook, but has very remarkable keeping qualities, tubers of it remaining fresh after an exposure of more than six months to room temperatures. Mr. Cook suggests that it might be hybridized with the flowering nasturtiums of our gardens and produce new varieties which could be perpetuated by tubers.

The fourth root crop described by Mr. Cook is the llacono (*Polymnia sonchifolia*, No. 41188), which belongs to the sunflower family and produces tubers resembling sweet potatoes in shape, but tasting like the Jerusalem artichoke.

Although Peru is recognized generally as the home of the potato, it is doubtful whether even the American breeders have known the extent to which the potato has been developed by the inhabitants of the Andes. Mr. Cook's collection of 47 varieties (Nos. 41197 to 41243), each with a distinctive native name, gives some indication of the development which has taken place in the home of the potato.

Of material received from Mr. Frank N. Meyer, who was exploring in the region south of Shanghai, little is described in this inventory. The most interesting appears to be a variety of the nagi (*Myrica rubra*, No. 41256), which bears fruits as large as crab apples, of a dark-purple color, extremely attractive appearance, and fine flavor. Mr. Meyer's investigations near Hangchow, China, show that this species of fruit tree exists in numerous varieties and constitutes a new crop which deserves to be tested on well-drained soils in our Gulf States.

Mr. Wilson Popenoe, during a brief visit to Cuba, studied the Cuban varieties of the mango and avocado and sent in what from his experience with Florida and California conditions he believes to be the most promising Cuban varieties of these fruits (Nos. 40911, 40912, 40920, 40921, and 40978 to 40982). He recommends as a new ornamental tree and for trial as a stock for the mango the nariz (*Anacardium excelsum*, No. 40987).

The newly aroused interest in the chayote (*Chayota edulis*) makes the collection of six selected varieties from San Jose, Costa Rica (Nos. 41135 to 41140), of unusual importance, and Mr. Wercklé's remark that over 100 pounds of the edible roots are dug from a single plant of certain green-fruited varieties calls attention to a portion of the plant which has not yet been utilized by us.

The time may not have arrived when plantations of tropical forest trees grown for their timber will be a paying proposition, but when it does the ucuúba (*Virola surinamensis*, No. 41255), which the veteran student of tropical agriculture, the late Doctor Huber, considered the most useful tree of the Amazon region, will come in for consideration. Its easily worked, moderately hard wood, as also its seeds, which furnish a kind of vegetable wax rich in stearin, may make it eligible for plantation purposes.

Bambos tulda, a species of Burmese bamboo, which was introduced in 1907 from the Royal Botanic Garden, Sibpur, Calcutta (No. 21002), has been so successful both in the Canal Zone and in Porto Rico that the introduction by Dr. Proschowsky of what appears to be a hardier variety of this species from the Riviera (*Bambos tulda longispiculata*, No. 40936) is of unusual interest. No bamboo yet introduced has produced a quality of wood so suitable for split-bamboo fishing rods and talking-machine needles as the tulda, and there appears to be a strong demand for its culms.

The Para grass and Carib grass, both remarkable rank-growing foliage grasses from the Tropics, have grown successfully in southern Texas and in the Everglades and are yielding forage for cattle-raising purposes there; and the molasses grass (*Melinis minutiflora*, No. 41148), sent in by Mr. T. R. Day, of Macuco, Brazil, may succeed equally well and will at least be interesting to test in comparison with them.

Whether the elephant grass (*Saccharum ciliare*, No. 40989), which covers large areas in the Punjab, British India, and is frequently planted in lines or dividing hedges in low-lying places subject to periodic inundation, can be utilized in this country is a question worthy of investigation.

Mr. I. B. Pole Evans has sent in from British East Africa a grass (*Pennisetum longistylum*, No. 41055) which cattle eat greedily and which he reports to be one of the most promising in the country. Rhodes grass and Sudan grass have both been such distinctly profitable introductions from this general region that this new introduction will be watched with unusual interest.

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

This inventory has been prepared by Miss May Riley and the botanical determinations of seeds introduced made by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine under the supervision of Mr. S. C. Stuntz, in charge of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., April 9, 1917.

INVENTORY.

40896. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ.

Lemon grass.

From Suva, Fiji Islands. Presented by Mr. C. H. Knowles, Superintendent of Agriculture, Nasinu Experiment Station. Plants received July 8, 1915.

"This grass, which furnishes the lemon-grass oil of commerce, is growing well on sloping ground, the soil of which is brownish red, not very good in quality. The ground was first ploughed and harrowed, and young plants from a seed bed set out at distances of 3 feet. The space between the young plants was kept clean by weeding, and the plants soon grew and covered the ground. Plants may be set out any time during wet weather, but from September to December is best. Under normal conditions the grass flowers about April or May, when about 4 feet high. After the grass has been cut it flowers irregularly during the year. The best time to cut appears to be when the grass is from 3 to 4 feet high, but before it is heavily in flower. Subsequent cuttings may be made whenever the grass is over 3 feet high. Two cuttings may be depended on, while three may be made unless dry weather sets in for some time. The young grass is richer in oil than the older grass, but the total yield per acre obtained in the same time is less." (Extract from *Bulletin No. 6, Fiji Department of Agriculture, Notes on a Lemon Grass from Fiji*. See this bulletin for further information.)

40897. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. Sorghum.

From Reduit, Mauritius. Presented by Mr. F. A. Stockdale, Director of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received July 6, 1915.

40898 to 40903.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 2, 1915. Quoted notes by Mr. Meyer.

40898. ULMUS PUMILA L. Ulmaceæ. Elm.

"(No. 2297a. Peking, China, May 14, 1915.) Seed of the common North China elm, which has proved itself to be adapted as an ornamental tree over a very extended territory in the United States. Introduced previously under S. P. I. No. 22975, which number see for further information."

40899. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. Jujube.
(*Ziziphus sativa* Gaertn.)

"(No. 2298a. Peking, China, May 5, 1915.) Seeds of a small-fruited variety of cultivated jujube, containing a large percentage of seeds with plump kernels. To be raised primarily as stocks for improved varieties. Purchased in the Peking market."

40898 to 40903—Continued. (Quoted notes by Mr. F. N. Meyer.)

40900. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

“(No. 2300a. Peking, China, May 19, 1915.) A small-seeded variety of peach, said to be grown in the Western Hills near Peking. To be tested as a stock and experimented with in localities north of the peach belt proper. May possibly be a very hardy sort. Purchased in the Peking market.”

40901 and 40902. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.
(*Dolichos sesquipedalis* L.) **Asparagus bean.**

40901. “(No. 2301a. Peking, China, May 18, 1915.) A variety of yard-long bean, said to be unusually elongated; much used as a garden vegetable either fresh, dried, salted, or pickled. Needs support and a rich, yet light, soil to give maximum returns. Chinese name *Ch'ang ch'ing chiang tou* or *Shih pa tou*, meaning ‘Long green yard bean’ or ‘Eighteen-in-a-pod bean.’”

40902. “(No. 2302a. Peking, China, May 18, 1915.) A variety of yard-long bean, said to be rather short and more prolific than the preceding number. [S. P. I. No. 40901.] Used in similar ways. Chinese name *Tuan ch'ing chiang tou*, meaning ‘Short green yard bean.’”

40903. DOLICHOS LABLAB L. Fabaceæ. **Hyacinth bean.**

“(No. 2303a. Peking, China, May 10, 1915.) A brown-seeded variety of hyacinth bean, much used by the Chinese as a vegetable, preferably sliced green and only slightly cooked. These hyacinth beans are much grown as a home vegetable along fences of kaoliang stems and even in between maize. They are also quite decorative. Chinese name *Ch'ing pien tou*, meaning ‘Green flat bean.’”

40904. RUBUS CANADENSIS L. Rosaceæ. **Blackberry.**

From West Virginia. Collected by Mr. A. B. Brooks, forester, West Virginia Agricultural Experiment Station, Morgantown. Received July 9, 1915.

“Collected on the northern end of Back Fork Mountain, in Randolph County, at an altitude of a little over 3,500 feet. I searched on Point Mountain where Dr. Millspaugh reports finding this species, but found none that seemed to me typical. I wish to state that my observations on this trip tend to strengthen what I have believed for some time, namely, that this species varies greatly as to some of its characters, due to conditions under which it grows. For example, I found to-day hundreds of acres overgrown with this blackberry, some of the plants growing in rich north exposures and in shady places, while others grow on open sunny flats and southern exposures and on poor ground. Invariably the plants growing in the rich soil and in the shade are found to be unarmed for the most part and very tall and thrifty, of course, while those in the sunny, poor soil are found to be stunted and with a rather good supply of prickles (these I have been calling *Rubus canadensis*). So when I go to look for *R. millspaughii* I am somewhat at a loss. The specimens sent grew in a shady place.” (Brooks.)

Collected as *Rubus millspaughii*, now recognized as a synonym of *R. canadensis*.

40905. ALEURITES FORDII Hemsley. Euphorbiaceæ. Tung tree.

From Auburn, Ala. Presented by Mr. Ernest Walker, horticulturist, Alabama Agricultural Experiment Station. Received July 6, 1915.

Seed from the crop of 1914 produced by trees sent to the experiment station under S. P. I. No. 21013

40906 to 40909.

From Cuzco, Peru. Presented by Dr. A. A. Giesecke, president, University of Cuzco. Received July 8, 1915.

40906. LUCUMA sp. Sapotaceæ.

40907. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

40908. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

40909. PRUNUS DOMESTICA L. Amygdalaceæ. **Plum.**

40910. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Changchun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received July 8, 1915.

40911 to 40913.

From Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 16, 1915. Quoted notes by Mr. Popenoe.

40911. MANGIFERA INDICA L. Anacardiaceæ. **Luisa mango.**

"(Jovellanos, Matanzas Province, Cuba, July 11, 1915.) *Luisa mango*. A seedling of the Philippine race. The parent tree, from which this bud wood was taken, is growing in the garden at the Casa Vivienda, on the Nueva Luisa sugar estate. My attention was directed to it last year by Prof. F. S. Earle, who considers it the best Philippine variety which he has seen in Cuba. *Luisa* is a typical Philippine mango, long, slender, and pointed at the apex, varying somewhat in form and size. A good specimen will weigh 8 or 10 ounces. The color is lemon yellow, as in others of the type. The fruits are not yet ripe, so I have not had an opportunity to test the quality, but according to Prof. Earle it is excellent. The tree is not fruiting heavily this season, there being only a few clusters close to the ground and about a dozen close to the top of the tree. Seedlings of the Philippine race are frequently rather unproductive, although the fruits are produced in clusters of two or three to about ten, and in a good season an enormous crop may be produced. Because of its excellent flavor and quality, this variety should be given a trial at Miami, Fla., but it will be well to observe its fruiting habits for a few years before distributing it to any extent."

Cuttings.

40912. PERSEA AMERICANA Miller. Lauraceæ. **Luisa avocado.**
(*Persea gratissima* Gaertn. f.)

"(Jovellanos, Matanzas Province, Cuba, July 11, 1915.) *Luisa avocado*. The parent tree of this variety is growing in the garden at Casa Vivienda, on the Nueva Luisa sugar estate. It is a large seedling, apparently 25 years old at least. Its particular value lies in the fact that the fruit is said to ripen in October, after nearly all the other avocados are gone. The fruits, which are only about 3 inches long at present, are broadly obovate in form, with no indication of a neck, the skin light green when

40911 to 40913—Con. (Quoted notes by Mr. Wilson Popenoe.)

ripe and very thick. Judging from the immature fruit, the seed cavity is not large and the seed fits in it snugly. According to the gardener who was in charge of the place, the fruit is of excellent quality, with a rich flavor and no fiber. The tree, which stands among a lot of others beside a small stream which trickles through the garden, is bearing a good crop of fruit. The only late avocado at present grown commercially in southern Florida is the *Trapp*. It seems well worth while to try other varieties which ripen late in the season, and *Luisa* has been obtained with this in view. The season is earlier here than in Florida, generally speaking, and an avocado which ripens here in October may hang on the tree in Florida until even later than this, because of the cool autumn weather. To be given special attention, as it may be of considerable importance."

Cuttings.

40913. MORINGA OLEIFERA Lamarck. Moringaceæ.

"*Palo blanco*. A small ornamental tree which is planted in the gardens of this region. As commonly seen here, it is a tree of about 15 or 20 feet in height, erect, and of very attractive appearance. The leaves are pinnately compound, often nearly a foot in length, of pleasing light-green color, with opposite, shortly petiolulate obovate-elliptic leaflets rarely over half an inch long. The flowers are borne in axillary panicles 6 to 8 inches long; they are white, about an inch long, and faintly fragrant. As they are produced in great abundance, they make the tree effective as an ornamental. The slender triangular seed pods are often a foot in length; when ripe they dehisce and scatter the ground with seeds. *Palo blanco* is considered to be an antidote for manchineel poisoning. As an ornamental it seems worthy of trial in southern Florida, and possibly also in southern California, in regions protected from severe frosts."

40914. HOLCUS SORGHUM L. Poaceæ.**Sorghum.**

(*Sorghum vulgare* Pers.)

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received July 13, 1915.

"Collected in Natal, near Pietermaritzburg. In forwarding this grass seed to you, I think it only right that I should point out that this grass in South Africa is highly susceptible to the rust *Puccinia purpurea* Cooke, and also to a new smut which I am describing in a paper to be read at the meeting of the South African Association for the Advancement of Science, which meets in Pretoria next month, and have named it *Sorosporium simii* Pole Evans. In view of the importance of Sudan grass in America, I think it highly probable that this smut which occurs on *Sorghum halepensis* will also attack your Sudan grass." (Evans.)

40915. LITCHI CHINENSIS Sonnerat. Sapindaceæ.**Litchi.**

(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College, through Mr. F. E. Shamel. Received July 19, 1915.

"*Haak-ip* (*Hei yeh*) litchi. The litchi seems to do best in about this latitude. It succeeds somewhat north and south of this, but I should say can not stand much frost. We have a light frost here almost every year, but not heavy enough to do much damage. The litchi seems to do best on dikes of low land

where its roots can always secure all the water needed and where they are even subject to submersion. In some places they grow it on high land, but not nearly so successfully. I have never seen a budded or grafted litchi tree, and I understand budding and grafting are never done. Litchi trees are either inarched or layered, layering being the most common and the most successful. If inarched, it is on litchi stock. The common practice in inarching is to use the *Loh mai chih* [*No mi chih*] variety for scions and *Shan chi* variety for stock. The seeds of the various varieties vary greatly in vitality. I am told that there is absolutely no success with seedlings, though seeds of certain varieties germinate quite readily. This variety, the *Haak-ip*, is one of the most popular and is now on the market. The seed of this variety germinates quite readily, though not so well as the *Shan chi*." (*Groff*.)

40916. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received July 19, 1915.

"These litchis are about one month later than the first lot I sent you [S. P. I. No. 40850]. They are of a more delicate texture and flavor, but the flesh is thin in proportion to the seed. The tree has a poor chance, however, and under proper conditions might do better." (*Higgins*.)

40917. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Alamoen.**

From Paramaribo, Dutch Guiana. Presented by Dr. J. A. Samuels, who secured it from Mr. A. J. Bueno de Mesquita. Received July 16, 1915.

"This fruit, which is most likely the largest variety of citrus, is called *Guidieon-apple* in Surinam, or *Alomoes*, the Dutch name being *Pompalmoes*. It is not cultivated on a large scale, but is planted in the house gardens both in the city and the country. No attempt has been made at selection work to improve the quality, and the fruit is not used for industrial purposes." (*Samuels*.)

See S. P. I. No. 37804 for previous introduction and description.

40918. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. **Tiger bean.**

From Changning, via Swatow, Kiangsi, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received July 7, 1915.

"Tiger beans, something new to me, but very good to eat. We like them baked and, indeed, any way. The only difficulty is to get enough of them, for they are not common." (*Bousfield*.)

40919. TRITICUM DICOCCUM Schrank. Poaceæ. **Emmer.**

From Bombay, India. Presented by Mr. Selby S. Coleman, American vice consul, who secured it from Mr. Frank Harrison, Bombay.

Wild *Kathiawar* wheat. Determined by Mr. M. A. Carleton as an emmer.

See S. P. I. No. 39227 for previous introduction and description.

40920 and 40921. MANGIFERA INDICA L. Anacardiaceæ.

Mango.

From Cienfuegos, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cutting received July 19, 1915.

40920. "(Cienfuegos, Cuba, July 13, 1915.) *Manga mamey*. A fine seedling type, found only in the Quinta Aviles, so far as known. Its

40920 and 40921—Continued.

origin is uncertain, but its affinities seem to lie with the common *manga* group; hence the Cubans call it *manga mamey*. It is considered by many to be superior in flavor to *mango Chino*, but does not seem to be shipped to Havana in such quantities, possibly because there are fewer trees of this type in the Quinta. Like *Chino*, however, it is a true seedling type, polyembryonic, and apparently maintains the type characteristics when grown from seed. In general form it is broadly cordate, very short (just about as broad as long), slightly compressed laterally, the base flattened and very slightly oblique, the apex with a suggestion of a beak. In weight it averages 8 to 12 ounces. The stem is inserted in a shallow, narrow, almost regular cavity. The surface is smooth, greenish orange-yellow to orange-yellow in color, blushed around the base with reddish salmon. The dots are large and conspicuous, a distinguishing feature of the type, as frequently with other members of the *mango* group. The skin is thick and very tough, the flesh bright yellow-orange, meaty, moderately juicy, with very little aroma. The flavor is acid, pleasant, fairly spicy; fiber not very objectionable except around the ventral edge of seed, where it is long and fine. The seed is long, rather thick, with two to five embryos in the specimens examined, and an exceedingly hard, woody endocarp. In season this type agrees with *Chino*, being early to midseason in ripening. While somewhat more fibrous than the best Indian varieties grown in Florida, it is far above the average Cuban seedling in quality and freedom from fiber, and is here considered a very choice mango. The trees appear to be productive. For trial in southern Florida." (*Popenoe*.)

40921. "(Cienfuegos, Cuba, July 13, 1915.) *Mango Chino*. This is one of the largest and best seedling types in Cuba. As far as known it is found only in the Quinta Aviles, near Cienfuegos, where there are a number of old and large trees from which the Havana market, as well as local markets, are supplied. In Havana single fruits of this type bring 20 to 40 cents each. There appears to be very little difference among the fruits from the various trees of this type grown in the Quinta Aviles. As the trees are all seedlings, this constancy of the type characteristics proves that *Chino* is not merely a seedling variety, but a type which will doubtless reproduce its distinguishing characteristics when grown from seed. In general form *Chino* is broadly cordate, plump, usually somewhat oblique at the base and rounded at the apex. It weighs 10 to 16 ounces. The stem is inserted in a shallow, somewhat irregular, cavity. The surface is smooth, greenish yellow to dull cream yellow in color, overspread or blushed around the base with carmine. The skin is very thick and tough, making the fruit an excellent shipper. The flesh is deep yellow in color, orange-yellow toward the seed, of very firm and meaty texture, juicy, and with a very faint but pleasant aroma. The fiber is more abundant than in our best India varieties, but much less so than in the average Cuban seedling; it is long at the ventral edge of the seed, but comparatively short elsewhere. The flavor is rich, spicy, and very pleasant, the seed oval, rather thin and not objectionably large. It usually contains four to six embryos. *Chino* is rather early in season, and the trees seem to be productive. The origin of this type is not known; the man who planted the trees is now dead, and the caretaker

40920 and 40921—Continued.

at the Quinta, who has been there 35 years, says that the trees were nearly as large when he first came on the property as they are now. It is a very distinct type; nowhere have I seen one which seemed to be closely allied to it or resembled it in all details. It should be tried in southern Florida." (*Popenoe.*)

For an illustration of trees of these mangos, see Plate I.

40922 and 40923. ORYZA SATIVA L. Poaceæ. Rice.

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American consul general, through the American consul general at Athens, Greece. Received July 10, 1915.

40922. No. 91. *Broussa rice.* **40923.** No. 92. *Broussa rice.*

See S. P. I. No. 39545 for previous introduction and description.

40924. CELTIS AUDIBERTIANA Spach. Ulmaceæ. Hackberry.

From Paris, France. Presented by the director, Museum of Natural History. Received July 12, 1915.

The form of *Celtis occidentalis* cultivated in the gardens of the Paris Museum of Natural History. Leaves somewhat glaucous, scarcely shiny. Fruit-bearing pedicels two to three times as long as the petioles. Stones slightly larger than those of *C. occidentalis* of the more typical form.

40925. PHASEOLUS LUNATUS L. Fabaceæ. Cape bean.

From Marseille, France. Presented by Dr. E. Heckel, director, Colonial Museum of Marseille. Received July 14, 1915.

"*Phaseolus lunatus, kalamaka* of the Malagasies. Cape beans have taken the second place among the agricultural products of Madagascar in exportation. In commerce, this large bean bears different names, *haricot d'Orleans, haricot de Lima, de Parague*, etc. It has been known in Madagascar for a very long time, and it is mentioned in the accounts of voyages before the seventeenth century. Its culture is practiced almost exclusively in the Provinces of Tulear and Morondava, situated at the southwest of the island. The alluvial soils of the deltas of this region suit it admirably, particularly those which are rich in micaceous elements. These are ordinarily recovered from bararatas, large reeds (*Phragmites communis?*), attaining 4 meters in height and submerged during the winter. The soil is prepared by superficial working. This preparation commences in March and April, as soon as the waters subside. The bararatas (reeds) are cut and burned; they shoot again, but the young shoots are broken down with a stick and this encroaching vegetation disappears. The seeds are planted in holes from 3 to 4 meters apart, in March and April. Harvest takes place from September to December. Almost all of the crops of cape beans are irrigated. Sells in Marseille for 65 francs per 100 kilos." (*Heckel.*)

40926. CANARIUM OVATUM Engler. Balsameaceæ. Pili nut.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received July 19, 1915.

"Because of the easy digestibility of these nuts, they are being used in increasing quantities for the preparation of an infant food, the excess of oil being removed and the nuts ground to a paste.

"These nuts have been gathered by one of our representatives residing on the island of Catanduanes and are fresh stock, hulled by the cold-water process. Mr. Jacobson stated that the shipment consists of at least two distinct types, and it is the short, well-rounded type that we have been able to germinate in our grounds in Luzon." (*Adn. Hernandez.*)

40927. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ.
(Aleurites triloba Forst.) **Lumbang.**

From Littleriver, Fla. Procured from Mr. Charles A. Mosier. Received July 19, 1915.

40928 to 40935. ORYZA SATIVA L. Poaceæ. Rice.

From Tananarivo, Madagascar. Presented by the Governor General of Madagascar. Received July 14, 1915.

40928. No. 1.—A. <i>Lava.</i>	40932. No. 3.—A. <i>Madinika.</i>
40929. No. 1.—B. <i>Lava.</i>	40933. No. 3.—B. <i>Madinika.</i>
40930. No. 2.—A. <i>Lava somotra.</i>	40934. No. 4.—A. <i>Vato.</i>
40931. No. 2.—B. <i>Lava somotra.</i>	40935. No. 4.—B. <i>Vato.</i>

40936. BAMBOS TULDA LONGISPICULATA (Gamb. and Brand.) Bois and Grignan. Poaceæ. Bamboo.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Plants received July 21, 1915.

"M. Rivière, who was here about a year ago and saw my plant, appeared to doubt that my specimen was exactly the same species as described by him under the name *Bambos macroculmis* (not from flowers, which he never saw). But I have the impression that his doubt depended mainly on the difference in size, his *B. macroculmis* acquiring up to 25 meters in height, while my plant has not until now produced shoots more than 15 to 18 meters in height. Still this seems of little importance, as my plant is in a rather poor condition, crowded all around by trees, palms, etc., and poorly exposed in poor soil, and there can be no doubt that under good conditions my plant would make a much better growth. Anyhow, my plant corresponds exactly to description of *B. macroculmis*. It has flowered for three consecutive years on one or two of the smallest shoots, but it is growing on just as usual, and evidently belongs to the bamboos which do not die after flowering. The stalks are comparatively compact, with less cavity than the ordinary Japanese and Chinese species so common in gardens, and very strong and lasting, which I can testify, having used them for prolongation of a very long and heavy ladder. This large bamboo is hardy in my badly exposed garden and therefore would be so generally on the Riviera. The new shoots start in autumn and generally do not finish development before spring, but when frost arrives they do not suffer; growth is simply arrested for some time. Of course it is possible that in low, water-logged ground and with lasting frosts the young shoots might be killed, but in my garden on a steep hill this has not happened. Unfortunately, no seed has been produced, but this species can be multiplied by slips of the crowded side branches which yearly start anew and form aerial rhizomes. If I should divide the clump, it would be a question of an enormous bulk, which, even when cutting away the stalks (which, according to my experience here when transplanting, can not be safely done, such clumps without leafage dying), would weigh nearly a hundred



SEEDLING MANGOS OF THE TWO PRINCIPAL CUBAN RACES, AT SANTIAGO DE LAS VEGAS. (SEE S. P. I. NOS. 40920 AND 40921.)

The tall tree on the left is typical of the race called *mango*, while the low, broad one is a *manga*. This classification, although one made by the natives, seems to hold in both tree and fruit characters, the *mango* type of fruit being nearly always elongated or longer than broad, frequently more or less reniform, and usually beaked. The fiber is long and coarse, but not very thick, and the pulp is slightly more acid than that of the *manga*. The *manga* type produced by the low broad trees has fruit nearly always broader than long, usually oblique at base and apex, with no beak. The fiber is fine and extremely abundant, almost impossible to separate from the very sweet pulp. (Photographed by Wilson Popence, Santiago de las Vegas, February 23, 1916; P16677FS.)



THE NARIZ TREE, ANACARDIUM EXCELSUM (BERT. AND BALB.) SKEELS, A RELATIVE OF THE CASHEW, AT TRINIDAD, CUBA. (SEE S. P. I. NO. 40987.)

A magnificent South American tree, attaining a height of 65 feet, with an erect compact head of dark-green foliage. The fruits, which ripen in August, are dark brown, about an inch long, reniform and flattened, and shaped somewhat like a nose, whence the name *nariz*. The fruit stalk is not large and swollen, nor are the seeds considered edible, as in the cashew. The tree is worthy of trial as an ornamental, although the fruit appears to have no value. (Photographed by Wilson Popenoe, July 17, 1915; P16417FS.)

kilos. I think from what I have personally seen for years that the climate of southern California may be a little colder than that of the Riviera, since so many plants suffer in southern California which do not suffer here, and my California correspondents confirm my earlier personal experience. Still I think that the bamboo in question will grow, at least in all the sheltered parts of southern California, and undoubtedly in places such as Santa Barbara and San Diego, where, as my correspondents write me, the same species resist as here on the Riviera." (*Proschowsky*.)

40937. MELILOTUS ALBA Desr. Fabaceæ. Melilot.

From Changchun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received July 8, 1915.

40938 to 40969. TRITICUM spp. Poaceæ. Wheat.

From Lyallpur, Punjab, India. Presented by the Department of Agriculture. Received July 15, 1915.

Quoted notes from Albert and Gabrielle L. C. Howard, *Memoirs of the Department of Agriculture in India*, vol. 2, no. 7. (The abbreviation D. means density of ear.)

40938 to 40940. TRITICUM DURUM Desf. Durum wheat.

40938. "Type No. 1. Var. *melanopus* Al. Awns long, black, but the black colour is lost very easily; chaff densely felted, white with a pinkish tinge, often spotted with mould fungi; grains long, amber, generally hard and flinty, although occasionally mottled ones are found; density varies with the rankness of growth; straw tall, slender but stiff; somewhat liable to rust; ripens late. This is the common macaroni wheat of the Punjab and was found in the Wadanak of Zira, Wadanak of Sialkot, Wadanak of Batala, Wadanak Kalchingari of Montgomery, Wadanak of Amritsar, Dagar of Pind Dadan Khan, Dagar of Wazirabad, Dagar of Shahpur, Pamman of Ferozepore, Dagar of Muzaffargarh, Dagar of Multan, Dagar of Montgomery, in the Wadanaks of Lyallpur, Ferozepore, and Amritsar, and the Palestine of Lahore."

40939. "Type No. 2. Var. *africanum* Kecke. Similar in most respects to type 1, but the ears taper to a point and are slightly longer; grain very dark red, hard on the whole, with a very few mottled grains; length of ear 84 mm.; D. [density of the ear]=28. This type is more liable to rust than type 1. This type was only met with as an impurity in Wadanak Kalchingari of Montgomery."

40940. "Type No. 3. Var. *leucurum* Al. Awns long, white with a reddish tinge; chaff smooth, shiny, white with a pinkish tinge due to the veins on the glumes being red; grain very long and thin, white, much lighter in colour than type 1, generally very hard and translucent, hardly a mottled grain to be found; length of ear, 75 mm.; D.=22; straw good; ripens late; not so liable to rust as type 1. This type was only found as an impurity in the Wadanak of Lyallpur in very small quantity. The grains of this wheat are so long that in cleaning prior to grinding they would pass over standard sieves with the large impurities."

40938 to 40969—Con. (Quoted notes by A and G. L. C. Howard.)

40941 to 40969. TRITICUM AESTIVUM L.

(Triticum vulgare Vill.)

"*T. compactum* Host. Dwarf wheats. Ears exceedingly dense and short, rarely over 5 cms. long, outer glumes keeled in the upper half and rounded in the lower half, straw very short and stiff, grains rounded.

"There are four varieties of dwarf wheats grown in the Punjab. These wheats are drought resisting and are generally grown on inundation moisture with little rain. They are also said to be good yielders and type 7 has a good reputation for bread making. Owing to the smallness of their grain they can, however, be used only for indigenous consumption and they are therefore being gradually replaced by common wheats. They agree with the common wheats in time of ripening and showed themselves exceedingly susceptible to early rust, *Puccinia triticina* Eriks., when grown at Pusa; in fact, they were almost destroyed by it. They are, however, fairly resistant to yellow rust. The ears are short and erect, the straw stiff, short (generally about 3 feet 6 inches or 4 feet), hollow throughout, as in common wheats, but much stouter.

"Humphries remarks that 'types 4 and 7 are extraordinarily small in the berry, so small that millers would hesitate to buy them if they contained any small seeds, because the machinery used for extracting the small seeds would take out simultaneously a very large proportion of the wheat berries themselves.'"

40941. *T. compactum*. "Type No. 4. Var. *erinaceum* Kcke. Ears bearded, with short bristly spreading awns very irregular in length, awns red; chaff smooth and dark red; grain very small, round, rather a light dirty red in colour, very difficult to distinguish from a dark amber, hard on the whole, with a few soft grains; ear length 50 mm.; D.=38; straw shows no pink colour. To this type belongs the Makkhi of Chiniot."

40942. *T. compactum*. "Type No. 5. Var. *linaza* Kcke. Ears beardless; chaff felted with short hairs, white with a pinkish tinge due to the pink colour of the edges and the veins of the glumes; grain round, small, but larger than in type 4, amber coloured, hard on the whole, with a few soft and mottled grains; ear length 49 mm.; D.=38; straw pinkish, turning black or greyish pink on ripening. This type was only met with in small quantity in the Makkawali of Dera Ghazi Khan."

40943. *T. compactum*. "Type No. 6. Var. *wernerianum* Kcke. Ears beardless, but with occasional very slight bearding; chaff smooth, white with a pinkish tinge; grain round, about the same size as in type 5, a clean light red, all soft; ear length 44 mm.; D.=39; straw has no pink colour. This type was only found in small quantity in the Makini of Multan."

40944. *T. compactum*. "Type No. 7. Var. *humboldti* Kcke. Ears beardless; chaff smooth, white with a pinkish tinge; grain round, about the same size as in type 5, but possibly a little smaller, amber coloured, consistency very variable, hard, soft, and mottled grains found in about equal proportions; ear length 45 mm.; D.=41; straw pinkish, turning black on ripening. This is the

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.) common dwarf wheat of the Punjab, and was found in the Rodi of Shahpur, Rangrih or Ghiali of Kangra, Makini of Multan, Daudi of Muzaffargarh, Daudan of Multan, Makkawali of Dera Ghazi Khan, and in Daudi of Multan. Mr. A. C. Dobbs, of Lyallpur, found that this wheat was grown at Rawalpindi and that it was considered in that district as the best for bread making.”

40945. “Type No. 8. Var. *barbarossa* Al. Ears bearded; awns red; chaff felted with short, rather sparse hairs, yellowish red; grain dark red, consistency variable, hard, soft, and mottled grains found in about equal proportions; ear length 78 mm.; D.= 24; straw good; ears erect and rather slender. This type was found in the Lal Kasar-wali of Lyallpur in very small quantity.”

40946. Type No. 8 A.

40947. Type No. 8 B.

40948. “Type No. 9. Var. *fuliginosum* Al. Ears bearded; awns stiff, stout, rather short, black but lose their colour very easily; glumes sharply keeled to the base; chaff densely felted with long hairs, the felting resembling very closely that found on the macaronis, chaff greyish white or yellowish white, pink at the edges, generally with black spots of Cladosporium; grain very dark red, on the whole hard with a few mottled grains, the shape resembling that of a common wheat; ear quadratic in section, somewhat club shaped at the top, somewhat compact; ear length variable, about 70 mm. on the average; D.= 25; straw stiff, stout, hollow throughout; ears very erect. This type was found in the Lal of Batala, Ratti of Montgomery and in the Lal Kale Kasar-wali of Lyallpur; it was also found in small quantity in the Lal Desi of Jhelum, Lal of Delhi, Pamman of Ferozepore, Dagar of Multan, Kunjhari of Muzaffargarh. This wheat is one of the most interesting types found in the Punjab, for although it must be classed as a common wheat, it appears to possess many of the characters of the macaroni wheats. The felting resembles very closely that of the macaroni wheats and is quite different to that found on the other felted common wheats or on the felted dwarf wheat. The shape of the glumes with the keeling continued sharply to the base resembles that of macaroni wheats. The hollow straw and the shape of the grain are, however, those of a common wheat. The shape of the ear with its compact sometimes club-shaped top, the stoutness of the straw, and the stiff awns remind one of the dwarf wheats, and it seems quite possible that this wheat, which is unique in India, may have arisen from a natural cross between a dwarf and macaroni wheat. This supposition is supported by the fact that we have found a dwarf wheat to be the female parent in some of the natural crosses found by us and described in the last part of this paper. At flowering time this wheat (type 9) appears to shed a vast amount of pollen and probably gives rise in this way to further natural crosses. It is interesting to note that this wheat is marked by Humphries as being the best of the 25 Punjab types submitted to him.”

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

40949. Type No. 9 A.

40950. "Type No. 10. Var. *erythroleucon* Kcke. Ears bearded; awns red; chaff smooth, dull light red; grain amber coloured, liable to sprout in the ear, consistency variable, hard, soft, and mottled grains found in equal proportions; length of ear 82 mm.; D.= 21; straw short and weak, ears bend over when ripe; early. This type was found in the Safed of Moga, Mundi of Ludhiana, Jogia of Karnal."

40951. "Type No. 11. Var. *erythroleucon* Kcke. Ears bearded; awns red; chaff smooth, a more intense and brighter red than in type 10; grain amber coloured, liable to sprout in the ear, consistency variable, but with a majority of soft grains; ears squarer and denser than in type 10, ear length 76 mm.; D.= 25; straw tall and strong, ears stand erect; later than type 10. This type was found in the Safed of Amritsar, Sohan of Chiniot, Kunjhari of Dera Ghazi Khan, Daudi of Lyallpur, and in the Jogia of Karnal."

40952. "Type No. 12. Var. *erythroleucon* Kcke. Ears bearded; awns red with occasional blackening; chaff smooth, dull light red with a somewhat bluish tone, occasional blackening on the chaff; grain amber coloured, hard on the whole; ear length 86 mm.; D.= 21; straw intermediate in strength between that of types 10 and 11, pink, turning black on ripening, tall; ears bend over when ripe; early; grain easily shed. This type was found in the Rangrih of Palampur."

40953. "Type No. 13. Var. *ferrugineum* Al. Ears bearded; awns red; chaff smooth, shiny, yellowish or brownish red; grain red, intermediate in colour between the dark and light red-grained types, rather small, consistency variable, about two-thirds being hard; ear length 96 mm.; D.= 18; straw medium; ears fairly erect; rather late. This type was found in the Lal Kasar-wali of Lyallpur. The hard red of Gujar Khan also belongs to this type, but ripened a little later than the Lal Kasar-wali. This difference may easily disappear after the hard red of Gujar Khan is acclimatised at Lyallpur."

40954. "Type No. 14. Var. *erythropermum* Kcke. Ears bearded; awns pinkish yellow; chaff smooth, white with a reddish tinge when ripe; grain light red, hard and soft grains in about equal proportions; ear length 80 mm.; D.= 23; straw weak and short; ears bend over when ripe; early; fairly rust resistant; sheds its grain more easily than type 15. This type was found in the Lal of Karnal, Lal of Sialkot, Lal of Attock, Lal Safed of Sirsa, Lal of Zira, Kasalu or Surkh of Ferozepore, Ratti or Lal of Pind Dadan Khan, Lal of Ludhiana, Desi Surkh of Jullunder, Lal Desi of Jhelum, Lal of Rawalpindi, Lal of Delhi, Kunjhari of Muzaffargarh."

40955. "Type No. 15. Var. *erythropermum* Kcke. Ears bearded; awns pinkish yellow; chaff smooth, white with a reddish tinge when ripe; grain light red, consistency variable, but the majority are soft grains; ear length 80 mm.; D.= 25; straw tall and strong; ears erect when ripe; late; susceptible to rust; grains less easily

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.) shed than in type 14. This type was found in the Ratti or Lal of Pind Dadan Khan, Watni of Shahpur, Kunjhari of Multan.

“Types 14 and 15 form the common red wheat of the Punjab. A glance at the names of the varieties will show that they are cultivated all over the province. They are very similar to, if not identical with, the common red wheats cultivated in the United Provinces. These two types are absolutely identical in the laboratory, but quite different in the field.”

40956. “Type No. 16. Var. *graecum* Kcke. Ears bearded; awns rather pinkish yellow; chaff smooth, white with pink edges and veins; grain white, rather small, on the whole soft, but with some hard and mottled grains; ear length 78 mm.; D.= 23; straw fairly strong. This type was found in the Ghoni of Lahore, Safed of Ludhiana, Safed of Rohtak, Safed of Batala, Daudkhani of Dasuya, Daudkhani of Delhi. Pori of Montgomery, and in the Safed Kasar-wall of Lyallpur.”

40957. “Type No. 17. Var. *delfi* Kcke. Ears beardless; chaff felted with short, rather sparse hairs, red with a bluish tinge; grain amber coloured, consistency variable; hard, soft, and mottled grains present in equal proportions; ear length 94 mm.; D.= 19; straw medium. This type was found in the Rodi of Attock, Ghoni of Gujrat, Ghoni of Sialkot, Khoni of Jhelum, Ghoni of Chiniot, Ghoni of Amritsar, Khoni of Batala, Mundli of Karnal, Mundli of Ludhiana, Safed of Lahore, Kanku of Palampur, Jhakrehun of Palampur, Safed Brij Sondha of Rohtak, and in small quantity in the Rodi of Muzaffargarh, Ghoni Lal, Ratti of Muzaffargarh, Desi of Dera Ghazi Khan, Suthra of Multan. This is a very common wheat in the Punjab.”

40958. Type No. 17 B.

40959. “Type No. 18. Var. *delfi* Kcke. Ears beardless; chaff felted with short, rather sparse hairs, yellowish red; grain amber coloured, consistency variable, but the majority of the grains are soft; ear length 72 mm.; D.= 26; ears squarer and denser than in type 17; straw stronger than in type 17; later in ripening. This type was found in the Rodi of Muzaffargarh, Ghoni Lal, Ratti of Muzaffargarh, Desi of Dera Ghazi Khan, Suthra of Multan, and in small quantity in the Ghoni of Chiniot, Ghoni of Amritsar, Jhakrehun of Palampur.”

40960. “Type No. 19. Var. *leucospermum* Kcke. Ears beardless, but occasional slight bearding met with; chaff felted with some short somewhat sparse hairs, white with pink veins or edges to the glumes; grain whiter than in 17, 18, and 21, but darker than 16; consistency variable, but about three-quarters of the grains soft; ear length 74 mm.; D.= 24; straw strong, pinkish, turning black on ripening. This type was found only in very small quantity in the Buggi of Leiah at Lyallpur.”

40961. Type No. 19 D.

40962. Type No. 19 H.

40963. “Type No. 20. Var. *alborubrum* Kcke. Ears beardless, with occasional very slight bearding; chaff smooth; light yellowish red; grain amber coloured, rather large, consistency variable, but about two-thirds of the grains soft; ear length 78 mm.; D.= 24;

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

straw taller and stronger, ears more erect and later in ripening than type 21; grain very easily shed. This type was only found in the Ghoni of Amritsar."

40964. "Type No. 21. Var. *alborubrum* Kcke. Ears beardless, with occasional very slight bearding; chaff smooth, brownish red, dull; grain amber coloured, but somewhat whiter than 17, 18, and 20, consistency variable, about an equal amount of hard, soft, and mottled grains; ear length 90 mm.; D.= 20; straw medium; ears bend over when ripe; earlier than type 20; grain very easily shed. This type was found in the Kanku of Palampur and in small quantity in the Rodi of Attock, Ghoni of Gujrat, Ghoni of Sialkot, Khoni of Jhelum, Khoni of Batala, Mundli of Karnal, Mundli of Jullunder, Mundli of Ludhiana, Jhakrehun of Palampur, Ratti of Muzaffargarh, Kunjhari of Muzaffargarh, Kunjhari of Multan, Safed Ghoni, and Ghoni Lal."

40965. "Type No. 22. Var. *milturum* Al. Ears beardless, sometimes slightly bearded; chaff smooth, shining, dark brownish red; grain very dark red, consistency variable, but on the whole the sample is hard; ear length 94 mm.; D.= 19; straw medium, but rather better than in type 23. This type was found in small quantity in the Ghoni of Sialkot and in Safed Ghoni."

40966. "Type No. 23. Var. *milturum* Al. Ears beardless; chaff smooth, dull, yellowish red; grain very light red, somewhat small, entirely soft; ear length 81 mm.; D.= 23; straw medium. This type was only found in the Ratti of Muzaffargarh."

40967. Type No. 23. Var. *milturum* Al.

40968. "Type No. 24. Var. *albidum* Al. Ears beardless; spikelets blunt; outer glumes short and rounded, chaff smooth, white with a reddish border; grain yellowish white, resembles 19, rather large, consistency variable, but on the whole the sample is soft; ear length 93 mm.; D.= 20; straw strong; ears bend over slightly. This type was found in the Koni of Chakwal, Kunj of Muzaffargarh, Buggi of Leiah, and Safed Ghoni."

40969. "Type No. 25. Var. *albidum* Al. Ears beardless, often slightly bearded; spikelets pointed, outer glumes long and pointed; chaff smooth, yellowish white, shiny, with very slight reddish border; grain larger than in any other of the types of common wheat in the Punjab, greyish white of a different tone of colour to any of the other white wheats; on the whole soft; ear length 100 mm.; D.= 20; straw very strong; ears erect. This type was found in Buggi of Leiah and Safed Ghoni. These two types, 24 and 25, differ in appearance so much from all the other wheats of the Punjab and bear such a strong resemblance to the Australian wheats introduced into the province that we can not help suspecting that they originally came from Australia."

40970. PHASEOLUS MUNGO L. Fabaceæ.**Urd.**

From Trinidad, British West Indies. Presented by Mr. W. G. Freeman, Assistant Director of Agriculture and Government Botanist, Department of Agriculture. Received July 13, 1915.

"*Woolly pyrol*. I believe this is going to be a valuable green-manure crop in southern Florida." (C. V. Piper.)

40971 and 40972.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received July 15, 1915.

40971. *ARDISIA CAPOLLINA* A. DC. Myrsinaceae.

A handsome shrub, related to *A. crenulata*, but distinguished by its entire, lanceolate leaves and wine-colored drupes. Flowers rose colored, in terminal panicles or clusters of umbels.

40972. *AMYGDALUS MICROPHYLLA* H. B. K. Amygdalaceae.

Shrub about 3 feet high, with few spreading branches, thin oblong leaves bunched on the small branchlets, and white flowers somewhat smaller than those of *A. incana*.

40973 and 40974. *LITCHI CHINENSIS* Sonnerat. Sapindaceae.

(*Nephelium litchi* Cambess.)

Litchi.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 24, 1915.

40973. "(No. 2304a. Shanghai, China. June 12, 1915.) About 20 pounds of seed, obtained from 250 pounds of fresh litchis, bought in the open market at 8 cents (Mexican silver) per pound. Said to have come from Canton. Of use as stocks for improved varieties and for selection work." (*Meyer.*)

40974. "(No. 2305a. Shanghai, China. June 19, 1915.) Fresh litchis, bought in the open market at 8 cents (Mexican silver) per pound. Said to have come from Canton. Of use as a stock for improved varieties and for selection work." (*Meyer.*)

40975 and 40976.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received July 21, 1915.

40975. *ACACIA ARMATA* R. BROWN. Mimosaceae.

"An evergreen bush, 4 to 6 meters in height, very dense. For the very driest poor soil." (*Proschowsky.*)

40976. *MIMOSA ACULEATICARPA* Ortega. Mimosaceae.

(*Mimosa acanthocarpa* Poir.)

"One and one-half to 2 meters in height, covered all over with hooks and spines, forming impenetrable hedge. For the very driest poor soils." (*Proschowsky.*)

40977. *ALEURITES MOLUCCANA* (L.) Willd. Euphordiaceae.

(*Aleurites triloba* Forst.)

Lumbang.

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received June 2, 1915.

"A handsome tree with spreading branches, alternate, lobed, pubescent leaves of a pale color, rounded or cordate at the base, with two glands at the top of the petiole. Flowers small, white, in terminal lax cymes; fruit fleshy, coriaceous, globose, with four shallow furrows; seeds one or two, rugose, gibbous. The *candlenut* tree is widely spread over Polynesia, a small part of Malaysia, and the Philippine Islands. It is remarkable that it has not established itself in Guam. Only a few specimens grow on the island, which are called either by the Philippine name *lumbang* or the Caroline Island name *raguar*. The natives

say the nuts were brought here from the Caroline Islands. They have not come into use in Guam. Throughout Polynesia the nuts, strung on coconut-leaflet ribs, serve the natives for candles to light their houses. In Hawaii they are roasted, chopped up, mixed with seaweed, and served at native feasts as a relish. They yield an oil which is very fluid, of an amber color, without smell, insoluble in alcohol, readily saponifiable, and quick drying. This oil is a mild cathartic, acting in the same manner as castor oil, but causing no nausea or griping and having the further advantage of a nutty flavor and of being more prompt in its effects." (*Safford, Useful Plants of Guam.*)

40978 to 40983.

From Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cuttings received July 26, 1915. Quoted notes by Mr. Popenoe.

40978 to 40982. *PERSEA AMERICANA* Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

40978. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Bartlett* avocado. A rather remarkable variety growing in the garden of Dr. Alberto Bartlett, of this town. It is said to bear two crops a year; the first crop is early and is now ripening; the second crop commences in December and the last fruit was eaten this year on May 8. In form this fruit is broadly pyriform, and in size about 4 inches long by 3 inches in thickness. The color is bright green, the surface smooth. The skin is rather thin, scarcely over 1 mm. in thickness. The flesh is creamy yellow near the seed, changing to pale green near the skin, of good texture and said to be of good quality, though not excellent. The seed is about the average size, but not objectionably large; the seed coats are rather thick and loose, but I found no specimens in which the seed rattled in the cavity. The tree is evidently very productive, judging by the present crop. It is growing in a very favorable situation, however, and received a good deal of fertilizer. The fruit is attractive in appearance and seems well worthy of a trial in southern Florida."

40979. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Don Carlos* avocado. A small variety, said to be of exceptionally choice quality, from the Quinta Aguas Azules of Dona Serafina Wilson, Viuda de Bartlett, near Guadalupe, about 15 miles from Placetas. This fruit is almost perfectly round in form and of light yellowish green color. The skin is thick, the flesh of fine, oily texture, and the seed very small in comparison to the size of the fruit. The tree is bearing an excellent crop and can probably be considered productive. It ripens its fruit from August to October, and is not, therefore, a very late variety, but because of its good quality it is considered worthy of a trial in southern Florida. It was the favorite fruit of Don Carlos Bartlett, the former owner of the Quinta Aguas Azules, and has been named for him."

40980. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Guadalupe* avocado. A late variety from the quinta of Sr. Joaquin Wilson at Guadalupe, about 15 miles from Placetas. This is a broadly pyriform fruit, narrowed at the base, but not noticeably 'necked,' and somewhat oblique at the apex. It will probably weigh 12 to 14 ounces when ripe. The color is green, sometimes

40978 to 40983—Con. (Quoted notes by Mr. Wilson Popenoe.)

mottled with maroon; the skin is rather thin, about 1 mm. in thickness. The flesh, which seems to be entirely free from fiber, is said to be of very good flavor. The seed is of about the average size, not objectionably large, and apparently tight in the cavity. This tree produces the latest fruits of any on the Wilson farm, but the crop does not all ripen late, and only a few fruits hang on until February. At the present time there are fruits in various stages of growth upon the trees, some almost fully grown, others still quite small. Sr. Joaquin Wilson claims that he has picked ripe fruit from this tree during a large portion of the year. It does not appear to be a very heavy bearer, however. For trial in southern Florida."

40981. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Merced* avocado. The latest variety growing in the Quinta Aguas Azules of Dona Serafina Wilson, Viuda de Bartlett, near Guadalupe, about 15 miles from Placetas. The fruit is said to remain on the tree until February. It is broadly pyriform, very similar to *Pollock* in shape, but probably not over 1 pound in weight, judging by its present size. The color when ripe is said to be green and the quality excellent. The tree is old and in poor condition; it is not bearing a good crop this season, but might fruit more heavily under favorable conditions. For trial in southern Florida."

40982. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Wilson* avocado. A late variety, said to be of unusually good quality, from the quinta of Sr. Joaquin Wilson at Guadalupe, about 15 miles from Placetas. This is a rather small fruit, probably not over 8 or 10 ounces in weight, round to very broadly oval in form, usually somewhat oblique at the apical end. The color when ripe is said to be very light green. The skin is 2 mm. in thickness. The flesh is perfectly free from fiber and said to be of unusually fine texture and rich flavor. The seed is very small in proportion to the size of the fruit. According to Sr. Joaquin Wilson, after whom the variety is named, it ripens about Christmas. The tree is carrying an excellent crop and seems to be all that could be desired in regard to productiveness. While rather small in size, this seems to be a valuable fruit, and should be tried in southern Florida."

40983. MANGIFERA INDICA L. Anacardiaceæ.**Mango.**

"(Santiago de Cuba, July 23, 1915.) *Biscochuelo* mango. This is probably the best type of mango grown in the vicinity of Santiago de Cuba, and excepting the *Filipino* one of the very best in the island. It is quite common here and very abundant on the markets, where the fruits are sold at \$2 per hundred. *Biscochuelo* is a fruit of rather unique form differing from all others I have seen in Cuba. It is oval to subreniform, decidedly oblique, the left shoulder rounded to very broad and marked by a deep suture, which extends some distance down the ventral side of the fruit, the right shoulder usually falling abruptly. The apex is rather sharp and sometimes almost beaked. In cross section the fruit is broadly oval. The weight is 8 to 14 ounces. The general color, when the fruit is fully ripe, is clear light orange, but as seen in the market they are frequently tinged with green. The skin is thick and tough, the flesh bright orange-yellow, firm and meaty, with a faint but pleasant aroma and very

40978 to 40983—Con. (Quoted notes by Mr. Wilson Popenoe.)

little fiber for a seedling type. The flavor is sweet even when the fruit is still quite hard, and when fully ripe it is very pleasant. The seed is reniform in outline, with long fiber on the ventral edge and short stiff fibers elsewhere, the embryos being one to five in number. Most of the specimens examined were polyembryonic. Seems worthy of trial in southern Florida."

40984 to 40986.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received July 29, 1915.

40984 and 40985. *FICUS SYCOMORUS* L. Moraceæ. **Pharaoh's fig.**

40984. "Baladi."

40985. "Kelabi."

See S. P. I. No. 39858 for previous introduction.

40986. *TAMARIX APHYLLA* (L.) Karsten. Tamaricaceæ. **Tamarisk.**
(*Tamarix articulata* Vahl.)

See S. P. I. No. 39856 for previous introduction and description.

40987 and 40988.

From Trinidad, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 21, 1915.

40987. *ANACARDIUM EXCELSUM* (Bert. and Balb.) Skeels. Anacardiaceæ.
(*Anacardium rhinocarpus* DC.) **Nariz.**

"(Trinidad, Santa Clara Province, Cuba, July 17, 1915.) *Nariz.* A magnificent tree, native of South America. It is very rare here in Cuba, but there are four or five fine old specimens beside the cart road, from Casilda to Trinidad, and it is from these specimens (which have been noted by Roig and de la Maza, *Flora de Cuba*, p. 131) that this specimen of seed was obtained. The *nariz* attains 60 or 65 feet in height, forming an erect but rather broad, compact head of dark-green foliage. As a shade and ornamental tree it should have considerable value. The leaves are entire, or nearly so, upon stout petioles one-half to 1 inch long, the blades obovate, oblanceolate, or spatulate, 6 to 18 inches long, 2½ to 6 inches broad, the apex obtuse to subacute, the base cuneate-attenuate, the surface smooth and deep green above, somewhat paler beneath, the venation raised below. The fruits ripen principally in August; they are dark brown, about an inch long, reniform and flattened, shaped somewhat like a nose, whence the name *nariz*. Unlike the cashew, the fruit stalk is not large and swollen, but is inconspicuous. The seeds are not considered edible. While this tree appears to have no particular economic value, it is worthy of trial as an ornamental, and it would also be of interest to test it as a stock for its relative, the mango." (Popenoe.)

For an illustration of the *nariz* tree, see Plate II.

40988. *CORDIA ALBA* (Jacq.) Roem. and Schult. Boraginaceæ.

"(Trinidad, Santa Clara Province, Cuba, July 17, 1915.) *Ateje.* A large shrub, 15 to 18 feet high, common along the eastern edge of the Valley of San Luis. It is bushy, branching close to the ground and sending up long, stiff shoots well furnished with dark-green foliage. The leaves are alternate, obovate to ovate-elliptical, 3 to 4 inches long, with entire margin and the surface covered with short, bristly hairs; petioles about an inch long, terete. The flowers, which are pale yellow and about

40987 and 40988—Continued.

half an inch in diameter, are borne in broad, flat-topped corymbs sometimes a foot across. The oblong-obovate fruits are half an inch in length and pearly white when ripe, inclosing a single large seed. It is apparently a good melliferous plant and of considerable ornamental value. For trial in southern Florida and southern California." (*Popoe.*)

40989. SACCHARUM CILIARE Anderss. Poaceæ. Elephant grass.

From St. Kitts, British West Indies. Presented by Mr. F. R. Shepherd, curator, Botanic Station. Received July 22, 1915.

"It is the *sara* of the classic authors of India and is met with throughout the plains and lower hills and distributed to China. In the Punjab it often covers large tracts of country and is frequently planted in lines or dividing hedges, especially in low-lying localities subject to periodic inundation. Sir William Jones says: 'This beautiful and superb grass is highly celebrated in the Puranas, the Indian god of war having been born in a grove of it, which burst into flame; the gods gave notice of his birth to the nymph of the Pleiads, who descended and suckled the child; thence named Carticeya. The *casá* (*kásá* or *káns*) vulgarly *casia* (*S. spontaneum*) has a shorter culm, leaves much narrower, longer and thicker hairs, but a smaller panicle, less compounded, without the purplish tints of the *sara*; it is often described with praise by the Hindu poets for the whiteness of its blossoms, which give a large plain, at some distance, the appearance of a broad river. Both plants are extremely useful to the Indians, who harden the internodal parts of the culms and cut them into implements for writing on their polished paper. From the *munj*, or culm, of the *sara* was made the *maunji*, or holy thread, ordained by Menu to form the sacerdotal girdle, in preference even to the *cusa* grass.' *Munj* fiber is obtained from the leaf sheaths; the blades are the *sar* or *sara* used in thatching houses and as a paper material; the contained flowering stem is the *bind* or *vind*; the panicle or flowering stem is the *sirki*, *til*, or *thili*, used in thatching boats, carts, etc.; *sentha* or *kana* is the lower, stronger portions of the flowering stem, used in the manufacture of chairs, stools, tables, baskets, and screens; and *tilak*, *tilon*, or *ghua* are names that denote the flowers. Some of these names, such as *munj* and *sara*, have been supposed to denote the products of different species, instead of different parts of one and the same plant; hence has originated much of the confusion that prevails. *Sara* is used in paper making and *munj* as a textile fiber. The much-prized *munj* is strong, elastic, and has a wonderful power of enduring moisture without decaying. It is extensively employed in the manufacture of cordage, ropes, the famed Delhi mats, and in the preparation of baskets, etc. *Munj* mats are reported to be proof against white ants, but are hard on shoe leather, harsh to the foot, and fatiguing when walked on for any length of time. These are largely produced in Allahabad, Agra, Delhi, and are traded in all over India, and within recent years have begun to find their way to Europe. In the early spring the old grass is often fired, when shortly after a crop of young leaves is produced from the stools, which is much valued as fodder." (*Watt, Commercial Products of India, p. 929-930.*)

40990. PASSIFLORA EDULIS Sims. Passifloraceæ. Passion fruit.

From Garrawin, Mangrove Mountain, via Gosford, Sydney, Australia. Presented by Mr. J. Harrison. Received July 28, 1915.

"Seeds of our commercial variety of *P. edulis*, of which we in this district are the principal growers." (*Harrison.*)

40991. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Manila, Philippine Islands. Presented by Mr. William S. Lyon, Gardens of Nagtajan. Received August 4, 1915.

Seeds sent in continuation of Mr. Lyon's experiments in shipping mango seeds to the United States. Three plants are being grown from the six seeds received.

40992. PASSIFLORA EDULIS Sims. Passifloraceæ. Passion fruit.

From Tucuman, Argentina. Presented by Mr. H. F. Schultz, horticulturist, Agricultural Experiment Station. Received August 2, 1915.

"Seeds of a superior yellow-fruited variety of *Passiflora* grown at Calilegua, Argentina. I expect to plant this variety quite extensively in this province under different local conditions of soil and climate. We have recently had very severe weather, the temperature going down to 5° C. below zero, which naturally has resulted in considerable damage to tender tropical and subtropical trees." (*Schultz.*)

40993. PSIDIUM GUAYABITA A. Richard. Myrtaceæ. Guayabita.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received August 5, 1915.

"This is a species peculiar to the western portion of Pinar del Rio, where it is called *guayabita del Pinar*. The fruit is edible, but not very valuable. A very popular aromatic liquor is prepared from the fruit, and there is a factory in Pinar del Rio which has patented the product with the name of *Licor de guayabita del Pinar*." (*Roig.*)

40994 and 40995.

From Santiago de las Vegas, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received August 3, 1915.

40994. ELAeis GUINEENSIS Jacq. Phœnicaceæ. Guinea oil palm.

"Seeds of the oil palm obtained from an old plant growing on the property of Sr. Brito, near Santiago de las Vegas. This palm seems to be at home here, but it is very rarely seen in cultivation. It has already been introduced into the United States at various times." (*Popenoe.*)

40995. ENTEROLOBIUM CYCLOCARPUM (Jacq.) Griseb. Mimosaceæ.

"*Oreja de judío*. A fine leguminous tree extensively used in this region as a shade tree along avenues and carreteras. Of the four or five different species used on the rock road from Santiago de las Vegas to Havana this is certainly one of the best, growing to a considerable height and branching to form a symmetrical, rounded head of deep-green foliage, giving a fairly dense shade and presenting an attractive appearance. While it has already been planted in Florida, I know of no avenues of it in that State, and it might advantageously be propagated at Miami, I believe, with the intention of testing it as an avenue tree." (*Popenoe.*)

40996. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder.

"(No. 208. *Uahi a Pele*.) The varietal name means 'smoke of Pele,' or 'volcano smoke,' Pele being the goddess or spirit of the volcano Kilauea. The leaf blade is dark olive bronze, shaded with purple; petiole maroon, varying from dark to light. The sap is reddish. The plant is very ornamental." (*R. A. Young.*)

40997 to 40999. PRUNUS spp. Amygdalaceæ.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received August 9, 1915.

40997. PRUNUS MAXIMOWICZII Rupr.

Maximowicz's cherry.

"Collected July 24, 1915."

"A tree about 25 feet high, with horizontal branches. Leaves obovate, about 1½ inches long, somewhat coarsely toothed, nearly glabrous; petioles slender, about one-half inch long. Flowers white, on slender hairy peduncles, one or two on each flowering shoot. Fruit crimson, the size of small peas. Japan." (*Kew Bulletin, New Garden Plants, 1903.*)

See S. P. I. No. 40189 for previous introduction and description.

40998. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.

(*Prunus sargentii* Rehder.)

Sargent's cherry.

"Seed. Arboretum, 1915."

"A species which has been confused with [the Japanese flowering cherry heretofore called] *P. pseudo-cerasus*, from which it differs by having all its parts glabrous. It is nearest allied to *P. serrulata*, differing by having sessile umbels and more coarsely toothed leaves. Japan." (*Kew Bulletin, New Garden Plants, 1909.*)

See S. P. I. Nos. 38761 and 40190 for previous introductions and description.

40999. PRUNUS YEDOENSIS Matsum.

Flowering cherry.

"Seed. Arboretum, July 12, 1915."

"A rather large tree with smooth branches and gray bark; young leaves pubescent along the veins; older leaves quite glabrous, broadly elliptic or ovate to oblong; base acute, oblique, or subrotund. Flowers precocious, rose-tinted fading to white, in 2 to 3 flowered corymbs. This tree differs from *P. pseudo-cerasus* in its precocious flowers, its pilose style, and its somewhat pubescent petioles and pedicels. Cultivated in gardens in Tokyo. (Adapted from the original description, *Tokyo Botanical Magazine, vol. 15.*)

41000. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. Amygdalaceæ.
(*Prunus davidiana* Franch.) **Wild peach.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., August 8, 1915.

"(No. 2299a. Peking, China, May 19, 1915.) Stones of the well-known *davidiana* peach; a valuable stock for various stone fruits. Purchased from a native collector who obtained them in the Western Hills, near Peking." (*Meyer.*)

41001. CANARIUM AMBOINENSE Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received August 14, 1915.

"A burseraceous tree 80 to 90 feet high, closely related to *C. moluccana*, but differing in the nearly smooth, oblong fruit, that of *C. moluccana* being very rough and very much more elongate. This tree branches about 25 feet from the ground, trunk about 8 feet in circumference; possesses large arching prop roots at the base; bark smooth and white; crown umbrella shaped." (*Hochreutiner, Plantae Bogoriensis Essiccateæ, p. 55.*)

41002. BELOU MARMELOS (L.) Lyons. Rutaceæ. Bael fruit.
(*Aegle marmelos* Correa.)

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Botanic Gardens. Received August 31, 1915.

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

41003. POUTERIA CAIMITO (Ruiz and Pav.) Radlkofler. Sapotaceæ. Abiu.
(*Lucuma caimito* Roem. and Schult.)

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, Escola Agricola de Lavras. Received August 5, 1915.

"A timber tree with edible fruits. It looks very much like *cabelludinho*. The fruit is a beautiful golden yellow and is the shape of the fruit of the *limão do matto*. The fruit is somewhat sticky, but of a delicious flavor. The one we have on our place is a beautiful bush at present and would do very well as an ornamental plant. It is found in the States of Espirito Santo, Sao Paulo, and Minas Geraes." (*Hunnicutt*.)

41004. LITCHI CHINENSIS Sonnerat. Sapindaceæ. Litchi.
(*Nephelium litchi* Cambess.)

From Amoy, China. Presented by Mrs. L. W. Kip, at the request of Mr. John M. Nixon, New York City. Received August 21, 1915.

"Some of the seeds came from Canton and Swatow, though I could not see any difference in the fruits from those grown in this region. The Chinese say that the litchi does not come true from seed, so they propagate it by scraping some of the bark from a branch and wrapping mud around it till rooted. Should do well in Florida and southern California and would be sure to flourish in Porto Rico." (*Kip*.)

41005. FRAGARIA CHILOENSIS (L.) Duches. Rosaceæ. Strawberry.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, consul general. Received August 20, 1915.

"Wild strawberry seeds, forwarded to this office by Prof. Abelardo Pachano, of the chair of agronomy, Escuela de Agronomia, Ambato, Ecuador, who writes as follows: 'Seed of *Fragaria* (*frutilla* as we call them). Please remember that they grow most extensively at Huachi, a country sandy and dry as the Sahara.' This is the only species recorded from Ecuador, but there may be others, and if so seeds will be procured and forwarded." (*Goding*.)

41006 and 41007. FRAGARIA spp. Rosaceæ. Strawberry.

From Bogota, Colombia. Presented by Mr. Thaddeus A. Thompson, American minister. Received August 21, 1915. Quoted notes by Mr. Thompson.

"The consuls in Barranquilla and Cartagena inform me that they believe this section of Colombia is the only one which produces strawberries, and I am of the opinion that they are more or less correct in their belief."

41006. FRÁGARIA CHILOENSIS (L.) Duches.

"*Chile*. Seeds of a rather white strawberry, which, I understand, is brought from a considerable distance, and which is not usually called a strawberry (*frresa*), but is known by the name of *chile*."

41007. FRAGARIA VESCA L.

"Seeds of the common red strawberry, which is procurable here throughout the year."

41008. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ. Tacaco.

From Costa Rica. Presented by Mr. Carlos Wercklé, at the request of Mr. J. E. Van der Laat, director, Department of Agriculture. Received August 20, 1915.

"Leave the fruits until shriveled, then put them in a pile of rotten leaves or very loose peat, as they do not sprout if planted in common garden earth." (Wercklé.)

See S. P. I. Nos. 26244, 26245, and 36592 for previous introductions.

41009 to 41016. TRITICUM spp. Poaceæ. Wheat.

From Northern Circle, Jubbulpore, Central Provinces, India. Presented by G. Evans, Deputy Director of Agriculture. Received July 30, 1915.

41009 to 41011. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41009. *Hansi pissi* (soft Hansi).

41010. *Sukerhai pissi* (soft Sukerhai).

41011. *Murya*.

41012 to 41016. TRITICUM DURUM Desf.

41012. *Bansi*.

Bansi is described as a hard red wheat by Watt, in Commercial Products of India.

41013. *Dahutia*.

Probably the same variety that Watt describes as *Daodia*, soft and starchy, white.

41014. *Howrah*.

41015. *Jalalia*.

Watt, in Commercial Products of India, describes this as hard and glutinous, white.

41016. *Tigharia*.

41017 to 41029. TRITICUM spp. Poaceæ. Wheat.

From Petrograd, Russia. Presented by Dr. Robert Regel, chief, Bureau of Applied Botany. Received August 17, 1915. Quoted notes by Dr. Regel.

41017 to 41023. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41017. "No. 126. Var. *ferrugineum* Al., subvariety *sibiricum*. Collected in Perm Government, 1906. Received from the Agricultural Society of the Province. Called *Krasnokoloska*, spring form. Grown by the bureau (pure line 0272A2, 1914, sowing 75, Government of Voronezh)."

41018. "No. 273. Var. *ferrugineum* Al., subvariety *rossicum*. Collected in Tomsk Government, 1903. Received through Prof. Prjanishnikov. Spring form. Grown by the bureau (pure line 062A2, 1913, sowing 46, Voronezh Government)."

41019. "No. 902. Var. *alborubrum* Körn., subvariety *orientale*. Collected in Bokhara, 1909. Received from exhibition in Tashkent from the collection of Bokharian Emir. Winter form. Grown by the bureau (sowing 30, 1911-12, Petrokof Government)."

41017 to 41029—Continued. (Quoted notes by Dr. R. Regel.)

41020. "No. 1423. Var. *erythrospermum* Körn., subvariety *duriusculum*. From Samarkand Province, 1909. Received from Mr. Nurmatov. Called *Kizyl-bogara*, spring wheat. Grown by the bureau (pure line 0326A4, 1914, experiment field of Prasnovodopadsk)."

41021. "No. 1879. Var. *lutescens* Al., subvariety *poltawense*. Collected in Ekaterinoslav Government, 1910. Received from the Agricultural School, Mariinsko. Called *Poltavka*, spring form. Grown by the bureau (sowing 43, 1911, Kursk Government)."

41022. "No. 1986. Var. *graecum* Körn., subvariety *amylosum*. Collected in Samara Government, 1910. Received through Mr. Tshechovitsch. Called *Chivinka*, spring form. Grown by the bureau (pure line 0402A3, 1913, sowing 64, Elisabetpol Government)."

41023. "No. 3237. *T. compactum* Host., var. *fetisowii* Körn., subvariety *burnaschewi*. Collected in Semiretshje Province, 1912. Received from Agricultural School of Kopál. Called *Teremkovaja*, spring form. Grown by the bureau (original sample, C. Flaxsberger)."

41024 and 41025. TRITICUM DICOCCUM Schrank.

41024. "No. 417. Var. *farrum* Bayle, subvariety *arras* Hochst. Collected in Samara Government, 1908. Received from Mr. Jelagitsh. Spring form. Grown by the bureau (pure line 094A4, 1913, sowing 66, Voronezh Government)."

41025. "No. 859. Var. *rufum* Schubl., subvariety *maturatum*. Collected in Samara Government, 1909. Received from Mr. Karamzin. Spring form. Grown by the bureau (pure line 0139A3, 1912, sowing 54, Voronezh Government)."

41026 to 41028. TRITICUM DURUM Desf.

41026. "No. 216. Var. *hordeiforme* Host., subvariety *densiusculum*. Collected in Tomsk Government, 1903. Received through Prof. Prjanishnikov. Spring form. Grown by the bureau (pure line 074A3, 1914, sowing 75, Voronezh Government)."

41027. "No. 465. Var. *coerulescens* Bayle. Collected in Tomsk Government, 1907. Received through Mr. Korenko. Spring form. Grown by the bureau (pure line 0295A4, 1914, sowing 75, Voronezh Government)."

41028. "No. 830. Var. *hordeiforme* Host., subvariety *laxiusculum*. Collected in Kursk Government, 1909. Received through Mr. Malzew. Spring form. Grown by the bureau (pure line 0123A4, 1913, sowing 66, Voronezh Government)."

41029. TRITICUM TURGIDUM L.

"No. 533. Var. *speciosissimum* Körn. Collected in Tiflis Government. 1908. Received from Miss Mlokosjevitsh. Grown by the bureau (pure line 0212A2, 1912-13, sowing 61, Elisabetpol Government)."

41030 and 41031.

From Songdo, Chosen (Korea). Presented by Rev. C. H. Deal, Anglo-Korean School. Received August 12, 1915.

41030. *RAPHANUS SATIVUS* L. Brassicaceæ.

Radish.

41030 and 41031—Continued.

41031. BRASSICA CHINENSIS Jusl. Brassicaceæ. **Pakchoi.**

"Korean cabbage. I think this is strictly a Korean article, as I have never met with it anywhere else. It grows very much like celery, but with leaves very much like a turnip or mustard leaf. The stems are stocky and blanch beautifully. It is used here for making a kind of pickle called *Kimchi*. The natives call the cabbage *Pāchōō*, which would be a good name in case you have not already introduced the seed under another name. The seeds are planted in the fall, about September, in hills about 15 inches apart each way and thinned to one stalk to a hill. It is not gathered until after frost, just before the first heavy freeze. It takes a good deal of water and rich land and plenty of fertilizer." (Deal.)

41032 to 41051. TRITICUM spp. Poaceæ. Wheat.

From Tunis, northern Africa. Presented by L. Guillochon, Botanical Service. Received August 17, 1915.

"Varieties commercially cultivated in Tunis, but selected by the Agricultural Experiment Station Service." (Guillochon.)

41032 to 41034. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41032. *Allorca.*

41034. *Richelle.*

41033. *Mahon.*

41035 to 41051. TRITICUM DURUM Desf.

Durum wheat.

41035. *Médéah.*

41044. *Mekki.*

41036. *Biskri Smooth.*

41045. *Mahmoudi.*

41037. *Namira.*

41046. *Mahmoudi A G³.*

41038. *Real Forte.*

41047. *Azizi.*

41039. *Lenah Khetifa.*

41048. *Adjini.*

41040. *Sbei.*

41049. *Allemand.*

41041. *Agili Pubescent.*

41050. *Berbern.*

41042. *Smooth Sbei.*

41051. *Souri.*

41043. *Taganrog.*

41052. LITCHI CHINENSIS Sonnerat. Sapindaceæ. Litchi.
(*Nephelium litchi* Cambess.)

From Hongkong, China. Presented by Mr. H. Green, acting superintendent, Botanical and Forestry Department. Received August 30, 1915.

See S. P. I. No. 38779 for description.

41053. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.
(*Nephelium longana* Cambess.)

From Little River, Fla. Presented by Mr. Charles Simpson. Received August 30, 1915.

"The longan tree is likewise a native of southern China, where it is cultivated for the sake of its fruit. Its leaves have generally five pairs of leaflets much resembling those of the litchi, but it is readily distinguished by its flowers having a deeply 5-parted calyx. The longan is a smaller fruit than the litchi, varying

from 1 inch to 1½ inches in diameter and quite round, with a nearly smooth, brittle skin of a yellowish brown color. It contains a similar semitransparent pulp, of an agreeable sweet or subacid flavor, and is largely sold in the markets." (*Treasury of Botany, vol. 2, p. 784.*)

To be tested as a stock for *Litchi chinensis*.

See S. P. I. Nos. 32006, 34206, and 39551 for previous introductions.

For an illustration of the longan tree in fruit in Florida, see Plate III.

41054. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**

(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received September 2, 1915.

"*Wai chih li chi.*"

See S. P. I. No. 38779 for description.

41055. PENNISETUM LONGISTYLUM Hochst. Poaceæ. **Kikuyu grass.**

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany. Cuttings received September 3, 1915.

"*Kikuyu* grass. We originally obtained this grass from British East Africa, which, so far as our experience goes, would appear to be one of the most promising grasses that we have in this country. So far, although the grass has been under cultivation at our botanical station for the past four years, it has shown no signs of forming seed, and it was only last summer that it flowered and enabled us to have it determined botanically. The grass has a creeping habit, and cattle are passionately fond of it; it also makes a nice hay grass." (*Evans.*)

41056. ALLIUM CEPA L. Liliaceæ. **Onion.**

From Teheran, Persia. Presented by Col. J. N. Merrill, Persian Army. Received September 3, 1915.

"Onion seed from Tarum, which is about 24 miles west of Zendjan (Zinjan), in western Persia. Mr. R. S. Reed, Controller of Finances of Zendjan, was kind enough to get me the seed. Tarum has an altitude of about 4,000 feet; irrigation is used; soil gravelly, probably contains alkali. They are the largest onions I have seen, some of them being 6 inches in diameter by 4 in depth or larger. Mr. Reed says the onions of Tarum are much esteemed by the Persians, who eat them raw, as they have such good flavor." (*Merrill.*)

41057. MYRCIARIA FLORIBUNDA (West) Berg. Myrtaceæ. **Guava berry.**

From St. Croix, Danish West Indies. Presented by Mr. Longfield Smith, director, Agricultural Experiment Station. Received August 30, 1915.

"Seeds of the guava-berry tree. The fruits of this tree make a delicious preserve with an aromatic flavor; they are also used with rum for making a liquor called guava-berry rum." (*Smith.*)



**THE LONGAN, DIMOCARPUS LONGAN LOUR. (NEPHELIUM LONGANA CAMBESS.),
IN FRUIT IN FLORIDA. (SEE S. P. I. NO. 41053.)**

This highly prized southern Chinese fruit tree bears abundantly in Florida, but the fruits appear to have little value, perhaps because selection has not been carried on to any extent. The profuse fruiting habit, the flourishing condition of this tree in Reasoner Brothers' tropical fruit shed, and the value placed on the fruit by the Chinese indicate that a thorough study of the various strains of this tree should be made. (Photographed by Wilson Popenoe, Oneco, Fla., August 19, 1914; P16166FS.)



FRUITS OF THE JAPANESE APRICOT, *PRUNUS MUME* SIEB. AND ZUCC., S. P. I. No. 28685. (SEE S. P. I. No. 41061.)

These exceedingly sour fruits, which resemble small greenish or yellow apricots and when perfectly ripe remind one of the American plum in flavor, are eaten in great quantities in Japan in the form of pickles and are said to have formed a portion of the army ration of the Japanese troops during the Russo-Japanese war, their effect being to quench the thirst. The fruits are pickled in brine with the leaves of the oil plant (*Perilla arguta*), which give them a reddish color and an aromatic taste. This apricot is the so-called "flowering plum," or "mume," of Japanese literature, and its extremely picturesque flowering branches are even more common on Japanese screens than are those of the famous flowering cherries. It is a greater favorite among Japanese poets than the cherry. It flowers so early that it is often caught by late snows and frost, and as few insects are flying at that time, it may need hand pollination. (Photographed June 22, 1915, from fruits sent from the Chico Field Station; natural size; P13508FS.)

41058 to 41061. PRUNUS spp. Amygdalaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received September 7, 1915.

41058 to 41060. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*Prunus sargentii* Rehder.) **Sargent's cherry.**

41058. *Yamazakura* seeds from Koganei, near Tokyo.

41059. *Yamazakura* seeds from Arashiyama, Kyoto.

41060. *Yamazakura* seeds from Yoshino, Nara.

See S. P. I. Nos. 38761, 40190, and 40623 for previous introductions and description.

41061. PRUNUS MUME Sieb. and Zucc. Japanese apricot.

"A deciduous tree of rounded habit, 20 to 30 feet high, with smooth, lustrous twigs. Leaves $2\frac{1}{2}$ to 4 inches long, roundish or broadly ovate, contracted at the end into a long tapering point, sharply and often doubly toothed, with scattered hairs on both sides, becoming smooth except about the midrib beneath; leafstalk one-half to three-fourths inch long. Flowers pale rose, 1 to $1\frac{1}{4}$ inches across, produced singly or in pairs (each on a very short stalk) from the joints of the previous year's wood; petals broadly obovate; calyx one-half inch across, with oblong rounded lobes. Fruit described as yellowish, globose, 1 to $1\frac{1}{4}$ inches wide, scarcely edible; shell of nut perforated. Native of Korea and perhaps China. It is much cultivated in Japan for ornament, and the double-flowered form was originally introduced to Europe from that country by Messrs. Baltet, of Troyes, in 1878. It was first distributed as '*P. myrobalana, fl. pleno.*' a name which still clings to it in many places. It is a true apricot, not a plum. In late years it has been imported from Japanese nurseries in quantity and in various forms; of these the following are now in our gardens: *Alba* (white), *alba plena* (double white), *flora plena* (double rose), *pendula* (weeping). The flowers are delicately perfumed. This apricot is very valuable in gardens, especially the double-flowered forms, for its early, profuse flowering, being in bloom generally about the same time as the almond, and at its best almost as beautiful. It should be given a sheltered place. It can be distinguished from the common apricot by the longer, more slender apex to the leaf." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles, vol. 2, p. 244.*)

"The pickled *mume* fruits form part of the army ration of the Japanese soldier. They are among the sourest things known. The trees are hardy at Washington, and some varieties flower in February." (*Fairchild.*)

See S. P. I. Nos. 9211 to 9216, 28685, and 34582 for previous introductions.

For an illustration of the fruits of this apricot, see Plate IV.

41062. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Manila, Philippine Islands. Presented by the director, Bureau of Agriculture. Plants received July 22, 1915.

See S. P. I. No. 25887 for description.

41063. ORYZA SATIVA L. Poaceæ. Upland rice.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicut, director, Escola Agricola de Lavras, through Mr. C. C. Knight, vice director. Received August 5, 1915.

"I do not know the name of the variety of this rice, as they do not pay much attention to varietal names here. However, this past year was very hard for upland rice, as we had a protracted drought of six weeks, but this rice made a crop. Another variety grown in the same field failed to make a crop." (*Hunnicut.*)

41064 to 41087. TRITICUM spp. Poaceæ.

Wheat.

From Sydney, New South Wales, Australia. Presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 26, 1915.

"The department's plant breeder states that the following varieties are winter wheats here, but if sown at the same season as such sorts in America they would probably be winterkilled. It is suggested that they be sown as spring wheat, with the exception of *Marster's Perfection* [S. P. I. No. 41072], which should stand the frosts of winter. It may be mentioned that samples of the ordinary varieties recommended to farmers in this country have invariably been sent abroad, and almost without exception have proved unsuitable for American and European conditions; it has been found that they either become eaten up with spring rust or do not survive the winters." (*Valder.*)

41064 to 41071. TRITICUM AESTIVUM L.

Wheat.

(*Triticum vulgare* Vill.)

- 41064. No. 4. Very early; harvested 1913.
- 41065. No. 9. Very early; harvested 1913.
- 41066. No. 3. Very early; harvested 1914.
- 41067. No. 14. Midseason to early; harvested 1914.
- 41068. No. 8. Very early; harvested 1914.
- 41069. No. 11. Very early; harvested 1913.
- 41070. No. 2. Very early; harvested 1914.
- 41071. *Warren* (ordinary). Midseason; harvested 1914.

41072. TRITICUM TURGIDUM L.

Marster's Perfection (Poulard). Very late; harvested 1913.

41073 to 41087. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

- 41073. *Tarragon* (ordinary). Rather late; harvested 1914.
- 41074. *Sunset* (ordinary). Very early; harvested 1914.
- 41075. *Jumbuck Cross* (ordinary). Medium early; harvested 1914.
- 41076. *Canberra* (ordinary). Very early; harvested 1914.
- 41077. *Bomen* (ordinary). Medium early; harvested 1914.
- 41078. *Cleveland* (ordinary). Rather late; harvested 1913.
- 41079. *Hard Federation* (ordinary). Early; harvested 1913.
- 41080. *Federation* (ordinary). Midseason; harvested 1914.
- 41081. *Steinwedel* (ordinary). Early; harvested 1913.
- 41082. *Purple straw* (ordinary). Midseason; harvested 1914.
- 41083. *Cedar* (ordinary). Early; harvested 1914.
- 41084. *Covra No. 16* (durum). Late, a beardless durum hybrid; harvested 1913.
- 41085. *Jonathan* (ordinary). Midseason; harvested 1914.
- 41086. *Florence* (ordinary). Early maturing; harvested 1914.
- 41087. *Thew* (ordinary). Early maturing; harvested 1914.

41088 to 41091. CITRUS NOBILIS DELICIOSA (Tenore) Swingle.
 Rutaceæ. **Mandarin.**

From Redland Bay, Queensland. Presented by Mr. James Collins. Cuttings received September 9, 1915. Quoted notes by Mr. Collins.

- 41088.** "*Excelsior* (hybrid). Tree robust, heavy cropper, no thorns, fruit large, skin tight, coarse while trees are young, very juicy, season late, good, color scarlet."
41089. "*Burrum Beauty* (hybrid). Tree robust, branches inclined to weep a little, good cropper, thorny, fruit very large, skin loose, quality fair, color scarlet."
41090. "*Coomber's Perfection* (true mandarin). Possibly the best mandarin grown, tree robust, upright grower, very thorny, not a very heavy cropper, fruit large, heavy, and firm, best quality."
41091. "*Ellendale Beauty* (hybrid). Tree robust grower, heavy cropper, fruit large to very large, firm and heavy, rather brisk flavor, good cropper, quality fair, color scarlet."

41092 to 41096. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
Chayote.

From Kingston, Jamaica. Presented by Mr. William Harris, Hope Gardens. Fruits received September 9, 1915.

- 41092.** Spiny green. **41095.** Small green.
41093. Large smooth green. **41096.** Long white.
41094. Medium-sized green.

41097 to 41123.

From Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received September 8, 1915. Quoted notes by Mr. Cook.

41097. XANTHOSOMA sp. Araceæ.

"No. 1399. *Qquelluuncucha*. Amaybamba, Peru, June, 1915. A variety with small roots that are preserved by drying and are called *chuños*, like the potato dried by freezing in the high plateaus. This variety is not acrid like the other, and the foliage is often cooked for greens."

Tubers.

41098. CURCUMA sp. Zinziberaceæ.

"No. 1442. *Patillo chuncho*. Santa Ana, Peru, July 8, 1915. A plant cultivated in the lower Urubamba Valley for its aromatic yellow-fleshed rootstocks which are used for coloring food. For this purpose *patillo* is considered superior to *annatto* and is an article of trade among the natives. To be raised for identification."

Rootstocks.

41099. CITRUS sp. Rutaceæ. Sweet lime.

"No. 1667. Santa Ana, Peru, July 7, 1915. A large and very vigorous form of the sweet lime, a rather popular fruit in the Urubamba Valley."

Cuttings.

41100. CANNA EDULIS Ker-Gawler. Cannaceæ. Canna.

"No. 1674. Santa Ana, Peru, July 8, 1915. Altitude, 3,000 feet. A cultivated variety, different from that found previously near Intihuatana, the tubers being green and white instead of red. The flowers are scarlet and somewhat larger than those of the other variety."

Rootstocks.

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41101. *XANTHOSOMA* sp. Araceæ.

"No. 1678. Santa Ana, Peru, July 2, 1915. Var. *Qquelluuncucha*. Supposed to be the same as No. 1399 (S. P. I. 41097), but the tubers somewhat smaller and longer. Grown at an altitude of about 3,000 feet."

Tubers.

41102. *FRAGARIA* sp. Rosaceæ.

Strawberry.

"No. 1767. San Miguel, Tocontoy, Peru, July 10, 1915. Plants of a wild strawberry grown at an altitude of about 8,000 feet."

41103. *MANIHOT DULCIS* (Gesner) Baillon. Euphorbiaceæ.

(*Manihot palmata* Muell. Arg.)

Sweet cassava.

"No. 1768. *Yuca*. San Miguel, Peru, July 10, 1915. Cuttings of a seed-bearing native variety grown at the upper rim of the tropical belt at an altitude of 6,000 feet. For testing in the South and in California in comparison with the variety from Lima."

41104. *OPUNTIA* sp. Cactaceæ.

Spineless prickly-pear.

"No. 1788. Tocontoy vicinity, Peru. A spineless form found by Prof. Hiram Bingham in the Urubamba Valley below Ollantaytambo. Of possible interest on account of the large size of the leaves, which are of a delicate texture and not unpleasant in taste. The spiny form is very common throughout the Urubamba Valley, being planted commonly for hedges."

Cuttings.

41105. *ESCALLONIA MYRTILLOIDES* L. f. Escalloniaceæ.

"No. 1827. *Tasta*. Pinasniocj, Peru, July 14, 1915. A tree related to the *Chachacoma*, but with much smaller leaves and more horizontal branches, giving the general appearance of a hemlock or other coniferous tree. Attains an altitude of 12,000 feet where heavy frosts are of nightly occurrence during the winter. Should be tested first along the Pacific coast."

Cuttings.

41106. *SOLANUM* sp. Solanaceæ.

"No. 1859. Pinasniocj, Peru, July 16, 1915. A native tree attaining a height of 20 to 25 feet and a diameter of 1 foot. Grows at an altitude of 11,000 to 12,000 feet, and flowers in the winter when frosts are of almost nightly occurrence. Blossoms in large clusters, angular bell shaped, pendent; yellowish outside, within rich violet with a network of fine yellow veins; peculiar and very attractive. May thrive on the Pacific coast."

Cuttings.

41107. (Undetermined.)

"No. 1861. *Masuca*. Pinasniocj, Peru, July 16, 1915. Willowlike shrub belonging to the family Melastomaceæ, with very handsome pendent flowers closely resembling those of *Fuchsia*. The calyx is red and the corolla deep blue. The branches are straight and upright and very tough, furnishing material for making baskets. The *masuca* comes from a high altitude where frosts are common and should be hardy enough to thrive along the Pacific coast, at least as far north as San Francisco."

Plants.

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41108. (Undetermined.)

"No. 1862. Pinasniocj, Peru, July 16, 1915. *Masuca*. Same as 1861 [S. P. I. No. 41107], but from a different plant."

Plants.

41109. SOLANUM sp. Solanaceæ.

"No. 1860. Pinasniocj, Peru, July 16, 1915. Same as 1859 [S. P. I. 41106], but from a different tree with flowers of a somewhat deeper color."

Plant.

41110. EUGENIA sp. Myrtaceæ.

"No. 1863. Pinasniocj, Peru, July 16, 1915. Cuttings of an extremely beautiful tree, with fine glossy deep-green foliage contrasting with a smooth, light-colored, graceful trunk and branches. Should be tried, especially along the Pacific coast. Likely to become a general favorite if conditions prove favorable for its development. Should be easily propagated from cuttings. This material is from a selected tree of which photographs were taken."

41111. HESPEROMELES OBLONGA Lindley. Malaceæ.

"No. 1874. Pinasniocj, Peru, July 16, 1915. *Lengli*. A very attractive tree, with deep-green, hollylike foliage and clusters of red berries. Somewhat resembling our thorn-apple trees, *Crataegus*, but with much more handsome evergreen foliage. Should be of interest for the Pacific coast if it is found to thrive."

Plants.

41112. ESCALLONIA RESINOSA (R. and P.) Persoon. Escalloniaceæ.

"No. 1886. Pinasniocj, Peru, July 17, 1915. *Chachacoma*. A tree of ornamental value, producing clusters of white flowers for a long period during the winter months. The trees attain a height of 30 or 40 feet and a diameter of 2 to 3 feet. The wood is of excellent quality, having very little grain, and used especially for carving and household utensils. Should endure frosts and may prove useful, especially along the Pacific coast."

Cuttings.

41113. SOLANUM sp. Solanaceæ.

"No. 1890. Pinasniocj, Peru, July 17, 1915. *Quita naranjo*. A shrub attaining a height of 6 to 8 feet, with very tough wood. The habits of growth, the clean, fresh green foliage and clusters of white flowers all unite to give a remarkable resemblance to the orange tree. This is recognized in the native name, which means 'wild orange.' The plant should be of ornamental value in the open air in the warmer parts of the country and perhaps indoors."

Cuttings.

For an illustration of the *Quita naranjo*, see Plate V.

41114. BUDDLEIA INCANA Ruiz and Pavon. Loganiaceæ.

"No. 1892. Pinasniocj, Peru, July 16, 1915. *Quishuar*. A tree with grayish foliage somewhat resembling the olive, with rather attractive clusters of yellow flowers. It grows on the high table-lands of southern Peru where frosts are of frequent occurrence during the winter season. It grows rapidly and propagates readily from cuttings. The wood is

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

said to be very hard and durable. Of possible interest for ornamental planting or windbreaks in the coast district of southern California."

Cuttings.

41115. (Undetermined.)

"No. 1907. Ollantaytambo, Peru, July 19, 1915. *Panti*. A medicinal plant much used among the Indians and sometimes cultivated. Evidently a composite, with a tuberous root not unlike the *Yacon* (*Polymnia*), but smaller."

Roots.

41116. *OPUNTIA* sp. Cactaceæ.

"No. 1918. Ollantaytambo, Peru, July 20, 1915. Spineless or nearly spineless forms of this cactus are not uncommon in the Urubamba Valley."

Cuttings.

41117. *SOLANUM* sp. Solanaceæ.

"No. 1937. Cuzco, Peru, July 26, 1915. A shrub attaining a height of 6 to 8 feet, but flowering when only 3 to 4 feet high. The flowers of an attractive blue color are in clusters and borne through the winter, even in dry exposed places where severe frosts occur every night. Of interest on account of its extreme hardiness and of possible value as an ornamental along the Pacific coast and elsewhere."

Cuttings.

41118. *CANNA* sp. Cannaceæ.

Canna.

"No. 1971. Below San Miguel, Peru, June, 1915. A species cultivated in the upper rim of the tropical belt at an altitude of about 6,000 feet."

Rootstock.

41119. *XANTHOSOMA* sp. Araceæ.

"No. 1676. Santa Ana, Peru, July 2, 1915. Var. *Huascamanuco*. A variety with deep pinkish flesh, one of the favorite sorts about Santa Ana."

Tubers.

41120. *XANTHOSOMA* sp. Araceæ.

"No. 1677. Santa Ana, Peru, July 2, 1915. Var. *Picauncucha*. A variety with large tubers and of good quality, but requires thorough cooking, as the flesh is said to be extremely acrid when raw."

Tubers.

41121. *MANIHOT DULCIS* (Gesner) Baillon. Euphorbiaceæ.

(*Manihot palmata* Muell. Arg.)

Sweet cassava.

"No. 1680. Santa Ana, Peru, July 6, 1915. *Yuca*. A native seed-bearing variety of cassava grown at an altitude of 3,000 feet. For experimental planting in the South and possibly in California."

Cuttings.

41122. *MANIHOT DULCIS* (Gesner) Baillon. Euphorbiaceæ.

(*Manihot palmata* Muell. Arg.)

Sweet cassava.

"No. 1973. Lima, Peru, August 17, 1915. *Yuca*. A variety grown along the coast between Lima and Callao, in a rather cool climate. Should be tested in California, as well as in the Southern States."

Cuttings.



THE QUITA NARANJO, SOLANUM SP., AN ORNAMENTAL SHRUB FROM THE MOUNTAINS OF PERU. (SEE S. P. I. NO. 41113.)

The clean, fresh foliage, the clusters of white flowers, and the globular fruits with the habit of growth unite to give this *Solanum* a remarkable resemblance to the orange tree. It is a shrub attaining a height of 6 to 8 feet, and because of its ornamental value should be tried in the mild-wintered portions of the United States, and perhaps also as a greenhouse shrub. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Ollantaytambo, Peru, May 18, 1915; natural size; P18110CA.)



A FIELD OF MOLASSES GRASS, MELINIS MINUTIFLORA BEAUV., S. P. I. No. 28768, FROM BRAZIL. (SEE S. P. I. No. 41148.)

A South African grass, commonly cultivated in Brazil, which has grown well in Florida and elsewhere in the Gulf States. It is said to be eaten greedily by cattle and horses, because of the sticky secretion on the blades, which is said to amount to as much as 3.22 per cent of the dry digestible matter. In the field it is of a purplish color, the sticky secretion sometimes being so evident as to look like frost on the leaves, leading observers to believe that the grass was frost resistant. (Photographed at the Gainesville, Fla., Experiment Station, by Peter Bisset, November 14, 1912; P10391FS.)

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)41123. *CANTUA BICOLOR* Lem. Polemoniaceæ.

"No. 1934. Ollantaytambo, Peru, July 25, 1915. Cuttings of a wild plant found about 1 league from Huarcocondo, along the road from Ollantaytambo. The flowers are somewhat smaller and lighter in color than those of the cultivated *Cantua buxifolia*."

Cuttings.

41124. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. Tangerine.

From Brazil. Presented by Rev. A. J. Holt, Kissimmee, Fla., who secured the seeds from Rev. R. E. Pettigrew, Paranagua, Brazil. Received September 10, 1915.

"Seeds of the Brazilian tangerine. Mr. Pettigrew tells me that these are from the finest tangerine that grows, that it is as large as a grapefruit and sells in New York at 25 cents each." (Holt.)

41125 to 41127. ORYZA SATIVA L. Poaceæ. Rice.

From Sao Paulo, Brazil. Presented by the Director de Agricultura e Industria Pastoral. Received August 13, 1915.

41125. No. 1. *Arroz agulha peludo* (hairy needle rice).41126. No. 2. *Catete dourado* (golden catete).41127. No. 3. *Arroz Valenciano* (Valencia rice; Bomba 10 Extra Florete).**41128. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.**

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Fruits received September 12, 1915.

See S. P. I. No. 25887 for previous introduction and description.

41129. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Naples, Italy. Presented by Mr. Jay White, American consul. Received September 8, 1915.

"Freestone peach seed of a variety known locally as *Mala Rosea* and grown in Sorrento, Italy, by Signor Casagrande. The fruit is considered one of the best varieties of table peaches grown in the vicinity of Naples." (White.)

41130 to 41132. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Foochow, China. Presented by Mr. Albert W. Pontius, American consul. Received September 7, 1915. Quoted notes by Mr. Pontius.

41130. "*Hung chiang* or 'red peach.' The season for ripening is from the early part of May to the middle of June."41131. "*Pai chiang* or 'white peach.' Ripening from June to the end of July."41132. "*Kuang ying* peach. Ripens from July to the middle of August. This is the smallest variety of the three."

41133. BELOU MARMELOS (L.) Lyons. Rutaceæ. Bael fruit.
(*Aegle marmelos* Correa.)

From Gujranwala, India. Presented by Rev. H. S. Nesbitt, manager, Boys' Industrial Home. Fruits received September 11, 1915.

"Five large specimens which are more rare here and four little scrub specimens which are the wild kind that grow in the jungles. They are sought for by camel owners, who ascribe some virtue to them and periodically feed them to their camels. They are so hard that they require to be broken under a hammer or a stone." (*Nesbitt.*)

41134. PIMENTA OFFICINALIS Lindley. Myrtaceæ. Allspice.

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Hope Gardens. Received September 9, 1915.

"A small tree with smooth, white bark, 25 to 30 feet high, native of the West Indies and Central America. The dried unripe berries, which are the size of small peas, are the allspice or pimento of commerce. The name 'allspice' is due to a supposed resemblance of the spice to a combination of the odour and flavor of cinnamon, nutmeg, and cloves. The tree was introduced into Ceylon over a century ago and established at Peradeniya, where it flowers in dry weather and occasionally sets a few fruits, but outside the Botanic Gardens it is rarely met with in this country. It is considered to yield best in a hot and rather dry climate, and prefers a loose loamy or alluvial well-drained soil. In Jamaica the berries are picked by hand while green but just ripe, and are then dried in the sun, the latter process taking six to ten days. The fruits are known to be sufficiently dry when the seeds rattle on shaking and are a dark colour. A crop can not be expected within six or seven years from the time of planting, and when in full bearing a tree will yield a hundred-weight of the dried spice. Jamaica is the only country that exports this spice, which is sold at present in England at about 2d. to 3d. per pound." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

41135 to 41141.

From San Jose, Costa Rica. Presented by Mr. J. E. Van der Laat, director, Department of Agriculture, through Mr. Carlos Wercklé. Received September 13, 1915. Quoted notes by Mr. Wercklé.

41135 to 41140. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.

"We have here a few exceptionally good varieties of the chayote, but, very strange, they are seldom found in the market; the variety called *chayota zapayo* (*zapayo* means squash), which is simply enormous, I have never seen elsewhere than in Tarras, a little village near Cartago. There is a form of the *cocora*, quite small, but very prolific, which has nothing of the fibrous felt around the seed (endocarp). The dark-green varieties produce more tubers than the light-colored ones; in the cold highlands (where the chayote does best) they take from a single plant as much as 100 pounds of roots every year. The plant grows and produces fruit also in the torrid lowlands, but it produces nearly no tubers. We have here some round fruits (nearly spherical)."

41135. Small white.

41138. Large white.

41136. Spiny white.

41139. Large dark green.

41137. Large light green.

41140. Large light green.

41135 to 41141—Continued. (Quoted note by Mr. C. Wercklé.)

41141. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ. **Tacaco.**

"The *tacaco* is not of a perishable nature, as the chayote; it has a hard skin when ripe and keeps in perfect condition for weeks; at last it shrivels and in this state it is planted. The fruits for planting are chosen from those which fall off the vine when dead ripe. They can not be planted in the soil; they do not sprout. The best way is to bury them in rotting leaves on the earth, with a layer of dead leaves on them."

Fruits.

41142. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

From Swatow, China. Presented by Mr. G. C. Hanson, American consul.

Received September 14, 1915.

"The two common strains of peaches in the vicinity of Swatow are locally called the cling and the free varieties. There is also a third variety of a hard and bitter nature, not edible except when preserved. This, the free strain, named so because the flesh does not adhere to the stone, ripens about the middle of July. It is a sweet peach and a better fruit than the cling variety. The seeds of this peach are used for medicinal purposes by the Chinese. The peaches grown here are greatly inferior to the American varieties. Peaches raised from the seeds are natural fruits, which are small and tasteless. The trees need to be budded before the edible peach can be produced." (*Hanson.*)

41143. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**

(*Pachyrhizus angulatus* Rich.)

From Calcutta, India. Presented by Mr. H. G. Carter, economic botanist, Botanical Survey of India Department, Indian Museum. Received September 7, 1915.

"*Sankalu.*"

See S. P. I. No. 38665 for previous introduction and description.

41144 to 41146. ORYZA SATIVA L. Poaceæ. **Rice.**

From Sao Paulo, Brazil. Presented by the Director de Agriculture e Industria Pastoral. Received September 13, 1915.

41144. No. 1. *Arroz Goyano* (rice from Guiana).

41145. No. 2. *Arroz Jaguary* (rice from Jaguary, Minas Geraes).

41146. No. 3. *Agulha* (needle), from the littoral (Iguape).

41147 and 41148.

From Macuco, Estado do Rio, Brazil. Presented by Mr. T. R. Day. Received September 13, 1915.

41147. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"*Mamão* (pronounced *mammong* very nearly, with accent on the second syllable) appears to be the same as the papaya of India, but the fruit here, like that of the Brazilian mango, is superior to the Indian varieties we have encountered, although it is not so much esteemed here as it is by the natives in India. These seeds are of an unusually good variety, and we think that if not already introduced or experimented with, it is well worth a trial in the United States in sheltered places where there is practically no winter. It will grow in any soil and fruits within twelve

41147 and 41148—Continued.

months, continuing in bearing for some four or five years. Among other uses it serves as a very good shade tree for young fruit plantations of tender varieties, as it is such an extraordinarily rapid grower and is very easily cut out when it has served its part." (*Day.*)

41148. *MELINIS MINUTIFLORA* Beauv. Poaceæ. **Molasses grass.**

"There are two grasses here that are worthy of special mention, the doubt as to adaptability being with regard to the winters in the Southern States, which I understand are in some places fairly severe. They are called *Capim gordura roxa* [molasses grass] and *Capim jaraguá*. *Capim gordura roxa* means literally 'greasy purple grass.' I have seen *Capim gordura roxa* live down the wild fern that is such a plague in some districts, and it forms (where not pastured) a dense carpet between 3 and 4 feet thick, upon which it was almost possible to walk. Riding or walking through it in the pasture under normal conditions, the proportion of wax and grease on the blades is sufficient to thoroughly clean and polish one's boots; this is no exaggeration, but is often remarked. It is not a watery grass, but unusually palatable to cattle and horses, and the blades secrete a wax or grease that, according to one analysis, totals as much as 3.22 per cent of the dry digestible matter. It is perceptible to the fingers, which it makes quite sticky. I have not met it in any other country, and I believe that it is indigenous to the central part of Brazil, not thriving right down in the south nor in the sandier coast States of the north. It is a fairly good drought resister and comes up fairly well again after a fire. There is a related variety called *Capim gordura blanco* (blanco means white), of a bright emerald-green color, but without the resistance of the *roxa*, and also not stooling so well. I have found both of the above grasses growing away from the sea level up to 2,000 meters on Caparao, the highest mountain of Brazil, and I have found it at 1,000 meters living down wild fern; both these altitudes are subject to frosts, and I have also ridden through it on the uplands of Minas Geraes coated with a dense white frost." (*Day.*)

For an illustration of a field of molasses grass, see Plate VI.

41149. *AMYGDALUS PERSICA* L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Chungking, China. Presented by the American consul. Received September 14, 1915.

"Seeds of two different strains of peaches which are commonly cultivated in this vicinity. These peaches are locally known under the names of *Hsiang t'ao*, or fragrant peach, and *Chieh t'ao*, or firm peach. The *Hsiang t'ao* is a large peach and its skin and meat are partly red. It becomes soft when ripe, and the seed is readily extracted. It has a very delicious flavor. The *Chieh t'ao* is slightly smaller in size than the *Hsiang t'ao* and when ripe its meat is still quite firm. This peach ripens in this climate during the latter part of June, while the *Hsiang t'ao* ripens about a fortnight earlier. This is also a very finely flavored peach, but, however, not quite so sweet as the other one. A point that I should like to call attention to is the comparative freedom of these peaches from imperfections, a fact which is noteworthy in view of an absence of pest-preventive measures." (*Myrl S. Myers.*)

The seeds of these two varieties were accidentally mixed; therefore only one number was assigned.

41150. RHEEDIA BRASILIENSIS (Mart.) Pl. and Tr. Clusiaceæ.**Pacuri.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received September 13, 1915.

See S. P. I. 37802 for previous introduction and description.

41151. PANAX QUINQUEFOLIUM L. Araliaceæ.**Ginseng.**

(*Aralia quinquefolia* Decne. and Planch.)

From Mukden, China. Presented by Mr. P. S. Heintzleman, American consul. Received September 16, 1915.

"Owing to unfavorable climatic and soil conditions in the district immediately surrounding Mukden, ginseng is not grown here; however, I have succeeded in securing a small quantity. This plant is harvested during October in the outlying district of Fengtien Province." (*Heintzleman.*)

41152. HORDEUM VULGARE COERULESCENS Seringe. Poaceæ.**Barley.**

From Amoy, China. Presented by Mr. L. Maynard, American consul. Received August 20, 1915.

"Barley grown in the Province of Amoy and locally known as the 'Black Rice variety.'" (*Maynard.*)

41153. HORDEUM DISTICHON NODUM L. Poaceæ.**Berley.**

From Lyallpur, Punjab, India. Presented by Mr. D. Milne, economic botanist, Department of Agriculture, through Mr. Wynne Sayer, assistant to the Agricultural Adviser to the Government of India, Pusa, India. Received July 22, 1915.

Subvar. *ianthinum*. Two-rowed, huskless, purple, naked variety.

41154. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Pretoria, Transvaal, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Cuttings received September 13, 1915.

"Uba sugar cane. From Winklespruit Experiment Farm, Natal." (*Evans.*)

41155 to 41162. HORDEUM spp. Poaceæ.**Barley.**

From Cawnpore, United Provinces, India. Presented by Mr. H. M. Leake, economic botanist. Received June 15, 1915. Quoted notes by Mr. Leake.

41155. HORDEUM DISTICHON NUDUM L.

"No. 128. Two-rowed huskless, from Bulandshahr."

41156. HORDEUM VULGARE COELESTE L.

"No. 27. Six-rowed huskless, from Dehra Dun."

41157. HORDEUM VULGARE HIMALAYENSE Rittig.

"No. 359. From Gorakhpur."

41158 to 41161. HORDEUM VULGARE L.

41158. "No. 25. Six-rowed, from Naini Tal."

41159. "No. 222. Six-rowed, from Bareilly."

41155 to 41162—Continued. (Quoted notes by Mr. H. M. Leake.)

41160. "No. 48. Six-rowed, from Kheri."

41161. "No. 59. Six-rowed, from Kheri."

41162. *HORDEUM VULGARE VIOLACEUM* Körn.

"Red barley. Six-rowed, from Cawnpore Farm."

41163. *SOLANUM TUBEROSUM* L. Solanaceæ. **Potato.**

From Buenos Aires, Argentina. Presented by Mr. W. D. Backhouse, through Mr. W. F. Wight, of the Bureau of Plant Industry. Tubers received September 6, 1915.

"From a few miles southeast of La Plata, in the Province of Buenos Aires, at a few meters' altitude above a lagoon, on land that had never been cultivated. The potatoes grew in small patches and the tubers were surprisingly good. Though this species flowers very profusely, it apparently does not seed. I had a patch isolated and inclosed some hundred plants, and not one seed was obtained. The tubers are by no means plentiful, either. The whole patch only gave about a kilo, and the biggest was about 2 inches in diameter." (*Backhouse.*)

41164. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ. **Tsama melon.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received September 20, 1915.

"I have been able to get in touch with a gentleman living in the Kalahari Desert who is able to secure the true *Tsama* melon, which grows about 250 miles farther west than his place. I do not know whether you are aware that it is extremely difficult to get the true article from the Kalahari, owing to the fact that the natives have an intense dislike to letting the seed leave the country and are up to all kinds of tricks to prevent it. Much of the so-called *Tsama* that appears in South Africa is the common *Kafir* melon or *Manketaan*, which appears to be far less drought resistant and not nearly so serviceable for desert regions." (*Davy.*)

This is the remarkable forage melon of the Kalahari, which furnished much of the feed for the huge herds of wild animals formerly pasturing there.

41165. *LILIUM PHILIPPINENSE* Baker. Liliaceæ. **Benguet lily.**

From Manila, Philippine Islands. Presented by the director, Department of Agriculture. Bulbs received September 24, 1915.

41166. (Undetermined.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received September 30, 1915.

41167. *CACARA EROSA* (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received September 28, 1915.

'*Bangkoewang*. This variety is the only one cultivated by the natives here.' (*The Director.*)

See S. P. I. Nos. 38665 and 41143 for previous introductions and description.

41168 to 41243.

From Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received September 16, 1915. Quoted notes by Mr. Cook.

41168 to 41176. *OXALIS TUBEROSA* Molina. Oxalidaceæ. 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. In some districts ocas are second only to potatoes, while in others ullucus are more important, or at least are sold more generally in the native markets. Ocas are eaten raw as well as cooked, and are also frozen and dried. Ocas prepared in this way are called *caya*, a term corresponding to *chuño* (*chunyo*), the name of the dried potatoes. 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 as sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. Some are preferred for eating raw and others for the making of *caya*. The texture of the tubers is 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. The range of colors is much the same as in the *ullucu*, but no deep-yellow varieties were seen, nor any with spots, except that some have bands of deeper color across the eyes. 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, ocas might become very popular for salads and pickles, if not for other purposes. The nature and habits of the plant indicate that it may be adapted to acid soils, which would be a distinct advantage in some parts of the United States."

Tubers.

41168. "No. 2021. Ollantaytambo, Peru, June 16, 1915. *Zapallo* oca. Pale yellow color of squash, with deep red bands across eyes; large specimens 8.5 cm. by 4 cm."
41169. "No. 1223. Ollantaytambo, Peru, June 16, 1915. *Higos* oca."
41170. "No. 2033. Sicuani (Ushcopata), Peru, April 9, 1915. Ten tubers in one hill."
41171. "No. 2026. Sicuani, Peru, April 4, 1915. *Hancolema*. White variety, scarcely pinkish at the ends. More slender than the *papa* oca."
41172. "No. 2030. Sicuani, Peru, April 9, 1915. *Cachu* oca. Smaller and more slender than the others (*papa* oca, No. 2025, and *hancolema*, No. 2026), and eyes not so close set. Pinkish all over, but much lighter than the preceding. Considered better for eating raw."
41173. "No. 2032. Sicuani (Ushcopata), Peru, April 9, 1915. *Yuracj* oca. At Ushcopata, a few miles above Sisuani, two more kinds of ocas were found, a reddish variety, smaller than *papa* oca, called *pocalluchu*, and a white variety, with very broad fasciated stems, called *yuracj* oca."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41174. "No. 2034. La Paz, Bolivia, August 4, 1915. A white variety, pinkish at the eyes and at the tips. Strongly thickened at the end, like the red variety, but the eyes closer together."

41175. "No. 2035. La Paz, Bolivia, August 4, 1915. A uniform pink variety, in form nearly cylindrical."

41176. "No. 2036. La Paz, Bolivia, August 4, 1915. A deep red variety, strongly thickened at the end. Eyes rather remote."

For illustrations of oca plants showing rootstocks, see Plates VII and VIII.

41177 to 41184. ULLUCUS TUBEROSUS Caldas. Basellaceæ. Ullucu.

"The *ullucu* or *papa lisa* is a root crop raised generally in the highlands of Peru and Bolivia, in the region where potatoes are grown. The tubers have a remarkably close resemblance to potatoes, except that the skins are smoother and the colors brighter, running from white through various intermediate shades to deep yellows and reds. There are also spotted varieties, white and pink or light yellow and pink. Judging from its representative in the native markets, the *papa lisa* ranks next to the potato in popular favor in Peru, being used largely in the making of soups, which is the principal branch of the culinary art among the Indians. The flavor of the *papa lisa* is peculiar and usually not attractive to the unaccustomed palate. But being one of the plants that accompany the potato in Peru, it may not be without interest to observe its behavior in the United States. The tubers are produced in abundance, and if the plant should be found to grow readily the possibilities of utilization should be carefully studied. The plant is a relative of the so-called Madeira vine, familiar in cultivation as an ornamental climber. A wild *ullucu*, common in the region of Sicuani, is very similar to the Madeira vine, but the plants of the cultivated varieties do not attain a length of more than 2 or 3 feet. The general appearance and habit of growth are also somewhat like those of the sweet potato."

41177. "No. 2027. Sicuani, Peru, April 9, 1915. *Papa lisa*. Yellow, spotted with pink."

41178. "No. 2028. Ushcopata, a few miles above Sicuani, Peru, April 9, 1915. *Papa lisa*. Yellow, size very variable, sprouts light pink."

41179. "No. 2038. Cuzco, Peru, April 18, 1915. *Papa lisa*. Small round yellow or yellowish pink variety."

41180. "No. 2039. Cuzco, Peru, April 18, 1915. *Papa lisa*. Long, pinkish purple, enlarged at the base. Sprouting mostly at the tip. Sprouts dark pink, thick."

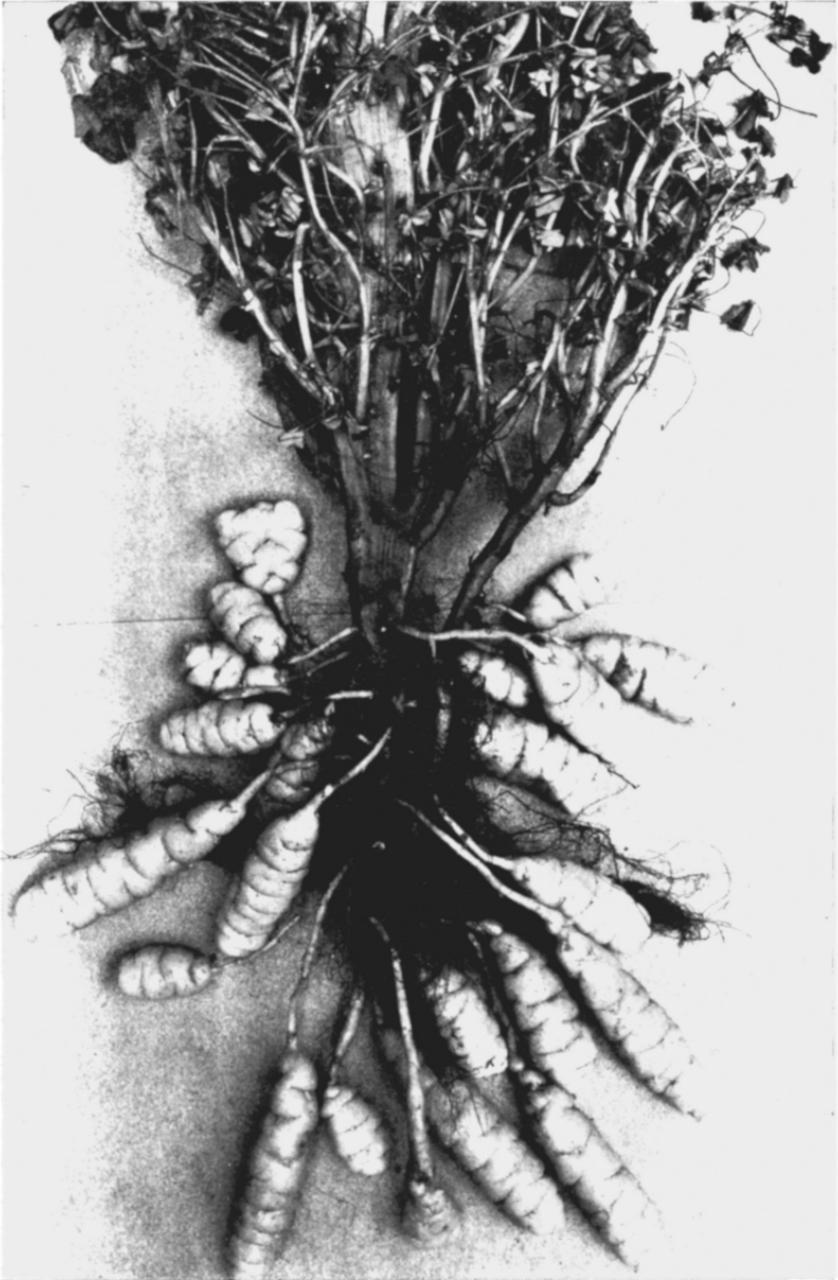
41181. "No. 2040. Cuzco, Peru, April 18, 1915. *Papa lisa*. White variety, elongated form. Sprouting from upper end."

41182. "No. 2041. Cuzco, Peru, April 18, 1915. *Papa lisa*. White variety, with pink blotches, rounded form. Uniform in shape. Well sprouted, slightly withered."

41183. "No. 2043. Lima, Peru, August 17, 1915. Color, pale greenish yellow; the largest variety of *ullucu* seen in Peru."

41184. "No. 2044. Lima, Peru, August 17, 1915. Color, deep pinkish yellow. Tubers large and broad."

For an illustration of the *ullucu*, see Plate IX.



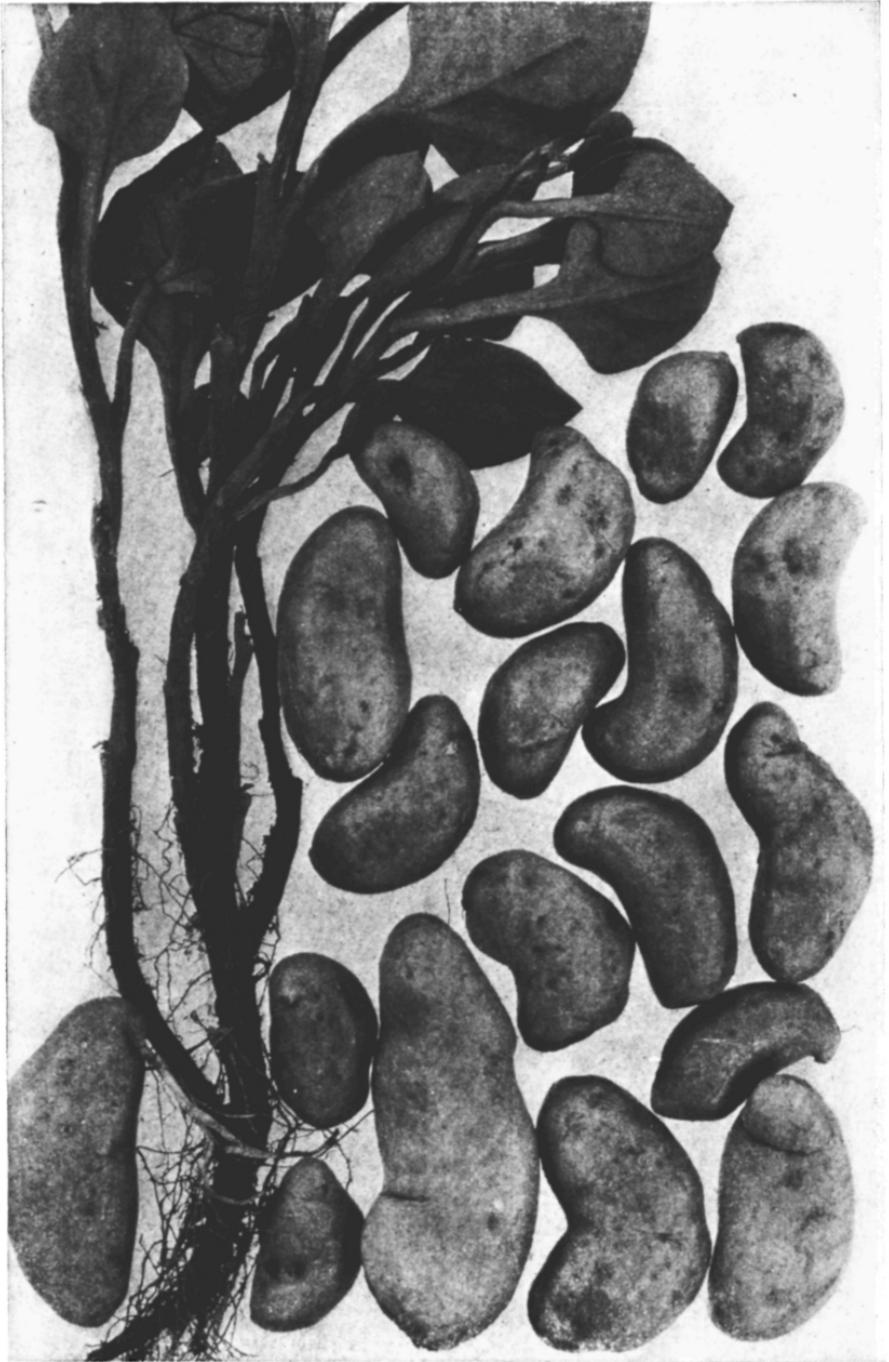
PLANT OF THE OCA, *OXALIS TUBEROSA* MOLINA, FROM THE MOUNTAINS OF PERU AND BOLIVIA, SHOWING THE ROOTSTOCKS AND THE TYPICAL OXALIS FOLIAGE. (SEE S. P. I. NOS. 41168 TO 41176.)

This plant, which has the general appearance of a large sheep sorrel, attains a height of a foot or more and bears 20 or more thickened rootstocks, which are largely used for food, being second only in importance to potatoes in some districts of Peru and Bolivia. The plant may be suitable for acid soils, as certain related species are, and the tubers may have value for salads or pickles, if not for general use as a vegetable. The rootstocks sometimes attain a length of 3 inches, with a diameter of $1\frac{1}{2}$ inches, and vary greatly in form and color, but are generally attractive in appearance. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Sicuani, Peru, April 10, 1915; about one-fourth natural size; P17751CA.)



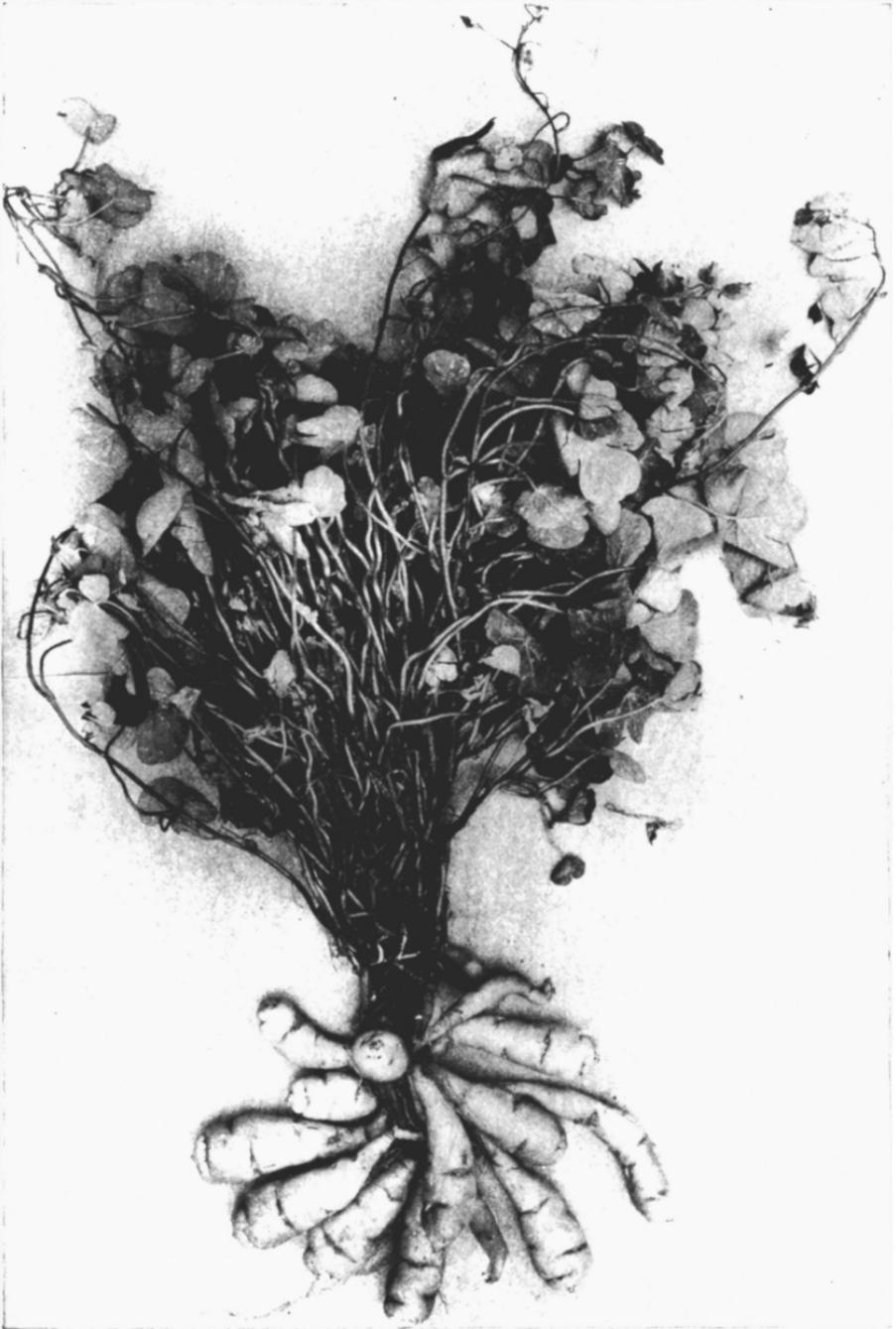
ROOTSTOCKS OF THE OCA, *OXALIS TUBEROSA* MOLINA, A VEGETABLE FROM THE ANDES OF PERU AND BOLIVIA. (SEE S. P. I. Nos. 41168 TO 41176.)

Ocas are eaten raw as well as cooked and also when frozen and dried. The tubers are tender and crisp, but juicy, and when first dug have a distinctly acid taste, which is lost on exposure to the sun. The color varies from white to light pink and through darker pinks and yellows to deep purplish red. The surface of the tubers is smooth, so that in general appearance they are very attractive. In form, some tubers are nearly cylindrical, while others are slender at the base, becoming strongly thickened at the apex. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Santa Rosa, Peru, April 12, 1915; natural size; P17783CA.)



THE ULLUCU, ULLUCUS TUBEROSUS CALDAS, ONE OF THE MOUNTAIN ROOT CROPS OF PERU AND BOLIVIA. (SEE S. P. I. NOS. 41177 TO 41184.)

In Peru the ullucu, or papalisa, ranks next in popularity to the potato, being used largely in making soups. The tubers resemble the potato very closely, except that the skins are smoother and the colors brighter, running from white through various intermediate shades to deep yellows and reds. There are also varieties spotted white and pink or light yellow and pink. The flavor is peculiar and may not be attractive to American palates, but as the tubers are produced in abundance, the possibilities of utilization should be carefully studied. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Santa Rosa, Peru, April 12, 1915; natural size; P17784CA.)



PLANT OF THE ANYU, *TROPAEOLUM TUBEROSUM* RUIZ AND PAVON, A PERUVIAN MOUNTAIN ROOT CROP. (SEE S. P. I. NOS. 41185 AND 41186.)

This rather close relative of the ordinary nasturtium of our gardens is cultivated in the plateau region of Peru for its tubers, which are eaten like potatoes, ocas (*Oxalis tuberosa* Molina), and ullucus (*Ullucus tuberosus* Calder), but chiefly in the form of soups. The tubers are unusually good keepers, some having reached Washington in good condition in mid-September which were collected in early April. They are of at least two forms, one with short coarse purple stripes mostly near the very deep eyes, and the other with larger stripes of a lighter color. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Sicuani, Peru, April 10, 1915; about one-fourth natural size; P17749CA.)

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41185 and 41186. *TROPAEOLUM TUBEROSUM* Ruiz and Pavon. Tropæola-
ceæ. Anyu.

* "One of the Andean root crops, generally cultivated in the potato-growing districts of the plateau region of Peru. Though apparently less popular than the *oca* and *ullucu*, the *anyu* has one important advantage over all the Peruvian root crops, including the potato, in its keeping qualities. Specimens collected in the district of Sicuani on April 9 were kept for three months at Ollantaytambo and then brought to Washington, and were still in good condition the middle of September. This means that the *anyu* tubers would be very easy to handle commercially in case they should prove to be of use in the United States. In Peru they are eaten like potatoes, *papa lisas*, and *ocas*, chiefly in the form of soups. The *anyu* plant is a rather close relative of another Peruvian species, *Tropaeolum majus*, a familiar ornamental cultivated in the United States under the name nasturtium. Hybrids between these two species might be of interest as affording a possibility of securing ornamental varieties that could be propagated from tubers. The flowers of *T. tuberosum* are not so large as those of *T. majus* and do not open so widely, but in other respects the general appearance is much the same. Experimental plantings of *anyu* should be made in the elevated districts in the Southwestern States and along the Pacific coast. In comparison with potatoes there appear to be very few varieties of the *anyu*."

41185. "No. 2024. Ollantaytambo, Peru, June 15, 1915. *Cheojche añu*. Spotted *anyu*. Strikingly marked with purple stripes, especially about the eyes. Two forms are found, one with short, coarse stripes, mostly confined to the vicinity of the eyes, which are very deep, with the surface very prominent between the eyes, making the outline very irregular. The other form has larger stripes of a somewhat lighter color. These are called *Pucacheojche*; the other *Yanacheojche*, or black striped.

41186. "No. 2031. Ushcopata, Sicuani, Peru, April 9, 1915. *Qquello* or yellow *anyu*. From Ushcopata, a few miles above Sicuani."

For an illustration of an anyu plant, see Plate X.

41187. *CANNA EDULIS* Ker-Gawler. Cannaceæ. Canna.

"No. 1674. Santa Ana, Peru, July 6, 1915. *Achria*. *Canna* cultivated at Santa Ana, entirely different from that below San Miguel. Tubers are superficial and green, flowers scarlet and of different form. Midribs of leaves dissolve into fine veins some distance below the apex. Plant looks like ordinary canna, familiar in the United States. Roots white where not green. Inflorescence joints come apart. Flowers not in good condition."

41188. *POLYMNIA SONCHIFOLIA* Poepp. and Endl. Asteraceæ.

"No. 2022. Ollantaytambo, Peru, July 24, 1915. *Llacono*. A root crop grown sparingly about Ollantaytambo at altitudes of about 10,000 feet. The tubers resemble sweet potatoes externally, but are white and watery within and taste much like Jerusalem artichokes."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41189 to 41192. (Undetermined.)

41189. "No. 624. Ollantaytambo, Peru, June 8, 1915. From a small liliaceous plant on a reforested terrace, 1 league, above Ollantaytambo. The tubers are like small yams or calathea tubers. To be raised for identification."

Tubers.

41190. "No. 1069. Colpani, Peru, June 1, 1915. *Pulla-pulla*. A liliaceous plant, to be raised for identification."

Bulbs.

41191. "No. 225. Tinta, Peru, April 16, 1915. Cactus, *Ayrampo*. Planted on walls."

Cuttings.

41192. "No. 1923. Ollantaytambo, Peru, July 20, 1915. Cactus." Cuttings.

41193. *FURCRAEA* sp. Amaryllidaceæ.

"No. 1917. Ollantaytambo, Peru, July 20, 1915. *Chuchao*. A native fiber plant very abundant in the dry districts about Ollantaytambo and ascending to an altitude of over 10,000 feet. Propagates by bulblets which are produced on the inflorescence, with or without flowers. May have possibilities as a hardy type very easy to propagate."

41194. *ULLUCUS TUBEROSUS* Caldas. Basellaceæ.

Ullucu.

"No. 2023. La Paz, Bolivia, August 4, 1915. *Papa lisa*."

Tubers.

41195. *TROPAEOLUM TUBEROSUM* Ruiz and Pavon. Tropaeolaceæ. Anyu.

"No. 2029. Ushcopata, Sicuani, Peru, April 9, 1915. *Pucañu*. From Ushcopata, a few miles above Sicuani. Marked with purplish across the eyes. See No. 2024 [S. P. I. 41185]."

Tubers.

41196. *ULLUCUS TUBEROSUS* Caldas. Basellaceæ.

Ullucu.

"No. 2037. Santa Ana, Peru, July 6, 1915. *Papa lisa*. Raised at Vilcabamba, Peru. Round, deep-yellow variety, variable in size."

Tubers.

41197 to 41243. *SOLANUM TUBEROSUM* L. Solanaceæ.

Potato.

"Peru is the home of the potato, which is the principal crop throughout the region of the high table-lands and along the eastern and western slopes of the Cordilleras. On the western slopes, which are exposed to the cold, the cultivation of potatoes is carried down to the shores of the Pacific, but on the eastern slope seldom extends below 8,000 feet, corn becoming the dominant crop below 10,000 feet. The number of potato varieties is very large, and a very great diversity of forms is shown, far beyond anything with which we are familiar in the United States. Unlike the varieties of corn, most of which are named only by color, the potato varieties have special names, though strains of different colors are recognized in many of the varieties. No attempt was made to secure a complete collection of varieties, but a series of photographs was made in order to show the general range of forms. The specimens were brought back with a view to supplementing the collection of South American varieties made by Mr. W. F. Wight in 1913."

Tubers.

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41197. "No. 1974. Ollantaytambo, Peru, June 16, 1915. *Pucaquehuillo chaucha*. Long, slender, curled like sweet potatoes, deep-red color. *Chaucha* means early. Considered earliest variety; matures in six months. Season slow because of cold. May do well in northern regions."
41198. "No. 1975. Ollantaytambo, Peru, June 16, 1915. *Alccatarma*. Pink and white, looks like *huayruru* [S. P. I. No. 41208]; in Cuzco and Sicuani. Has the same depressed form."
41199. "No. 1976. Ollantaytambo, Peru, June 16, 1915. *Pucacompis*. Pink all over; very deep eyes."
41200. "No. 1977. Ollantaytambo, Peru, June 16, 1915. *Paltasunchus*. Flat like *Alccatarma* [S. P. I. No. 41198], with shallow eyes. Color white."
41201. "No. 1978. Ollantaytambo, Peru, June 16, 1915. *Yanapiban*. *Pucacompis* [S. P. I. No. 41199] form, but deep dull purple or lead color."
41202. "No. 1979. Ollantaytambo, Peru, June 16, 1915. *Alccacompis*. Small, round, rather deep eyes, color white and pink. Name *alcca* means spotted or of two colors."
41203. "No. 1980. Ollantaytambo, Peru, June 16, 1915. *Ccohuisuluchi*. Small, flat, crooked, white and purple; apparently same as variety from Cuzco called *Pucasuituche*."
41204. "No. 1981. Ollantaytambo, Peru, June 16, 1915. *Yanaberundus*. Long, oval or tapering, deep purple color, *yana* meaning black."
41205. "No. 1982. Ollantaytambo, Peru, June 16, 1915. *Chorillo*. Long form, white, deeply notched across eyes."
41206. "No. 1983. Ollantaytambo, Peru, June 16, 1915. *Muruchunqui*. Large, flat, slightly purplish, but dull, with deep purple or blackish spots."
41207. "No. 1985. Ollantaytambo, Peru, June 16, 1915. *Yanacusi*. Flat, crooked, deep purplish with notch below the eyes."
41208. "No. 1986. Cuzco, Peru, July 23, 1915. *Huayruru*. White and red spotted. Form flattened. Grown around Cuzco."
41209. "No. 1987. Cuzco, Peru, July 23, 1915. A deep purple long variety."
41210. "No. 1988. Cuzco, Peru, April 6, 1915. *Petiquiña*. Dark purple, cylindrical with many deep eyes."
41211. "No. 1989. Cuzco, Peru, April 6, 1915. *Llaturuntu*."
41212. "No. 1990. Cuzco, Peru, April 6, 1915. *Soccohuaccoto*. Color light bluish."
41213. "No. 1991. Cuzco, Peru, April 6, 1915. *Ellusunchu*. In form like *Pucacompis* [S. P. I. No. 41199] and with the same deep eyes except that they are smaller and their color lighter."
41214. "No. 1992. Cuzco, Peru, April 6, 1915. *Yanacusi*. Outside dull grayish or clay color. Inside deep purplish under the skin, then white with bluish lines in the flesh."
41215. "No. 1993. Cuzco, Peru, July 29, 1915. *Pichireto*. Long oval, small eyes, grows large, surface mottled purplish, pink and white. Interior white, sprout red."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41216. "No. 1994. Cuzco, Peru, July 29, 1915. *Pucapetiquiña*. A well-known form, flesh yellow, purple-red under skin; one tuber with a purple-red core. Uniform reddish color outside."
41217. "No. 1995. Cuzco, Peru, July 29, 1915. *Pucacañari*. Extreme form of *Petiquiña* group with large prominence under each eye. Color red like *Pucapetiquiñas*."
41218. "No. 1996. Cuzco, Peru, July 29, 1915. *Chilquehuarmi*. Similar form to *Cheqqepuru*, but eyes more shallow and short like transverse slits. Uniform."
41219. "No. 1997. Cuzco, Peru, July 29, 1915. *Cheqqepuru* or *Murupetiquiñas*. Short deep eyes, white and dark-purple in large patches, to which the name *Murupetiquiñas* has reference. Flesh yellow, with a few scattered purplish spots along the boundary lines."
41220. "No. 1998. Cuzco, Peru, April 6, 1915. *Lomo*. A rather promising form, long, like the variety from below Panticalla Pass, but tinged with pinkish red instead of with purple. Eyes shallow, outside color yellow and pink spotted. White within. Size small; form long, cylindrical, or tapering at one or both ends. Surface smooth. Considered the best variety of the lot. Raised in quantities around Cuzco."
41221. "No. 1999. Cuzco, Peru, April 6, 1915. *Pucaberundus* or *Lequechu*."
41222. "No. 2000. Cuzco, Peru, April 6, 1915. *Salé*. Some with terminal buds, some still dormant. Small, round, reddish, with deep eyes, like small-sized *Pucacompis* [S. P. I. No. 41199]."
41223. "No. 2001. Cuzco, Peru, April 6, 1915. A common variety, rounded or somewhat square, with very deep eyes."
41224. "No. 2002. Cuzco, Peru, April 6, 1915. *Aspasuncho*."
41225. "No. 2003. Cuzco, Peru, April 4, 1915. *Suayllu*. Color reddish ('carmisa') outside and in. Shape long, size large, quality good. A few around Cuzco, but more productive and larger at higher altitudes."
41226. "No. 2004. Cuzco, Peru, April 18, 1915. *Suituche* or *Ccohuisullo* or *Pucasuituche* or *Pucaccohuisullo*. Small, long, dull purple, but yellowish around eyes, deep purple, irregular. Seems to be a rare variety, not familiar to most of those asked about it."
41227. "No. 2005. Cuzco, Peru, April 6, 1915. *Pucasuayllu*. Flesh creamy yellow, tinged with purple next the skin."
41228. "No. 2006. Cuzco, Peru, April 6, 1915. *Poccoya* or *Phoccoya*. Red, with deep eyes."
41229. "No. 2007. Cuzco, Peru, April 4, 1915. *Caylluhucoto*, previously called *Cailuhucot*. Yellow outside, white within; large, round; planted about Cuzco, Chincheros, etc."
41230. "No. 2008. Arraranca, Peru, April 12, 1915. *Ccanchalli*. White, strongly mottled with purple. Grown at the highest altitude, 14,000 feet. Curious in having most of the eyes on one side, the other side flat."
41231. "No. 2009. Tinta, Peru, April 16, 1915. *Leqquerunto*. Very smooth skin."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41232. "No. 2010. Tinta, Peru, April 16, 1915. *Yuracjpetiquiña*."
41233. "No. 2011. Arraranca, Peru, April 13, 1915. *Tutu*. Grown at the highest altitude of potato culture, about 14,000 feet. Plant No. 179. Has very strong purple rootstocks, the tubers also purple, eyes very large and prominent, subtended by a broad scale with a spine in the middle, like the *oca* and *anyu*. Foliage coarse. Said to be used only for making chufios."
41234. "No. 2012. Pinasniocj, Peru, July 16, 1915. *Cusi* or *Pucacusi*. Dark russet brown outside, purplish flesh, eyes deep. Considered a very fine variety. Altitude, 12,000 feet."
41235. "No. 2013. Pinasniocj, Peru, July 16, 1915. *Qquellopuiban*. Appearance like *Chilquehuarmi* [S. P. I. 41218]. Buds somewhat longer and with smaller eyes. Yellowish inside, whence the name. Altitude, 12,000 feet."
41236. "No. 2014. Pinasniocj, Peru, July 16, 1915. *Pucatarma*. Flat, oval, pink, shallow eyes; popular in market of Cuzco, on account of small eyes and smooth surface. Altitude, 12,000 feet."
41237. "No. 2015. Pinasniocj, Peru, July 16, 1915. *Muruchocjllus* or *Chocjllus*. Like *Petiquiña*, deep broad eyes, deep dull purple, spotted with white. Another smaller variety is called *Muruchancha*. Larger specimen than found later at Cuzco. Altitude, 12,000 feet."
41238. "No. 2016. Pinasniocj, Peru, July 16, 1915. *Yanamalan*. Flat, oval, silvery gray, eyes broad with long excurrent ridges. Altitude, 12,000 feet."
41239. "No. 2017. Pinasniocj, Peru, July 16, 1915. *Charcahuaylla*. Large, long pointed, mottled with light grayish and dull bluish purple. Quality not considered especially fine. Form convenient for handling. Altitude, 12,000 feet."
41240. "No. 2018. Machu Picchu, Peru, May 28, 1915. Cultivated to a slight extent above Machu Picchu and on the slopes above San Miguel at an altitude of 6,500 feet. Tubers very small, rounded. Of interest as representing the lowest altitude of potato cultivation."
41241. "No. 2019. La Paz, Bolivia, August 5, 1915. Long, slender, flattened, and curled, like *Pucagquehuillo chaucha* [S. P. I. 41197] from Ollantaytambo. Skin light pinkish. Eyes few and shallow. Terminal eye sprouted only."
41242. "No. 2020. Lima, Peru, August 16, 1915. Size variable, light grayish. Skin smooth. Eyes very deep, almost invisible. Space between eyes greatly swollen or puffed out. Terminal eyes shallow, sprouted. Flesh firm; considered a superior variety."
41243. "No. 2042. Machu Picchu, Peru, May 28, 1915. Cultivated to a slight extent above Machu Picchu and on the slopes above San Miguel at an altitude of 6,500 feet. Tubers long slender form, purple. Of interest as representing the lowest altitude of potato cultivation."

41244 and 41245. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

From Pungo Andongo, Angola. Presented by Rev. John C. Wengatz, Rome, N. Y. Received September 25, 1915.

Two varieties of native sorghums.

41244. "White *Masambala* or Kafir corn."

41245. "White *Masambala* or Kafir corn."

41246 to 41251. *HORDEUM* spp. Poaceæ. Barley.

From Petrograd, Russia. Presented by Mr. Robert Regel, chief, Bureau of Applied Botany. Received June 21, 1915.

41246. *HORDEUM DISTICHON NUTANS* Schubl.

41247. *HORDEUM VULGARE PALLIDUM* Seringe.

41248 to 41251. *HORDEUM DISTICHON NUTANS* Schubl.

41252 and 41253. *AMYGDALUS* spp. Amygdalaceæ. Peach,

From Catania, Italy. Presented by Mr. Joseph Emerson Haven, American consul. Received September 22, 1915. Quoted notes by Mr. Haven.

"Seeds are planted in the month of January and the fruits may be expected in three years in the months of July and August. The production in the Messina section of this district is fairly large, as also in the Palermo consular district, but very few peaches are grown in the immediate neighborhood of Catania."

41252. *AMYGDALUS PERSICA* L.
(*Prunus persica* Stokes.)

"The rough skinned is the ordinary peach of commerce, a clingstone and never very sweet. It is generally disappointing."

41253. *AMYGDALUS PERSICA NECTARINA* Ait. Nectarine.

"The smooth-skinned peach is found in considerable quantities. It is termed *Sbergia* in the Sicilian language, has an appearance of a golden plum shot with crimson lines, and bears a close relation to the nectarine. In size it is about the same as the crab apple and is a delicious fruit when properly ripe."

41254 and 41255.

From Para, Brazil. Presented by Mr. George H. Pickerell, American consul. Received September 9, 1915.

41254. *ORBIGNYA SPECIOSA* (Mart.) Barb. Rodr. Phœnicaceæ.
(*Attalea speciosa* Mart.) **Uauassu.**

"*Babassu* or *Uauassu*."

41255. *VIOLA SURINAMENSIS* (Rol.) Warb. Myristicaceæ.

"*Ucuúba*, gathered at Tuyue on the Purus River."

"In spite of being represented by a much smaller number of species, the Myristicaceæ are more important as timbers than the Annonaceæ, especially the two commonest species of the Amazon, *ucuúba branca* (*Viola surinamensis* Warb.) and *ucuúba vermelha* (*Viola sebifera* Aubl.). The first, especially, is one of the most useful trees of the Amazon region, not only for its easily worked wood, moderately hard, but also for its seeds, which furnish a kind of vegetable wax rich in stearin. While the *ucuúba*

41254 and 41255—Continued.

branca is found principally in the varzeas [probably meaning low, swampy valleys] it is not excluded from the terra firma [meaning dry ground]; the *ucuúba vermelha*, which is distinguished by its larger leaves and smaller fruits, is a tree of the dry land and is found principally in the forests. Both these species have, especially when young, a characteristic manner of growth, with slender whorled branches furnished with regularly distichous leaves. The regularity of its branching reminds one of the European conifers. Without doubt other Amazonian species of *Virola* and probably also some species of *Iryanthera* furnish wood which could be utilized, but I have no positive knowledge in regard to this." (*J. Huber, Mattas e Madeiras Amazonicas, Boletim de Museu Goeldi, vol. 6, p. 173, 1910.*)

41256 to 41269.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received September 27, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

41256. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

(*Myrica nagi* Thunb.)

"(No. 2306a. Hangchow, Chekiang, China, June 29, 1915.) A large-fruited variety of the so-called strawberry tree, or *nagi*. The fruits are the size of crab apples, of dark purple color, and of very attractive looks. They can be used in a multitude of ways, like out of hand, boiled in compotes, in pies, for sirup, and for wine. In general there exists a great variation among the trees as regards general habits, productivity, etc.; the fruits themselves vary also greatly in color, size, and taste. The best varieties are propagated by inarching; the trees are evergreen; they thrive best on well-drained, rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California. Chinese name *Yang mei*."

41257. PRUNUS SALICINA Lindley. Amygdalaceæ.**Plum.**

"(No. 2307a. Hangchow, Chekiang, China, June 29, 1915.) A medium-sized plum, clingstone, of reddish color, meat juicy and sweet in the center, but somewhat astringent near the skin and decidedly sour near the stone. The trees grow dense and low and are able to grow on water-logged land; that is, they thrive with the surface water only a few inches away at times. Of value for breeding purposes, especially in the Gulf Coast States."

41258. AMYGDALUS PERSICA L. Amygdalaceæ.**Peach.**

(*Prunus persica* Stokes.)

"(No. 2308a. Chekiang Province, China, July, 1915.) Stones of various types of peaches, collected in Chekiang. To be sown in the South for experimental purposes."

41259. CHIONANTHUS RETUSA Lindley. Oleaceæ.

"(No. 2309a. Panshan, near Hangchow, Chekiang, China, June 29, 1915.) The Chinese fringe tree, generally seen as a shrub, but occasionally found as a tree, a most beautiful and striking object when covered with its multitude of small, finely dissected white flowers, which are delightfully fragrant. Bears in early fall masses of blue-black berries. This plant naturally loves rocky mountain slopes and contrasts well with

41256 to 41269—Continued. (Quoted notes by Mr. F. N. Meyer.)

boulders and stones. It is used by Chinese gardeners in Shantung as a grafting stock for the tea olive, *Olea fragrans*, no doubt to keep the latter dwarf, and it withstands drought much better than when on its own roots. Much recommended as an ornamental garden and park shrub, especially for those sections of the United States where the winters are not too severe. Local Chinese name *Swe tsin tiao*."

41260. *PREMNA MICROPHYLLA* Turcz. Verbenaceæ.

"(No. 2310a. Mokanshan, Chekiang, China, August 6, 1915.) A deciduous shrub, from 3 to 10 feet in height, having glossy green leaves, resembling those of the lilac; flowers in panicles apparently white; berries black. Thrives in semishady places. Of value, possibly, as a hedge shrub for mild-wintered climates."

41261. *AGYNEJA IMPUBES* L. Euphorbiaceæ.

(*Glochidion sinicum* Hook. and Arn.)

"(No. 2311a. Mokanshan, Chekiang, China, August 6, 1915.) A shrub or small tree, growing from 2 to 20 feet in height, found on stony places mostly. Produces annual branches which resemble pinnated leaves on which flowers and fruits are being borne. Of value as a garden and park shrub in mild-wintered places."

41262. *SYMPLOCOS STELLARIS* Brand. Symplocaceæ.

"(No. 2312a. Mokanshan, Chekiang, China, August 3, 1915.) An evergreen shrub, with dense leathery foliage, like a rhododendron. Bears elongated, fleshy berries of blue color all along its wood, making a curious impression. Found in shaded spots on mountain slopes. Of value as a cover shrub in parks and gardens for the southern United States."

41263. *EUSCAPHIS JAPONICA* (Thunb.) Dippel. Staphyleaceæ.

(*Euscaphis staphyleoides* S. and Z.)

"(No. 2313a. Near Hangchow, Chekiang, China, June 26, 1915.) A shrub with deciduous pinnate leaves, bearing apparently white flowers, followed by capsules which turn from green to a brilliant red when ripening. Found on stony and waste places. Of use as a park shrub for mild-wintered regions."

"A deciduous bush up to 12 feet high, with stout, pithy branchlets and prominent buds; twigs smooth. Leaves 6 to 10 inches long, opposite, consisting usually of seven to nine leaflets. Leaflets opposite, ovate, 2½ to 4 inches long, long pointed, shallowly toothed, smooth except for a little down near the base of the midrib. Panicle terminal, branching, 4 to 9 inches long, carrying numerous yellowish white flowers, each about one-fourth inch across. Fruit consisting of three somewhat boat-shaped, spreading, rosy pink pods, one-half inch long, seeds black. Native of China, Korea, and Japan. As the specific name implies, this shrub is not only closely related to the bladder nuts (*Staphylea*), it also bears much resemblance to them. It differs in the larger number of leaflets, in the smaller individual flowers, and in the smaller, differently shaped fruit. Unfortunately, it is not very hardy and can only be grown outside permanently in the mildest localities." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 546.*)

41264. (Undetermined.)

"(No. 2314a. Purple Mountain, near Nanking, China, June 3, 1915.) A blueberry, of small growth, found on dry, rocky places at altitudes of about 1,000 feet above the sea. Bears edible berries."

41256 to 41269—Continued. (Quoted notes by Mr. F. N. Meyer.)**41265.** RUBUS sp. Rosaceæ. Raspberry.

“(No. 2315a. Near Lungtun, Kiangsu Province, China, June 6, 1915.) A low-growing species of raspberry bramble, bearing large, beautiful-looking fruits, which are quite juicy, though lacking in any pronounced flavor. Occurs on grassy embankments and on mountain slopes. Of use probably in hybridization experiments.”

41266. MEDICAGO HISPIDA DENTICULATA (Willd.) Urban. Fabaceæ. Bur clover.

“(No. 2316a. Nanking, Kiangsu Province, China, June 2, 1915.) A low-growing somewhat hirsute form of a common bur clover, found among grasses on waste lands and along roadsides. Of value possibly as a winter-forage plant in Pacific coast localities.”

41267 and 41268. VICIA spp. Fabaceæ. Vetch.

41267. “(No. 2317a. Nanking, Kiangsu, China, June 2, 1915.) Low-growing vetch, found among short grasses on gravel lands. Of value possibly as a winter-forage plant in Pacific coast localities.”

41268. (Nanking, Kiangsu, China, June 2, 1915.) Seed selected from Meyer's No. 2317a [S. P. I. 41267], because of evident specific differences.

41269. (Undetermined.)

“(No. 2318a. Mokanshan, Chekiang, China, July 23, 1915.) A climbing cucurbitaceous plant, having small, dissected leaves; bears small, soft, warty fruits. Of use as an ornamental porch and cover vine for semishady situations.”

41270 and 41271.

From Suva, Fiji Islands. Presented by the superintendent, Department of Agriculture. Received September 30, 1915.

41270. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. Mandarin.

“The local mandarins are most excellent in quality, of large size, good flavor, and juicy, but with skin rather coarse.” (C. H. Knowles.) Bud sticks.

41271. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ. Lemon grass. See S. P. I. No. 40896 for previous introduction and description.**41272 and 41273.** AMYGDALUS PERSICA L. Amygdalaceæ. Peach. (*Prunus persica* Stokes.)

From Teheran, Persia. Presented by Mr. Ralph H. Bader, American vice consul. Received September 25, 1915.

41272. “Yellow pit. Seeds of clingstone peach commonly cultivated in this district; the flavor compares favorably with the flavor of those grown in the United States. The peach is indigenous in Persia, but so far as is known the Persians have never made a systematic effort to improve the quality of this fruit.” (Bader.)

41273. “Red stone. Seeds of clingstone peach commonly cultivated in this district.” (Bader.)

41274. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.*(Prunus persica Stokes.)*

From Amoy, China. Presented by Mr. Lester Maynard, American consul. Received September 30, 1915.

"Seeds of late-season peaches, such as are grown in this district. They blossom and form their fruit in the latter part of March and ripen at the end of June. The fruit is about the size of a duck's egg, and they are sweet, but tart. The skin is rose color, as is the fruit, and they are of the clingstone variety. They are known locally as *pear peach*." (*Maynard.*)

41275 to 41281.

From Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees, Ltd., Liverpool, England, at the request of Mr. A. K. Bulley. Received September 28, 1915. Quoted notes by Mr. Cooper.

41275. (Undetermined.)

"No. 3829. Shrubby bush (Rosaceæ) 5 feet through, little tufts of pink and white fibers hanging from spiny branchlets. Growing among sand and gravel in Paro district; altitude, 8,000 feet. Flowers in cold weather, November to February."

41276. (Undetermined.)

"No. 3961. A bush up to 5 feet, usually under light forest in sandy peaty soil, from the bark of which paper is made locally. Altitude 9,000 to 10,000 feet. Flowering in autumn, November."

Received as a species of *Daphne*, but the seeds do not appear to belong to that genus.

41277 to 41281. PRIMULA spp. Primulaceæ. Primrose.**41277 and 41278. PRIMULA spp.**

41277. "No. 4008. *P. capitata* type in fruit at 12,000 feet. Smaller plants at 14,000 feet show hanging wide-mouthed blue flowers. In peaty meadow at fringe of *Abies* forest. Flowering in May and June."

41278. "No. 4082. Allied to *P. petiolaris*, but leaves and flower stems long to 18 inches, head often of 12 to 20 flowers. Growing in sodden leaf soil and gravel on a forest hillside under *Acer* and *Abies*. Flowering in May; only seen in fruit at an altitude of 11,000 feet."

41279. PRIMULA PETIOLARIS Wallich.

"No. 4129. With sessile inflorescence (*à la Wintzii*) in moist gravel and sandy leaf mold in shade of *Abies* forest at 11,000 feet. Flowering in May."

41280. PRIMULA OBTUSIFOLIA Royle.

"No. 4133. Flowers purple; in alpine peat meadows at 13,000 feet."

41281. PRIMULA sp.

"No. 4132. Same as 4008 [S. P. I. No. 41277] but at an altitude of 13,000 feet. In peat meadows with a 'meal' on leaves. No. 4008 had 'meal' (white) on under surface of leaves."

41282. CASSIA ANGUSTIFOLIA Vahl. Cæsalpiniaceæ.

From Poona, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received July 29, 1915.

"Obtained from Mr. H. G. Sampson, deputy director of agriculture, southern division, Madras Presidency." (*Burns.*)

41283 and 41284. OPUNTIA spp. Cactaceæ. Prickly-pear.

From Ollantaytambo, Peru. Presented by Mr. Ellwood C. Erdis, New Haven, Conn. Cuttings received September 21, 1915.

41283. "Spineless tuna; from 9,000 feet altitude at this place." (*Erdis.*)

41284. "A spiny tuna with yellow flowers; from 9,000 feet altitude at this place." (*Erdis.*)

41285 to 41288.

From Waverly, New Zealand. Presented by Mr. T. W. Lonsdale, manager, Moumahaki Experiment Farm, Department of Agriculture, Industries, and Commerce. Received September 30, 1915. Quoted notes by Mr. Lonsdale.

41285. BROMUS UNIOLOIDES (Willd.) H. B. K. Poaceæ. Prairie grass.

"Moumahaki prairie grass. The strongest and best known for providing winter feed here."

41286. DAUCUS CAROTA L. Apiaceæ. Carrot.

"Moumahaki matchless white carrot. Gave the best results here in 1915."

41287. TRIFOLIUM REPENS L. Fabaceæ. White clover.

"Moumahaki evergreen white clover. Selected for its winter growing habits."

41288. VICIA FABA L. Fabaceæ. Broad bean.

"Moumahaki selected horse bean. Seed produced near to the ground and plants of vigorous habit."

41289. ANNONA sp. Annonaceæ. Anona.

Plants grown from seed received from Mr. William J. Tutcher, superintendent, Botanical and Forestry Department, Hongkong, China, December, 1913.

41290. PITTOSPORUM CRASSIFOLIUM Solander. Pittosporaceæ.

From Auckland, New Zealand. Presented by Mr. H. H. Wright, Avondale Nurseries. Received September 30, 1915.

Evergreen shrub, 20 feet, good hedge plant. Leaves coriaceous, the under surface, as well as shoots and sepals, covered with close white hairs. Flowers in terminal umbels, often solitary, deep purple, nearly half an inch long. From the North Island of New Zealand, chiefly on the east coast. (Adapted from *Laing and Blackwell, Plants of New Zealand.*)

41291 to 41294. GOSSYPIUM spp. Malvaceæ. Tree cotton.

From Darwin, Northern Territory of Australia. Presented by Mr. S. A. Bailey, Agricultural Branch. Received September 30, 1915.

"From the plantation of Mr. W. B. Pruen, near Darwin. Plant 9 or 12 feet apart each way, according to climate. At the end of the second season remove the old wood annually from the Caravonica tree and ratoon the native sorts. Matures in two years." (*Bailey.*)

41291. Rough, *Caravonica*.

41293. Native, interior.

41292. Smooth, *Caravonica*.

41294. Native, coast.

41295 to 41314.

From Buenos Aires, Argentina. Presented by Mr. Benito J. Carrasco, director general, Botanic Garden. Received September 7, 1915.

41295. AESCHYNOMENE HYSTRIX Poir. Fabaceæ.

A leguminous (fabaceous) plant with odd-pinnate leaves; small linear or slightly oval leaflets, obtuse at apex and base; half arrow-shaped stipules; and short axillary racemes of bright yellow flowers.

41296. ASTRONIUM BALANSÆ Engl. Anacardiaceæ.

Glabrous anacardiaceous tree with very hard wood; subcoriaceous leaves composed of four to five pairs of long petiolulate, oblique, lanceolate leaflets with sharply serrate margins; dense terminal panicles of very small flowers; and globose drupes. (Adapted from the original description, *Engler, Botanische Jahrbücher, vol. 1, p. 45, 1881.*)

"This is one of the most extensively utilized species of hardwood in the country. It is abundant, and is exported from the mountain regions as planks, sleepers, posts, etc." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41297. BELOPERONE PLUMBAGINIFOLIA (Jacq.) Nees. Acanthaceæ.

"Small, shrubby acanthaceous plant, 1 to 2 feet high, with long petiolate soft leaves and short spikes of rich purple flowers, one-half inch long. Found in South America from Brazil to Argentina." (*Wallich, Plantae Asiaticae Rariores, vol. 3, p. 102, 1832.*)

41298. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook. Papayaceæ.

A small, rapid-growing tree, native of Paraguay, with large palmately 3-lobed leaves and small fruits, which are said to contain a larger percentage of papain than those of *Carica papaya*.

41299. COLLIGUAJA INTEGERRIMA Gill. and Hook. Euphorbiaceæ.

Coliguay.

Small euphorbiaceous shrub with opposite or alternate, narrowly lanceolate, entire, somewhat rigid leaves borne only on the upper part of the branches; monœcious spikes of flowers borne on the ends of the branches, the lower flowers being pistillate, the upper staminate. The habit resembles that of a *Stillingia*. (Adapted from *Hooker, Botanical Miscellany, vol. 1, p. 140, 1830.*)

41300. SEBASTIANA KLOTZSCHIANA BRACHYCLADA (Muell. Arg.) Pax and K. Hoffm. Euphorbiaceæ.

Euphorbiaceous shrub with slightly spiny, alternate branches and inconspicuous monœcious flowers. It is called *Blanquillo* by the people of Argentina where it is a native, and is regarded by them as being poisonous.

41301. FLOURENSIA CAMPESTRIS Griseb. Asteraceæ.

A glabrous, yellow-flowered shrub from Argentina, up to 6 feet in height, with oblong-lanceolate leaves. A composite (Asteraceæ) closely allied to the *tar-bush* (*F. cernua*) of the southwestern United States and somewhat resembling the sunflowers (*Helianthus* spp.) in the structure of the flowers.

41302. GUETTARDA URUGUENSIS Cham. and Schlecht. Rubiaceæ.

A small rubiaceaceous tree 15 to 20 feet high, with twisted branches; opposite membranaceous, lanate leaves of varied forms ranging from ovate or elliptic to cuneate-elliptic and lanceolate, always acute, often

41295 to 41314—Continued.

mucronate, about 3 inches long and 1 inch across; caducous petiolar stipules lanceolate triangular, acute; axillary, long pedunculate cymes of white flowers with salver-shaped 5-lobed corollas, smooth within, sericeous without, less than half an inch long, and three to four bony-seeded cylindrical ovoid drupes one-third of an inch in diameter. (Adapted from *Chamisso and Schlechtendal, Linnaea, vol. 4, p. 183, 1829.*)

41303. ALEGRIA DIVARICATA (Martius) Stuntz. Tiliaceæ. **Soto caballo.**
(*Luehea divaricata* Mart.)

Handsome tree 20 to 50 feet high with graceful ashy-tomentose branches, oblong, rarely elliptic or oblong-lanceolate leaves, 4 inches long and 2 inches broad; terminal panicle inflorescences of rather large white to rose-colored flowers. Found along river banks in the forests of Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 12, part 3, p. 159, 1886.*)

41304. MABA sp. Diospyraceæ.

An ebenaceous tree with alternate, entire leaves, and small flowers almost sessile in their axils. Known as *Maba* in Argentina, where it is used for its timber.

Received as *Maba argentinensis* Speg., for which a place of publication has not yet been found.

41305. MYROXYLON SALZMANNI (Clos) Kuntze. Flacourtiaceæ.
(*Xylosma salzmanni* Eichl.) **Ira-poitá.**

A small spiny tree 10 to 15 feet in height, with somewhat variable leaves, usually ovate-oblong to ovate, more or less crenate-dentate, 2 to 4 inches long and 1 to 2 inches broad; and diœcious inconspicuous greenish yellow flowers borne in umbellate fascicles. Native of Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 13, part 1, p. 448, 1871.*)

41306. PIPTADENIA RIGIDA Bentham. Mimosaceæ.

"Unarmed mimosaceous shrub or small tree, entirely glabrous or with the younger parts slightly pubescent; leaves composed of four to six pairs of many-paired linear falcate leaflets and axillary short spikes of small white flowers." (*Bentham, in Hooker's Journal of Botany, vol. 4, p. 338, 1842.*)

41307. PLAZIA ARGENTEA (Don) Kuntze. Asteraceæ.
(*Hyalis argentea* Don.)

A composite shrub from Argentina called *olivillo*. Reported by Tweedie to grow to the exclusion of almost everything else on the salt plains of northern Argentina.

41308. PTEROGYNE NITENS Tul. Cæsalpiniaceæ. **Viraro.**

A tall, stout, unarmed tree abundant in parts of Argentina and Brazil. It has pari-pinnate leaves, with usually alternate, lanceolate leaflets; and small flowers in short, loosely flowered, axillary clusters. (Adapted from *Engler and Prantl, Die Natürlichen Pflanzenfamilien, vol. 3, part 3, p. 130.*)

"The wood is very strong and resistant. It is used for the construction of carts, except for the spokes. It is considered an excellent wood in Misiones and is exported. In Salta it is also highly valued and is used in coach making." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41295 to 41314—Continued.

41309. RUPRECHTIA FAGIFOLIA Meissn. Polygonaceæ.

Duraznillo blanco.

"An abundant tree with smooth bark which renews itself annually, and which after becoming dry, but before falling, becomes wrinkled and gives the tree a peculiar and very characteristic appearance. Wood rosy, hard; trunk coarse, not utilized. A very handsome ornamental tree; in spring it is covered with yellow flowers which later become rosy. Their color resembles that of the peach flower; hence the name *Duraznillo*." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41310. SCHINOPSIS LORENTZII (Griseb.) Engler. Anacardiaceæ.

(*Quebrachia lorentzii* Griseb.)**Quebracho colorado.**

A tree with compound leaves composed of 10 to 15 pairs of persistent, leathery leaflets, glabrous above. Highly prized for its hard and durable reddish colored timber. One of the most valuable trees in Argentina.

41311. SIDA BONARIENSIS Willd. Malvaceæ.

Shrubby plant with cordate, oblong leaves, deeply crenate, stellate-pubescent above, tomentose beneath; the capsule villous. Native of Argentina; called *Malvisco*.

41312. SOLANUM BONARIENSE L. Solanaceæ.

Tender evergreen shrub up to 10 feet high, with ovate-oblong, sinuate-repand leaves, long lateral racemes of large white flowers, and globose yellow berries. Native of Argentina, where it is called *Granadillo*. Said to have medicinal properties.

41313. VALLESIA GLABRA (Cav.) Link. Apocynaceæ.

Ancochi.

"A small, spineless tree with somewhat twisted branches; soft, yellow wood which is not utilized. It is abundant near rivers. Its fruit is white, resembling a pearl. The bark is rugose and soft like that of the *Cedrillo*; it is a poisonous plant, but in 1896 and in 1909 I ate the fruits without suffering any ill effects." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

Found from Florida through tropical America to Chile and Argentina.

41314. VITEX MONTEVIDENSIS Cham. Verbenaceæ.

A small tree from Uruguay and Brazil 15 to 20 feet high with branches usually compressed and dilated at the nodes; ashy-gray, glabrous bark; seemingly opposite palmate leaves composed of five, rarely three, lanceolate to elliptic leaflets 4 to 6 inches long; and axillary cymes of slightly irregular flowers with nearly rotate 5-lobed corollas. (Adapted from the original description, *Linnaea*, vol. 7, p. 373, 1832.)

"The wood, of reddish color, somewhat striped, hard, is strong and much esteemed. As it resists moisture well it is much used for posts, etc.; and being easily split, it is used for shingles. The fruits yield a kind of oil; and the wood itself, even after it has become dry, exudes oil when placed on the ground, and seems to become green again." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)



GIANT ACORNS OF A MEXICAN OAK (*QUERCUS INSIGNIS*, S. P. I. No. 39723).

A white oak which occurs in the vicinity of Huatusco, about midway down the flanks of Mount Orizaba in the State of Vera Cruz, Mexico, forming there trees 60 to 80 feet high, branching 30 or 40 feet from the ground; believed by Dr. Purpus to be capable of acclimatization in Florida, Porto Rico, and Hawaii. The acorns are edible. (Photographed by Mr. E. L. Crandall, Washington, D. C., May 21, 1918; natural size; P23880FS.)

NOTE OF CORRECTION.

In Inventory 42, Plate I, opposite p. 16, was printed a photograph supposed to represent acorns of S. P. I. No. 39723, *Quercus insignis* Martens and Galleotti. Dr. C. A. Trelease has called our attention to the fact that these acorns are *cyclobalanoides* Trelease. We here publish Plate XI, from a photograph of *Q. insignis*, with a corrected legend. The legend under Plate I in Inventory 42 should read:

Acorns of *Quercus cyclobalanoides* Trelease, the Mexican ring-scaled white oak, closely related to *Q. insignis*; collected in the State of Chiapas, by Dr. C. A. Trelease. Photographed, natural size, by Mr. E. L. Crandall, Washington, D. C., August 14, 1914 (P13834FS). No S. P. I. number was assigned to these acorns."

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