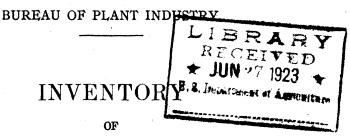
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JU. S. DEPARTMENT OF AGRICULTURE.



SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1

TO MARCH 31, 1921.

(No. 66; Nos. 52306 to 52854.)



WASHINGTON GOVERNMENT PRINTING OFFICE. 1923.

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

INVENTORY

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO-DUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1921 (NO. 66; NOS. 52306 TO 52854).

INTRODUCTORY STATEMENT.

During the 73 working days of which this inventory is a record 549 new lots of plant immigrants arrived in Washington and were inspected, fumigated, labeled, and planted in the various gardens of the Office of Foreign Seed and Plant Introduction. They came from all over the world, recommended for some particular purpose, and those which we are able to propagate will go out to the regions best suited to their culture and find their way into the hands of bona fide plant experimenters, who will do something with them.

Forest trees.—To those who realize that it may not necessarily be our own native forest trees which will prove best adapted for forest purposes, the following new introductions will be of interest: The Canary Islands pine, *Pinus canariensis* (No. 52817), has been very successfully grown in South Africa and Chile as a timber tree, and its valuable hard wood may make it a species worth growing extensively in southern California.

Of interest to lovers of fine conifers are the following: The characteristic spruce of the great Tianshan Mountain range of Turkestan, *Picea schrenkiana* (No. 52659); a variety of the Siberian fir from the Amur River, *Abies sibirica nephrolepis* (No. 52623); a species from the Szechwan Province of China, *Abies faxoniana* (No. 52622); and a rare one from the Min Valley of China, *Abies recurvata* (No. 52624)—the last three presented by the Hon. Vicary Gibbs, of Elstree, England. It is to be hoped that we can find a place in this country for the Taiwania (*T. cryptomerioides*, No. 52570), which is, according to E. H. Wilson, who secured seeds and plants on his last expedition, the loftiest tree of the Formosan forest. It resembles a giant lycopod, reaches a height of 180 or even 200 feet, and has a girth of 30 feet. We are indebted to the Arnold Arboretum for propagating material of this species.

For the cool coastal regions of the Pacific coast the Chilean evergreen beeches (*Nothofagus* spp.) appear to be particularly well adapted,

and F. Albert, consulting forester to the Chilean Government, has sent in three of these species, the coigue (N. dombeyi, No. 52592), the roble (N. obliqua, No. 52593), and the rauli (N. procera, No. 52594), as well as a number of other Chilean trees and shrubs, including the tique (Aextoxicon punctatum, No. 52556), the beautiful tara (Caesalpinia pectinata, No. 52587), and an attractive liliaceous shrub (Philesia magellanica, No. 52596), remarkable in its ability to withstand the fumes from copper-smelting furnaces.

The growing interest in hybrid trees for forestry work as well as for street tree planting will make the hybrid poplar (*Populus rasumowskiana*, No. 52705), a cross between *P. nigra* and *P. suaveolens*, and the hybrid walnut (*Juglans intermedia vilmoreana*, No. 52681), sent in by Vilmorin-Andrieux & Co., of value to parks and forests.

J. F. Rock, our agricultural explorer, secured in Bangkok, Siam, seeds of the giant forest tree Castanea diversifolia (No. 52387), which bears quantities of edible chestnutlike nuts; and from the same region he obtained Quercus junghuhnii and other species of oaks (Nos. 52440 to 52448), bearing sweet edible acorns in great clusters, which might take the place of the scrub oaks of the pinelands of Florida.

We are so accustomed to think of the forests of Africa as trackless and inexhaustible that to learn of the threatened extinction in Rhodesia of the magnificent Milanji cypress (Callitris whytei, No. 52807), which grows to 140 feet in height at altitudes of 10,000 feet, comes as a distinct shock. It should make us realize, perhaps, that the virgin forests of the whole world are threatened by fire and the strangling grasses which man is taking into them. At least an effort can be made to save this cypress from extinction.

Grains.—The rise of plant-breeding institutions is a thing of recent times, and it is encouraging to note that already a free exchange has begun of the seeds and plants which are being produced by them in various countries. From the two foremost institutions in the Netherlands, those at Groningen and Bussum, have been received valuable collections (Nos. 52818 to 52840, 52842 to 52844) of their best selected strains of wheat, oats, barley, and flax, which can scarcely fail to be valuable in some of the cooler summer regions of America; whereas from the famous Australian plant breeder Pridham have come nine pure-line selections of the Hard Federation wheat (Triticum aestivum, Nos. 52557 to 52565) which has proved to be an improvement over the old Federation and which has been grown commercially in Australia since 1914 because of its equal yields and the better milling quality of the grain. Professor Ducellier, of the School of Agriculture of Maison Carree, Algiers, has presented a collection of 11 varieties of Saharan wheats (Triticum spp., Nos. 52546 to 52556)

with yields comparable to the best European varieties. What will happen to the black rice of Burma (No. 52751), which Mr. Rock found and used with keen relish as a breakfast dish at Moulmein, time only can decide. He declares it is a grain especially prized in Siam and when served as he used it is particularly delicious. What might it be when puffed?

The fundi grass of Sierra Leone, *Digitaria exilis* (No. 52736), which is grown by the Nigerian tribe as a supplemental food grain, may prove too expensive for production on a large scale because of the small size of its kernels; but, like the Abyssinian teff, it deserves to be thoroughly investigated as having possibly some particular use for invalids.

Forage and fodder plants.—Fodder trees have received little attention in this country, though in the drier parts of India and Australia much use is made of them. Two new ones from New South Wales, the leopard tree, Flindersia maculosa (No. 52798), and the myall, Acacia pendula (No. 52800), deserve study by the ranchmen of the extreme Southwest, where fodder grasses are scarce, since in years of unusual drought these trees can tide over the stock until rains come. They have nutrient values of 48.5 and 29, respectively, and will stand periods of prolonged drought.

Vegetables.—Why should we not use the old-fashioned potherb Good King Henry, Chenopodium bonus-henricus (No. 52789)? It is extremely hardy and two weeks earlier than asparagus produces shoots that are easily blanched and have a delicious flavor. It is related to our own lamb's-quarters, C. album, which is also excellent.

Tomato growers may be interested in Mr. Harrison's giant tomato bush (No. 52334) which in the frostless region of Burringbar, New South Wales, produced in 12 months a plant 16 feet across and 11 feet high that bore 100 dozen fair-sized fruits.

Nut-producing plants.—Telfairia pedata (No. 52450), a cucurbit growing like a liana in the tropical forests of East Africa and producing immense fruits which are filled with large flat edible seeds, although brought to the attention of horticulturists in 1824 seems nowhere to have been cultivated. It deserves a thorough trial. There is something alluring in the idea of replacing the scrub oaks of the pinelands of Florida with the deciduous oaks of Siam (Nos. 52440 to 52448) which produce great masses of sweet edible acorns.

Dye and tannin plants.—Mr. Rock's account of the black dye made from a tropical species of persimmon, Diospyros mollis (No. 52510), a substance whose color is so prized by the Chinese that they ship into Siam yearly over \$800,000 worth of silk and pay duty on it in order to have it dyed there, should attract the attention of the manufacturers of dyes. Seed of the tree to grow in Porto Rico and Hawaii was secured.

The currebau-sevil (*Piptadenia cebil*, No. 52504) of Bolivia, which, according to Mr. Meschrutz, yields one of the best tanning materials, is a tree adapted to growing on stiff clay soils where little rain falls.

Medicinal plants.—In this inventory is described the chaulmoogra oil-producing tree, Taraktogenos kurzii (No. 52803), to secure which J. F. Rock made his expedition into Siam, Burma, and Assam. He also collected Hydnocarpus anthelminthica (No. 52465), the Siamese maikrabao tree, and H. castanea (No. 52514), one of the kalaw trees of Burma, from both of which similar oils are obtained. Where in America these trees can be grown is a problem to be solved by trial only. The Hawaiian Islands, Porto Rico, the Philippines. and the Canal Zone are presumably the logical places for them, and it is in these regions, too, that there is the keenest interest in the cure of leprosy. However, it is contemplated that specimens will be sent to other countries in order to make sure that these valuable drug-producing trees find a congenial home and come into cultivation where they can furnish an adequate number of seeds to supply the demand created by the new discoveries in the methods of treating this loathsome bacterial disease.

Fruits.—At first thought there does not seem to be a very large number of different kinds of fruits in cultivation by civilized man, but there really are a great many. The introductions for the three months covered by this inventory include, for example, 16 rare or little-known species or varieties. Wilson Popenoe introduces the capulin, or Ambato cherry, a form of Prunus serotina (No. 52720) which, though from a region of little frost, bears prodigious crops of fruits as large as the Early Richmond cherry and may prove to be the southern cherry of the future. He finds the Andes berry, Rubus glaucus (Nos. 52733 and 52734), as good as any of our cultivated species. The babaco (No. 52574) and the chamburo (No. 52721), both interesting species of Carica from Ambato, Ecuador, have a degree of hardiness which should insure their success in California, and although they are quite different from the true papaya, being edible only when cooked, they should prove valuable additions to our horticulture either directly or through hybridiza-They will probably not compare directly with the Solo papava of Hawaii (No. 52620), a selected uniformly shaped fruit of excellent quality which is recommended by the territorial experiment station for general cultivation because of its hermaphrodite flowers and the fact that the variety comes reasonably true from seed.

An attractive Syrian species of Sorbus, S. trilobata (No. 52600), Professor Poirault presents as one bearing fruits suitable for preserves; and M. Auguste Chevalier, of Paris, has sent us the seeds

of a wild peach from Annam (No. 52339), probably a form of Amygdalus persica, and seeds of a wild apple, Malus laosensis (No. 52341), from the Laos country of French Indo-China. These can scarcely fail to attract the attention of southern fruit breeders.

J. A. Kusche has collected for the Hawaiian Sugar Planters' Association much interesting material (Nos. 52399 to 52421), part of which through the courtesy of Dr. Harold L. Lyon has come into our hands. The interesting things of this collection are a new edible species of fig (No. 52406) with dark crimson-colored fruits, from Cairns, North Queensland, and several species of trees from Prince of Wales Island, which have not yet been determined. Through Vilmorin-Andrieux & Co., we have received a valuable collection of rare plants, including two species of strawberries (Nos. 52679 and 52680) from Sikkim and China and six species of the genus Ribes (No. 52706 to 52711), including one (R. longeracemosum) whose remarkably long racemes of currants should make it of great value for breeding purposes, according to E. H. Wilson, who saw it in fruit in western Hupeh, China.

Plants for parks and dooryards.—In the selection of ornamental plants for introduction attention is paid particularly to those which are capable of wide popularization among people of small means. Of these, the following notable ones are described in this inventory: A new ever-blooming morning-glory, Ipomoea carnea (No. 52493), found by Mr. Rock in Burma and probably suited to southern Florida; a beautiful arboreal red-flowered cotton (No. 52384) from Wat Lum, on the Menam River; Thespesia lampas (No. 52386), a tree related to two species which have proved already to be promising shade and ornamental trees in southern Florida; 11 species (Nos. 52690 to 52700) of the genus Caragana, among which is the Siberian pea tree (C. arborescens), one of the most important hedge and shelter-belt bushes of Canada and the Northwest; Rhododendron racemosum (No. 52603), a beautiful species from Yunnan with small. pink, sweet-scented flowers, which blooms when still small enough to be handled in pots and exhibits a variety of colors resembling the well-known R. vaseyi; two species of Bauhinia (Nos. 52746 and 52747) and one of the crape myrtle, Lagerstroemia sp. (No. 52750), from Moulmein, Burma; a collection of the small hardy ornamental bamboos of the genus Arundinaria (Nos. 52670 to 52674); Cassia nodosa (No. 52797), a gorgeous flowering tree from eastern Bengal; a species of horse-chestnut, Aesculus indica (No. 52625), which flowers later than the European species and grows in northern India to a height of 100 feet; the yellow-flowered clematis, C. tanqutica (No. 52631); the yellow-flowered peony, Paeonia lutea (No. 52648); and a collection of the famous Lemoine's hybrid mock oranges (Philadelphus lemoinei, Nos. 52649 to 52657), which deserve a place in every nursery of ornamental plants in America.

The botanical determinations of these introductions have been made and the nomenclature revised by H. C. Skeels and the descriptive and botanical notes arranged by G. P. Van Eseltine, who has had general supervision of this inventory. Miss Patty Newbold has assisted in the compilation of descriptive notes.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction, Washington, D. C., November 20, 1922.

INVENTORY.1

52306. Stachys sieboldi Miquel. Menthaceæ.

From Paris, France. Tubers purchased from Vilmorin-Andrieux & Co. Received February 1, 1921.

A perennial Japanese plant up to $1\frac{1}{2}$ feet in height, cultivated for its slender white tubers, which are eaten as salad, fried, and in many other ways. Cultivation is easy. The soil should be light and the plants spaced a foot apart. The tubers are dug in November or later. They shrivel on exposure to the air and should be taken only as wanted. (Adapted from Catalogue, Vilmorin-Andrieux & Co.)

52307 to 52309.

From Cali, Valle, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received January 3, 1921. Quoted notes by Mr. Popenoe.

52307. AGATI GRANDIFLOBA (L.) Desv. Fabaceæ. (Sesbania grandiflora Poir.)

"(No. 520a. November 22, 1920. Herb. No. 1205.) Seeds of regenerador. A handsome flowering tree cultivated in the lower portion of the Cauca Valley, especially in the vicinity of Cartago (whence these seeds) and Roldanillo. It reaches a height of about 25 feet and has handsome pinnate foliage. The pure-white flowers, 2 inches long, are shaped much like those of Clianthus and something like those of Erythrina. A rose-colored form is also cultivated, but I have been unable to get seeds of it. The tree is remarkable in that it commences to flower when not more than 3 feet high. It is a rapid grower, and when properly trained (it is inclined to be rather tall and slender in form) it is shapely and very attractive. I believe it would be a distinct addition to the ornamental trees of southern Florida."

For previous introduction, see S. P. I. No. 38656.

52308. Brownea grandiceps Jacq. Cæsalpiniaceæ.

"(No. 519a. November 22, 1920.) Seeds of arbol de la Cruz, a tree cultivated in a dooryard at Cartago, at an altitude of about 2,900 feet. This magnificent flowering tree, native to the Magdalena Valley in Colombia, is a common ornamental in the Cauca Valley at altitudes of 2,500 to 4,000 feet. It is about 20 feet in height and produces flame-

¹ It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

52307 to 52309—Continued.

scarlet flowers in compact clusters (they could almost be termed heads) 6 to 8 inches long and broad. While this plant is tropical, the fact that it is grown at Guaduas makes me think that it may succeed in southern

For previous introduction, see S. P. I. No. 51796. 52309. Carica sp. Papayaceæ.

"(No. 512a. November 22, 1920.) From a dooryard in Ibague, Department of Tolima, Colombia, at an altitude of about 4,200 feet. Seeds of a distinct species of Carica which I have not seen in Cundinamarca, At first sight I took it to be C. candamarcensis (the species common in Cundinamarca), but on closer examination the leaves proved to be much more deeply lobed and the fruit altogether distinct in character, though of about the same size and form. The plant is common in the region between Ibague and the Cauca Valley, being found at altitudes of 4,000 to 6,000 feet. It reaches about 15 feet in height, often branching near the base to form several stems. So far as I have seen, the plants_are unisexual, as in C. candamarcensis and, normally, in C. papaya. The fruits are broadly oval to elliptic, 3 to 5 inches long, and deep yellow when fully ripe. The flesh is white and has a faint applelike odor. The seeds are scattered through a white pulpy mass, which does not adhere to the wall of the cavity but is attached at the basal end. The flavor of the flesh is rather acid; it is eaten only when cooked, as that of C. candamarcensis in Bogota.

"I do not know how hardy the plant may be. It seems likely that it will resemble C. candamarcensis in hardiness, and in this case it will be of interest in connection with papaya breeding in Florida and California."

52310 to 52314. Allium spp. Liliaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received February 1, 1921. Quoted notes from Catalogue of Vilmorin-Andrieux & Co.

A collection of vegetables introduced for experiments in diseases of truck crops and for vegetable breeding experiments.

52310. ALLIUM ASCALONICUM L.

Shallot.

"Echalote de Jersey. Bulbs of a variety which is larger and more highly colored than the ordinary shallot and a very good keeper."

52311. ALLIUM CEPA L.

Onion.

"Rocambole, Bulbs of a variety from Spain, Plant in October or November, or in February."

52312 to 52314. ALLIUM FISTULOSUM L.

Welsh onion.

52312. "Ciboule commune. Bulbs of the variety most cultivated."

52313. "Ciboule blanche hative. Bulbs of an early and less pungent variety."

52314. "Ciboule vivace (Ciboule de Saint-Jacques). Bulbs of a variety which does not produce seeds."

52315 to 52317. Solanum tuberosum L. Solanaceæ. Potato.

From Cali, Valle, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received January 3, 1921. Quoted notes by Mr. Popenoe.

52315 to **52317**—Continued.

- 52315. "(No. 524. November 22, 1920.) Tubers of an excellent potato grown in the mountains near Cali. The tubers attain large size compared with other Colombian potatoes and are oblong or oval, distinctly compressed, and light brown in color. The surface is remarkably free from eyes, being in fact nearly smooth. The flesh is white and of good quality. I am told by some people that this is not a native variety, but one which has been introduced into the valley fairly recently. In any event, it is worthy of trial in the United States by those interested in potato breeding."
- 52316. "(No. 525. November 22, 1920.) Papa criolla (native potato) from the Cali market. Tubers of the common yellow-fleshed potato of the Andes, a variety which produces tubers of small size but remarkably rich flavor. This variety is said to be very early and to be suited to cultivation in a warmer climate than others. The tuber is round, commonly not over 3 inches in diameter, deep rose colored, with very deep eyes, a very thin skin which peels readily from the boiled tuber, and mealy flesh of rich-yellow color and excellent quality. It appears to me a very interesting variety for trial in the United States."
- 52317. "(No. 526. November 22, 1920.) Tubers of papa criolla (native potato). From the Cali market. A round to oblong, medium-sized, brown-skinned, deep-eyed potato from market. It appears practically identical with No. 525 [S. P. I. No. 52316] except in the color of the surface. The flesh is yellow, of excellent quality, and of remarkably rich flavor."

52318 to 52329.

From Coggeshall, Essex, England. Seeds presented by John K. King, of King & Sons. Received January 3, 1921. Notes adapted from King & Sons' "Pedigree Seed Wheats," 1920–21.

52318 to 52327. Triticum aestivum L. Poaceæ. Common wheat. (T. vulgare Vill.)

- **52318.** Benefactor. This wheat ripens fairly early and on good soils produces a fair yield. The ear is of medium length, with rough chaff and white plump grains of good size. The straw is very strong and of medium length. (P. 7.)
- **52319.** Essex Conqueror. A new wheat which yields 80 bushels per acre. The well-set compact ears, some nearly 6 inches long and 5 to 7 chested, are well filled with bold plump red grain of superior milling properties; the chaff is white. The strong stiff straw is of medium height and upstanding in the most severe weather. (P. 2.)
- **52320.** *Iduma Red.* A red wheat which produces good upstanding straw and fairly large ears; the grain is of excellent milling quality, and the chaff is white. (P. 7.)
- **52321.** Improved Double Stand-up White. This wheat has a short stiff straw and a rather short ear well set with pale-white grain. (P. 7.)
- 52322. John Bull. An early strong wheat which yields as much as 60 bushels per acre. The straw reaches a height of 5 feet or more, and the large heads with white chaff are closely set with the finest large red grain, which is of high value for milling. (P. 3.)

52318 to 52329—Continued.

- 52323. Little Joss. A cross between Squareheads Master and Ghirka, raised by Professor Biffen. This variety is said to be rust resistant, and the quality of the grain is unquestionably good; the ears are long and somewhat pointed, which quality in our judgment detracts from its cropping properties. (P. 7.)
- 52324. Marshal Foch. A fairly early wheat, ripening about the same time as Victor, with white chaff and pale-red grain, said to be of good milling quality. The strong stiff straw is of medium length. (P. 7.)
- 52325. Reselected Victor White. A fairly early wheat which gives excellent results on most soils. The straw is of medium length, and the square compact ears bear medium-sized grain. (P. 7.)
- 52326. Snowdrop White. A white wheat, something over 5 feet high and very level, yielding up to 80 bushels per acre. The square thick ears are of good length. The pearly white grains are compactly set and often 5 or 6 chested; it is eagerly sought after by millers. The straw is very strong and free from rust. (P. 4.)
- 52327.. White Marvel. Of the two, we consider this variety to be better than Red Marvel. It possesses all the characteristics of Red Marvel, but the grain is white. The straw is stiff, and the ear, although long, is generally fairly thick chested. The variety is exceedingly valuable for spring sowing. (P. 7.)
- 52328 and 52329. Triticum turgidum L. Poaceæ. Poulard wheat.
 - 52328. Percival's Red Cone. After careful experiments on our Experimental Farms, we do not recognize any great difference between this and a good stock of the ordinary Cone. (P. 7.)
 - 52329. Early Red Cone. This variety is said to ripen 10 days before ordinary Rivetts, but we did not find it so early. The heads are close and compact, and the straw is somewhat shorter than Rivetts. (P. 7.)

52330. DATURA METEL L. Solanaceæ.

Datura.

From Manila, Philippine Islands. Seeds presented by Sr. Adn. Hernandez, Director of Agriculture. Received January 5, 1921.

"This Asiatic plant, described as a distinct species by Nees, is regarded by some botanists as a white-flowered form of *Datura metel*. It is identical with the plant known to the Japanese by the name 'Chosen Asagao,' or 'Korean morning-glory.'" (W. E. Safford.)

52331. EUTERPE sp. Phœnicaceæ.

Assahy palm.

From Para, Brazil. Seeds presented by Dr. Paul Le Cointe, director, Commercial Museum. Received January 6, 1921.

"Fresh seeds of the assahy palm." (Le Cointe.)

52332. Colocasia esculenta (L.) Schott. Araceæ. Taro.

From Canton, China. Tubers presented by F. A. McClure, instructor, Canton Christian College. Received January 7, 1921.

"This taro, or dasheen, is known locally by the name tso oo. The smail tubers that grow out from the 'eyes' of the mother tuber are called oo tsai.

It is these that I am sending. This variety of taro is common in all parts of Kwangtung and Kwangsi and is the earliest variety known here. Its quality, however, is only medium, compared with that of the later varieties. The taro prefers a loose sandy soil and is sometimes grown along with ginger, bean, or Chinese melons, in various companion-cropping systems. The fertilizers commonly used are ashes from rice straw, horse manure, and night soil. The average yield per mow (one-fifth acre) is about 20 taams, or 2,600 pounds. Of these, about one-half are the large 'mother' tubers [corms] and about one-half are the new small tubers, or oo tsai. The large ones are fed to hogs largely, because of their inferior quality and coarseness. They bring an average price of \$1.60 local silver (about \$1 G.) per 130 pounds. The small ones are used for human consumption, and they bring about \$2 local silver per 130 pounds. In selecting for seed, the largest and finest tubers are chosen, those which have a red swollen sprout at the top being preferred. The crop is planted here in February and March, and the harvest is ready by June and July." (McClure.)

"Leaf stem deep purplish maroon, shading into green near the blade, and with conspicuous band of bright green at base. Petiolar sinus grayish white with network of purplish veins. Petiolar spot on blade indistinct or absent." (R. A. Young.)

52333 and 52334.

From Burringbar, New South Wales, Australia. Seeds presented by B. Harrison. Received January 7, 1921.

52333. Acacia sp. Mimosaceæ.

Wattle.

"A creeping wattle, rooting at the joints, which should prove useful as a sand binder. It grows to a height of about 3 or 4 feet on the beach here," (Harrison.)

Received as Acacia procumbens, for which a place of publication has not been found.

52334. Lycopersicon esculentum Mill. Solanaceæ. Tomato.

"Harrison's Prolific. This tomato is a rapid grower and in our district, which is subtropical, grew in 12 months to the height of 11 feet, attained a spread of 16 feet, and produced 100 dozen fair-sized fruits. It commences to bear when only 9 to 12 inches in height and branches profusely both close to the ground and along the stems. The fruit is scarlet, very fine flavored, and about 4 or 5 inches in circumference. The first plant attracted a great deal of attention from residents for miles around, who declared they had never before seen anything approaching it. The soil where the plant grew was well drained and had been lightly burned over, which was probably the cause of the vines thriving so well and escaping any disease." (Harrison.)

52335. Trifolium subterraneum L. Fabaceæ.

Subterranean clover.

From Melbourne, Victoria, Australia. Seeds purchased from F. H. Brunning. Received January 10, 1921.

"One of the most nutritious plants known to agriculture, indigenous to Britain and found growing on dry, sandy, and gravelly soil. The stems grow over each other to a depth of 6 or 7 inches, the lower ones being as healthy as those above." (Brunning.)

52336 and 52337.

From Cambridge, England. Seeds presented by F. G. Preston, Botanic Garden. Received January 8, 1921.

52336. Berberis brevipaniculata C. Schneid. Berberidaceæ. Barberry.

A shrub from western China with tawny glabrous young branches, later becoming furrowed and ash colored, and graceful golden yellow spines. The oblong, entire, clustered leaves are 10 to 30 millimeters long, shining above, distinctly glaucous, and with a bloom. The small graceful flowers are in panicles which are sometimes 2.5 centimeters long. (Adapted from Bulletin de l'Herbier Boissier, ser. 2, vol. 8, p. 263.)

For previous introduction, see S. P. I. No. 38986.

52337. CLEMATIS TANGUTICA OBTUSIUSCULA Rehd, and Wils, Ranunculaceæ. Clematis.

A glaucous-green climbing shrub, native to central Asia, with leaves 3 to 5 inches long, consisting of lanceolate segments up to $2\frac{1}{2}$ inches long, often lobed in one or both sides. The nodding solitary flowers are very large, on erect peduncles that are 6 inches long and arched at the tip. The oval-lanceolate, golden yellow sepals are 2 inches long with recurved tips. (Adapted from Curtis's Botanical Magazine, pl. 7710.)

52338. Holcus halepensis × sorghum. Poaceæ. Sorghum.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received January 8, 1921.

"A perennial sorghum which appears to be interesting as a forage." (*Trabut.*) For previous introduction, see S. P. I. No. 39588.

52339 to 52342.

From Paris, France. Seeds presented by M. Auguste Chevalier. Received January 11, 1921. Quoted notes by M. Chevalier.

52339. Amygdalus persica L. Amygdalaceæ. (*Prunus persica* Stokes.)

Peach.

"A wild peach growing at an altitude of 1,000 meters in the mountains of Annam, French Indo-China."

52340. Amygdalus persica L. Amygdalaceæ. (*Prunus persica* Stokes.)

Peach.

"A form improved under cultivation by the inhabitants of the mountains of Annam, French Indo-China. Grows at altitudes of 1,000 meters."

52341. Malus laosensis (Cardot) Cheval. Malaceæ.

Apple.

"A cider apple from Tranninh, Laos, French Indo-China."

52342. Pyrus Pashia Buch.-Ham. Malaceæ.

Pear.

A small tree common in Simia, Burma, North China, and in the temperate Himalayas at altitudes of 3,000 to 8,000 feet. The barren branchlets usually end in a spine. The simple, ovate or ovate-lanceolate, long-pointed leaves, 2 to 4 inches long, are tomentose when young, ultimately glabrous. The white flowers tinged with pink, 1 inch in diameter, are in simple corymbs of 10 or fewer. The yellowish brown apple-shaped fruits, half an inch to an inch in diameter, are rough with small white spots. (Adapted from Collett, Flora Simlensis, p. 169.)

For previous introduction, see S. P. I. No. 44052.

52343 to 52349.

From Buitenzorg, Java. Seeds presented by L. Koch, chief, Plant Breeding Station for Annual Crops. Received January 12, 1921. Quoted notes by Mr. Koch.

52343 and 52344. Arachis hypogaea L. Fabaceæ. Peanut.

- 52343. "Katjang Tanon Toeban, one of the best types of peanuts. The seed pods are formed close together like those of Spanish peanuts, which ripen here in about 80 days. This variety ripens in about 100 days. When harvested, almost all the seed pods are ripe, so that there is almost no loss from overripe or shriveled seeds." (Koch.)
- 52344. "Katjang Tanoh Witte Bastaard No. 3. One of the types obtained by crossbreeding white hybrid No. 3. This variety ripens in about 100 days; the seed pods are formed close together like those of Spanish peanuts and 'small Japan nuts.' When harvested almost all the seed pods are ripe, so that there is almost no loss from overripe or shriveled seeds." (Koch.)
- 52345 to 52349. Soja Max (L.) Piper. Fabaceæ. Soy bean. (Glycine hispida Maxim.)
 - 52345. "Witte Kedelei No. 18, a variety imported from Formosa, which is late ripening, having a growing period of about 120 days."
 - 52346. "Zwarte Kedelei No. 15. Selected Javanese variety which has a growing period of 95 to 100 days."
 - 52345. "White Kedelci No. 18, a variety imported from Formosa, with a growing period of 95 to 100 days."
 - 52348. "Zwarte Kedelei No. 17a. Imported from Formosa. This variety has a growing period of 95 to 100 days."
 - 52349. "Zwarte Kedelei No. 27. Probably a Chinese variety, which has a growing period of 95 to 100 days. Peking ripens here in about 75 days."

52350 and 52351. Saccharum officinarum L. Poaceæ.

Sugar cane.

- From Fajardo, Porto Rico. Seeds presented by R. A. Vive, in charge, Experimental Station. Received January 15, 1921.
 - 52350. "Demerara 433. A variety known to produce fertile seeds and juice of high density; the most tolerant to mosaic disease of any cane that we have." (Vive.)
 - 52351. "Demerara 109. A variety known to produce fertile seeds and juices of high density. A very good germinator." (Vive.)

52352. Davidsonia pruriens F. Muell. Cunoniaceæ.

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received January 18, 1921.

"A palmlike tree with large long-lobed leaves at the top. The pear-shaped purple plums are borne on the trunk and even on the roots of the tree if these are exposed above the surface of the ground. The fruit juice makes a refreshing beverage for summer time and could also be used for coloring liquids, etc." (Harrison.)

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52353. Cassia eremophila A. Cunn. Cæsalpiniaceæ.

From New South Wales, Australia. Seeds presented by Hugh Dixson, Abergeldie. Received January 18, 1921.

"A yellow-flowered shrub, 5 feet high, which remains a long time in flower. The plant is native to the interior of New South Wales, so that it will stand heat and also temperatures as low as 15° F. I have only one plant, but it is so floriferous that I intend having more in the garden." (Dixson.)

For previous introduction, see S. P. I. No. 44071.

52354 and 52355. Corylus avellana L. Betulaceæ. Filbert.

From Loiret, France. Plants presented by M. Edmond Versin. Received January 19, 1921.

52354. "Précoce de Frauendorf." (Versin.)

52355. "Princesse royale." (Versin.)

52356. Trifolium glomeratum L. Fabaceæ. Cluster clover.

From Adelaide, South Australia. Seeds presented by J. F. Bailey, Director of Agriculture. Received January 19, 1921.

"Although this clover is to be found over considerable stretches of country in this State, there is only one district where it is anything out of the ordinary as a fodder plant, and this is a comparatively small strip of extremely fertile volcanic land between Mount Gambier and Mount Schank. Here, in most seasons, it covers much of the pasture land to the exclusion of most other plants, and after being grazed for some months will make a dense mass 2 to $2\frac{1}{2}$ feet high, which is cut for hay. Other than in this particular strip of country, the clover is useful only because it grows fairly well in sour soils low in phosphate content, when these soils first come into cultivation and before the other clovers have established themselves." (W. J. Safford, superintendent, Experimental Work, Adelaide.)

For previous introduction, see S. P. I. No. 9756.

52357. ECHIUM VIOLACEUM L. Boraginaceæ.

From Cordoba, Cordoba Province, Argentina. Seeds presented by Dr. C. C. Hosseus, Academia Nacional de Ciencias, through Prof. C. V. Piper, Agrostologist in Charge, Office of Forage-Crop Investigations. Received January 21, 1921.

"A desirable ornamental, known in Brazil as *flor morado* (purple flower), and reported to be a valuable forage plant. It is native to the Mediterranean region of Europe and Africa and apparently introduced into Brazil, Uruguay, and Argentina. The plant is beautiful when in bloom." (*Piper*.)

52358 to 52361. Linum spp. Linaceæ.

Flax.

From Glasnevin, Dublin, Ireland. Seeds presented by F. W. Moore, director, Royal Botanic Garden. Received January 21, 1921.

52358. LINUM ALPINUM L.

A herbaceous plant found in fields on the Alps and Jura Mountains, with slender stems branching at the top and decorated with numerous narrow leaves; the large lilac-blue flowers are in lax clusters at the tips of the branches. It thrives in the sun and is much esteemed for rock gardens; it flowers from June until the winter and requires no care. (Adapted from Correvon et Robert, Flore Alpine, p. 295.)

52358 to 52361—Continued.

52359. LINUM GRANDIFLORUM Desf.

Variety rubrum.

"An erect, branching plant, 25 inches high, native to Algeria. The bluish green leaves are darker than those of Linum usitatissimum, and the plant is also later and less determinate in its blooming period; the flowers are much larger and of a deep-red color." (J. C. Brinsmade, jr.)

For previous introduction, see S. P. I. No. 38972.

52360. LINUM MUELLERI Moris.

A plant 1½ feet high, with shrubby branching stem, found in hilly grazing lands in Sardinia. The green glabrous leaves have revolute margins; the lower are elliptic, the upper linear-lanceolate. The yellow flowers are in lax terminal panicles. (Adapted from Moris, Flora Sardoa, vol. 1, p. 358.)

52361. LINUM USITATISSIMUM L.

A form introduced for flax investigations.

For previous introduction, see S. P. I. No. 50160.

52362. Crataegus azarolus L. Malaceæ.

Hawthorn.

From Cefalu, Sicily, Italy. Seeds presented by Signor Salvatore Scalco, through E. M. Byrnes, assistant in charge, Experimental Gardens and Grounds, United States Department of Agriculture, Washington, D. C. Received January 24, 1921.

Among the species of Crataegus one of the most important is C. azarolus, with its numerous varieties and races. This is a shrub of the calcareous hills and grows only on very dry lands. If undisturbed, it grows as high as 13 to 16 feet, but its branches are generally hacked off for fuel by Arab women or mutilated by heavy stones thrown by the boys to shake down the fruit. Some varieties of C. azarolus have fruits as large as a large cherry, with a very agreeable acid taste. Although they are sold on the markets of the Orient, they would not be marketable in Europe or America because of the large stones; but specimens are often found which are nearly stoneless, and it is possible that this character could be fixed by selection. For 15 years or more the writer has used C. azarolus as a stock for pears with excellent results. Top grafted at 2 to 3 feet above the ground, it develops into a very beautiful, productive, and long-lived dwarf tree, provided the grafting is done with a very early variety. This shrub occurs in extremely hot, dry places, and must therefore complete the greater part of its development early in the season. Its roots therefore are unable to furnish the amount of sap necessary to develop pears in August. If, however, it is grafted with a pear which fruits in May or June, when the roots of the Crataegus are in their period of greatest activity, the best results are obtained. The writer speaks only of pears because he has experimented with them, but he sees no reason a priori why these stocks should not do as well for apples, which he has not as yet tried. (Adapted from Aaronsohn, Agricultural and Botanical Explorations in Palestine, Bureau of Plant Industry Bulletin No. 180, pp. 15-16.)

For previous introduction, see S. P. I. Nos. 48516 and 48517.

52363. Dolichos lablab L. Fabaceæ.

Bonavist bean.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received February 4, 1921.

Lablab stringless. A tall twining plant, often reaching a height of 15 feet, with bunches of short, broad, yellowish white pods. The very numerous slightly downy pods contain brown seeds, half an inch broad and one-third of an inch thick, provided with a curious white aril or keel along one of the edges. (Adapted from Vilmorin-Andrieux & Co., General Wholesale Seed List, 1920, p. 28.)

52364 to 52366. LINUM spp. Linaceæ.

Flax.

From Amsterdam, Netherlands. Seeds presented by the director, Jardin Botanique de l'Université d'Amsterdam. Received January 25, 1921.

52364. LINUM MONOGYNUM Forst. f.

1920 harvest.

A very desirable species native to New Zealand, which blossoms in the greenhouse in May and June and has a succession of large white flowers for a great length of time. The plant is $1\frac{1}{2}$ feet high, with erect glaucous stems much branched at the top in a corymbose manner. The sepal margins are white and diaphanous; the handsome petals are broadly ovate-obtuse. (Adapted from Curtis's Botanical Magazine, pl. 3574.) 52365 and 52366. Linum usitatissimum L.

52365. A form introduced for experimental purposes; harvested in 1919.

For previous introduction, see S. P. I. No. 52361.

52366. Introduced for experimental purposes; from the 1920 crop. For previous introduction, see S. P. I. No. 52361.

52367. Kennedia Rubicunda (Schneev.) Vent. Fabaceæ.

From San Francisco, Calif. Seeds presented by Miss Alice Eastwood. Received January 25, 1921.

A tender, hairy twiner, native to Trinidad. The dark-purple flowers, with oblong, revolute standard and linear-oblong wings and keel, are borne in silky racemes shorter than the three-parted leaves. (Adapted from Edwards's Botanical Register, pl. 1101.)

For previous introduction, see S. P. I. No. 49487.

52368. Populus Euphratica Oliver. Salicaceæ.

Poplar.

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received January 26, 1921.

This Algerian tree attains a height of 50 feet. The wood is harder than that of most other poplars. It is used for planking and boat building, also for beams, rafters, boxes, paneling, and turnery. On account of its lightness the wood is frequently used for rafts. Cattle browse on the leaves. (Adapted from Mueller, Select Extra-Tropical Plants, p. 417.)

For previous introduction, see S. P. I. No. 30054.

52369 to **52374**. Linum spp. Linaceæ.

Flax.

From Edinburgh, Scotland. Seeds presented by Dr. Isaac Bayley Balfour, director, Royal Botanic Garden. Received January 26, 1921. Quoted notes by J. C. Brinsmade, jr., Office of Cereal Investigations, Bureau of Plant Industry.

52369 to 52374—Continued.

52369. LINUM FLAVUM L.

"A perennial branching plant native to Europe, 5 to 10 inches high, with large yellow flowers."

52370. LINUM GRANDIFLORUM Desf.

Variety rubrum. Introduced for flax investigations.

For previous introductions, see S. P. I. No. 52359.

52371. LINUM MONOGYNUM Forst. f.

A form introduced for experimental purposes.

For previous introduction, see S. P. I. No. 52364.

52372. LINUM PERENNE L.

Variety sibiricum.

"An erect, branching compact plant, 6 to 12 inches high, with bluegreen leaves and purple flowers. Native to Europe."

This species is much esteemed for rock gardens. It flourishes in the sun and flowers from June until the winter without requiring any care. (Adapted from Correvon et Robert, Flore Alpine, p. 295.)

52373. LINUM TENUIFOLIUM L.

This plant differs from Linum alpinum in its shorter, more slender stems, its longer, narrower leaves rough at the edges, and in its rose-lilac fugacious corolla. It grows on the warm sunny slopes of the lower regions of the Alps and Jura Mountains. It is cultivated for rock gardens, requires no care, and flowers from June to winter. (Adapted from Correvon et Robert, Flore Alpine, p. 295.)

52374. LINUM USITATISSIMUM L.

Introduced for the Office of Cereal Investigations.

For previous introduction, see S. P. I. No. 52365.

52375 and 52376.

From Cambridge, England. Seeds presented by J. Burtt Davy. Received February 2, 1921.

52375. Annona Cherimola Mill. Annonaceæ.

Cherimoya.

"Seeds of a custard-apple from Madeira; I do not know that it is better than any others, but it might be of use to anyone working on this fruit." (Davy.)

52376. VIRGILIA CAPENSIS (L.) Lam. Fabaceæ.

"A very ornamental strain of the *keurboom* from South Africa, which may prove useful in Hawaii and ornamental in Florida and southern California as a flowering tree." (*Davy*.)

For previous introduction, see S. P. I. No. 48188.

52377. Diospyros ebenaster Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii, Seeds presented by Gerrit P. Wilder. Received February 4, 1921.

One of the most popular fruits of Mexico, where it is grown at altitudes up to 6,000 feet. In favorable situations the tree reaches a height of 60 feet. The bright-green, shining elliptic leaves are 4 to 8 inches long. The oblate, olive-green thin-skinned fruit is 2 to 5 inches in diameter. The soft, unctuous, dark chocolate-brown pulp is of sweet flavor somewhat similar to that of the kaki, but

scarcely so pleasant. This fruit is eaten fresh but is more highly esteemed by Europeans when the pulp is beaten with a small quantity of orange or lemon juice and served as a dessert. It should be chilled thoroughly before being served. (Adapted from *Popenoe*, *Manual of Tropical and Subtropical Fruits*, p. 370.)

For previous introduction, see S. P. I. No. 49480.

52378. JUNIPERUS THURIFERA L. Pinaceæ.

Juniper.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received February 4, 1921.

"Found at Awies, at an altitude of 1,800 meters." (Trabut.)

A tree 5 to 10 meters high, with a thick trunk and a rounded or flattened crown. The light-brown or bluish pruinose fruits are erect or horizontal. Native to Spain. (Adapted from Lázaro, Compendio de la Flora Española, vol. 1, p. 594.)

52379. STACHYS SIEBOLDI Miquel. Menthaceæ.

From Paris, France. Tubers purchased from Vilmorin-Andrieux & Co. Received February 5, 1921.

A perennial, growing 10 to 18 inches tall, with creeping rootstocks. It is cultivated for its 2 to 3 inch slender nodose white tubers. These tubers soon shrivel when exposed to the air and should be lifted only when wanted. They are eaten cooked in different ways or as a salad. (Adapted from Vilmorin-Andrieux & Co., General Wholesale Seed List, p. 53.)

For previous introduction, see S. P. I. No. 50541.

52380 to **52382**. Linum spp. Linaceæ.

Flax.

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Hortus Botanicus Bergianus. Received February 8, 1921.

52380. LINUM AUSTRIACUM L.

A perennial herb found in Vizcaya and Catalonia, Spain, with an almost woody root, linear-lanceolate leaves, and nearly corymbose racemes. The violet-red or light-blue petals are ovate-rounded. (Adapted from Lázaro, Compendio de la Flora Española, vol. 2, p. 296.)

52381. LINUM FLAVUM L.

This form was introduced for experimental purposes.

For previous introduction, see S. P. I. No. 52369.

52382. LINUM USITATISSIMUM L.

Introduced for experimental purposes.

For previous introduction, see S. P. I. No. 52374.

52383. Miscanthus condensatus Hack. Poaceæ. Plume-grass.

From Yokohama, Japan. Seeds presented by S. Iida, manager, Yokohama Nursery Co. Received February 9, 1921.

"A grass native to Hachijo Island (also at the latitude of Tokyo) of an evergreen and tender nature, and with a wider blade and thicker stalk than is found in our common Miscanthus. It is extensively cultivated as fodder; cattle like it better than cornstalks. The excellent quality of the milk products of the island is said to be due to this grass." (*Iida*.)

52384 to 52386.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921.

52384. Gossypium arboreum L. Malvaceæ.

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"At Wat Lum, Siam, along the Menam River, I found an interesting cotton plant 10 to 12 feet high, worthy of cultivation on account of its beautiful red flowers. There were very few seeds, but I am sending some." (Rock.)

For previous introduction, see S. P. I. No. 34184.

52385. Solanum mammosum L. Solanaceæ.

"From Champorn, Lower Siam. An ornamental plant with peculiar fruits having fingerlike protuberances at the stem end." (Rock.)

For previous introduction, see S. P. I. No. 48145.

52386. THESPESIA LAMPS (Cav.) Dalz. and Gibs.

"An ornamental shrub 5 to 8 feet in height, with large yellow flowers. It is common in the forests of northern Siam." (Rock.)

A small bush common in the tropical jungles of India, Burma, and Ceylon, from Kumaon eastward, ascending to 3,000 feet in Nepal. The young twigs yield a good fiber. The root and fruit are used medicinally. The tough pliant wood is much used in certain parts of Bombay Province for making drums. (Adapted from Watt, Dictionary of the Economic Plants of India, vol. 6, pt. 4, p. 45.)

For previous introduction, see S. P. I. No. 26166.

52387 to 52391.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921. Quoted notes by Mr. Rock.

52387. Castanea diversifolia Kurz. Fagaceæ.

"(No. 81. From Bangkok, Siam.) Mighty trees with wonderful crowns, straight trunks, and fine wood. The nuts are quite sweet and very tasty when roasted. The trees are prolific bearers, and seeds are plentiful just now."

52388 and 52389. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo. (C. decumana Murr.)

52388. "(From Nakon Chaisri, Siam.) Nakon Chaisri pummelo, grown in Nakon Chaisri, and presented by Dr. Yai, Minister of Agriculture, who has a garden up the Menam River 8 miles from Bangkok. There are three distinct seasonal crops, and I was told that the crop borne during the rainy season usually produced seeds, while in the other seasons the fruits are seedless. Dr. W. A. Graham, agricultural adviser, says that the formation of seeds is due to pollination by a fly, which is apparently absent at other seasons.

"Doctor Yai, who is an expert on pummelos, etc., says that when plants of this pummelo are brought to and planted in Bangkok, they change their character entirely and become quite a different thing; that the trees, in fact, bear fruits identical with a pummelo long cultivated in Bangkok and known as Ban Kun Non. Doctor Yai thinks that the Nakon Chaisri pummelo originated from this

52387 to 52391—Continued.

Ban Kun Non and that when brought to Bangkok from Nakon Chaisri, only an hour or so distant by rail, it reverts to the Ban Kun Non. The Nakon Chaisri pummelo can not be shipped for various reasons; the main one is that it loses its aroma.

"The citrus fruits differ considerably here; for example, all citrus fruits grown south of Bangkok and also nearer the sea are fer superior to those north of Bangkok. A matter of 8 miles or so makes a great difference. Those grown south of Bangkok are irrigated or inundated by very salty water, as the tide carries the salty ocean water up the Menam River and into the Klongs. When planting the Nakon Chaisri pummelo elsewhere the natives always add salt to the soil.

"North of Bangkok the river water is quite sweet. I tasted mandarins, choice fruits grown south of Bangkok, and fruits from stock which was derived from the southern garden but grown north of Bangkok, and the difference was tremendous. Those grown south of Bangkok sell for 6 ticals per hundred, and those grown north of Bangkok, although larger, sell for 3 ticals per hundred because the aroma is not comparable."

52389. "(From Bangkok, Siam.) Thong Dee pummelo. Seed presented by Doctor Yai, Minister of Agriculture. Doctor Yai considers this the best pummelo of Siam; it is a little acid and so is better liked than the Nakon Chaisri, which is very sweet; it is a splendid shipper and has quite the aroma of the Nakon Chaisri. The Thong Dee pummelo does not lose its flavor when planted elsewhere; it produces seeds and is also seedless at times."

52390. Pterocarpus macrocarpus Kurz. Fabaceæ.

"From Korat, Siam. The *mai padou*, one of the finest timber trees of Morat. It grows to a height of 150 feet with a girth of 10 feet at 4 feet above the ground. All the wood, or nearly all, is bought by Japan; it is very hard and splendidly adapted for furniture and also for construction work."

52391. Quercus Truncata King. Fagaceæ.

Oak.

"(No. 75. From Bangkok, Siam.) A valuable oak which grows on dry, shady, or gravelly slopes, at an altitude of 2,400 to 5,000 feet, and I should think that it would thrive in California and also in Florida. The acorns are very sweet and are eaten roasted. I have eaten many of them myself and they are rather good. The tree is a prolific bearer and seeds are plentiful just now."

52392. Malus sylvestris Mill. Malaceæ.

Apple.

(Pyrus malus L.)

From Kona, Hawaii. Scions presented by J. E. Gamalielson, weather observer, through Prof. W. H. Sherzer, Michigan State Normal College, Ypsilanti, Mich. Received March 29, 1921.

"A sport found by Mr. Gamalielson, about 15 years ago, growing on a fallen tree-fern log. He recognized the growing sprouts as being those of the apple, and he brought one to his home. It grew there for some time and bore fruit. From the original tree he transferred a sprout to his present home, and it has

been bearing ever since, some years so prolifically that the branches had to be propped to keep them from breaking off. The apple produced is a moderately good one and entirely without seeds. Apples do not grow very favorably in that climate. The elevation at Kona, Hawaii, is 500 feet; the precipitation about 127 inches, temperature averaging approximately 70° F." (William A. Taylor.)

52393 to 52397. Quercus spp. Fagaceæ.

Oak.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921. Quoted notes by Mr. Rock.

"From Bangkok, Siam. Valuable oaks which grow on dry, shady, or gravelly slopes, at altitudes of 2,400 to 5,000 feet, and I should think that they would thrive in California and also in Florida. The acorns are very sweet and are eaten roasted. I have eaten many of them myself, and they are rather good. The trees are prolific bearers, and seeds are plentiful just now."

52393 and 52394. QUERCUS LINDLEYANA Wall.

52393. "No. 77a."

52394. "No. 77b."

52395. Quercus polystachya Wall.

" No. 78."

52396. Quercus sootepensis Craib.

"No. 82."

52397. Quercus thomsoni Miquel.

" No. 89."

52398. Euphorbia sp. Euphorbiaceæ.

From Meping River bluff, Fa Man, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 1, 1921.

"Mai khai. A valuable shrub for use for binding sand on steep banks. It is exceedingly strong." (Rock.)

52399 to 52421.

From Honolulu, Hawaii. Seeds presented by Dr. Harold L. Lyon, in charge, department of botany and forestry, experiment station of the Hawaiian Sugar Planters'. Association. Received January 31, 1921. Quoted notes by Dr. Lyon.

52399. Canarium rufum A. W. Benn. Balsameaceæ.

"Forwarded by the director of the Botanic Garden, Singapore."

A medium-sized tree with oblong coriaceous pinnæ 1 to 2 feet long. The flowers are fascicled on a terminal panicle. The drupes are 2 inches long. Native to Malakka. (Adapted from Hooker, Flora of British India, vol. 1, p. 533.)

52400. Canavali obtusifolium (Lam.) DC. Fabaceæ.

"Collected in Fiji by C. E. Pemberton."

A glabrous perennial creeper, widely distributed as a strand plant on tropical shores, with pinnately trifoliate leaves and few-seeded pods. According to Maiden, the brown oblong seeds are cooked and eaten by the Australian natives. The plant is useful as a binder of loose sand. (Adapted from Contributions from the United States National Herbarium, vol. 9, p. 211.)

For previous introduction, see S. P. I. No. 48600.

.52399 to 52421—Continued.

52401. Cassia grandis L. f. Cæsalpiniaceæ.

"Forwarded by director of the Botanic Garden, Singapore."

A tree of medium size, native to the West Indies and Guiana, with a fairly stout stem; it branches irregularly and has a moderate spread. The large pinnate leaves are dark green. The pretty pink flowers are borne on innumerable short racemes along the bare branches, never or rarely among the foliage. The large, rough, hardwood pods, 16 to 18 inches long and 1½ inches wide, almost round, are borne in great numbers; the numerous brown flattish, oblong seeds, rather small for the size of the pod, are each in a separate compartment wrapped in a thick gluelike substance. The beans are nondehiscent. Creoles are very fond of eating the substance in which the seeds are inclosed, although it has a very pungent odor. (Adapted from Journal of the Board of Agriculture of British Guiana, vol. 12, p. 4.)

For previous introduction, see S. P. I. No. 46140.

52402. Cycas sp. Cycadaceæ.

"A cycad which grows here in dense groves; it is from 5 to 25 feet in height and resembles Cycas revoluta."

52403. Elaeocarpus sp. Elæocarpaceæ.

"A fine tree with large glossy leaves."

52404 to 52410. Figure spp. Moraceæ.

Fig.

52404. Ficus sp.

"Collected in Fiji by C. E. Pemberton."

"A tree 20 to 40 feet tall." (Pemberton.)

52405. Ficus sp.

- "Collected near Cairns, North Queensland, by J. A. Kusche."
- "The only fig tree seen here, found growing in a salt-water slough near Cairns. The tree is about 100 feet tall, with no aerial roots, with compact dense foliage, and with a spread of about 100 to 150 feet. The dark-red fruit is the size of a walnut." (Kusche.) 52406. Figure 52.
 - "Collected near Cairns, North Queensland, by J. A. Kusche."
- "A large clean tree with fruit of a fine delicately sweet flavor and the size of a black Smyrna fig, only more rounded and dark crimson when ripe." (Kusche.)

52407. Ficus sp.

- "Collected on Prince of Wales Island by J. A. Kusche."
- "A large spreading tree." (Kusche.)

52408. Ficus sp.

- "Collected on Prince of Wales Island by J. A. Kusche."
- "One of the largest figs on the island; the fruit is orange-yellow." (Kusche.)

52409. Ficus sp.

- "Collected on Prince of Wales Island by J. A. Kusche."
- "Small-leaved fig; a large spreading tree." (Kusche.)

52410. Ficus sp.

- "Collected on Prince of Wales Island by J. A. Kusche."
- "A very large tree, white fruited." (Kusche.)

52399 to 52421—Continued.

52411. FLACOURTIA INDICA (Burm. f.) Merr. Flacourtiaceæ.

(F. ramontchi L'Hérit.) Ramontchi.

"Collected in Fiji by C. E. Pemberton." •

"An introduced tree 30 feet tall, called 'Indian cherry,' a good ornamental with rich dark foliage." (Pemberton.)

For previous introduction, see S. P. I. No. 28289.

52412. MAXIMILIANEA VITIFOLIA (Willd.) Krug and Urb. Cochlosper-(Cochlospermum hibiscoides Kunth.) [maceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

"A tree from 10 to 50 feet tall with leaves like those of the maple; very showy when in bloom, with clusters of deep-yellow flowers the size of a dollar." (Kusche.)

52413. MIMUSOPS Sp. Sapotaceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

"Native plum. The fruit is eaten by the natives." (Kusche.)

52414. MUCUNA sp. Fabaceæ.

"Collected in Fiji by C. E. Pemberton."

52415. PARINARI Sp. Rosaceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

"One of the finest and largest trees on the island, 25 to 150 feet high, with very hard wood, and a spread of 150 to 200 feet. It grows everywhere on seashore and mountains. The tree is clean; no insects were noted." (Kusche.)

52416. STERCULIA sp. Sterculiaceæ.

"Collected on Prince of Wales Island by J. A. Kusche."

52417. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ.

Bor.

"Collected in Fiji by C. E. Pemberton."

"A small tree 15 feet in height, with an edible, apple-flavored yellowish green froit 1 inch in diameter. Said to be from India." (Pemberton.)

For previous introduction, see S. P. I. No. 45625.

52418. (Undetermined.)

"Collected in Fiji by C. E. Pemberton."

"A tree 30 feet tall, native forest 'Lami.'" (Pemberton.)

52419. (Undetermined.)

"Collected in Fiji by C. E. Pemberton."

"A shrub." (Pemberton.)

52420. (Undetermined.)

"Collected on Prince of Wales Island by J. A. Kusche."

"A nice spreading small tree in the jungle, with long, dark, glossy leaves and hard wood." (Kusche.)

52421. (Undetermined.)

"Collected on Prince of Wales Island by J. A. Kusche."

"A small tree growing near the beach." (Kusche.)

52422 to 52424. DATURA METEL L. Solanaceæ. Datura.

From Goa, Portuguese India. Seeds presented by P. Correia Affonso. Received January 21, 1921.

52422. "A plant which has been used for centuries by the Hindus, Persians, Arabs, and other oriental peoples as a narcotic. In India, Datura doctors dispensed these seeds which are often used by thugs and other criminals to render their victims unconscious, dispensing it clandestinely with food or drink. Goa may be regarded as the type locality of this species. At least three different forms occur, chiefly distinguished from one another by the color of the stems and flowers, and also by the presence or absence of prickles on the capsules. All normal forms are characterized by 5-toothed trumpet-shaped corollas and globose, tuberculate, or spiny capsules which differ from those of our common Datura stramonium in being borne on inclined or nodding, instead of erect, peduncles and in not being regularly dehiscent." (W. E. Safford.)

For previous introduction, see S. P. I. No. 43774.

52423. This may possibly be a different color from S. P. I. No. 52422.

52424. Possibly a different form from the foregoing.

52425 and 52426. Holous sorghum L. Poaceæ. Sorghum. (Sorghum vulgare Pers.)

From Johannesburg, Transvaal. Seeds presented by the Agricultural Supply Association. Numbered January, 1921. Quoted notes by H. N. Vinall.

"The results of tests at Chillicothe, Tex., in 1921, indicated that these two lots were not equal either in yield or quality to the regular strains of Blackhull kafir. As forage they would be classed as medium, and the seed yield was about average. The plants grew to a height of 5½ feet, a little taller than our ordinary Blackhull kafir."

52425. "The plants of this lot had 13 leaves, being therefore slightly better than the No. 52426 for forage."

52426. "The plants of this lot had 11 leaves."

52427 to 52431. Saccharum officinarum L. Poaceæ.

Sugar cane.

From Florida. Seeds presented through Dr. E. W. Brandes, Pathologist, Office of Sugar-Plant Investigations, United States Department of Agriculture, Washington, D. C. Received January 29, 1921.

52427. Christal, from J. W. Ives, Kreamer Island, Fla. For experimental purposes.

52428. D-74, from J. A. McGee, Ritta Island, Fla. For experimental purposes.

"A sugar cane of medium size, early maturing, imported from Demerara by the Louisiana Sugar-Experiment Station, and now one of the most popular varieties in Louisiana for sugar manufacture." (P. A. Yoder.)

52429. D-74, from A. H. Price, South Bay, Fla. For experimental purposes.

52430. D-74, from H. A. Braddock, Tory Island, Fla. For experimental purposes.

52427 to 52431—Continued.

52431. Florida Green, from W. B. Cross, Kreamer Island, Fla. Introduced for experimental purposes.

"Presumably a medium-sized soft green cane identical with Otaheite of Cuba and Bourbon of the British West Indies. Variety low in fiber and highly susceptible to most sugar-cane diseases. Liked for a chewing cane but not well adapted for sirup or sugar because of the lack of disease resistance and poor ratooning qualities." (P. A. Yoder.)

52432 to 52435. Saccharum officinarum L. Poaceæ.

Sugar cane.

From Rio Piedras, Porto Rico. Seeds presented by F. S. Earle, Insular Experiment Station. Received January 15, 1921.

52432. "D-109. A dark-red cane, originated in Demerara by Doctor Harrison, fairly resistant to root disease and a fairly good ratooner. Its dark color might make it undesirable for sirup-making. When allowed sufficient time to mature, the cane tests well for sucrose and purity." (H. B. Cowgill.)

"A very good germinator." (R. A. Vive.)

- 52433. "Kavangire (Uba). A slender fibrous variety of the northern India (Japanese) type, very prolific and resistant to most diseases. Immune to mosaic disease. Similar to or identical with Uba." (P. A. Yoder.)
- 52434. "P. R. 260. An erect-growing, green to yellowish green cane, having long stalks of good girth, which gave excellent tonnage in gran cultura (long period of growth—18 months in Porto Rico) and also made an exceptionally fine appearance at Central Guanica, where it was sent for trial. The tonnage obtained from gran cultura was excellent. It has ratooned only fairly well and will probably be more suitable for the south coast, where ratooning is little practiced." (H. B. Cowgill.)
- 52435. "P. R. 292. A tall erect-growing cane, of reddish green color, which gave an excellent yield as gran cultura, and a juice of good sucrose and purity. The stalks were long and of good girth. It stooled well and was vigorous and healthy. It also made a good growth as ratoon cane." (Annual Report of the Porto Rico Insular Experiment Station, 1917-1918, p. 91.)

52436 to 52448.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 14, 1921. Quoted notes by Mr. Rock.

52436. Castanea diversifolia Kurz. Fagaceæ.

"(No. 81. Chiengmai, Siam.)"

A moderate-sized evergreen tree found in Nepal, eastern Bengal, Assam, and Chittagong up to an altitude of 5,000 feet. The fruit is eaten and much resembles the filbert in shape and flavor but has a thinner shell. The gray hardwood splits well and is largely used for shingles in Darjiling. It coppies freely and is often pollarded and the branches burned for fertilizer. (Adapted from Watt, Dictionary of the Economic Products of India, vol. 2, p. 228.)

52436 to 52448—Continued.

52437. Elaeocarpus siamensis Craib. Elæocarpaceæ.

"(No. 80. Chiengmai, Siam.) A fine ornamental foliage tree, producing seeds in great abundance. The seeds are used as a narcotic by the Lao. The tree will grow well in Florida."

A tree about 9 meters high, with densely puberulent young branches and reddish bark. The lanceolate papery leaves are 7 to 14 centimeters long and 2.6 to 6 centimeters wide. The white flowers are in racemes and have the petals, 5 millimeters long and 4 millimeters wide, fringed almost to the middle. The tree is found in an evergreen jungle on Dai Sutep at Chiengmai at an altitude of 660 meters. Lao name, Mai Moon. (Adapted from Kew Bulletin of Miscellaneous Information, 1911, p. 23.) 52438. Gossypium sp. Malvaceæ.

"A cotton with a large lint of khaki color. It grows four days' journey from Chiengmai. This cotton grows wild in the mountains and is now being cultivated in some villages owing to the demand for khaki cotton cloth. It is woven in a village called Lampoon. Many a soldier's uniform is made from this cotton. I have seen Slamese or Lao officials in brown-cotton uniforms."

52439. ORYZA SATIVA L. Poaceæ.

Rice.

"(No. 94. Chiengmai, Siam.) Black rice, much liked as a breakfast food by the Europeans in Chiengmai. When boiled it is deep purple and has a very fine nutty flavor, quite unlike that of the ordinary rice. It is cultivated exactly like the other rice. The leaves, stalks, etc., are all black, and a field of black rice stands out plainly among the ordinary rice fields. I think that it can be developed as a breakfast food in the States."

52440 to 52448. Quercus spp. Fagaceæ.

Oak.

52440 and 52441. QUERCUS JUNGHUHNII Miquel.

52440. "(No. 88. Chiengmai, Siam.) An oak with edible acorns greatly liked by the Lao people."

52441. "(No. 90. Chiengmai, Siam.) A variety of No. 88 [S. P. I. No. 52440]."

52442. QUERCUS Sp.

"(No. 77. Chiengmai, Siam.)"

52443. QUERCUS POLYSTACHYA Wall.

"(No. 78. Chiengmai, Siam.)"

52444. QUERCUS FENESTRATA ROXD.

"(No. 79. Chiengmai, Siam.)"

52445 and 52446. QUERCUS THOMSONI Miquel.

52445. "(No. 86. Chiengmai, Siam.)"

52446. "(No. 89. Chiengmai, Siam.)"

52447. Quercus kerrii Craib.

"(No. 91. Chiengmai, Siam.)"

52448. Quercus sp.

"(No. 92. Chiengmai, Siam.)"

52449. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ.

(A. triloba Forst.) Lumbang.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, in charge, Agricultural Experiment Station. Received February 10, 1921.

"Individuals here eat these nuts to some extent, but occasionally they are made quite ill from them, owing to the stage of ripeness of the nut or to some peculiar characteristic of the person that eats them. If they are eaten unripe, they act as a strong purgative; if fully mature and roasted, they are doubtless, in most cases, harmless. From the general experience in Porto Rico, however, I would advise eating them, if at all, with caution." (May.)

"Lumbang, or candlenut, oil is used in soap making, and in the Philippine Islands the press cake is highly prized as a fertilizer." (R. A. Young.)

52450. Telfairia pedata (J. E. Smith) Hook. Cucurbitaceæ.

From Nairobi, Kenia, British East Africa. Seeds presented by S. W. Eells, American consul, through Dr. H. L. Shantz, Physiologist in Charge of Plant Physiological and Fermentation Investigations, Bureau of Plant Industry. Received January 13, 1921.

"A perennial climber, indigenous to eastern Africa, Zanzibar, and Pemba, which grows very luxuriantly and prolifically in this colony. The kernels of the seeds are used by the natives, both as a foodstuff and as a source of edible oil.

"The following analysis showing the percentage of the constituents of the seeds has been published by Gilbert (see Sadebeck, Die Kulturgewächse der Deutschen Kolonien und Ihre Erzeugnisse, Jena, 1899, p. 245): Moisture, 6.45; ash, 2.04; oil, 36.02; protein, 19.63; woody fiber, 7.30; nitrogen-free extractive matter, 28.45.

"These seeds are flat, irregularly circular in shape, and about $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter. The single seeds average 4.9 grams in weight.

"The Imperial Institute reported as follows:

"'The seeds consist approximately of fibrous husk 11 per cent, shell 38 per cent, and kernel 51 per cent.'

"A previous investigator has recorded 7, 33, and 60 per cent of fibrous husk, shell, and kernel, respectively. The kernel yields 56.9 per cent of slightly reddish brown oil.

"The oil from seeds from Zanzibar gave the following analysis: Specific gravity at 15° C., 0.919; acid value, 2.6; saponification, 196; iodin value, 89.

"This is a nondrying oil and has a pleasant, slightly sweet taste. It would be suitable for soap manufacture, and also as an edible oil. The seed is used by Europeans in this colony both as a nut and as a flavoring for cakes.

"The reason that these seeds are not more used is due to the hardness of the shell and the difficulty of removing it, as well as to the intensely bitter, green skin which separates the kernel from the shell. If a method could be found of removing the tough fibrous husks and this bitter skin, it would appear that the seed would be of considerable commercial value, both for its edible oil and for the manufacture of soap, as well as for the resultant oil cake which would probably make a good cattle feed. It would be impossible, however, to use the cake after pressing the unhusked seeds on account of the skin mentioned above.

"A German syndicate of soap and candle manufacturers at Mannheim has investigated the possibilities of these seeds, but express the opinion that it would be inadvisable to place consignments of the seeds on the European market until a machine had been invented for rapidly and cheaply shelling them.

"These seeds grow very rapidly in any place which is not touched by frost. The pod containing the seeds is about a foot in diameter when ripe. The vine climbs over neighboring trees and requires no care." (*Eells.*)

52451 to 52460.

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52451 and 52452. CARAGANA spp. Fabaceæ.

52451. CARAGANA ARBORESCENS Lam.

Siberian pea tree.

Variety sophoraefolia. A form of Caragana arborescens with extremely small leaflets. (Adapted from Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 95.)

52452. CARAGANA BOISI C. Schneid.

A vigorous species distinguished by its strong spines, the stipules lignified from the base of the rachis, and by its beautiful thick glabrous foliage which is notably persistent. (Adapted from Vilmorin and Bois, Fruticetum Vilmorianum, Catalogue 1, p. 57.)

52453 and 52454. Berberis spp. Berberidaceæ.

Barberry.

52453. Berberis brachypoda Maxim.

A bush from western China 4 to 7 feet high, with 3-parted spines, oval serrate leaves, yellow flowers in long slender panicles, and scarlet fruits which are up to half an inch in diameter. In its native country this barberry grows at altitudes of 5,200 to 11,700 feet. (Adapted from Sargent, Plantae Wilsonianae, vol. 1, p. 375, and Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 922.)

For previous introduction, see S. P. I. No. 43818.

52454. Berberis aggregata C. Schneid.

A shrub from thickets in the Min Valley, western Szechwan, at altitudes of 4,265 to 7,546 feet. It reaches a height of 5 feet and has yellowish brown spines in clusters of three. The oval-oblong leaves are rather small, with a few distant serrations. The yellow flowers, about one-fourth of an inch wide and almost sessile, are in dense racemes; the fruits are salmon red. (Adapted from Bulletin l'Herbier Boissier, 2d ser., vol. 8, p. 203, and from Sargent, Plantae Wilsonianae, vol. 1, p. 375.)

For previous introduction, see S. P. I. No. 43817.

52455. Deutzia sp. Hydrangeaceæ.

Apparently a new species of Deutzia.

52456 and 52457. Philadelphus spp. Hydrangeaceæ.

52456. PHILADELPHUS GRANDIFLORUS Willd. Common mock orange.

A scentless species (though not entirely inodorous) far superior in its display of flowers to any of the fragrant sorts. It makes strong growth up to 10 feet or more in height. When pruned after flowering it makes straight, long shoots of 5 feet or more, which are covered with lovely white flowers along their whole length in the flowering season. The long branches are of great beauty and are in demand for cut-flower decorating, as well as for lawn display. This is a southern species, growing from Virginia southward, but it is quite hardy in the Middle States, and its merit as a hand-

52451 to **52460**—Continued.

some, tall-growing shrub causes it to be extensively used for shrubbery plantings. (Adapted from *The Florists' Exchange*, vol. 38, p. 15.)

52457. PHILADELPHUS SERICANTHUS Kuehne. Chinese mock orange.

A bush 3 meters high, with inflorescences of 7 to 11 white flowers, native to thickets at altitudes of 1,300 meters in western Szechwan. The bark of 2-year-old twigs is nut brown or gray. The leaf blades are narrowly lanceolate, long-attenuate, with 3 to 8 or more small teeth or occasionally entire, smooth on both sides or with appressed hairs, or the underside densely white hairy on the veins. (Adapted from Sargent, Plantae Wilsonianae, vol. 1, p. 145, and from Gartenflora, vol. 45, p. 561.)

52458. Rosa beggeriana Schrenk. Rosaceæ.

Rose.

A bush 1 to 2½ meters tall with evenly prickly, pinnate leaves, the leaflets usually 7 to 9, elliptic to oblong, smooth and deep green above, generally thickly hairy and bluish green below. The inflorescences are 1 to nearly 50 flowered and the flowers white, cream, or more rarely red. The fruits are very dark red. (Adapted from Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 572.)

52459. Spiraea myrtilloides Rehder. Rosaceæ.

Spirea.

A graceful shrub 2 to 3 meters high and excessively spreading. The young branches are chestnut or fuscous brown and glabrous. The numerous short spurs, densely covered with the persistent fulvously pubescent bud scales and bases of the petioles, give to the 2 and 3 year old branches a peculiar appearance. The somewhat papery oval leaves are entire, cuneate at the base, glabrous and obscurely bluish green above, paler and laxly pilose beneath. The umbellate, hemispherical racemes are densely many flowered and are borne at the tips of short, few-leaved branches. The white flowers, 5 to 6 millimeters in diameter, are on graceful pedicels 3 to 6 meters long. Native to upland thickets at altitudes of 3,000 to 4,000 millimeters in western Szechwan. (Adapted from Sargent, Plantae Wilsonianae, vol. 1, p. 440.)

52460. RHODODENDRON CHARTOPHYLLUM Franch. Ericaceæ.

An evergreen bushy species with white to lavender glabrous flowers, 3 to 4 centimeters long, broadly funnel formed and five lobed, on elongated flowering branches. The oblong or narrowly lanceolate leaves are rigidly coriaceous, glaucous above and sparsely scaly below. Native to Yunnan and extending from western Szechwan to Tatsienlur (Soulie). (Adapted from *The Garden, vol. 78, p. 304,* and from *Morot, Journal de Botanique, vol. 9, p. 398.*)

52461 to 52464. Pyrus spp. Malaceæ.

Pear.

From Arlington Farm, Va. Seedlings of Asiatic hybrid pears. Numbered March, 1921. Quoted notes by J. Marion Shull, botanical artist, Office of Fruit-Disease Investigations, Bureau of Plant Industry.

"Oriental hybrid pear seedlings bred by Dr. M. B. Waite, Office of Fruit-Disease Investigations, United States Department of Agriculture, for blight resistance and grown at Arlington Farm."

23564-23----3

52461 to 52464—Continued.

52461. Pyrus sp.

"A tree of medium size and vigor with light-brown bark and fairly upright branches. The light-green leaves are 2 inches long and 1 inch wide. The tree is apparently productive and is probably as blight resistant as the *Kieffer*. The large obovate to elliptic light-yellow fruit, $3\frac{1}{4}$ inches long and 3 inches in diameter, has a medium-thick, smooth, brown-dotted skin and juicy, crisp, mild-flavored flesh, granular but finer grained than that of the Angoulème. The fruit ripens September 15 to 30, and the dessert quality is good. The medium-stout stalk is 1 inch long and inserted in a slight cavity."

52462. Pyrus sp.

"A large vigorous tree with dark-brown bark, moderately spreading branches, and abundant foliage. The blight resistance is probably not equal to that of the *Kieffer;* the original tree is dead from blight at the roots and is now known only by top-worked trees and nursery stock. The smooth, thin-skinned yellow-russet fruit, 2 inches in diameter and of slightly irregular pyriform shape, ripens about September 10. The rich, juicy, medium fine-grained flesh is rather acid and of excellent dessert quality."

52463. Pyrus sp.

"A somewhat spreading tree of medium size and vigor, with only moderately abundant light-green leaves $2\frac{1}{4}$ inches long. The blight resistance is good. (No blight has been observed, and the tree is very vigorous in the nursery row.)

"The obovate to obconic fruit, 2 to $2\frac{1}{4}$ inches in diameter, of regular form, with a short stout stem inserted in a very slight depression, ripens September 1 to 10. The golden russet to red-brown rather smooth skin has numerous grayish dots. The flesh is of very good dessert quality and is melting, sirupy, and Seckellike."

52464. Pyrus sp.

"This large, vigorous, somewhat spreading tree with dark-brown bark is very blight resistant. (No blight observed.) The regular obovate fruit is 3½ inches long and 3 inches in diameter, with a medium-long, rather slender stem inserted in a pronounced cavity. The medium-thin skin is yellow, tending to redden in the sun. The juicy tender flesh ripens about September 15 and is of good dessert quality. It is distinctly sweeter, juicier, tenderer, of better quality, and less stony than the Kieffer."

52465 and 52466.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 14, 1921.

52465. Hydnocarpus anthelminthica Pierre. Flacourtiaceæ.

Maikrabao.

"(No. 83. Chiengmai, Siam.)" (Rock.)

For a full discussion of this species and its use in the treatment of leprosy, see United States Department of Agriculture Bulletin No. 1057, "The Chaulmoogra Tree and Some Related Species."

For previous introduction, see S. P. I. No. 48227.

52465 and **52466**—Continued.

52466. Livistona sp. Phænicaceæ.

Fan palm.

"(No. 85. Chiengmai, Siam.) This is in all probability a new species; it has large oval blue fruits, the flesh of which is eaten by the natives after it has been boiled. They sell three for 1 salung (\$0.067)." (Rock.)

52467. Chayota edulis Jacq. Cucurbitaceæ. Chayote. (Sechium edule Swartz.)

From the city of Guatemala, Guatemala. Fruits and roots presented by Don Marcial Prem, through Dr. W. E. Safford, economic botanist, United States Department of Agriculture, Washington, D. C. Received January 26, 1921.

"The fruits of this variety are quite large (those received, 24 and 28 ounces, respectively), almost spherical, dark green, and practically free from corrugations, though there are small depressions at both the stem and blossom ends of the fruits. Broad ranks of thick, coarse spines extend from stem to fissure of the fruits, between which are narrow bands that are practically free from spines. The quality of the fruit is good, though this is not considered the best of the Guatemalan varieties." (L. G. Hoover.)

52468. Hydnocarpus anthelminthica Pierre. Flacourtiaceæ.

Maikrabao.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received January 20, 1921.

"From Korat, Siam. The seeds furnish an oil used by the Chinese in the treatment of leprosy. I was told that the *maikrabao*, as this tree is called, grows plentifully along the rivers of Korat. No one at Korat, except the old natives, seemed to know anything about it. Finally I was taken out into the jungle, and there along some of the smaller tributaries to the main streams were Hydnocarpus trees in plenty. I photographed them in their native haunts. It would be well to plant those I sent along river banks or swampy places in Florida. Although they do well in cultivation, 1,000 feet is about the altitude at which they grow wild." (*Rock.*)

For an illustration of maikrabao trees, see Plate I.

52469 to 52489. Saccharum officinarum L. Poaceæ.

Sugar cane.

From Belmonte, Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Experiment Station. Received February 4, 1921. Quoted notes by Mr. Grey.

"All numbers refer to Harvard seedlings."

52469. "H 11.027. Good for all situations; fine for milling; tolerates mosaic."

52470. "H 11.050. Robust grower of upright habit; tolerates mosaic."

52471. "H 15. A fine cane for hilly land; high in sucrose."

52472. "H 144. Resistant in old lands."

52473. "H 219. An improved Crystalline cane seedling."

52474. "H 289. Resistant against cane root disease; robust."

52469 to 52489—Continued.

52475. "H 598. Persistent cane for old land; resists mosaic."

52476. "H 1418. Heavy yield of cane; tenacious grower on low land."

52477. "Wild seedling from H 2038, naturalized; seed grows spontaneously along brooks."

52478. "*H* 4121. Heavy, upright, robust grower."

52479. "H 4124. Immune from mosaic; 90 per cent of the seedlings are resistant or immune. Seed held vitality over six months."

52480. "H 6047. Persistent grower on low land; high in carbohydrates."

52481. "H 6112. Resistant against mosaic; fine root tenacity."

52482. "H 6113. Resistant against mosaic; hardy; ratoons well."

52483. "H 6241. Tall, vigorous, upright; resistant against mosaic."

52484. "H 6142. Fine for general cultivation; high in sucrose."

52485. "H 6286. Tall, persistent-rooting variety; resistant against mosaic."

52486. "H 6296. Immune from mosaic, five years among mosaic plants; stands drought."

52487. "H 9050. A very robust grower, tolerant; not injured by mosaic."

52488. "H 9092. A very robust grower; tall, resistant; heavy tonnage."

52489. "H 9176. A robust grower on good land; high in carbohydrates; tolerant."

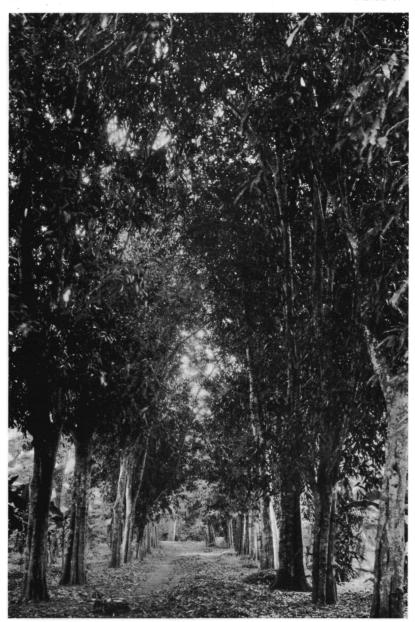
52490 and 52491. RUBUS IDAEUS L. Rosaceæ.

European raspberry.

From Maidstone, England. Plants presented by George Bunyard & Co., Royal Nurseries. Received February 5, 1921.

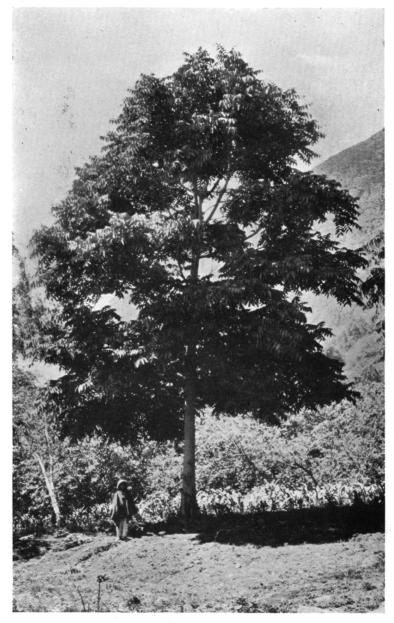
52490. Park Lane. This is undoubtedly one of the sweetest fruits grown; it is fairly large, roundish, and well flavored; the clusters are moderately large. The fruit is too tender for market use but is unrivaled for garden culture. The stout vigorous canes, often reaching a height of 6 feet, are covered with slender, almost soft bristles. The leaves are large and broad with overlapping flat leaflets which are held out horizontally. This variety was grown by Mr. Pyne, of Topsham, Devon, and introduced in 1912. (Adapted from Journal of Pomology, vol. 1, p. 243.)

52491. Pyne's Royal. This raspberry has fully satisfied the hopes that it evoked in 1913 when it was introduced and is now the largest of all varieties grown. Its size, however, has not detracted from its cropping powers, and it will, we imagine, be grown largely for market when it becomes more plentiful. The rich-red firm fruits, often 4 inches in circumference, are rather conical, of moderate sweetness, and often occur in clusters of twenty. The stout canes bear scattered dark thorns and large, rugose, down-curved leaves. This variety was grown by Mr. Pyne, of Topsham, Devon, in 1907, and introduced in 1913. (Adapted from Journal of Pomology, vol. 1, p. 243.)



AN AVENUE OF THE SIAMESE MAIKRABAO TREES, WHICH PRODUCE AN OIL VERY SIMILAR TO THAT OF THE CHAULMOOGRA TREE. (HYDNOCARPUS ANTHELMINTHICA PIERRE, S. P. I. NO. 52468.)

Seeds from the trees shown here were forwarded to Washington under S. P. I. No. 51773, and later, under S. P. I. No. 52468, more seeds, collected from trees near Korat in eastern Siam, were sent in. The oil from these trees is very similar to the true chaulmoogra oil and is used in the same way in the treatment of leprosy. (Photographed by J. F. Rock, Klong Sarn, Bangkok, Siam, October, 1920; P22628FS.)



THE TOCTE, A NATIVE ECUADORIAN WALNUT TREE. (JUGLANS SP., S. P. I. No. 52611.)

This tree strongly resembles our native black walnut ($Juglans\ nigra$), but the foliage is perhaps larger. The nuts are $1\frac{1}{2}$ inches in diameter, and the kernel has a mild pleasant flavor. The wood is said to be fine grained and to take a beautiful finish. (Photographed by Wilson Popenoe, Ambato, Ecuador, January, 1921; P18327FS.)

52492. Ananas satīvus Schult. f. Bromeliaceæ. Pineapple.

From Bahia, Brazil. Shoots presented by Dr. V. A. Argollo Ferrão. Received February 5, 1921.

"Abacaxi. Cultivated on the south of Bahia on a peculiar sandy soil, good only for that crop. They come to market on sailing vessels." (Argollo Ferrão.)

Previous introductions of abacaxi are apparently more or less resistant to the wilt disease, which has proved very destructive to this crop.

52493 and 52494.

From Bangkok, Siam. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 9, 1921. Quoted notes by Mr. Rock.

52493. IPOMOEA CARNEA Jacq. Convolvulaceæ. Morning-glory.

"Cuttings of a large woody, scandent or rambling shrub, which can be grown over trellis work and is one of the largest flowered and handsomest species I know. It is covered with pink flowers all the year round and is easily grown from cuttings."

52494. IRVINGIA MALAYANA Oliver. Simaroubaceæ.

"The seeds are very rich in fat, and an oil is extracted from them; they are also eaten roasted and remind one of butternuts. The seeds are sold on the market."

A tree native to Malaleka, with thick elliptic leaves 4 inches long and small flowers in axillary racemes. The large fruit is drupaceous. (Adapted from Hooker, Flora of British India, vol. 1, p. 522.)

52495. Adonts vernalis L. Ranunculaceæ.

From Groningen, Netherlands. Seeds presented by A. Fiet, director, Botanic Garden. Received January 5, 1921.

The best and most commonly cultivated Adon's and a desirable and very effective early bloomer.

For previous introduction, see S. P. I. No. 51762.

52496 and 52497.

From Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 10, 1921.

52496. Figus glomerata Roxb. Moraceæ.

"Madua. A large Ficus which grows on the banks of the Meping River. The edible fruits are red when ripe, a little smaller than the Smyrna fig, and are borne on the trunk and branches in great numbers." (Rock.)

For previous introduction, see S. P. I. No. 12111.

52497. Momordica cochinchinensis (Lour.) Spreng. Cucurbitaceæ.

"A large climber which grows along the banks of the Meping River. The large orange-colored spiny fruits are edible before maturity." (Rock).

For previous introduction, see S. P. I. No. 34692.

52498 to 52502. Triticum aestivum L. Poaceæ.

(T. vulgare Vill.)

Common wheat.

From Cambridge, England. Seeds presented by Prof. H. R. Biffen, Department of Agriculture, Cambridge University. Received February 11, 1921. Quoted notes by Prof. Biffen.

"Pure lines of Yeoman wheat which, I believe, are better in quality than the ordinary stocks in cultivation here, because the total nitrogen content is distinctly higher than that of ordinary stocks."

For previous introduction, see S. P. I. No. 46797.

52498. "Yeoman C."

52501. "Yeoman S."

52499, "Yeoman F."

52502. "Yeoman Y."

52500. "Yeoman H."

52503. Triticum turgidum L. Poaceæ.

Poulard wheat.

From Haifa, Syria. Seeds presented by Dr. A. Khazanoff, Jewish Colonization Association. Received February 11, 1921.

"Wheat of the *Hati* variety, which I secured from the Jewish colony of Yabniel in the district of Tiberias, Lower Galilee, Syria. This is the principal variety grown there and in the neighboring valleys. It does very well in the hot dry climate which characterizes that region, and may be of service in your hot and arid Southwest." (*Khazanoff*.)

52504 and 52505.

From Santa Cruz de la Sierra, Santa Cruz, Bolivia. Seeds presented by Herman Meschurtz. Received February 14, 1921.

52504. PIPTADENIA CEBIL Griseb. Mimosaceæ.

"Currebau-sevil, which we are using for tanning, and by the use of which I tanned a bull hide in three months. The tree grows in the poorest soil, also in stiff clay, and needs little water; it may be very useful in the Southern States." (Meschurtz.)

For previous introduction, see S. P. I. No. 48074.

52505. Prosopis sp. Mimosaceæ.

"Cuperi algaroba. A handsome shade tree which grows rapidly, yields fine wood for furniture, and bears large pods, 12 inches long and three-fourths of an inch in diameter, of which all live stock are fond." (Meschurtz.)

52506. Quercus ilex L. Fagaceæ.

Oak.

From Thrace, Turkey. Seeds presented by Stephen R. Capps, United States Geological Survey, through T. H. Kearney, United States Department of Agriculture. Received February 19, 1921.

"An evergreen live oak, desirable as an ornamental and hedge plant, with a hollylike, usually crinkly leaf, ranging in shade in different individuals from yellow-green to dark green. The leaves are very dense, so that the bush looks solid, and about like holly leaves in that they are prickly enough to discourage animals and children but not spiny enough to be really objectionable. The tough gnarled stems are very strong, and the smooth mottled gray bark is about like holly bark.

"The plant takes kindly to pruning, as witnessed by those bushes growing along trails where sheep and goats have kept them trimmed back. It is hardy

in a climate much like that of Washington, D. C., and is unaffected by temperatures of 0° to 110° F. These seeds were collected in Thrace, near the base of the Gallipoli Peninsula, where the plant is very common; it has a vertical range from sea level to 3,000 feet, the highest mountains in the district where it is found. The tree is adapted to a wide variety of soils, growing vigorously in beach sand, lowland silts, residual sandy and clayey soils, and on rocky surfaces with little soil.

"The bush grows to a height of 6 to 10 feet. I saw one individual, probably of the same species, that had a trunk 8 inches in diameter and was 20 feet high.

"To get the acorns before the crows and magpies beat me to them, I had to pick them before they fell naturally." (Capps.)

For previous introduction, see S. P. I. No. 30389.

52507. Dioscorea alata L. Dioscoreaceæ.

Yam.

From Crescent City, Fla. Presented by H. D. Collette, who grew it from material from the West Indies supplied by Samuel Rosen, New York City. Received February 24, 1921.

"Cuttings of a yam with yellowish flesh, somewhat moist, but of good quality for preparing mashed yam." (R. A. Young.)

52508. RAPHANUS SATIVUS L. Brassicaceæ.

Radish.

From Tientsin, Shantung, China. Seeds presented by Mr. K'ung, through H. S. Conard, Grinnell, Iowa. Received February 24, 1921.

"Lo-pu. A very 'sweet' radish from Tientsin, Shantung, China." (K'ung.)

52509. Eriogonum wrightii subscaposum S. Wats. Polygonaceæ.

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received February 24, 1921.

A low perennial found in the high montane belt of southern California. The leafy branches are short forming a close, dense mat, from which arise the short flowering stems. The bright-pink flowers are clustered near the ends of the stems and form a sharp contrast to the mat of small white woolly leaves. (Adapted from Jepson, A Flora of California, pt. 4, p. 415.)

52510 to 52513.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 17, 1921. Quoted notes by Mr. Rock.

52510. Diospyros mollis Griffith. Diospyraceæ.

"One of the most valuable dye plants in Siam. The Chinese import yearly 3,000,000 ticals (\$804,000) worth of silk, pay the duty on it, and all for the purpose of dyeing the silk black; every bit is again exported. There are large but rather primitive dye factories here. It is said that the Chinese have tried to grow the tree in China but were not successful. I have seen material dyed black which had been washed twice a week for three years and it certainly was still as black as black could be. The dyeing is said to be a laborious process. The fruit must be still green when collected for dyeing purposes; it is mashed in water and the material is dipped into it, the water is then thrown away, and the pulp is pressed and placed again in water; this process is repeated many times. The material must be dried in the sun after each dipping. It is difficult to secure ripe seeds, as the fruits are col-

52510 to 52513—Continued.

lected before maturity. The tree is about 25 feet high, with fruits the size of a large cherry."

52511. Inga laurina (Swartz) Willd. Mimosaceæ.

"A small ornamental tree native to South America, which is cultivated in Singapore."

A tropical American tree, 9 to 15 meters high, with leaves composed usually of four leaflets; the flower clusters are longer than in other members of this genus. As a shade tree for coffee this species is second in importance only to the "guava" (Inga vera). Specimens have been found, in some cases at least, with tubercles on the roots. The tree is one of those employed in the cacao cultivation of Guadeloupe in making hedges or windbreaks which are planted across the direction of the prevailing winds at distances of 100 meters. (Adapted from Cook and Collins, Economic Plants of Porto Rico, Contributions from the U. S. National Herbarium, vol. 8, p. 167.)

52512. LAGERSTROEMIA sp. Lythraceæ.

"A small tree with exceedingly ornamental flowers which are very large and purplish pink. It is found in the dry jungle of Korat."

52513. Sindora sp. Cæsalpiniaceæ.

"A tree growing in the dry jungle of Morat, eastern Siam. It is quite ornamental, and the pods are spineless."

52514. Hydnocarpus castanea Hook. f. and Thoms. Flacourtiaceæ.

From Moulmein, Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received February 21, 1921. Quoted notes by Mr. Rock.

"A large tree 50 to 80 feet in height with smooth light-brown bark and fruits the size of a large orange, ripening from March to July. Only one tree among thousands was found with ripe fruits on January 7, 1921. It was loaded with ripe and semiripe fruits. The tree grows on steep rocky hills along water-courses near the Karen village of Oktada, several miles from Paung, in the Martaban Hills, on the Kalama Mountain Range. The trees must be planted in gravelly, well-drained soil.

"Strange to say, the people in Moulmein know nothing about this tree, and the superintendent of the leper asylum here did not know that the tree grows at all in Burma. The foresters I met in the jungle never heard of the name *kalaw*, which is the Burmese name of the tree. Many of the Burmese I interrogated knew the name but not the tree; they knew the seeds from the bazaars where they are sold. Only people actually making a living by collecting these seeds can give information."

For a full discussion of this tree, see "The Chaulmoogra Tree and Some Related Species," United States Department of Agriculture Bulletin No. 1057.

52515 to 52529.

From Groningen, Netherlands. Presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received February 2, 1921. Quoted notes by Mr. Broekema.

52515 and 52516. AVENA SATIVA L. Poaceæ.

Oats.

52515. Seeds of a form of oats with a light husk.

52516. Seeds of a form of oats with dark husk.

52515 to 52529—Continued.

52517 to 52519. Hordeum vulgare pallidum Seringe. Poaceæ.

Barley.

52517. "Seeds of Bocumer gerst (winter barley)."

52518. "Seeds of Winter gerst."

52519. Mansholt wintergerst II. Seeds of the first, second, and "after" crop. It is shorter and stiffer than Mansholt wintergerst I; however, it is susceptible to rust. Of high weight per hectoliter. (Adapted from Autumn (Aug., 1919) Catalogue, Groninger Zaaizaadvereeniging.)

52520 to 52522. Solanum tuberosum L. Solanaceæ. Potato

52520. "Tubers of a form which has been extensively experimented with here and proved one of the best to be found."

52521. "Tubers of a form which has been extensively experimented with here and which has proved one of the best."

52522. "Tubers of a potato under extensive experimentation here which has proved one of the best."

52523 to 52529. TRITICUM AESTIVUM L. PORCER. Common wheat. (T. vulgare Vill.)

"Varieties of winter wheat which surpass all those which are known in this country and which in my opinion deserve to be tested in every region where winter wheat is cultivated."

52523. Addens, seeds of the original, especially developed for light soils by N. G. Addens, at Bellingwolde. Trials on the better sand and peat soils are to be recommended. The cold resistance of this wheat is very good; the yield is about 40 hectoliters per hectare; the straw is of medium length and fairly stiff; and the head is not heavy. This variety is developed from the so-called Belgian wheat and received from this a high value for baking. (Adapted from Autumn Catalogue (Aug., 1919), Groninger Zaaizaadvereeniging.)

52524. Diekhuis I. Seeds of the "after crop." The straw is long and stiff, and the grain red; the cold resistance is somewhat better than that of Wilhelmina; and the yield is good. It is more and more in demand for those soils which are not so well adapted for the growing of wheat. (Adapted from Autumn Catalogue (Aug., 1919), Groninger Zaaizaadvereeniging.)

52525. Millioen III. Seeds of the original and "after" crop. The variety is leafy with a large white grain. In yield and cold resistance it compares with Wilhelmina. (Adapted from Autumn Catalogue (Aug., 1919), Groninger Zaaizaadvereeniging.)

52526. "Pantso."

52528. "W. & E. P."

52527. "Wieb." 52529. "W. & W. D. 14."

52530 and 52531.

From Jocolo, Izabal, Guatemala. Seeds presented by Harry Johnson. Received February 18, 1921. Quoted notes by Mr. Johnson.

52530. Byrsonima crassifolia (L.) H. B. K. Malpighiaceæ. Nance. "A variety of the common nance, called here nance agrio, to distinguish it from the ordinary sweet variety which it much resembles in the tree

52530 and 52531—Continued.

and fruit. The fruits are pleasantly acid and do not seem to have quite so strong an odor as that of the sweet one. Both the sweet and sour varieties are made into a preserve. The fruits are packed in jars with a layer of sugar, then a layer of fruit, etc., afterwards some aguardiente (an inferior brandy) is added. This recipe has ceased to be of interest in the north. However, I can assure you it is good."

For previous introduction, see S. P. I. No. 43429.

52531. CROTALARIA STRIATA Schrank. Fabaceæ.

"Locally called *chipilin*. It is an ornamental perennial species reaching about 6 feet in height and spread. The spikes of pea-shaped yellow flowers and the young leaves are boiled with rice or meat and are very good. The plant is also good for forage."

For previous introduction, see S. P. I. No. 50751.

52532. Xanthosoma sp. Araceæ.

Yautia.

From Guatemala. Presented by Harry Johnson. Received March 17, 1921.

"Corms of the *malanga colorado*. The leafstalks are slightly reddish along the groove. It is a good variety around Jocolo." (Johnson.)

"This yautia is pink skinned and pink and white fleshed. It is mealy when cooked and of good flavor. The leaf stems are plain green, with slightly reddish or purplish shading near the margin of the sinus wings. The blade forms about a 95° angle with the petiole." (R. A. Young.)

52533. Castanopsis argentea (Blume) A. DC. Fagaceæ.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received February 16, 1921.

An evergreen tree 50 to 60 feet high, with thinly coriaceous, lanceolate leaves, shining above and sometimes quite silvery beneath. Native to Tenasserim and Martaban. (Adapted from *Hooker*, *Flora of British India*, vol. 5, p. 621.)

52534. TAMARIX APHYLLA (L.) Karst. Tamaricaceæ. Athel. (T. articulata Vahl.)

From Indio, Calif. Cuttings presented by Bruce Drummond, Government Date Gardens. Received February 15, 1921.

A bush or often a small tree 10 to 50 feet high, native to India, with pink flowers one-eighth of an inch in diameter, in slender spikes more or less interrupted. The branches are fastigiate, elongated, and slender, and the leaves are reduced to a very short sheath, with a minute tooth. (Adapted from Nicholson, Illustrated Dictionary of Gardening, vol. 4, p. 7, 1889.)

For previous introduction, see S. P. I. No. 45952.

52535 to 52545. Saccharum officinarum L. Poaceæ.

Sugar cane.

From Soledad, Cienfuegos, Cuba. Seed presented by Robert M. Grey. Received February 4, 1921. Quoted notes by Mr. Grey.

"H refers to Harvard seedlings."

52535. "H 4124. Resistant against mosaic; 90 per cent of the progeny are exempt. The seed held vitality from January to July."

52536. "H 6241. Harvard seedling; parent immune from mosaic."

52535 to 52545—Continued:

52537. "H 6296. Harvard seedling; parent immune from mosaic."

52538 to 52545. "These are resistant or tolerant, are robust growing, and suitable for cultivation on our old lands."

52538. "H 10.028."

52541. "H 1418."

52539. "Java 51."

52542. "H 1419."

52540. "H 1304."

52543. "H 4121. A heavy Javan seedling from J 247; resistant against mosaic."

52544. " H 9029."

52545. "H 9092."

52546 to **52556**. Triticum spp. Poaceæ.

From Maison Carree, Algiers. Seeds presented by Prof. L. Ducellier, L'École d'Agriculture. Received February 26, 1921. Quoted notes from Ducellier, Les Blés du Sahara, except as indicated.

"The Sahara wheats appear to be perfectly adapted to the Saharan regions; the heads and seeds are normally developed. The numerous related forms which are in the oases seem to indicate an ancient culture. The heads are remarkably well filled, each measure of grain sown yields 10 to 100 measure, and in certain cases, considering the climatic conditions, the yield is comparable with the best wheats of Europe. It does not seem that the ordinary varieties of wheat, even those with a great yield, can become under the best conditions as floriferous as certain Saharan varieties. This peculiar property of the Saharan wheats makes them interesting objects of hybridization."

52546 to 52552. TRITICUM SPELTA L.

Spelt

52546. "Abdessalem. From Taghouzi, Province of Gourara; a white beardless wheat, distinguished from European wheat by its shorter and more compact head."

52547 and 52548. "Bhamoud. From Khenessa de l'Augrout, Gourara. This grain is of excellent quality."

52547. "With red grain."

52548. "With white grain."

52549. "El Harcha. From Gourara. Also grown in the Province of Tesbit (Timmimoun)."

52550. "Ali ben Maklouf, or Ali, or Maklouf. From Gourara."

52551. "Lebbaga. From Gourara."

52552. "Masraf. From Gourara. A white bearded wheat which can not be completely husked by hand on account of its firm glumes."

These seeds were received as Triticum spelta var. saharae.

52553 to 52556. Triticum aestivum L.

Common wheat.

(T. vulgare Vill.)

52553. "Bahtane. From Gourara. It has also been grown in the oasis of Timmi, Touat."

52554. "Baroudi. From the oasis of Timmi, Touat."

52555. "El Moumena. From Gourara."

52556. "Ferek, or beardless Hamra. From Gourara. Also grown in the easis of Timmi, Touat."

These wheats were received as Triticum vulgare var. oasicolum.

52557 to 52565. Triticum Aestivum L. Poaceæ. Common wheat. (T. vulgare Vill.)

From Cowra, New South Wales. Seeds presented by J. T. Pridham, plant breeder, Experimental Farm, through J. A. Clark, agronomist, in charge of Western Wheat Investigations, United States Department of Agriculture. Received March 1, 1921. Quoted notes by Mr. Pridham, except as otherwise noted.

"Pure-line selections of Hard Federation wheat." (Clark.)

An early spring wheat, short, with strong white straw and erect dense awnless spikes with small hard vitreous white kernels which are very attractive and doubtless would attract buyers and bring a premium over other white wheats on American markets, as is the case in Australia. The plant has the distinctive brown, hard, and general appearance of Federation in the field, but differs in being slightly taller and earlier, in having a square and shorter spike, broader and squarer shoulders, and shorter, rounder, and harder kernels. The variety Hard Federation has been grown commercially in Australia since 1914. During the past few years it has replaced the Federation variety in many sections because of equal yields and better milling quality of the grain. (Adapted from Australian Wheat Varieties in the Pacific Coast Area, United States Department of Agriculture Bulletin No. 877, p. 11.)

 52557. "Wheat No. 24 (A8)."
 52562. "Wheat No. 69 (A6)."

 52558. "Wheat No. 30 (A8)."
 52563. "Wheat No. 71 (A6)."

 52559. "Wheat No. 55 (A7)."
 52564. "Wheat No. 71 (A9)."

 52561. "Wheat No. 66 (A6)."
 52565. "Wheat No. 73 (A9)."

52566. ARUNDO PLINII Turra. Poaceæ.

(A. mauritanica Desf.)

From Algiers, Algeria. Rhizomes presented by Dr. L. Trabut. Received February 28, 1921.

This grass is smaller in all parts than Arundo donax: the culms are mostly 1.5 meters tall and 4 to 7 millimeters thick; the blades, 1 to 2 centimeters wide, are smooth or scabrous on the margins only. The brown or yellow panicle is rather narrow and reaches 30 centimeters in length. Native to the Mediterranean region. (Adapted from Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 2, p. 334.)

52567. Pyrus communis X lindleyi. Malaceæ. Pear.

From Fruitland Park, Fla. Cuttings presented by Louis Bosanquet. Received February 11, 1921.

"Cincincis pear." (Bosanquet.)

A variety which resembles the *Sha Lea* pear very closely. It is the parent of numerous seedlings fruited by S. F. Smith. The medium to small fruit is of fairly regular oval form, with slightly roughened skin, light colored with numerous brown dots. The flesh is of yellowish white color with little flavor but juicy. The texture is crisp and breaking; and the core is large and gritty with large flattish black seeds. (Adapted from *Report of the Agricultural Experiment Station, Ithaca, N. Y., Bulletin No.* 332, p. 479.)

52568. Pyrus ussuriensis Maxim. Malaceæ.

Pear.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received February 28, 1921.

A Chinese pear stock recently discovered by Prof. F. C. Reimer, of the Southern Oregon Experiment Station, to be the most resistant to the blight which attacks and destroys the trees. (Adapted from Yokohama Nursery Co., Descriptive Catalogue for 1920, p. 55.)

For previous introduction, see S. P. I. No. 44051.

52569. Eugenia uniflora L. Myrtaceæ.

Pitanga.

From Porto Alegre, Rio Grande do Sul, Brazil. Seeds presented by G. S. Froes. Received January 12, 1921.

The pitanga is the best of the Eugenias. It is grown to some extent in Florida and California, but it has not been given the attention it deserves. No horticultural varieties have been established, since the tree is rarely propagated vegetatively, although there is considerable variation among seedlings.

For previous introduction, see S. P. I. No. 37026.

52570. Taiwania cryptomerioides Hayata. Pinaceæ.

From Jamaica Plain, Mass. Plants presented by Prof. C. S. Sargent, director, Arnold Arboretum. Received March 1, 1921. Collected originally by E. H. Wilson.

The loftiest tree in the forests of Taiwan is the Taiwania, which rears its small moplike crown well above all its neighbors. The average height of this tree is from 150 to 180 feet, but specimens exceeding 200 feet are known. The trunk is sometimes as much as 30 feet in girth, quite straight, and bare of branches for 100 to 150 feet. It is a strikingly distinct tree, singularly like an old Cryptomeria; both trees suggest gigantic lycopods. In the dense forests the crown is small, dome shaped or flattened, the branches few and short, and one wonders how so little leafage can support so large a tree. When the top is broken by storms, the lateral branches assume an erect position. In the more open forest the branches are massive and wide spreading, the crown is oval or flattened, and on small trees the branchets are often pendent. The Taiwania sheds its small branchlets as do Cryptomeria, Cunninghamia, and Sequoia. (Adapted from Journal of the Arnold Arboretum, vol. 2, p. 35.)

For previous introduction, see S. P. I. No. 46980.

52571 to 52573.

From Kulara, via Cairns, Queensland. Seeds presented by J. A. Hamilton. Received February 24, 1921. Quoted notes by Mr. Hamilton.

52571. Musa sp. Musaceæ.

Banana.

"Wild banana."

52572. Piper sp. Piperaceæ.

Pepper.

"Wild pepper seeds. A very ornamental vine with very good fruits; it likes rich alluvial soil and plenty of moisture in the growing season. Of course it will not stand much frost, but as it is uninjured by the few frosty nights here the plant should thrive in southern California."

Received as P. bancroftii, for which a place of publication has not yet been found.

52573. (Undetermined.)

"A pretty tree which grows in alluvial soil near creeks; it bears prolifically very acid fruits which make a good preserve."

52574 to 52580.

From Ambato, Ecuador. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received February 4, 1921. Quoted notes by Mr. Popenoe.

52574. Carica sp. Papayaceæ.

Babaco.

"(No. 533a. Ambato, Ecuador. January 3, 1921.) Seeds of a rather dwarf species 8 to 10 feet in height, which can probably be grown in the open in southern California. The fruits are about a foot long and nearly seedless; from 17 good specimens only 10 seeds were obtained, and it is rare to find specimens which contain more than 3 seeds. The fruit is like a slender papaya in form and appearance, but has highly aromatic flesh containing much papain. It is not good for eating until cooked, when it yields an excellent sauce with plenty of 'character.' The local name for this fruit is babaco and the plant is commonly propagated by cuttings. For cultivation in southern California and for hybridizing with the common papaya, I believe it to be a fruit of genuine merit."

52575. Duranta triacantha Juss. Verbenaceæ.

"(No. 536a. Ambato, Ecuador.) *Chivo.* A common indigenous shrub in ravines and on hillsides about Ambato, growing to a height of 15 feet and heavily armed with stiff sharp thorns, for which reason it ought to make an excellent hedge plant. Its pale-blue flowers, borne in clusters 3 or 4 inches long, are followed by golden berries half an inch in diameter. The plant should be sufficiently hardy for cultivation in California and Florida."

52576. Fragaria Chiloensis (L.) Duchesne. Rosaceæ.

Chilean strawberry.

"(No. 534. Ambato, Ecuador. December 29, 1920.) Ambato strawberry. That this plant has been cultivated at Ambato since a remote day is evidenced by the following passage, taken from Velasco, Historia del Reino de Quito, 1789: 'The strawberry of Quito, erroneously called frutilla (little fruit), since it is as large as two or three European strawberries. It bears every day in the year, and although it is common in several provinces, in no other is it produced in such abundance and perfection as in that of Tungurahua.'

"This remarkable fruit more recently attracted the attention of Robert Spruce, the English naturalist, who wrote (according to the Florist and Pomologist, Jan., 1870, p. 24): 'In the equatorial Andes the Province of Ambato is famed for its strawberries, which equal in size and flavor some of our best varieties and are to be seen exposed for sale in the market place of Ambato every day in the year. They are cultivated at an altitude of from 7,000 to 9,500 feet above the sea, where the mean temperature of the year ranges between 59° and 67° F.; but the best are grown a little way out of Ambato, as you go toward Guayaquil, on the slopes of Guachi (lat. 1½° S.) at near 9,000 feet, and in a mean temperature of 60° F.; where, however, the thermometer does sometimes descend, perhaps half a dozen times in the year, to the freezing point in the early morning and scarcely ever on two successive days.'

"It is only in the region of Guachi that this species is commercially cultivated in Ecuador. Distant about 5 miles from Ambato, it lies at an altitude varying from 9,500 to 10,000 feet, and consists of a series of rolling hills, almost devoid of trees and with a soil which can be char-

52574 to 52580—Continued.

acterized as a very loose fine sandy loam of volcanic origin. The strawberry plantations cover an area of at least 60 acres; the plants are never irrigated, and the rainfall is probably not more than 15 inches per annum. Three times a year the fields are cleaned of weeds with a heavy hoe, this being the only cultural attention which they receive. The plants do not grow to a large size. The natives assert that the plants when irrigated make luxuriant growth but do not yield abundantly, nor is the fruit large and sweet, and this has, indeed, been observed by me to be the case when plants are grown in the town of Ambato under good cultural conditions. The fruit is harvested once a week throughout the year; there are, however, three seasons when the most abundant yield is obtained, these being in February, August, and December. The method of handling the fruit is primitive; it is carried to Ambato in kerosene boxes and is there sorted and packed in baskets for shipment by train to Guayaquil and Quito.

"In form this strawberry is less variable than most of the varieties grown in the United States. It is oblong-conical, sometimes oblong-ovoid, and from 1 to 2 inches long. When fully ripe it is light red in color, with the flesh pinkish white, meaty, juicy, and of mild, sweet flavor. The quality is not so good as that of the finest North American and European strawberries, but the fruit can be shipped much more successfully because of its firm texture.

"This is one of the most remarkable and interesting fruits of Ecuador. It deserves careful attention at the hands of North American strawberry breeders and should be tested particularly in the dry Southwestern States. I would recommend for it a light, loose, sandy soil and very little water."

52577. Lycopersicon esculentum Mill. Solanaceæ. Tomato.

"(No. 532a. Ambato, Ecuador. January 2, 1921.) A small tomato from the market of Ambato, Ecuador. The fruits are round, smooth, of attractive color and good quality. Of interest in connection with tomato breeding in the United States."

52578. Prunus armeniaca L. Amygdalaceæ.

Apricot.

"(No. 537a. Ambato, Ecuador.) This fruit is cultivated commercially in two sections of Ecuador, at Ambato and in the vicinity of Cuenca. Regarding its behavior in the latter region, Luis Cordero (Enumeración Botánica) says: 'This handsome fruit tree succeeds perfectly in our haciendas of rather warm climate, especially in the fertile and beautiful valleys of Paute and Gualaceo. Rare is the year in which the fruit is not abundant, and for this reason the well-known boxes of apricots preserved in sirup, so highly esteemed in other parts of the country, are never wanting.' Outside the Cuenca and Ambato regions, occasional trees are to be seen at Loja and northward in Imbabura Province.

"The ripening season at Ambato is in January and February. Propagation is commonly by seed and occasionally by grafting on the peach, apricot, and plum. The varieties grown in Ecuador (seedling forms in the main) are almost invariably small fruited and considerably inferior to the best North American and European sorts.

"For trial in the United States as a stock plant."

52574 to 52580—Continued.

52579. Prunus serotina Ehrh. Amygdalaceæ.

Capulin.

"(No. 538a. Ambato, Ecuador.) Capulin. Seeds from ordinary fruits. to be grown for trial as stock plants on which to graft superior varieties of this and other rosaceous fruits.

"Theodor Wolf ["Ecuador," published at Leipzig, 1892] says, 'The capulin is as distinguishing a characteristic of the Sierra as the coconut is of the coast. I do not doubt that it is indigenous, but commonly it is found in cultivation about the huts of the Indians, and in their fields and orchards.' The distribution of this species in the interandean region of Ecuador is widespread, but it is seen in much greater abundance in some regions than in others. Beginning in the northern part of the country, it is frequent in the Provinces of Carchi and Imbabura, but not particularly so in the former. the Lake of San Pablo it grows in great abundance. In Pichincha Province it is only fairly common. From Latacunga to Riobamba it is one of the few trees which grows upon the cold, sandy plains, and it here attains greater economic importance, perhaps, than in any other part of the country. In the Azuay it is almost as abundant and important, however, and in certain portions of this Province, together with that of Canar, it has the appearance of an indigenous species. In Loja it is not rare, but not sufficiently abundant to play a very important part in the list of economic products. Its range in general is from 6,000 to 11,000 feet.

"The historian Gonzalez Suarez recounts that the *capulin* tree was worshipped by the inhabitants of Canar Province in pre-Columbian times; and it is found in a wild, though not certainly indigenous, condition at the present time. It is a curious though not unique circumstance that it should be known throughout the country, even among the Indians who speak Quichua, under a name taken from the Aztec tongue. I have nowhere been able to find any other name than that of *capulin*; and in certain places the latter has been combined with Quichua words to make compound names such as *capulin-urcu* (the name of a certain mountain), and *sacha-capulin* (the name given to a species of Vallea thought to resemble the *capulin* in appearance).

"This plant, which is cultivated from Peru northward to Mexico, becomes a stout tree up to 40 or 45 feet in height. The leaves are oblong-lanceolate to lanceolate, finely serrate, and 3 to 5 inches long. The flowers, which are produced on slender racemes 3 to 8 inches long, are white and about three-quarters of an inch broad. The fruits resemble a European cherry in appearance; they are oblate or nearly round, from one-half to three-quarters of an inch in diameter, deep purplish maroon in color when fully ripe, with a thin, tender skin surrounding greenish flesh and a single hard seed. The flavor and quality of the fruit, as also the size, vary greatly; as commonly seen, the capulin is not over half an inch in diameter, and its flavor is disagreeably bitter. In several regions, however, there are very superior forms, well worthy of vegetative propagation. Some of the best ones are those of Cuenca and Ambato. At Catiglata, near the latter town, there is a famous tree whose fruit is large, very juicy, and as sweet as the best European cherries."

52574 to 52580—Continued.

52580. Prunus cerasifera myrobalana (L.) C. Schneid. Amygdalaceæ.

"(No. 535a. Ambato, Ecuador.) Mirabel. This plum was brought from Europe in the early colonial days and is quite successful under the conditions which obtain in the region of Ambato (8,500 feet), the trees growing to large size and producing their popular fruits in great abundance. Propagation is by suckers, less commonly by seed, and occasionally by cuttings. The species is often used as a stock plant on which to graft the se-called Reina Claudia plum (properly Chabot or Bailey). The fruits ripen earlier than those of other plums now cultivated at Ambato, the season being from December to January; they are round to broadly oval in form, up to an inch long, bright red when fully ripe, with soft juicy flesh of pleasant flavor, much inferior in quality, however, to that of good northern varieties such as the Bailey and Wickson Perfection, both of which are now grown commercially at Ambato. For trial in the United States as a stock plant."

52581 to 52583.

From Beira, Mozambique. Seeds presented by Thomas Honey, acting Director of Agriculture, Governo do Territorio da Companhia de Mozambique. Received March 3, 1921. Quoted notes by Mr. Honey.

52581 and 52582. Anacardium occidentale L. Anacardiaceæ.

Cashew.

52581. "Large red-fruited variety."

52582. "Large yellow-fruited variety."

52583. LANDOLPHIA KIRKII Dyer. Apocynaceæ.

"Indigenous rubber vine."

A scandent shrub native to the Nile Land and Mozambique, with thinly coriaceous leaves, very variable in size and shape on the same branch, lanceolate to oblong, 1 to 4 inches long. The whitish flowers, 1½ inches long, are in many-flowered corymbs or in somewhat loose panicles, ovoid or much elongated, with spreading branches often passing into tendrils. The ovoid-globose fruits are 1 to 3 inches in diameter. This is one of the most important rubber plants of East Africa. (Adapted from Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 1, p. 55.)

For previous introduction, see S. P. I. No. 5023.

52584 and 52585. Datura innoxia Mill. Solanaceæ.

From Teneriffe, Canary Islands. Seeds presented by Frank Anderson Henry, American consul. Received March 3, 1921.

"This species, indigenous in Mexico and tropical America, was introduced into the Canary Islands, southern Europe, and India at a very early day. It has been confused by many writers with the Old World Datura metel, but is easily distinguished from that species by the 10-angled limb of its corolla and the soft pubescence of its foliage and young branches. It was figured by Sims, in Curtis's Botanical Magazine, pl. 1440, in 1812, under the incorrect name D. metel and published by him in De Candolle's Prodromus. This species is identical with the nacazcul, or downy toloatzin of the Aztecs, who used it as a

narcotic and in certain religious ceremonies. It has recently been cultivated on the island of Montserrat, British West Indies, as a source of scopolamin, an alkaloid with the properties of atropin." (W. E. Safford.)

52584. Received as D. stramonium, but does not agree with that species.

52585. Received as D. fastuosa alba, but does not agree with that species.

Obtained from Sr. Don Rodolfo Godinez, ingeniero director de la Granja Agrícola.

52586 to 52594.

From Santiago, Chile. Seeds presented by F. Albert, consulting forester, Forestry Department, through the United States Forest Service. Received March 5, 1921.

52586. Aextoxicon punctatum Ruiz and Pav. Euphorbiaceæ. Tique.

A Chilean tree belonging to the spurge family, with small colorless scales covering all of its parts, and with dense foliage. The leaves, quite stiff and narrowly oblong in shape, are very dark green on the upper surfaces and light green or even whitish below. The small white flowers are borne in short axillary racemes, and the fruits are small black olive-shaped drupes. By reason of its beauty the wood is admirably suited for the making of furniture, etc. (Adapted from Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 68.)

For previous introduction, see S. P. I. No. 49268.

52587. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. Tara. (C. tinctoria Domb.)

A tall upright spiny shrub or small tree, often planted for hedges in Peru. Here it grows under much the same conditions as the *molle*, or pepper tree, but extending into somewhat lower and drier situations. In the market of Lima tara pods are a regular article of trade, and are said to be used for dyeing, tanning leather, and making ink. The immature seeds of the tara contain underneath the skin a layer of edible flesh. It has a rather pleasant, slightly sweetish taste, like the arillus of the seeds of Inga and other leguminous trees. (Adapted from O. F. Cook, note to S. P. I. No. 41823.)

52588. CALDCLUVIA PANICULATA (Cav.) D. Don. Cunoniaceæ. Tiaca

La Tiaca, also called triaca by the natives of Chile. The tree may reach a height of 15 meters. The leaves, up to 14 centimeters long, are elliptic, serrate, short stemmed, and frequently opposite. The white aromatic flowers which appear in spring are borne in axillary corymbs. The wood is excellent for carriage making. (Adapted from Castillo and Dey, Jeografia Vejetal del Rio Valdivia, p. 57, and from Johnson, Gardener's Dictionary, p. 155.)

52589. Eucryphia cordifolia Cav. Eucryphiaceæ. Muermo.

An ornamental and also useful Chilean tree which attains a height of about 15 feet, with thick, leathery, shining leaves and aromatic white flowers which appear in the spring and make the tree a beautiful sight. Because of the abundance of nectar, this tree is a favorite with the bees. The bark, rich in tannin, is utilized in dyeing and also in medicine. (Adapted from Castillo and Dey, Jeografía Vejetal del Rio Valdivia, p. 81.)

For previous introduction, see S. P. I. No. 49270.

52586 to 52594—Continued.

52590. LAURELIA SEMPERVIRENS (Ruiz and Pay.) Tulasne. Monimiaceæ. (L. aromatica Juss.) Chilean laurel.

"A handsome tree of southern Chile, with durable wood, which is never bored by insects and is much used for flooring. An excellent tree for our northwest coast." (W. E. Safford.)

For previous introduction, see S. P. I. No. 49272.

52591. Maytenus boaria Molina. Celastraceæ.

Maiten.

"An ornamental Chilean tree of weeping habit, with small gray-green and orange fruits. Superficially it resembles the pepper tree (Schinus molle). It thrives well as far north as San Francisco and should be exploited as a shade tree for dry regions. The young branches are much relished by cattle." (Fairchild.)

52592 to 52594. Nothofagus spp. Fagaceæ.

52592. Nothofagus dombeyi (Mirb.) Oerst. (Fagus dombeyi Mirb.)

Coigüe.

A majestic tree, with leathery, oval, or elliptic short-stemmed leaves which are of an intense shining-green color. It is native to Chile, where it will grow in soil too damp for cultivation. The wood is quite valuable for building purposes. (Adapted from Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 39.)

For previous introduction, see S. P. I. No. 49274.

52593. NOTHOFAGUS OBLIQUA (Mirb.) Blume. (Fagus obliqua Mirb.)

Roble.

A tall deciduous tree, with oval-oblong clear-green leaves and 3-seeded fruits. The wood, which is considered a valuable timber, varies in quality with the nature of the soil. The streets of the city of Valdivia are paved with blocks of wood of this tree. It is said to be the most northerly of the Chilean beeches. (Adapted from Castillo and Dey, Jeografía Vejetal del Rio Valdivia, p. 35.)

For previous introduction, see S. P. I. No. 49275.

52594. Nothofagus procera Oerst.

Rauli.

(Fagus procera Poepp. and Endl.)

A deciduous Chilean timber tree, once abundant in the province of Valdivia, but now comparatively scarce owing to the great demand for its wood which is reddish and compact, and is used for parquet flooring, cabinetwork, etc. (Adapted from Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 36.)

52595. Calophyllum inophyllum L. Clusiaceæ.

Alexandrian laurel.

From Manila, Philippine Islands. Seeds presented by Adn. Hernandez, director, Manila Bureau of Agriculture. Received February 26, 1921.

This tropical tree is widely distributed throughout India, where a greenish oil is extracted from the seeds and is used for burning by the poorer classes. It is also used as an application in rheumatism.

An analysis of Queensland-grown fruits follows: Shells, 62.5 per cent; kernels, 37.5 per cent; greenish yellow oil, 43 per cent; dry residue, 27 per cent; moisture, 30 per cent; ashes of whole kernels, 1.66 per cent; ashes of exhausted residue, 6.15 per cent. The green oil on saponification yields a

bright-yellow soap, the green pigment of the oil having been changed into a bright yellow. This oil is bitter and aromatic; its specific gravity is 0.942; and it solidifies at $+5^{\circ}$.

The strong, durable reddish wood is useful for the joiner and cabinetmaker; in India it is used for masts, spars, railway sleepers, machinery, etc. The weight is 63 pounds per cubic foot. (Adapted from Maiden, Useful Native Plants of Australia, pp. 284, 390.)

For previous introduction, see S. P. I. No. 38118.

52596 and 52597.

From Santiago, Chile. Seeds presented by F. Albert, consulting forester, Forestry Department, through the United States Forest Service. Received March 5, 1921.

52596. PHILESIA MAGELLANICA Gmel. Liliaceæ.

A shrub 3 to 4 feet high, bearing pendulous bright-red flowers. It is native to South America from Chile to the Straits of Magellan. It is said to be remarkably strong in withstanding the effects of a deleterious atmosphere, for it grows well in the noxious fumes of the copper-smelting works in Chile. It is hardy in favored districts of Britain south of the Thames. It requires a light peaty soil. (Adapted from Gardeners' Chronicle, 3d ser., vol. 55, p. 398.)

For previous introduction, see S. P. I. No. 31744.

52597. TRICONDYLUS OBLIQUA (Ruiz and Pav.) Kuntze. Proteaceæ. (Lomatia obliqua R. Br.) Radal

An evergreen tree up to 35 feet in height, with somewhat grooved branches, alternate leathery leaves with shining upper surfaces, and axillary racemes of white flowers. The leaves are fragrant, reminding one of the European walnut; an infusion of the bark has purgative properties utilized in medicine. Native to Chile. (Adapted from Castillo and Dey, Jeografía Vejetal del Río Valdivia, p. 41.)

For previous introduction, see S. P. I. No. 49278.

52598. Figur Carica L. Moraceæ.

Fig.

From Palermo, Italy. Cuttings purchased through Louis G. Dreyfus, jr., American consul. Received March 8, 1921.

Cuttings of a fig growing in the orchard of Agostino Lamonica, Castel-daceia Italia, Palermo, about 12 miles from the city of Palermo. The fruit is said to be the size of a saucer.

52599. Cassia occidentalis L. Cæsalpiniaceæ.

From Bahia, Brazil. Seeds presented by H. M. Curran. Received March 11, 1921.

"Seeds of this plant, ground after washing, make a fair coffee substitute which is in common use among the poor people of South American countries from Colombia to Brazil. The plant is a rapid-growing coarse annual weed, bearing great quantities of seed." (Curran.)

•52600. Sorbus Trilobata (Labill.) Heynh. Malaceæ. (Pyrus trilobata DC.)

From Paris, France. Cuttings presented by Prof. Georges Poirault, Université de Paris, École Supérieure de Pharmacie. Received March 11, 1921.

"Cuttings of a tree growing at the Villa Thuret (but originally from Syria), which is a rather rare but very interesting ornamental, being covered in the spring with large white flowers, and in the autumn maturing fruits which make excellent preserves. A Syrian friend of mine tells me that in his country this tree is very popular." (Poirault.)

52601. Trifolium pratense L. Fabaceæ. Red clover.

From Prague, Bohemia. Seeds presented by Grunhut & Fanta. Received March 17, 1921.

Bohemian red clover introduced for experimental purposes.

52602. Brassica oleracea botrytis L. Brassicaceæ. Cauliflower.

From Lugano, Switzerland. Seeds presented by F. Dammann, seed specialist. Received March 11, 1921.

"Cauliflower *Primus*, the finest Italian cauliflower, introduced by my firm to the trade in 1897. *Primus* is grown by market gardeners in almost every European country." (*Dammann*.)

52603. Rhododendron racemosum Franch. Ericaceæ.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received February 24, 1921.

"A very desirable species discovered by Delavay in Yunnan, China, at an altitude of about 9,000 feet. It has small pink sweet-scented flowers which are produced when the plants are still small enough to be handled in pots. It is said to be perfectly hardy in England." (F. V. Coville.)

52604. Amygdalus davidiana (Carr.) Zabel. Amygdalaceæ. (Prunus davidiana Franch.)

From Nanking, Kiangsu, China. Seeds purchased through J. H. Reisner, from the College of Agriculture and Forestry, University of Nanking. Received March 3, 1921.

Introduced for experimental purposes.

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52605. Populus alba subintegerrima Lange. Salicaceæ. Poplar.

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received March 9, 1921.

A tree native to Lower California, which grows to a height of 80 or 90 feet, with a stout trunk 3 feet through, covered with rough ash-colored bark, and with ascending branches. The silky pubescent and ovate leaves are 3 inches long. The tree grows on the high mountains of the interior of the Cape region of Lower California, and along streams which it often follows well down toward the warm lowlands. The leaves and flowers appear in February; in October all are fallen, an unusual condition in Lower California where most of the vegetation comes forward with the summer and fall rains. The light reddish wood of this tree is used for making furniture. The wood much resembles cherry in color, is close grained, moderately hard, and shows a handsome satiny surface. It appears well suited for the interior finish of houses or for the better classes of cabinetwork. It is therefore desirable that this tree should be tested for timber in countries with a temperate climate. Since it grows at a considerable elevation above the sea, where the temperature sometimes falls below the freezing point, the tree might be expected to thrive in Southern California and in all the Mediterranean basin. (Adapted from Garden and Forest, vol. 4, p. 330.)

52606. Holcus sorghum L. Poaceæ.

Sorghum.

(Sorghum vulgare Pers.)

From Johannesburg, Transvaal, Union of South Africa. Seeds presented by J. Burtt Davy, Agricultural Supply Association. Received March 11, 1921.

White kafir introduced for comparison with American-grown seeds.

52607 to 52617.

From Ambato, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received March 11, 1921. Quoted notes by Mr. Popenoe.

52607. DATURA SANGUINEA Ruiz and Pav. Solanaceæ.

"(No. 570b. Ambato, Ecuador. January 14, 1921.) Two seed pods from the common red-flowered arborescent Datura cultivated in the vicinity of Ambato, altitude about 8,500 feet."

52608 and 52609. Delostoma Roseum (Karst. and Tr.) Schum. Bignoniaceæ.

52608. "(No. 566a. Quinta Normal, Ambato. January 22, 1921.) Cholán. A small tree, native to certain regions of Ecuador and occasionally cultivated in parks and gardens. It is rather susceptible to frost, but will probably withstand the winters of southern California and southern Florida. Its lilac-colored flowers resemble those of the catalpa in form and size."

52609. "(No. 567a. Quinta Normal, Ambato. January 22, 1921.) Cholán. This plant differs from 566a (S. P. I. No. 52608), principally in the color of the flowers, which are pale lilac. It also seems to be a trifle less frost resistant than the latter. For trial in California and Florida."

52610. Duranta triacantha Juss. Verbenaceæ.

"(No. 562a, Ambato, Ecuador, January 22, 1921.) Chivo."

For previous introduction, see S. P. I. No. 52575.

52611. Juglans sp. Juglandaceæ.

Walnut.

"(No. 571a. Quito, Ecuador. January 29, 1921.) Tocte. There are probably two species of Juglans in Ecuador which go under this name; one of them is Juglans peruviana, the other as yet undescribed. Both are found in the highlands between altitudes of 6,000 and 10,000 feet; one or the other is abundant in nearly every town of the sierra. The tree is sometimes called nogal, as well as tocte; the fruit is always known by the latter name.

"Luis Cordero (Enumeración Botánica) says of this tree in the Province of Azuay, 'It is most useful, since it furnishes, aside from its grateful fruit and its fine, solid, and beautiful wood, a tonic of probable efficiency obtained from boiling the leaves.' The plant is much used by the Indians of Imbabura Province in the preparation of dyes.

"The tocte is abundant at Ambato. It can scarcely be termed a cultivated species in this region, since it is not commonly planted; but trees which spring up around cultivated fields and in dooryards are allowed to grow unmolested, and the fruit is utilized in a small way. The plant strongly resembles J. nigra, but the foliage is perhaps larger. The nuts are an inch and a half in diameter, with a very thick bony shell deeply

52607 to **52617**—Continued.

corrugated on the surface, and a kernel of mild, pleasant flavor. Recently the species has been utilized in Ambato as a stock plant on which to graft J. regia.

"In Ibarra the tocte is very abundant, and the nuts are commonly sold in the market. They are used to prepare a famous sweetmeat, the nogada of Ibarra, made from brown or white sugar, milk, and walnut meats. At Otavalo the tree is quite abundant, as also in the southern part of Ecuador at Loja and Cuenca. The two species which go under this name are very similar in character."

For an illustration of the tocte, see Plate II.

52612. Medicago sativa L. Fabaceæ.

Alfalfa.

"(No. 563a. Ambato, Ecuador. January 21, 1921.) Seed purchased in the market of Ambato, near which town it was produced, at an altitude of 8,600 feet. This is the common alfalfa of the Ecuadorian highlands, forwarded for trial in comparison with North American varieties. It is cultivated in a region of little rainfall and on a very light, loose sandy soil."

52613. Tacsonia tripartita Juss. Passifloraceæ.

"(No. 561a. Ambato, Ecuador. January 24, 1921.) Tacso. This species is quite distinct in habit from Tacsonia mollissima; the plant is a slender climber, reaching to 15 or 20 feet. The leaves are deeply 3-lobed, with the lobes narrow; the flowers are light pink, 3 inches broad. The fruits are oblong, tapering slightly toward the stem, about 3 inches in length, and orange-yellow. In flavor they are quite similar to those of T. mollissima. For trial in California and Florida."

52614. PRUNUS SEROTINA Ehrh. Amygdalaceæ.

Capulin.

"(No. 564a. Ambato, Ecuador. January 24, 1921.) Capulí. Seeds of the large-fruited variety of which scions have been sent."

For previous introduction, see S. P. I. No. 52579.

52615. Prunus cerasifera myrobalana (L.) C. Schneid. Amygdalaceæ.

"(No. 565a. Ambato, Ecuador. January 22, 1921.) *Mirabel*. Seeds obtained from fruits purchased in the market of Ambato. For trial as a stock plant."

For previous introduction, see S. P. I. No. 52580.

52616. Zea mays L. Poaceæ.

Corn.

"(No. 560a. Ambato, Ecuador. January 12, 1921.) Maiz negro (black corn). A peculiar variety of corn, obtained in the market of Ambato. The ears are 3 to 6 inches long, tapering toward the apex, and the kernels large, starchy, and purplish black."

52617. ASTRAGALUS Sp. Fabaceæ.

"(No. 568a. Ambato, Ecuador. January 22, 1921.) An attractive shrub common on dry hillsides about Ambato (8,500 feet), whence this seed. It sometimes reaches to 6 feet in height; its compound pinnate leaves are 3 to 5 inches long, and its lilac-purple pea-shaped flowers, borne in small clusters, are about half an inch broad. The plant will probably succeed in California and Florida, where it should be tested as an ornamental."

52618. Hordeum distiction palmella Harlan. Poaceæ. Barley.

From Ayr, Scotland. Seeds presented by McGill & Smith (Ltd.). Received March 11, 1921.

"Sample of a new barley for which our name is Golden Pheasant. It is a cross between the best brewing barley in Britain and the best brewing barley in Germany." (J. F. McGill.)

52619. Acacia tortilis (Forsk.) Hayne. Mimosaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received March 21, 1921.

A tree abundant in many parts of tropical Africa and Arabia, with brown or reddish brown extremities and straight spines 2.5 centimeters long on the barren branches and very short, slightly recurved spines on the flowering branches. The linear-oblong leaflets are 2 to 7 millimeters long. The capitate flowers are in clusters of as many as five in the leaf axils. The flat, spirally twisted linear pod is 6 to 12 centimeters long. (Adapted from Muschler, Manual Flora of Egypt, vol. 1, p. 461.)

52620. CARICA PAPAYA L. Papayaceæ.

Papaya.

From Honolulu, Hawaii. Seeds presented by J. M. Westgate, Agronomist in Charge, Agricultural Experiment Station. Received March 21, 1921.

"This variety of papaya which has been under cultivation through four generations has transmitted its characteristic flavor and texture and, to a reasonable degree, its shape to all of the seedlings of its kind that have come under observation. To this variety has been given the name Solo. The fruits are quite small, in many instances being only large enough for one serving. Most plants of the variety are hermaphrodite or bisexual, but a staminate tree is found occasionally. Although the fruits are small, they are crowded into the axil of nearly all the leaves and are so numerous that the yield is reasonably heavy, yet not equaling in total weight that of some of the large kinds. The fruit is pyriform, somewhat irregular, colors well and uniformly before softening, and is free from the diseased spots which occur on the surface and penetrate the pulp of many of the large forms. The flesh is of medium thickness, of bright-yellow color, smooth, tender almost to melting, and of delicious flavor even near the stem end, where many papayas lack flavor. The seeds, which are abundant, permit ready and rapid means of propagation, and, because of the loose placenta or inner lining of the fruit to which the seeds are attached, they are very easily removed when the fruit is prepared for serving. From the standpoint of the home gardener, the Solo is considered one of the best of the papayas that have been grown at the experiment station, for, although small, its qualities of texture and flavor give it first rank." (Report of the Hawaii Agricultural Experiment Station, 1919, p. 28.)

52621. Rhododendron racemosum Franch. Ericaceæ.

From Edinburgh, Scotland. Seeds presented by Dr. Isaac Bailey Balfour, director, Royal Botanic Gardens. Received March 19, 1921

"The amount of pink color in the flower of this species varies enormously. We have them from pure white to forms which are pink throughout. It resembles in that respect your *Rhododendron vaseyi*." (Balfour.)

52622 to 52661.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs. Received March 7, 1921. Quoted notes by Mr. Gibbs.

52622. Abies faxoniana Rehd, and Wils. Pinaceæ.

Fir.

A tree 20 to 40 meters high, with obscurely gray fissured bark and horizontal branches; the common species in northwest Szechwan, where it forms extensive forests. The tree is characterized by the short, broadly ovoid scales of its very resinous winter buds, its ferruginous villose shoots, rather short flat leaves, and by its violet-purple, oblong, densely resinous cones, 6 to 7 centimeters long. (Adapted from Sargent, Plantae Wilsonianae, vol. 2, p. 42.)

52623. Abies sibirica nephrolepis Trauty. Pinaceæ.

Fir.

A variety which differs from *Abies sibirica* in its kidney-shaped scales that are almost three times as broad as long and somewhat exceed the bracts. Native to Amur, Siberia. (Adapted from *Maximowicz*, *Primitiae Florae Amurensis*, p. 260.)

For description of A. sibirica, see S. P. I. No. 42311.

52624. Abies recurvata Masters. Pinaceæ.

Fir.

A very remarkable species, unlike any other in its strongly decurved but assurgent leaves. It is a very local species forming entire forests in the Min Valley south of Sungpan. The tree reaches a height of 80 feet and has reddish brown bark. The leaves are deep green or very glaucous, varying very much in this respect. The small erect brown cones are borne in clusters at the ends of the branches and néar the tops of the trees. The timber is hard, resinous, and highly valued for building purposes. (Adapted from Journal of the Linnean Society, vol. 37, p. 423.)

52625. Aesculus indica (Royle) Hook. Æsculaceæ.

A tree 100 feet high, found at altitudes of 8,000 to 10,000 feet in northern India, and flowering the latter part of June when the other horse-chestnuts have finished. The luxuriant foliage is shining green; and the dainty white flowers, which are borne in fairly dense racemes, have the two small upper petals heavily blotched with yellow changing to orange-red and the lower petals tinged with pink. (Adapted from *The Garden, vol. 76, p. 376,* and from *Gardening Illustrated, vol. 39, p. 405.*) 52626. Berberis sp. Berberidaceæ.

Barberry.

"Wisley seedlings."

52627. Berberis sp. Berberidaceæ.

Barberry.

" Forrest No. 13208."

52628. Berberis sp. Berberidaceæ.

Barberry.

"Forrest No. 13224."

52629. CABAGANA BOISI C. Schneid. Fabaceæ.

A variety with beautiful persistent foliage.

For further description, see S. P. I. No. 52452.

52630. CLEMATIS MONTANA RUBENS Wilson. Ranunculaceæ.

A splendid spring-flowering climber which will grow almost anywhere. It is perfectly hardy and a very free grower, ascending 15 feet in one season. The profuse flowers are 2 to 3 inches across and soft rosy red. (Adapted from Gauntlett, Hardy Plants Worth Growing, No. 92, p. 22.)

52622 to 52661—Continued.

52631. CLEMATIS TANGUTICA (Maxim.) Korsh. Ranunculaceæ.

A superb species 10 to 16 feet high, closely related to *Clematis* orientalis, with foliage equally glaucous, flowering in July with large bright-yellow, very abundant flowers with long-pointed petals. The fruit forms silvery plumelike, very decorative tassels. (Adapted from *Vilmorin-Andrieux*, *Plantes Vivace et a Massifs*, 1921, p. 29.)

52632 to 52639. Cotoneaster spp. Malaceæ.

 52632. "Farrer 403."
 52636. "Forrest 14864."

 52633. "Forrest 33."
 52637. "Forrest 14948."

 52634. "Forrest 5567."
 52638. "Forrest 14976."

 52635. "Forrest A553."
 52639. "Forrest 16031."

52640. DEUTZIA SCHNEIDERIANA LAXIFLORA Rehder. Hydrangeaceæ.

A shrub 1 to 2 meters high with fuscous-purple branches and somewhat papery, elliptic, stellately hairy leaves, shining or white beneath. The flower clusters are broadly paniculate, 3 to 6 centimeters long. The oblong petals are about 10 millimeters long, stellately hairy on the outer surface. The stamens, often longer than the petals, are dilated and toothed at the tip, the teeth scarcely touching the anther. The three graceful styles are about as long as the stamens. (Adapted from Sargent, Plantae Wilsonianae, vol. 1, p. 7.)

For previous introduction, see S. P. I. No. 40580.

52641. DEUTZIA sp. Hydrangeaceæ.

"Forrest No. 15631."

52642. Deutzia sp. Hydrangeaceæ.

"Farrer No. 109."

52643. Forsythia sp. Oleaceæ.

"Sport."

52644. ILEX FARGESII Franch. Aquifoliaceæ.

A glabrous species with black bark and thick, spreading leaves 10 to 15 centimeters long, linear-lanceolate or narrowly oblong, the lower entire and the upper remotely denticulate. The flowers are crowded in globose cymes on pedicels 5 to 6 millimeters long, and the spreading petals are 5 millimeters long. The globose drupes are in clusters of three to four in the axils of the leaves. Native to Szechwan, western China. (Adapted from Journal de Botanique, vol. 12, p. 255.)

52645 and 52646. LAVANDULA SPICA L. Menthaceæ.

Lavender.

52645. "Variety Nana Glasnevin."

52646. "Variety Twickel Purple."

52647. Malus sylvestris Mill. Malaceæ.

Apple.

(Pyrus malus L.)

"Variety aldenhamensis. A rooted sucker of the original tree."

52648. PAEONIA LUTEA Delavay. Ranunculaceæ.

Peony.

One of the most beautiful of the yellow species, found in Yunnan in 1892. It is a hardy species and is a choice plant for garden effect. The clear-yellow flowers are about $3\frac{1}{2}$ inches in diameter. (Adapted from The Garden, vol. 61, p. 267, and vol. 76, p. 416.)

52622 to 52661—Continued.

52649 to 52657. PHILADELPHUS LEMOINEI Lemoine. Hydrangeaceæ.

52649. "Avalanche."

Mock orange.

A most graceful shrub 5 to 6 feet high, with whiplike slender branches mostly erect. It has smallish lanceolate leaves, and the parentage of *Philadelphus microphyllus* can be readily detected. The handsome single fragrant flowers, in numerous small clusters, open about June 26. (Adapted from *Garden Magazine*, vol. 29, p. 198.)

52650. "Bannierii."

A remarkably showy form which blossoms about June 20; the long stout branches bear numerous clusters of three to four large pure-white semidouble flowers over 2 inches across. (Adapted from Garden Magazine, vol. 29, p. 198.)

52651. "Bouquet blanc."

A new variety of medium height, with pure-white flowers 1 inch across, in big clusters along the branches, bending them down with their weight.

52652. "Boule d'Argent."

A dwarf variety with large white double flowers, which are very fragrant.

52653. "Candelabra."

A variety 2 feet high, with large white flowers entirely covering the branches.

52654. "Erectus."

A new, very beautiful floriferous variety.

52655. "Manteau d'Hermine."

A small neat shrub which does not grow more than 2 to $2\frac{1}{2}$ feet in 10 or 12 years. The branches have a spreading habit and bear small leaves which show strongly the characteristics of *Philadelphus microphyllus*. The double to semidouble pure-white flowers are borne in great profusion from all the stems about June 13.

52656. "Mont Blanc."

A free-branching, excellent garden shrub 5 feet high, with slender ascending stems. It bears profusely a wealth of pure-white fragrant blossoms about June 13.

52657. "Oeil de pourpre."

A variety with a purple disk.

52658. Picea jezoensis (Sieb. and Zucc.) Carr. Pinaceæ. Spruce.

A very beautiful hardy flat-leaved spruce 70 feet high, with branches spreading on the ground, a dense pyramidal habit, and beautiful orange-crimson staminate flowers. The leaves are silvery on the upper surface and rich green on the lower. This is the most widely distributed of the species of eastern Asia, ranging from the Amur region to Manchuria, Chosen, and northern and central Japan. (Adapted from Gardeners' Chronicle, 3d ser., vol. 3, p. 52, and from National Nurseryman, vol. 24, p. 420.)

For previous introduction, see S. P. I. No. 20318.

52622 to 52661—Continued.

52659. Picea schrenkiana Fisch. and Mey. Pinaceæ.

A large tree attaining a height of 100 feet, with ashy gray branchlets and large ovoid light-brown buds. The straight or curved rigid leaves are up to 1½ inches long. The cylindric dark shining-brown cones are 3 to 4 inches long and 1 inch in diameter. This species forms large forests in Turkestan, north of 41° at 4,500 to 10,000 feet altitude, and extends eastward through Chinese territory along the Tianshan Mountains. (Adapted from Clinton-Baker, Illustrations of Conifers, vol. 2, p. 48.)

52660. Rubus sp. Rosaceæ.

52661. Rubus sp. Rosaceæ.

"Forrest No. 15329."

"Forrest No. 15334."

52662 and 52663.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received February 28, 1921, at the Plant Introduction Garden, Chico, Calif.

52662. Amygdalus davidiana (Carr.) Zabel. Amygdalaceæ. (*Prunus davidiana* Franch.)

For use as stock.

For previous introduction, see S. P. I. No. 46694.

52663. Prunus serrulata Lindl. Amygdalaceæ. Flowering cherry.
Introduced for experimental purposes.

52664 and 52665. Saccharum officinarum L. Poaceæ.

Sugar cane.

Spruce.

From Coimbatore, India. Seeds presented by U. Vittal-Rao, Experiment Station, Agricultural College. Received March 17, 1921. Quoted notes by Mr. Vittal-Rao.

52664. "J 213."

52665. "Kassoer."

52666. Phleum pratense L. Poaceæ.

Timothy.

From Sydney, New South Wales, Australia. Seeds presented by George Valder, director, Department of Agriculture. Received March 24, 1921.

"Timothy grass from Glen Innes Experiment Farm. This seed is from what is described as the best growth of timothy grass ever obtained at Glen Innes. The plants reached a height of over 2 feet and were characterized by exceptionally long seed heads." (Valder.)

52667. Malus sylvestris Mill. Malaceæ.

Apple.

(Pyrus malus L.)

From Platenice, Bohemia. Cuttings presented by Dr. Rudolph Kuráž, agricultural attaché, Czechoslovak Legation, Washington, D. C., through Dr. Ales Hrdlicka, curator, Division of Physical Anthropology, United States National Museum. Received March 21, 1921.

"These cuttings came from Platenice, in Bohemia, which lies about 200 meters above sea level. I assure you that they are from the very best source." $(Kur\acute{a}\acute{z}.)$

52668. Mangifera indica L. Anacardiaceæ.

Mango.

From Honolulu, Hawaii. Plants and cuttings presented by Willis T. Pope, Horticulturist, Agricultural Experiment Station. Received March 17, 1921.

This variety is considered the best, at least for lowland conditions, of all the mangos that have been introduced into Hawaii. It is of medium size, inclining to the rounded form, with a distinct beak at the stigmatic point. The surface is smooth and when ripe is a pale yellow, beautifully marked with crimson where exposed to the sun. It is practically fiber-free, has a delightful aroma, and is as soft and juicy as a ripe peach. The seed is easily removed, so that the fruit can be served in halves and eaten with a spoon without the slightest inconvenience. In order to remove the seed, it is only necessary to make a cut circling the fruit, about midway its length, and extending as deep as the surface of the seed. Then, by a slight twisting motion, one-half of the fruit can be separated from the seed, leaving a smooth unbroken surface within. By cutting very slightly around the seed, it may easily be removed from the remaining half of the mango. The flavor is so unusually delicious as to put this mango in a class of its own in Hawaii. The Pirie is less subject than other varieties to the black spots caused by the fungus Colletotrichum glocosporioides and, while not immune to the fruit-fly attacks, it either possesses a high degree of resistance or is not a preferred variety for the fly. No injured fruits were found on this variety in the station orchards this season, though crops of several of the other varieties were rendered almost worthless." (Westgate, Report of the Hawaii Agricultural Experiment Station, 1919, p. 23.)

52669 to 52689.

From Paris, France. Plants presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52669. ABALIA CACHEMIRICA Decaisne. Araliaceæ.

An unarmed herb 5 to 8 feet high, with quinately compound leaves; the 5 to 9 oblong-ovate leaflets, 4 to 8 inches long, are doubly serrate and glabrous or bristly on the veins beneath. Native to the Himalayas.

For previous introduction, see S. P. I. No. 30285.

52670. ARUNDINARIA AURICOMA Mitf. Poaceæ.

Bamboo.

One of the most beautiful of the lesser bamboos. It forms a graceful sheaf of slender stems 2 to 3 feet high, well clothed with a peculiarly velvety foliage in gold and green. It appears to be quite hardy in most places and affords a glorious break of delicate color in shrubbery, woodland, or a large rock garden. At all seasons it is attractive without being aggressive and, as it never runs underground to any extent, may be planted anywhere. (Adapted from *The Garden, vol. 83, p. 271.*)

52671. ARUNDINARIA FASTUOSA (Marl.) Makino. Poacere. Bamboo.

The loftiest and stateliest of the hardy bamboos, this is superior to and different from Arundinaria simoni in the early fall of the stem-sheaths, in the short, crowded branches at each joint which give to each stemgrowth a columnar appearance, and in the more tufted habit. It is only rarely that underground suckers appear any distance away from the parent clump, whereas in A. simoni they are rampant. The darkgreen hollow stems, up to 22 feet high, are perfectly erect and round, except at the upper internodes which are flattened on one side. The

52669 to 52689—Continued.

branches are short and very leafy. The leaves, 4 to 8 inches long, are dark lustrous green above, glaucous on one side of the midrib beneath and greenish on the other. (Adapted from Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.)

For previous introduction, see S. P. I. No. 42652.

52672. Arundinaria fortunei (Van Houtte) A. and C. Rivière.
Poaceæ.

Bamboo.

A silver-variegated bamboo, from 2 to 7 feet high, a very hardy and free grower. The leaves, 5 inches long, are beautifully striated with white. (Adapted from *Gauntlett*, *Hardy Plants Worth Growing*, *No.* 92, p. 285.)

52673. ARUNDINARIA PUMILA Mitf. Poaceæ.

Bamboo.

A very pretty and ornamental little dwarf bamboo. At first one might be tempted to confound this species with Arundinaria humilis, but closer observation leads to the conviction that it is quite a distinct species. It is not so tall, the bright-green leaves are darker, shorter, and narrower, and do not taper so gradually to a point as those of A. humilis. The tessellation is closer, the teeth of the serrated edges are if anything less conspicuous, and the nodes are less well defined and far less downy; but, on the other hand, they have a waxy bloom not to be found in A_4 The stem is much more slender and more entirely purple, except quite at the base. The culms are about 15 inches high, round, hollow, very slender, and about three-eighths of an inch in circumference, slightly flattened at the top. The internode is about $2\frac{1}{2}$ inches long. The culms are not much branched. The leaves are about 5 inches long and up to three-fourths of an inch in breadth, rounded at the base, petiolated, and ending rather suddenly in a fine point. They are rather rough to the touch on both surfaces. This brilliant little plant is quite hardy and is a very effective ornament for some rocky nook where, as it does not seem much inclined to run at the roots, it may better be kept within bounds than some of its family. (Adapted from Mitford, The Bamboo Garden, p. 98.)

For previous introduction, see S. P. I. No. 41924.

52674. ARUNDINARIA PYGMAEA (Miquel) Kurz. Poaceæ. Bamboo.

A subshrub 6 inches in height, with solid branching culms and dense foliage. The leaves are 1 to $1\frac{1}{2}$ inches long, rounded at the base, with rough, somewhat hairy margins, bright green above and whitish pubescent beneath. Native to Japan. (Adapted from *Miquel*, *Annales Musei Botanici Lugduno-Batavi*, vol. 2, p. 286.)

For previous introduction, see S. P. I. No. 42653.

52675. Buddleia Davidii Franch. Loganiaceæ.

(B. variabilis Hemsl.)

"Variety prostrata," (Vilmorin-Andrieux.)

A more or less prostrate, low-branching form with lanceolate, relatively small leaves and pale flowers. Native to Hupeh, China. (Adapted from Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 846.)

52676. CLEMATIS BUCHANIANA DC. Ranunculaceæ. Clematis.

A very vigorous Himalayan species which will cover a large wall space with buoyant hairy leaves and is covered in September with cymes of

52669 to 52689—Continued.

pendent whitish yellow flowers which exhale a delicate perfume. (Adapted from *Vilmorin-Andrieux*, *Plantes Vivaces et a Massifs*. 1921. p. 28.)

52677. COTONEASTER DAMMERI RADICANS C. Schneid. Malaceæ.

This variety differs from the typical form in its long peduncles and constantly one or two flowered racemes. The fruit is globose and bright scarlet, and the normal habit of the plant prostrate and rooting. (Adapted from Sargent, Plantae Wilsonianae, vol. 1, p. 176.)

For previous introduction, see S. P. I. No. 40574.

52678. Deutzia discolor Hemsl. Hydrangeacere.

"Variety major." (Vilmorin-Andricux.)

A luxuriantly spreading shrub with branches so heavily laden with flowers that the tips bend over and trail the ground. The white flowers, larger than in the type, are sometimes slightly suffused with rose. (Adapted from *Gardening Illustrated*, vol. 30, p. 307.)

52679. Fragaria daltoniana J. Gay. Rosaceæ.

Himalayan strawberry.

A perennial stoloniferous plant with slightly hairy petioles 2 to 3 inches long and elliptic to obovate-elliptic membranous leaflets up to 1 inch long, covered with sparse white rigid hairs. The solitary one-flowered scape is a little shorter than the leaves. The oblong, cylindric glabrous fruit is about half an inch long. Native to alpine pastures in the Sikkim-Himalayas, at altitudes of 10,000 to 15,000 feet. (Adapted from Journal of the Asiatic Society of Bengal, vol. 44, pt. 2, p. 206.)

For previous introduction see S. P. I. No, 48286.

52680. Fragaria nilgerrensis Schlecht. Rosaceæ.

Nilghiri strawberry.

This vigorous and hardy strawberry was introduced from China under the direction of M. Maurice de Vilmorin and is remarkable for its tufted habit, hairy foliage, its small white flowers, and especially for its small, insipid, white, hairy fruits. (Adapted from Journal Société Nationale d'Horticulture, vol. 21, p. 189.)

For previous introduction, see S. P. I. No. 51616,

52681. Juglans intermedia vilmoreana Carr. Juglandaceæ. Walnut.

A tree 80 feet high, possibly a hybrid between the European and American black walnut, with branches more upright than those of the European walnut, grayish bark, and bronze-colored young shoots. The buds are inclosed in fleshy, hairy scales. The fruit is intermediate between that of the two parents. The slightly coriaceous smooth darkgreen ovate leaflets remain on the branches until killed by frost. The fruit is not produced every year, and never in large quantities; it is smooth and the nut is more deeply furrowed than that of the European species. The seed germinates well and produces plants resembling the parent. (Adapted from Garden and Forest, vol. 4, p. 52.)

For previous introduction see S. P. I. No. 22525.

52682. Juglans sp. Juglandaceæ.

Walnut.

A new species of walnut.

52683. Juglandaceæ.

Walnut.

"No. 6164. M. V." (Vilmorin-Andrieux.)

52669 to 52689—Continued.

52684. MALUS SIKKIMENSIS (Hook. f.) Koehne. Malaceæ. Crab apple. (Pyrus sikkimensis Hook. f.)

A wild crab-apple tree, common in Sikkim, which bears fruit only pleasantly edible when stewed with sugar. (Adapted from Records of the Botanical Survey, India, vol. 1, No. 2, p. 11.)

For previous introduction, see S. P. I. No. 33057.

52685. OSMANTHUS DELAVAYI Baill. Oleaceæ.

A beautiful evergreen shrub from southwestern China, with dense axillary clusters of pure-white flowers. The dark-green ovate leaves are an inch long and have serrate margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 55, p. 257.)

For previous introduction, see S. P. I. No. 48332.

52686. PHYLLOSTACHYS FLEXUOSA A. and C. Rivière. Poaceæ. Bamboo.

A graceful bamboo 8 to 10 feet high, with tall, slender, slightly zigzag canes changing from green to bright yellow. The dark-green, rather small leaves are bent. The plant has a most graceful aspect, the lithe branches being swayed by the gentlest breeze. One of the hardiest of the bamboos, this species is quite distinct. (Adapted from Gauntlett, Hardy Plants Worth Growing, No. 92, p. 294.)

52687. PYRACANTHA CRENULATA (Don) Roemer. Malaceæ. (Crataegus crenulata Roxb.)

"A shrub of medium small dimensions, closely allied to *Crataegus* pyracantha (Pyrancantha coccinea) having small glistening green leaves and bearing a multitude of bright-red berries. Found on stony places at altitudes of 3,000 to 5,000 feet. It is of value as a very ornamental rockery shrub for those sections of the United States where the temperature is never very low." (F. N. Meyer.)

For previous introduction, see S. P. I. No. 40737.

52688. Pyrus sp. Malaceæ.

"Mandchouriea." (Vilmorin-Andrieux.)

52689. VIBURNUM SIEBOLDII Miquel. Caprifoliaceæ.

A wide-spreading shrub from Japan, sometimes reaching a height of 10 to 15 feet. If the leaves are bruised or crushed in the hand, the odor is anything but agreeable, but otherwise it is not noticeable. The flowers, in large flat clusters, are cream colored or almost white and borne in moderate-sized heads during June. In August the fruit clusters assume a rich crimson color and are very conspicuous and ornamental, but in September they turn black and soon drop. (Adapted from Gardening Illustrated, vol. 39, p. 405.)

52690 to 52700. Caragana spp. Fabaceæ.

From Paris, France. Cuttings presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52690. Caragana arborescens Lain.

Siberian pea tree.

"Variety nana." (Vilmorin-Andrieux & Co.)

A quaint-looking dwarf shrub with stiff contorted branches which grow slowly. It is usually grafted on the type, from which it does not differ in leaf or flower. (Adapted from Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 288.)

.52690 to 52700—Continued.

52691. CARAGANA ARBORESCENS Lam.

Siberian pea tree.

"Variety sophoraefolia." (Vilmorin-Andrieux & Co.)

A form of Caragana arborescens with extremely small leaflets. (Adapted from Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 95.)

For previous introduction, see S. P. I. No. 52451.

52692. CARAGANA ARBORESCENS CUNEIFOLIA (Dipp.) C. Schneid.

Siberian pea tree.

A small form of Caragana arborescens with truly cuneate leaves. (Adapted from Schneider, Illustriertes Handbuch der Laubholdzkunde, vol. 2, p. 95.)

52693. CARAGANA FRUTEX (L.) Koch.

A handsome bushy shrub, native to Siberia and quite hardy in England, with smooth spreading branches and pinnate leaves with two pairs of leaflets which are very close to each other at the point of the petiole; the pale-green leaflets are obovate. The bright-yellow flowers, solitary or in pairs, are produced in the abortive shoots of the last year. The peduncles are long and slender, jointed, and smooth. (Adapted from Sweet, British Flower Garden, vol. 3, p. 227.)

52694. CARAGANA FRUTEX (L.) Koch.

"Variety pygmaea." (Vilmorin-Andrieux & Co.)

A dwarf form.

52695. CARAGANA FRUTEX (L.) Koch.

"Variety sylvatica." (Vilmorin-Andrieux & Co.)

52696. CARAGANA GRANDIFLORA DC.

A densely branching shrub with shining brown bark ornamented with white longitudinal streaks. The spiny stipules are reflexed and spreading; the paired spiny mucronate leaves, 4 to 7 centimeters long, are clustered at the tips of the branchlets. The ovate-oblong shining leaflets are cuneate at the base and 1 to 10 millimeters long. The yellow flowers, 6 to 10 millimeters long, are often solitary on peduncles 10 to 12 millimeters long. (Adapted from Komarov, Acta Horti Petropolitant, vol. 29, p. 219.)

For previous introduction, see S. P. I. No. 30546.

52697. CARAGANA MICROPHYLLA Lam.

"Variety glomerata arenaria." (Vilmorin-Andrieux & Co.)

A form of Caragana microphylla, variety glomerata, which has a rachis about 6 to 7 centimeters long and ovate or elliptic leaves about 2 to 6 centimeters long. (Adapted from Komarov, Acta Horti Petropolitani, vol. 29, p. 350.)

52698. CARAGANA PYGMAEA (L.) DC.

A handsome shrub with small leaves and yellow flowers, which grows spontaneously in hilly places in the southern provinces of Russia, especially about the River Tschargurban, also in great abundance in all the provinces south of Lake Baikal. In cultivation it rarely exceeds 4 feet, but in its wild state it is often 6 feet high with a stem 2 inches thick. The shoots when old are long and flexible, of bright-yellow color, and are

23564-23---5

52690 to 52700—Continued.

made into flyflaps by the inhabitants of the country where it grows wild. The shoots are much tougher than those of any of our cultivated osiers and are better suited to be used for tying. The hard, dull-brown wood is streaked with red and is well adapted for veneering. (Adapted from Edwards's Botanical Register, vol. 12, p. 1021.)

For previous introduction, see S. P. I. No. 42282.

52699. CARAGANA SIBIRICA Medic.

A Siberian species of the ornamental Caraganas, shrubs grown chiefly for their bright-yellow flowers. The leaves are abruptly pinnate, with small entire leaflets. The pods are terete, linear, and straight.

52700. CARAGANA Sp.

An unidentified form.

52701. Litchi chinensis Sonner. Sapindaceæ. Lychee. (Nephelium litchi Cambess.)

From Zarfarwal, Punjab, India. Seeds presented by H. S. Nesbitt, American United Presbyterian Mission. Received January 25, 1921.

"This is counted a delicious fruit here, and the barky shell inclosing the sweet juicy pulp makes it easily transportable." (Nesbit.)

For previous introduction and description, see S. P. I. No. 51472.

52702 to 52714.

From Paris, France. Cuttings presented by Vilmorin-Andrieux & Co. Received February 21, 1921.

52702. Cornus Walteri Wangerin. Cornaceæ.

A tree 40 feet high, with white flowers and blue-black fruits, growing in woodlands at 900 to 2,000 feet altitude in western Hupeh, China. (Adapted from Sargent, Plantae Wilsonianae, vol. 2, p. 576.)

For previous introduction, see S. P. I. No. 34566.

52703. HYDRANGEA sp. Hydrangeaceæ.

Received without description.

52704. LONICERA Sp. Caprifoliaceæ.

Received without notes.

52705. X POPULUS BASUMOWSKIANA Schroed. Salicaceæ. Poplar.

A hybrid between *Populus nigra* and *P. suaveolens*. It is a large tree with roundish leaves smaller than in *P. petrovskoe*. The shoots are cylindrical. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 18, p. 108.)

52706. Ribes cynosbati L. Grossulariaceæ. Gooseberry.

A shrub about 6 feet high, native to eastern North America, with reddish purple fruits, scarcely half an inch in diameter and more or less covered with slender prickles. (Adapted from Jacquin, Hortus Botanicus Vindobonensis, seu Plantarum Rariorum, pl. 123.)

52707. RIBES LONGERACEMOSUM Franch. Grossulariaceæ. Currant.

"This species, found in the mountains of western China, bears large black fruits of good flavor in racemes a foot and a half long." (E. H. Wilson, A Naturalist in Western China, vol. 2, p. 31.)

For previous introduction, see S. P. I. No. 51617.

52702 to 52714—Continued.

52708. RIBES PETRAEUM Wulf. Grossulariaceæ.

Currant.

Another of the red currant group widely spread in a state of nature in Europe and North Africa. It has no value as an ornamental shrub, its flowers being green suffused with purple, somewhat bell shaped, in horizontal or slightly nodding racemes 3 or 4 inches long. The leaves are more deeply lobed than in the common red currant, and the lobes are pointed. The fruit is roundish, flattened somewhat at the end, red, and very acid. (Adapted from Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.)

For previous introductions, see S. P. I. No. 40472.

52709. RIBES PETRAEUM CAUCASICUM (Bieb.) Jancz. Grossulariaceæ.

Currant.

A shrub 1 to 3 meters high, with glabrous shoots and rounded leaves up to 13 centimeters broad and 12 centimeters long, ordinarily five lobed, the lobes little developed. The reddish flowers are in racemes up to 10 centimeters long. The receptacle is furnished with five tubercles below the petals, and the fruit is red or blackish purple. (Adapted from Janczewski, Monographie des Groseilliers, p. 290.)

For previous introduction, see S. P. I. No. 40426.

52710. Ribes ussuriense Jancz. Grossulariaceæ.

Currant.

A much-branched shrub 1 millimeter high, producing rhizomes like those of Ribes aureum; the shrub has an odor resembling that of camphor. The glabrous leaves dotted below with yellow glands are 8 centimeters long and broad and three to five lobed. The loose arched racemes, 1 to 1½ centimeters long, bear five to nine whitish flowers briefly campanulate. The round fruit, as large as a currant, is black (greenish blue before ripening), not aromatic, and with greenish, slightly sweet acidulous flesh. The small ovoid seeds have a greenish gelatinous coating and an inflated funiculus. The fruit falls as soon as it is ripe and the seeds germinate in 22 to 50 days. The floral buds are very sensitive to winter cold. (Adapted from Janczewski, Monographie des Groseilliers, p. 349.)

For previous introduction, see S. P. I. No. 40488.

52711. RIBES VILMORINI Jancz. Grossulariaceæ.

Currant.

A shrub 2 meters high, with glabrous branches which are red when young. The development and flowering are very slow; the small cordate leaves are 2 to 3 centimeters long and wide and are covered on the under surface with glandular hairs. The small greenish flowers are sometimes slightly tinged with brownish red and are in small clusters of two to eight. The small round black, glabrous fruit is capped with the flower, which does not dry up. The slightly sweetish flesh is pale or veined with purple-black. The fruit ripens in August and remains unchanged on the bush until October. Native to middle China, Tibet, and Yunnan. (Adapted from Mémoires Société Physique et Histoire Naturelle, Geneve, vol. 35, p. 462.)

52712. SPIRAEA MYRTILLOIDES Rehder. Rosaceæ.

Spirea.

For previous introduction and description, see S. P. I. No. 52459.

52713. Syringa chinensis Willd. Oleaceæ. Lilac.

A deciduous bush of dense rounded habit, 10 to 15 feet high, with flowers of the common lilac shade, intermediate in size between those

52702 to 52714—Continued.

of the common and Persian lilacs, and in somewhat loose clusters. The growths made during the summer produce the following May a pair of flower trusses 3 to 6 inches long at each joint toward the end, so that the whole makes a heavy arching, compound panicle. The seeds are fertile only occasionally. Native to China. (Adapted from Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 566.)

Received as Syringa correlata, which is now referred to S. chinensis. 52714. VIBURNUM sp. Caprifoliaceæ.

Received without description.

52715 to 52735.

From Ambato, Ecuador. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received February 12, 1921. Quoted notes by Mr. Popenoe.

52715. Bunchosia armeniaca (Cav.) DC. Malpighiaceæ.

"(No. 541a. Banos, near Ambato, Ecuador, 6,000 feet altitude. January 10, 1921.) Ciruela verde or ciruela silvestre. This species is considered to be indigenous in the Pastaza Valley below Banos. It is commonly cultivated in the latter town, and occasionally in the gardens of Ambato, but the climate of the latter region is slightly too cool for it. In Loja it is well known, as also in Otavalo and Ibarra. The plant attains about 15 feet in height and is quite attractive. The glossy deepgreen leaves are elliptic-acuminate, 3 to 6 inches long, and rather leathery; the small yellow flowers are produced in short axillary racemes. The fruits are round or nearly so, 1 to 2 inches in diameter, and light green to yellowish green. Within the thin delicate skin is a mass of cream-colored, very sweet pulp in which one or two large seeds are embedded. The plant is probably too tender for any section of the United States except southern Florida."

52716. Carica sp. Papayaceæ.

Chamburo.

"(No. 546a. Ambato, Ecuador. January 12, 1921.) This plant is called *chilhuacan* in the gardens of Imbabura Province, where it is quite common; the same name is also used at Quito, where the species is fairly well known. In Tungurahua Province it is termed *chamburo*, while in the Azuay it is known as *siglalon*. In Loja it is more frequently seen as a wild than as a cultivated plant and is called *chamburo*. Its zone is approximately from 6,000 to 10,000 feet.

"The plant, which reaches a height of 15 to 20 feet, has a trunk somewhat stouter than that of the papaya and leaves which strongly resemble those of the latter in size and character. It is irregularly diœcious, at least when brought under cultivation. I have seen at Ambato plants bearing principally staminate flowers, but carrying at the same time a good number of fruits apparently normal in form and size. Many specimens produce pistillate flowers only, and some staminate only. The fruits, which are sold in the markets of numerous interandean towns, are elliptic, sharply pointed at the apex, and deeply five ribbed. By means of this latter characteristic they can easily be distinguished from those of the higacho (Carica sp., S. P. I No. 53758). They are deep orange when fully ripe, and possess a fragrance quite distinct from that of the papaya. The flesh is about half an inch in thickness; it is eaten usually after cooking in the form of a sweet conserve. The numerous

52715 to 52735—Continued.

seeds, resembling those of the papaya in size, are embedded in a gelatinous translucent pulp which fills the central cavity of the fruit and is sometimes eaten. The species is indigenous in the Andes of northern South America. In the vicinity of Bogota, Colombia, it is abundantly cultivated. It is probably sufficiently hardy to withstand the winters of southern California and southern Florida."

For an illustration of the chamburo, see Plate III.

52717. Rubus glaucus Benth. Rosaceæ.

Andes berry.

"(No. 557a. Ambato, Ecuador. January 12, 1921.) Mora de Castilla. The Andean raspberry, the common dark maroon-fruited variety. This excellent fruit, native to the mountainous regions of Ecuador (as well as to several other tropical American countries) has received a certain amount of cultural attention at Ambato, Quito, Otavalo, and Ibarra, with the result that several varieties have originated. At Ambato there are two, the common sort with dark maroon-colored fruits and another with light-red fruits, somewhat more delicate in flavor than those of the common sort. The plant is half-climbing in habit and a vigorous grower. It covers arbors and fences, or can be trained into bush form. making a clump about 10 feet broad and high. The stems are round and covered with a thick whitish bloom; the leaves are trifoliolate, with the leaflets ovate-lanceolate, long-acuminate, serrate, about 3 inches in length, light green above and whitish below. The flowers are produced in terminal racemes sometimes a foot in length; they are white and about an inch in diameter. The fruits are oblong-oval, often an inch long, and composed of a large number of drupelets crowded closely together. The seeds are not so large as to be troublesome in the mouth, nor are they hard; the flavor resembles that of certain northern raspberries, being rich, aromatic, and very pleasant. Although excellent when eaten with sugar and cream, the fruit is more commonly used in Ecuador to prepare a sweet conserve or the sirup made in Otavalo, called jarope de mora, from which an excellent refresco is made.

"This plant grows on soils of various types, from clay to light sandy loams. It will probably require intelligent pruning to make it fruit abundantly. I believe it possesses great possibilities when cultivated in the southern and southwestern United States, since its fruits are larger than any of the raspberries we now grow and of excellent quality."

52718 and 52719. Zea Mays L. Poacer, Corn.

52718. "(No. 543a. Ambato, Ecuador. January 11, 1921.) Morocho blanco. An excellent white flint corn, grown in the vicinity of Ambato. It is used principally as human food, after grinding and preparation in the form of mazamorra (a sort of corn-meal mush); it is also used to make chicha, a fermented beverage. Of interest to those engaged in corn breeding."

52719. "(No. 542a. Ambato, Ecuador. January 11, 1921.) Maiz amarillo. Yellow starchy corn grown in the vicinity of Ambato, at an altitude of about 8,000 feet. For those interested in corn breeding."

52720. PRUNUS SEROTINA Ehrh. Amygdalaceæ.

Capulin.

"(No. 544. Ambato, Ecuador. January 12, 1921.) Ambato cherry. This is a remarkable and most excellent variety of the capulin, famous throughout Ecuador. The parent tree is growing on the hacienda of

52715 to 52735—Continued.

Victor Oviedo, at Catiglata, near Ambato; it is usually known, however, as the 'Gonzales tree,' from the name of a former owner of the property.

"In size and quality of fruit this variety is far superior to the great majority of capulfs seen in Ecuador and other tropical American countries. It is worthy of propagation by grafting and should be planted in all those regions where the capulf can be grown. It will probably succeed in California, and perhaps also in the Gulf States. It would be a valuable acquisition for the highlands of Mexico and Central America, as well as for other tropical countries where there are plateaus or cultivated regions at altitudes between 6,000 and 10,000 feet.

"The parent tree is probably very old and is one of the largest capulins I have seen. It is about 50 feet high and has a spread of 60 feet. Its fruits, which are very abundantly produced during the first months of the year (from January to March), are as large as the Black Tartarian cherry of California (three-quarters of an inch in diameter), dark maroon, with soft juicy flesh and a seed of about the same size as that of our northern cherries. The flavor is sweet and very agreeable, with a faint trace of bitterness if the fruit is not fully ripe."

52721. Carica sp. Papayaceæ.

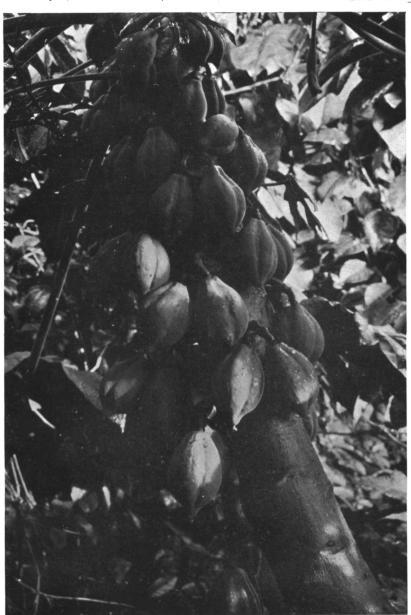
Babaco.

"(No. 547. Ambato, Ecuador. January 12, 1921.) This is called babaco throughout the interandean region of Ecuador, where it is cultivated in many places, from Loja Province northward to Carchi Province. I have never seen it except in cultivation, and this only between 6,000 and 10,000 feet in altitude; nor have flowers other than purely pistillate ones been found on any of the numerous plants examined.

"This is, in fact, the most remarkable and valuable of the several interesting species of Carica cultivated in Ecuador. Because of its large fruits, which yield an excellent sauce, because of the relatively low temperatures which the plant can withstand, and because of its habit of producing seedless fruits it is worthy of attention in other countries. It is a smaller plant than Carica papaya, rarely reaching more than 10 feet in height. The stem is usually slender, especially when the plants are set closely together, as they are in the small commercial plantations of The leaves are glabrous like those of the higacho (Carica Ambato. sp., S. P. I. No. 53578), but with fewer lobes than in the latter. fruits are commonly about a foot long and 3 to 5 inches in diameter; they are truncate at the base, sharply acute at the apex, and conspicuously 5-angled in transverse outline. The flesh is about half an inch in thickness, nearly white, distinctly fragrant, and very acid. It is eaten only after cooking. The large cavity in the center of the fruit contains a quantity of white cottony substance and occasionally a few seeds. The latter are possibly produced when the flowers are fertilized with pollen of other species of Carica (since staminate flowers of the babaco are not seen in cultivation).

"The plant is propagated by cuttings and in no other manner. Whether it represents a wild species which I have not seen, or whether it has been derived by cultivation from the *higacho*, I am unable to say; the latter hypothesis does not appear unreasonable. It is worthy of a careful trial in California and Florida."

Fruits of the babaco are shown in Plate IV.



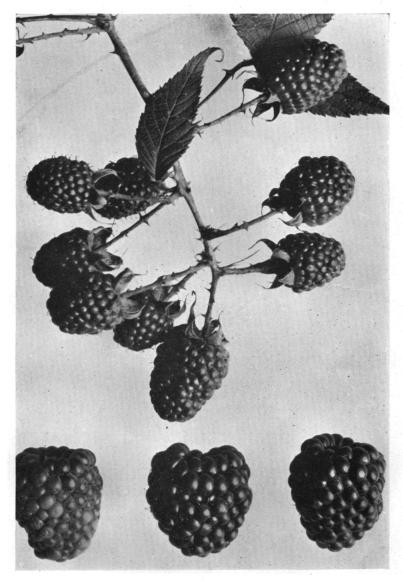
THE CHAMBURO, AN INTERESTING RELATIVE OF THE PAPAYA. (CARICA SP., S. P. I. No. 52716.)

The chamburo is indigenous in the Andes of northern South America and will probably be sufficiently hardy to withstand the winters of southern California and southern Florida. The fruit flesh is half an inch thick and is usually eaten, after being cooked, in the form of a sweet conserve. (Photographed by Wilson Popenoe, Banos, Tungurahua, Ecuador, March 11, 1921; P18482FS.)



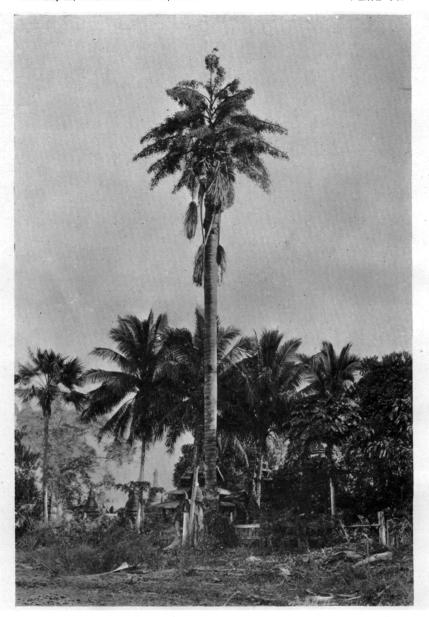
FRUITS OF THE BABACO, ONE OF THE MOST VALUABLE SPECIES OF CARICA CULTIVATED IN ECUADOR. (CARICA SP., S. P. I. No. 52721.)

The babaco is particularly worthy of attention because of its large, usually seedless fruits, which yield an excellent sauce, and because of the relatively low temperatures that it can withstand. Like the chamburo, it will probably do well in southern California and southern Florida. (Photographed by Wilson Popenoe near Ambato, Ecuador, January, 1921; P18377FS.)



A RED-FRUITED VARIETY OF THE ANDES BERRY. (RUBUS GLAUCUS BENTH., S. P. I. No. 52734.)

The Andes berry is one of the most promising fruits of this group introduced from South America, and the berries of the red-fruited variety (which is very rare) have a more delicate flavor than those of the common purplish fruited form. The luscious fruits resemble our blackberries, and some varieties are said to be superior in flavor. (Photographed by Wilson Popenoe, near Ambato, Ecuador, January, 1921; P18356FS.)



THE TALIPOT PALM OF TROPICAL ASIA. (CORYPHA UMBRACULIFERA L., S. P. I. No. 52802.)

Often growing to a height of more than 80 feet, this giant palm attains a spread of about 200 square feet. The seeds are dyed red and sold as coral for beads, the pith of the trunk yields a kind of sago, and the leaves are made into fans and mats. It will probably do well in Porto Rico, and in the Canal Zone and other parts of tropical America. (Photographed by J. F. Rock, Okima, Burma, January, 1921; (P22686FS.

52715 to 52735—Continued.

- 52722 to 52730. Solanum tuberosum L. Solanaceæ.
- Potato.
- 52722. "(No. 555. Ambato, Ecuador. January 12, 1921.) Calvache potato, grown near Ambato. This is a productive and late-maturing variety, grown mainly at the lower altitudes. The tubers are elliptic-obovate and compressed to long and slender in form, of medium size, with a light rose-pink surface marked with very few and shallow eyes. The flesh is white and of good quality."
- 52723. "(No. 551. Ambato, Ecuador. January 12, 1921.) Dominga potato, grown near Ambato. This variety, which is cultivated at the lower altitudes of this region, is moderately productive. The tubers are medium sized, roundish oval, light rose colored, with white flesh of good quality. One of the most important commercial varieties."
- 52724. "(No. 552. Ambato, Ecuador. January 12, 1921.) Huagrasinga potato, grown near Ambato. This is a late-maturing variety, with tubers irregularly round, pale yellow brown, with violet-colored areas around the rather deep eyes. The flesh is white, of fair quality. It is slightly resistant to late-blight and is grown at both high and low altitudes."
- 52725. "(No. 549. Ambato, Ecuador. January 12, 1921.) Inglesa potato, grown near Ambato. This moderately productive, latematuring variety has round, good-sized tubers of dark violet, with moderately numerous and deep eyes. The flesh is white and of good quality. This has proved at Ambato to be the most resistant to late-blight of all the varieties tested."
- 52726. "(No. 554. Ambato, Ecuador. January 12, 1921.) Leona potato, grown near Ambato. A late-maturing, productive variety which is most successful at the higher altitudes. The tubers are round, medium to large, brown, the eyes few and not very deep. The flesh is white, and superior in quality to that of all others cultivated in the Ambato region. The keeping qualities of the variety are excellent."
- 52727. "(No. 550. Ambato, Ecuador, January 12, 1921.) Leona Pazmina potato, grown near Ambato. This late-maturing and moderately productive potato yields tubers of oval to round form, medium size, dark-red color, with moderately few and not very deep eyes. The flesh is white and of excellent quality. The plant, which grows best at high altitudes, is moderately resistant to late-blight. The variety keeps better than most of the others known at Ambato."
- 52728. "(No. 556. Ambato, Ecuador. January 12, 1921.) Manzana potato, grown near Ambato. This productive and late-maturing variety, cultivated mainly at the lower altitudes of the Ambato region, produces tubers of irregularly round form, medium size, with a rose-pink surface and rather numerous and deep eyes marked with yellow. The flesh is white and of good quality. The plant is not resistant to late-blight."
- 52729. "(No. 548. Ambato, Ecuador. January 12, 1921.) Tabla potato, grown near Ambato. This is one of the largest potatoes cultivated in Ecuador. The plant is very productive, and the tubers, which mature rather late in the season, are elongated,

52715 to 52735—Continued.

flattened, light red, with few and not very deep eyes. The flesh is white and of good quality. The plant has shown itself fairly resistant to late-blight."

52730. "(No. 553. Ambato, Ecuador. January 12, 1921.) Yungara potato grown near Ambato. This productive and late-maturing variety yields oblong medium-sized tubers, light rose colored with yellow areas around the few and not very deep eyes. The flesh is white and of good quality; the plant is not resistant to late-blight. One of the important commercial potatoes of central Ecuador."

52731. Fragaria chiloensis (L.) Duchesne. Rosaceæ.

Chilean strawberry.

"(No. 550. Guachi Grande, near Ambato, Ecuador. January 12, 1921.) *Ambato* strawberry. Of unusual interest for culture in the Southwest." For previous introduction, see S. P. I. No. 52576.

52732. Pyrus communis L. Malaceæ.

Pear.

"(No. 540. Ambato, Ecuador. January 11, 1921.) Pera nacional or pera común, from a huerta near Ambato. For trial as stock plants.

"This small pear, probably introduced into Ecuador by the Spaniards in colonial times, is cultivated commercially in the vicinity of Ambato, whence the fruits are carried to Quito, Guayaquil, and other points in the Republic. It is also grown in the Azuay, near Cuenca. Propagation is by suckers which spring up abundantly beneath the old trees.

"The species is vigorous in habit, trees sometimes reaching 25 feet in height and producing their fruits in great abundance. The ripening season at Ambato is from January to March. The fruit is pyriform, an inch or slightly more in length, yellow, and firm in texture even when fully ripe. The flesh is white, rather mealy, not very juicy, and of a mild, pleasant flavor. It is very rare for any seeds to be found. The plant is often used at Ambato as a stock on which to graft the large-fruited pears known as peras de manteca."

52733 and 52734, Rubus glaucus Benth. Rosaceæ. Andes berry. For previous introduction, see S. P. I. No. 52717.

52733. "(No. 539. Ambato, Ecuador. January 11, 1921.) Mora de Castilla, or Andes berry."

52734. "(No. 545. Ambato, Ecuador. January 12, 1921.) Mora de Castilla. A red-fruited variety of this excellent Andean berry, obtained from Prof. Abelardo Pachano. This variety is rare, and its fruits are of a more delicate flavor than the common sort. It should have a careful trial in the southern and southwestern United States."

For a more thorough discussion of this berry the reader is referred to the Journal of Heredity, vol. 12, pp. 387 to 393.

A fruiting spray and several fruits of the Andes berry (natural size) are shown in Plate V.

52735. DATURA SANGUINEA Ruiz and Pav. Solanaceæ.

"(No. 558b.) From a dooryard in Ambato. Seed pods of the common datura cultivated as an ornamental plant in the vicinity of Ambato. The flowers are orange-red."

52736. DIGITARIA EXILIS (Kippist) Stapf. Poaceæ. Fundi grass.

From Sierra Leone, Africa. Seeds presented by D. W. Scotland, Director of Agriculture, Njala, Mano. Received March 23, 1921.

"An annual grass, much resembling crabgrass, grown by Nigerian tribes as a supplementary food grain. This grass, called by natives 'fundi,' is often grown in the millet fields, and yields a crop of fine seed which is made into flour for the preparation of a kind of porridge. Fundi was known in Africa in 1798, but it was first brought into England in 1842 by R. Clarke, who describes the grain as about the size of mignonette seed. It is sown in May or June, carefully weeded in August, and ripens in September. The plant grows to a height of 18 inches, and the slender stems bend to earth by the weight of the grain. It prefers light or even rocky soil. Clarke says the grain is 'delicious' for food. Fundi was tested at McNeill, Miss., in 1920, and it is believed that it will give from three to five cuttings of hay in a season or a larger amount of pasturage." (C. V. Piper.)

For previous introduction, see S. P. I. No. 49524.

52737 and 52738. Triticum Aestivum L. Poaceæ.

(T. vulgare Vill.)

Common wheat.

From St. Jean le Blanc, Orleans, France. Seeds presented by M. Edmond Versin. Received March 11, 1921. Quoted notes by M. Versin.

52737. "Blé de Chine No. 1. Extra early, a little bearded; this took a diploma of honor as the finest head at Bordeaux, France."

52738. "Blé de Chine No. 2. Very early and beardless."

52739. Prunus armeniaca L. Amygdalaceæ. Apricot.

From Haifa, Palestine. Seeds presented by Amram Khazanoff, Jewish Colonization Association. Received March 11, 1921.

"Seeds of the Musmush kelabi, the bitter-kerneled apricot or dog's apricot, which is used in the Damascus region as stock for grafting the apricot under irrigation. The fruit of the Musmush kelabi is used for the manufacture of apricot paste, or kamr-ed-din." (Khazanoff.)

52740 to 52744.

From Medellin, Colombia. Seeds presented by W. O. Wolcott. Received March 17, 1921.

52740. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

An evergreen, semiwoody plant, cultivated throughout the Tropics for its edible, ovoid, smooth-skinned fruits. When mature these reddish yellow fruits have an agreeable subacid flavor and although pleasant when eaten fresh are used chiefly for stewing and for jam or preserves.

52741 to 52743. Poaceæ.

"These grasses grow from 2 to 4 feet tall. They apparently require very little moisture, for I gathered some from cracks in the rocks. The natives say they are fine for fattening stock." (Wolcott.)

52741. Andropogon minarum (Nees) Kunth. Beard-grass.

A large perennial grass allied to the bluestem of the eastern United States.

52740 to 52744—Continued.

52742. MELINIS MINUTIFLORA Beauv.

Molasses grass.

A stout perennial with viscid pubescent foliage and narrow many-flowered panicles of very small awned spikelets. (Adapted from Hitchcock, United States Department of Agriculture Bulletin No. 772.)

52743. Pennisetum setosum (Swartz) L. Rich. Mission grass.

A tall perennial grass related to pearl millet; native to South America and Central America.

52744. VICIA FABA L. Fabaceæ.

Broad bean.

"The beans are native here. The natives use them as food and also as stock feed. The stalks grow very rank, from 2 to 3 feet high, and are from one-fourth to one-half of an inch thick; they are covered with heavy leaves all the way from the ground up. The natives call them habas silvestre." (Wolcott.)

52745 to 52751.

From Moulmein, Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received March 18, 1921. Quoted notes by Mr. Rock.

52745. Annona reticulata L. Annonaceæ.

Custard-apple.

"Seed from choice and delicious fruits of 'bullock's-heart."

52746. BAUHINIA MALABARICA Roxb. Cæsalpiniaceæ.

"(Western Siam. December 16, 1920.) A large tree 30 to 40 feet in height, with a large round crown and thousands of long pendent racemes; flowers not seen; found in dense forest near Raheng, western Siam." 52747. BAUHINIA sp. Cæsalpiniaceæ.

"(Myawaddi, Burma. December 21, 1920.) A shrub or small tree in dry forests of eastern Burma, one day's journey from the Siamese boundary. The flowers are arranged in threes in the axils of all the leaves, standing erect on the upper surface of the branches."

52748. Bombax insigne Wall. Bombacaceæ. Cotton tre

"A large forest tree of the lowland jungle found along the banks of the Meping River, western Siam. The tree reaches a height of 80 to 100 feet. The floss is used by the natives for stuffing pillows; it is also spun."

52749. IPOMOEA HORSFALLIAE Hook. Convolvulaceæ. Morning-glory.

"Variety briggsii. A splendid crimson-flowered morning-glory which reaches large dimensions and is, of course, a perennial. It flowers for many months during the year, especially during the cold season; the crimson flowers are borne in large clusters."

52750. LAGERSTROEMIA Sp. Lythraceæ.

"An ornamental tree 30 feet in height, with showy pink flowers. It grows in the very dry jungle beyond Palut, western Siam, with Strychnos nux-vomica, Dipterocarpus tuberculatus, Cassia fistula, etc. It is worthy of cultivation."

52751. ORYZA SATIVA L. POACESE.

Rice.

"Black rice from Oktada Martaban; fresh seed from this year's yield."

52752 and 52753. LUPINUS spp. Fabaceæ.

From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. Received March 30, 1921.

52752. Lupinus albus L. Fabaceæ.

White lupine.

"A tall-growing lupine with white flowers. The variety vulgaris is cultivated in southern Europe. Formerly this variety was cultivated in Germany but usually does not mature there. The bitter principle in both seeds and plants make the crop useful only for green manuring. In Germany it has been superseded by the yellow lupine." (A. J. Pieters.)

For previous introduction, see S. P. I. No. 39347.

52753. LUPINUS LUTEUS L. Fabaceæ.

Yellow lupine.

"A species native to southern Europe and cultivated especially in Germany for green manure. It is more resistant to drought than the white, and will thrive on thin, lime-poor soils. This plant does not make as large a mass of growth as the white but ripens earlier." (A. J. Pieters.)

For previous introduction, see S. P. I. No. 39349.

52754. Avicennia officinalis L. Verbenaceæ. White mangrove.

From Manila, Philippine Islands. Cuttings presented by Adn. Hernandez, director, Bureau of Agriculture. Received February 9, 1922.

A small Philippine tree found along the outer edges of swamps; the dark-green, leathery leaves are hairy beneath and about 4 inches long. The small, orange-yellow flowers are borne in few-flowered heads, and the fruit is a single-seeded capsule. The wood is hard, heavy, difficult to split, and is rarely attacked by beetles. (Adapted from *Brown, Minor Products of Philippine Forests, vol. 1, p. 80.*)

52755. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ.

(A. triloba Forst.)

Lumbang.

From Dania, Fla. Nuts presented by George W. Bloom. Received December 20, 1920. Numbered March 31, 1921.

"Candlenut. The tree is 50 feet high with a spread of 30 feet. It bore 2 bushels or more of nuts. Three young plants that came up under the tree were pulled up and planted in cans in the latter part of August, and they are now 2 feet high; these will be planted on my place here in Dania the last of this month. There are also two plants from nuts sprouted in cans. Three uncracked nuts were planted and three that were cracked just enough to break the shell. Two of the cracked nuts developed into trees. The nuts have been given to everyone that cared to try or plant them. Apparently the kernels are not injurious, as they have been eaten by a number of children with no noticeable ill effects." (Bloom.)

52756 to 52773.

From Bedford, England. Plants presented by Laxton Bros. Received March 15, 1921. Quoted notes from Laxton, Strawberries and Small Fruits, 1919 and 1920.

52756. Fragaria moschata Duchesne. Rosaceæ. Hautbois strawberry. "Royal. A fine alpine form, with rich aromatic flavor."

52757. Fragaria vesca L. Rosaceæ.

Wood strawberry

[&]quot;Red Alpine. The best form of alpine strawberry."

52756 to 52773—Continued.

- 52758 to 52762. Fragaria spp. Rosaceæ. Garden strawberry.
 - 52758. "International. A plant of very compact growth and robust habit, producing long, leathery, vigorous foliage and very handsome wedge-shaped fruit which ripens about midseason. The bright, glowing-scarlet fruit has white flesh, very rich in flavor, and particularly firm and solid in texture."
 - 52759. "King George V. A fine, new, early, forcing, and outdoor strawberry raised by crossing Louis Gauthier \times Royal Sovereign. It is a really magnificent fruit quite as large as, if not larger than, Sovereign, but it ripens nearly a week earlier, when grown side by side. The fruit is the brightest scarlet, but the flesh is orange-red throughout. The flavor is delicious, excelling Royal Sovereign or any other forcing strawberry with which we are acquainted. It is a heavier cropper than Sovereign, forms splendid crowns, and sets and swells particularly freely."
 - **52760.** "La Perle. A very fine everbearing variety of French origin. The large light-scarlet fruit has firm sweet flesh."
 - 52761. "Maincrop. A hybrid between Bedford Champion and Laxton, producing fruit which combines size with flavor. A particularly vigorous grower throwing out a profusion of very bold large trusses of firm-textured, coxcomblike fruits. The color is very rich and the flavor good; both the outer skin and inner flesh are firm, which qualities will enable it to bear packing and transit well."
 - 52762. "White Perpetual. A hybrid between Louis Gauthier and St. Antoine; it is a true perpetual throwing up its trusses of large, nearly white fruits until stopped by frost in November. The flavor is very sweet and luscious. The habit is similar to that of St. Antoine."
- 52763 to 52772. Rubus idaeus L. Rosaceæ. European raspberry.
 - **52763.** "Abundance. The richest flavored raspberry in cultivation, a red raspberry seedling raised in the Lincolnshire fruit-growing district, where it is being largely planted. The plant is a very strong grower and enormous cropper."
 - 52764. "Baumforth. Baumforth's seedling is one of the best for general use; it produces an abundance of large dark-crimson excellent-flavored fruits."
 - 52765. "Bountiful. The strongest grower and heaviest cropper in existence. The canes are strong and vigorous and entirely self-supporting. The handsome bright-crimson conical fruit is larger than that of Superlative; it is borne on long trusses. The flesh is sweet and juicy, but is firm and stands travel well. While Superlative and older sorts become worn out after many years' propagating from canes, this variety has all the vigor of a seed-ling. It is an improvement on the Bedford, which it resembles in color of fruit and foliage, except that the color is of a darker tint than that variety; the firm fruit is also larger and equally good in flavor."
 - 52766. "Devon. A fine new red raspberry with a large conical fruit of fine flavor and bright color. A very strong grower."

52756 to 52773—Continued.

52767. "Hornet. A form with round deep-red berries produced in great clusters."

52768. "Magnum Bonum. An early fruiting raspberry with sweet white fruit, better than that of Antwerp."

52769. "Merveille de Rouge. A fine autumn-fruiting raspberry, bearing in September on the young growth made in the same summer, large, very sweet fruits."

52770. "Norwich Wonder. An old but useful variety, bearing abundantly large excellent-flavored fruit."

52771. "October Red. An autumn-fruiting raspberry."

52772. "Semper Fidelis. A good cropper coming in after the others are over. It is more acid than others, and useful for preserving."

52773. Rubus sp. Rosaceæ.

Blackberry.

"Edward Langley. A variety selected after many years' trial by E. M. Langley, of Bedford, from the best of our common wild black-berries; it has proved to be a very fine acquisition under cultivation. It is better in flavor and crop than any of the American sorts."

52774. LINUM USITATISSIMUM L. Linaceæ.

Flax.

From Gizeh, Egypt. Seeds presented by the director, Horticultural Section. Received March 25, 1921.

For experimental purposes.

52775. Phaseolus lunatus L. Fabaceæ.

Lima bean.

From Holguin, Cuba. Seeds presented by Thomas R. Towns. Received March 24, 1921.

"Pole beans that are common here in Cuba. Instead of being annuals, they are perennials and bear several crops during the year. They bear abundantly and are rich and mealy." (Towns.)

52776 to 52784. LINUM spp. Linaceæ.

Flax.

From Montevideo, Uruguay. Seeds presented by Sr. Luis Guillot, Dirección General de Paseos Públicos. Received March 23, 1921,

52776. LINUM AFRICANUM L.

A species with opposite linear-lanceolate leaves and terminal pedunculate flowers. Native to South Africa.

52777. LINUM CORYMBIFERUM Desf.

A species with erect stems, 6 to 10 decimeters high, branching above into dichotomous, corymbose, filiform branchlets. The lanceolate, erect, scattered leaves are 13 to 35 millimeters long, and the yellow flowers are borne singly on short pedicels. Native to northwestern Africa. (Adapted from Desfontaines, Flora Atlantica, vol. 1, p. 279.)

52778. LINUM GRANDIFLORUM Desf.

A perennial Algerian plant, 30 to 40 centimeters high, with herbaceous stems from a shrubby base. The leaves are obovate-lanceolate to linear. The pink flowers, 3 centimeters long, are in forked cymes. (Adapted from Muschler, Manual Flora of Egypt, vol. 1, p. 568.)

52776 to 52784—Continued.

52779. LINUM NERVOSUM Waldst, and Kit.

A perennial herb with erect simple stems, branching at the apex. The sessile erect leaves are lanceolate and the large blue flowers are in panicles. Native to grassy forests near Pancsova, Hungary. (Adapted from Waldstein, Descriptiones et Icones Plantarum Rariorum Hungariae, vol. 2, p. 109.)

52780. LINUM PALLESCENS Bunge.

An erect, glabrous, pale glaucous perennial with linear, erect-spreading thickish leaves and pale-blue or white flowers. Native to Siberia. (Adapted from Ledebour, Flora Altaica, vol. 1, p. 438.)

52781 and 52782. LINUM USITATISSIMUM L.

52781. Received as *Linum monadelphum*, which is now generally referred to *L. usitatissimum*.

For previous introduction, see S. P. I. No. 50160.

52782. A form of the ordinary species of flax. Introduced for experimental work in cereal investigations.

For previous introduction, see S. P. I. No. 50160.

52783. LINUM sp.

Received as Linum floccosum, for which name a place of publication has not been found.

52784. LINUM sp.

Received as Linum regale, for which name a place of publication has not been found.

52785 and 52786. Cyamopsis tetragonoloba (L.) Taub. Fabaceæ. (C. psoraloides DC.) Guar.

From Nagpur, Central Provinces, India. Seeds presented by D. Clouston, Director of Agriculture, Central Provinces. Received March 25, 1921. Quoted notes by Mr. Clouston.

"Two varieties generally cultivated about Nagpur."

52785. "Deshi guar-phali."

52786. "Telia guar-phali."

52787. Persea schiedeana Nees. Lauraceæ.

Coyo.

From San Jose, Costa Rica. Seeds presented by Mrs. Amparo Zeledón, through A. Alfaro, director, Museo Nacional. Received March 25, 1921.

This plant, known as yas in Costa Rica and coyo in Guatemala, is found from southern Mexico to Panama. In Costa Rica it grows abundantly on the slopes of Irazu at altitudes between 4,000 and 6,000 feet. Its fruits greatly resemble avocados in character.

Up to the present the coyo has not shown much promise in Florida or California. It is somewhat slow of growth and probably will not bear until the trees are at least 8 or 10 years old. Efforts are being made to obtain the best seedling varieties from Guatemala and to propagate them by grafting. In this way it will probably be possible to encourage early fruiting and to have fruit of better quality than would be obtained from most seedlings.

Extended data concerning this species and its cultural requirements will be found in United States Department of Agriculture Bulletin No. 743, "The Avocado in Guatemala."

52788 to 52795.

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director,
Hortus Botanicus Bergianus. Received March 25, 1921.

52788. ABALIA CACHEMIRICA Decaisne. Araliaceæ.

A lax shrub 5 to 10 feet high, with 1 to 3 pinnate leaves pilose above and glabrous or hispid on the veins beneath. The umbels are in elongated panicles a foot long. (Adapted from *Hooker*, *Flora of British India*, vol. 2, p. 722.)

For previous introduction, see S. P. I. No. 52669.

52789. Chenopodium bonus-henricus L. Chenopodiaceæ.

Good King Henry.

An extremely hardy perennial, native to Europe, with a smooth, slightly channeled stem 2 to 3 feet high. The arrow-shaped, smooth dark-green leaves are frosty or mealy on the under surface and rather thick and fleshy. The small green flowers are in close compact clusters, and the small black seeds hold their viability for five years. The leaves are eaten like spinach and the shoots like asparagus as a very early vegetable blanched by simply earthing them up. These delicious shoots are abundant a fortnight before asparagus comes in and for some weeks afterwards. (Adapted from Robinson, The Vegetable Garden, p. 313.)

52790 to 52792. DATURA STRAMONIUM L. Solanaceæ.

52790. "Variety inermis. This is a recessive variety of Datura stramonium. It may be either white flowered or lavender flowered and is readily distinguished from the typical form in having capsules devoid of prickles." (W. E. Safford.)

52791. Received as *Datura leichhardtii*, but the seeds agree with those of *D. stramonium*.

52792. "Variety tatula. This variety is distinguished from the typical Datura stramonium by its lavender flowers and purple stem. The prickly pods are indistinguishable in form from those of the type. This is the dominant form of D. stramonium. The white-flowered type as well as the smooth-capsuled form usually called D. inermis are both recessive forms of the same species." (W. E. Safford.)

52793. DATURA sp. Solanaceæ.

Received as *Datura ekblomii*, for which name a place of publication has not been found.

52794. Elymus arenarius L. Poaceæ.

Lyme-grass.

A stout erect perennial, 2 to 4 feet high, with extensively creeping rootstocks, rather firm, flat sharp-pointed leaves, and terminal, usually densely flowered spikes. Found in maritime sands of Greenland and Labrador to Maine, Alaska to California, and on the shores of the Great Lakes. This grass is one of the best species known for binding drifting sands, and in northern Europe it has been cultivated with beach-grass (Ammophila arenaria) for this purpose, the two species forming an admirable combination. The seeds are used for food by the Digger Indians of the Northwest. (Adapted from United States Department of Agriculture, Division of Agrostology Bulletin No. 1, p. 307.)

52788 to 52795—Continued.

52795. HEMEROCALLIS FULVA L. Liliaceæ.

The brown day lily, native to Asia, which is quite as pretty as the famous Orange lily and indeed makes a greater show. It makes half a dozen or more offsets every year, so that a large clump is soon formed. (Adapted from Meehan's Monthly, vol. 5, p. 193.)

52796. Diospyros lotus L. Diospyraceæ.

From Yokohama, Japan. Seeds presented by the Yokohama Nursery Co. Received March 28, 1921.

Introduced for use as stocks.

For previous introduction and description, see S. P. I. No. 44535.

52797. Cassia nodosa Buch.-Ham. Cæsalpiniaceæ.

From Honolulu, Hawaii. Seeds presented by Dr. Harold L. Lyon, in charge, Department of Botany and Forestry. Received March 29, 1921.

A moderate-sized tree native to eastern Bengal and Malay Peninsula, very beautiful when bearing its profusion of bright-pink rose-scented flowers during May and June. The cylindric pods are 12 to 15 inches long. The tree is deciduous in dry weather. (Adapted from Macmillan, Handbook of Tropical Gardening and Planting, p. 294.)

52798. FLINDERSIA MACULOSA (Lindl.) F. Muell. Meliaceæ. Leopard tree.

From Sydney, New South Wales, Australia. Seeds presented by George Valder, Director of Agriculture. Received March 20, 1921.

In the opinion of many experienced growers the leopard tree stands next in value to the *kurrajong* as a fodder tree. It grows from 30 to 45 feet high or more, and its trunk is curiously spotted, hence its popular name. From the trunk and larger branches exude large quantities of ambercolored gum of a pleasant flavor. The leopard tree is found growing over immense tracts of country in the interior of New South Wales. Its smaller branchlets have a somewhat pendulous habit which gives a well-grown specimen a decidedly ornamental appearance. During very dry periods this tree is cut down for stock feed, sheep being particularly fond of its leaves and thriving on them. The chemical analysis of the partially dried leopard-tree leaves gave the following results (in percentages): Water, 41.70; ash. 3.42; fiber, 11.43; albuminoids, 9.31; carbohydrates, 30.22. Nutrient value, 48.5; albuminoid ratio, 1 to 4.5.

The leopard tree is well worth conserving on those areas where it is already growing and planting in the driest districts for feeding to stock during prolonged droughts. Under ordinary conditions it produces quantities of seed, which when ripe and sown in the ordinary way germinates readily, so that there would be no difficulty in raising any number of plants. This tree also yields a serviceable timber of a bright-yellow color, nicely marked, close grained, and exceedingly tough and elastic. (Adapted from the Pastoral Finance Association Magazine, vol. 5, No. 18, p. 33.)

52799. CITRUS SINENSIS (L.) Osbeck. Rutaceæ.

Orange.

From Jerusalem, Syria. Budwood presented by J. Ettinger, director, Agriculture and Colonization Department. Received March 31, 1921.

"Bud sticks of the Jaffa orange, Shamooti." (Ettinger.)

The Jaffa orange is one of the largest, larger even than the Washington Navel. Its form is obovate, its skin very thick, and its fruit seedless. The tree is not spiny, and the fruit, therefore, is never scarred by thorns. Its shipping qualities are excellent. (Adapted from Aaronsohn, Agricultural and Botanical Explorations in Palestine, p. 26.)

For previous introduction, see S. P. I. No. 51215.

52800 and 52801.

From Sydney, New South Wales, Australia. Seeds presented by George Valder, Director of Agriculture. Received March 31, 1921.

52800. ACACIA PENDULA A. Cunn. Mimosaceæ.

Wattle.

"One of the most beautiful of all the Australian wattles is Acacia pendula, the boree of the aborigines, and generally known amongst stockmen as myall and weeping myall. It is a handsome evergreen tree, attaining sometimes a height of 35 feet, and occurring more or less abundantly over large areas in the interior. The lance-shaped silver-gray leaves (phyllodes) are 2 to 5 inches long; both sheep and cattle are so partial to them that one may travel for days in a country where these animals are pastured and rarely see a young tree, as the seedlings are eaten as soon as they are well above the ground. In very dry seasons the myall is often cut down and fed to sheep and cattle, and they seem to thrive on it. The chemical analysis of the partially dried leaves of this tree gave the following results, which show they are of good feeding value: Water, 48.45; ash, 4.45; fiber, 19.64; albuminoids, 9.62; carbohydrates, 16.63; nutrient value, 29.0; albuminoid ratio, 1 to 20.

"Since the horses do not eat the leaves, they may be allowed to graze in paddocks where the young myalls are growing. When allowed to grow undisturbed for a time the myall produces an abundance of seeds, which when mature retain their vitality for many years, and sometimes lie in the ground for a long period, indeed, until the weather and soil conditions are favorable for their germination. A well-grown specimen has a trunk about 3 feet in circumference and yields an excellent timber which is heavy, close in the grain, and of a rich dark-brown color and beautifully marked, having a delightful fragrance of violets, which it retains for a long time after being cut. In pre-war times the timber of this tree was used in Europe for veneering, for which it is well adapted; and before the country was settled the aborigines used it in the manufacture of their weapons." (Pastoral Finance Association Magazine, vol. 5, No. 18, p. 131.)

52801. GEIJERA PARVIFLORA Lindl. Rutaceæ.

"Wilga. From Nyngan, New South Wales." (Valder.)

A tall shrub or tree native to the interior of New South Wales, where it reaches a height of about 30 feet. It has slender pendulous branches, narrow leaves 3 to 6 inches long, and when well developed has a highly ornamental appearance, having something of the aspect of a weeping willow. It has remarkable drought-enduring qualities, and the leaves are often fed to sheep, which are very fond of them. (Adapted from the Pastoral Finance Association Magazine, vol. 5, No. 18, p. 132.)

For previous introduction, see S. P. I. No. 49892.

52802 and 52803.

From Burma. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received April 5, 1921.

52802. CORYPHA UMBRACULIFERA L. Phœnicaceæ. Talipot palm.

"Talipot palm. From Monywa, upper Chindwin River, Burma." (Rock.)

"The talipot palm is one of about five species belonging to the genus Corypha. It has a ringed trunk, generally remarkably straight and reaching a height of over 80 feet. Its leaves are of gigantic size, possibly the largest fan leaves of all palms. The petiole is 7 feet long and armed with spines on the margins. The blade is about 6 feet long and 16 feet broad with segments numbering from 95 to 100, and these are again bilobate. The flowers are white to cream colored and are borne in huge terminal panicles often 20 feet long. The palm flowers but once, after which it dies. The fruit is a roundish one-seeded drupe.

"This enormous palm is a native of Ceylon and the Malabar coast but is now cultivated in most tropical countries. The flowering time begins usually in the hot season, and the seeds ripen about 9 or 10 months afterwards. Each tree has a spread of about 200 square feet.

"The leaves of this palm are made into fans, mats, and umbrellas; the segments were used by the Cinghalese to write on. The sacred Pali texts of the Buddhist literature of Ceylon are all written on the leaf segments which are supposed to have withstood the ravages of ages.

"The seeds, which are like ivory, are employed in India for the manufacture of beads; they are sometimes colored red and sold as coral. The pith of the trunk yields a kind of sago; it is beaten to flour and baked into cakes." (Rock, The Ornamental Trees of Hawaii, p. 19.)

For an illustration of the talipot palm, see Plate VI.

52803. TABAKTOGENOS KURZII King. Flacourtiaceæ. Chaulmoogra tree.

"(True chaulmoogra from the upper Chindwin, January, 1921.) The bark of these trees is smooth and pale yellowish brown; the trunks are straight; the branches, which appear quite low down, are at right angles to the trunk but droop downward, giving the trees a pyramidal shape and the aspect of an old Abies, or fir. The fruits, which are perfectly round and not pointed at the apex, are the size of a large orange, of a light-fawn color and velvety tomentose. They are on short thickened peduncles and are borne on the ends of the flexible branches which become pendent, owing to the weight of the fruits." (Rock.)

For further information concerning this tree and allied species, see Rock, "The Chaulmoogra Tree and Some Related Species," United States Department of Agriculture Bulletin No. 1057, pp. 10-27.

The chaulmoogra tree is illustrated in Plate VII, and its fruits are shown natural size in Plate VIII.

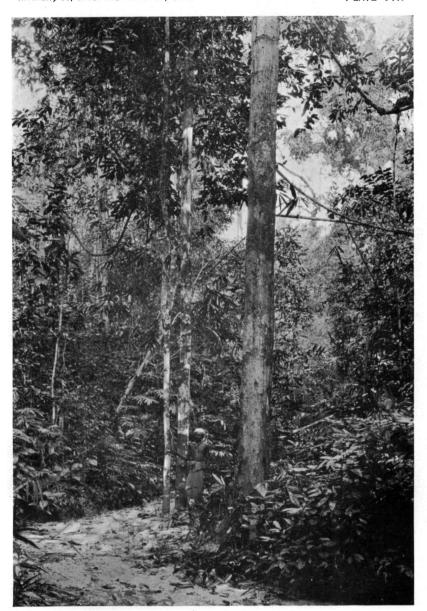
52804. Chayota edulis Jacq. Cucurbitaceæ.

Chayote.

(Sechium edule Swartz.)

From Guatemala. Fruit presented by Harry Johnson. Received March 17, 1921.

"These chayotes come from the damp, hot coastal region, near Lake Izabal. They may do well in Florida and not damp-off so badly in the rains." (Johnson.)



THE CHAULMOOGRA TREE OF BURMA. (TARAKTOGENOS KURZII KING, S. P. I. No. 52803.)

Doctors MacDonald and Dean, of Hawaii, consider it to be established that the fatty acids of the oil from the seeds of this tree are specific in leprosy, and it is certain that preparations of this oil have been of great help in the treatment of this dread disease. The trees near the native are chaulmoogra trees; the one in the foreground is an oak. (Photographed by J. F. Rock, near Khoung Khew, Upper Chindwin, Northwest Burma, January 20, 1921; P22773FS.)



FRUITS OF THE CHAULMOOGRA TREE. (TARAKTOGENOS KURZII KING, S. P. I. No. 52803.)

These fruits, shown here in natural size, are of a light fawn color. The oil is pressed cold from the kernels of the seeds after the seeds have been thoroughly washed, dried in the sun for one or two days, shelled, and the kernels crushed between corrugated-iron rollers. It is preparations of the ethyl esters of this oil that have been used so successfully in the treatment of leprosy. (Photographed by J. F. Rock, near Kyokta, Upper Chindwin, Burma, January, 1921; P22751FS.)

"The fruit is medium-sized, smooth, light green, appressed-pyriform, with scattered spines which are more prominent toward the fissure. Rust-colored irregular cracks appear in the skin. A cooking test of one of the two fruits received showed the chayote to be of good quality, the flesh tending toward the mealiness characteristic of the best Guatemalan types. The seed, however, is surrounded by a very tough fibrous seed coat from which extend into the flesh coarse fibers which render the removal of the flesh from the seed coat rather difficult." (L. G. Hoover.)

52805. PISUM SATIVUM L. Fabaceæ.

Garden pea.

From Bussum, Netherlands. Seeds presented by Dr. J. C. Th. Uphof, plant breeder, Nederlandsche Élitezaad Maatschappij. Received March 23, 1921.

"Mansholt kortstroo erwten (Mansholt short-straw peas)." (Uphof.)

A variety introduced for experimental work.

52806 to 52809.

From Southern Rhodesia. Seeds presented by W. L. Thompson, American Board Mission. Received March 29, 1921. Quoted notes by Mr. Thompson.

52806. Annona senegalensis Pers. Annonaceæ.

"A really delicious fruit with a pronounced flavor."

For previous introduction, see S. P. I. No. 51903.

52807. CALLITBIS WHYTEI (Rendle) Engl. Pinaceæ. (Widdringtonia whytei Rendle.)

"Native cedar of this region. These seeds are from trees in our own grounds."

The Milanji cypress was originally found at an altitude of 10,000 feet on Mount Milanji in Nyasaland by Alexander Whyte. It is a magnificent tree reaching a height of 140 feet, sometimes with a clear straight stem for 90 feet and a diameter of 5½ feet at 6 feet from the base. The pistillate cones, crowded four to six together on a short lateral shoot, are subglobose and about 1 inch wide when open. The staminate cones are solitary and terminal. The pale reddish timber is of excellent quality and easily worked. The bark on old trees is of great thickness, consisting of layers annually shed and renewed. These fine trees are rapidly disappearing before the forest fires, only those in damp gorges surviving. (Adapted from Transactions of the Linnean Society, 2d ser., vol. 4, p. 60, and from Gardeners' Chronicle, 3d ser., vol. 37, p. 18.)

52808. PARINARI CURTELLAEFOLIUM Planch. Rosaceæ.

"Seeds about the size of peach pits, from exceptionally large, fine fruits weighing $1\frac{1}{2}$ ounces each. Many tons of fruit were produced in this region during the past season."

A small or medium-sized tree with elliptic-oblong scabrid leaves, glabrescent above, tomentose beneath, 2 to 5 inches long. The tomentose flower panicles are 3 to 6 inches long. The drupe, about the size of an ordinary plum, has a mealy, not unpleasant taste. Native to Mozambique and Upper Guinea. (Adapted from Oliver, Flora of Tropical Africa, vol. 2, p. 368.)

52809. (Undetermined.)

"Seeds of one of our large timber trees which is 3 to 4 feet in diameter and has cherrylike wood. The seeds are about the size and shape of acorns; the flavor of the kernel reminds one of raw potatoes."

52810 and 52811.

From Lourenco Marques, Mozambique. Seeds presented by John A. Ray, American consul, through Harry B. Shaw, New York City. Received February 19, 1921.

52810. CARICA PAPAYA L. Papayaceæ.

Papaya.

A variety introduced for selection and breeding experiments.

52811. TRICHILIA EMETICA Vahl. Meliaceæ.

"Mafurra." (Ray.)

A very beautiful shade tree 10 to 20 meters high, with a large round head and a blackish trunk. The seeds are the source of a vegetable fat which is used by the natives for greasing the skin. The fat consists of about 55 per cent oleic acid and 45 per cent palmitic acid and has been used in the manufacture of soap. Native to tropical Africa and Arabia. (Adapted from Chiovenda, Etiopia, p. 88.)

For previous introduction, see S. P. I. No. 51284.

52812 to 52815. Gossypium Barbadense L. Malvaceæ. Cotton.

From Gizeh, Mouderieh, Egypt. Seeds presented by the director, Botanical Section, Cairo Department of Agriculture. Received February 14, 1921.

The following varieties were presented for experimental work:

52812. Ashmouni.

52814. Sakel.

52813. Assili.

52815. Zagora.

52816. Rubus sp. Rosaceæ.

Blackberry.

From Bush Hill Park, Enfield, Middlesex, England. Plants presented by Stuart Low & Co., Royal Nurseries. Received March 7, 1921.

Lowberry. A variety said to bear sloe-black fruits the size of a Logan black-berry.

"This lowberry originated on the grounds of Stuart Low & Co. They said in a letter to me that it was sent them in a consignment of blackberries which came from the United States many years ago from some correspondent of whom they have no record. As the plants were seedlings, they were fruited out and this one retained and called the 'lowberry.' The fruit is of the appearance of the Logan blackberry." (George M. Darrow.)

52817. Pinus canariensis C. Smith. Pinaceæ.

Pine.

From Santiago, Chile. Seeds presented by F. Albert, consulting forester, Forestry Department, through the United States Forest Service. Received March 5, 1921.

A pine native to the Canary Islands, which thrives in warm temperate climates and whose annual growth exceeds 1 meter in height and 1 centimeter in diameter. It is suited to all soils, from the seacoast to an altitude of 1,500 meters, has a straight trunk even when it grows in an isolated position, and its very thick bark prevents fire spreading from one tree to the other.

The wood of this pine, known in the Canary Islands as "tea," is very hard, very difficult to work, but unequaled for duration and building purposes because it does not rot. When buried it has the resistance of iron.

For some years large plantations of it have been established in South Africa and have done exceedingly well. Excellent results have also been obtained in Chile. (Adapted from Bulletin de la Société Nationale d'Acclimatation de France, vol. 64, p. 322.)

For previous introduction, see S. P. I. No. 10710.

52818 to 52834.

From Groningen, Netherlands. Seeds presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received March 29, 1921. Quoted notes by Mr. Broekema. Other notes adapted from Groninger Zaaizaadvereeniging, January 5, 1921.

52818 to 52822. Avena sativa L. Poaceæ.

Oats.

52818. "Gouden regen (golden drop)."

Stalofs gouden regen. The grain is intense yellow and has a very high weight per hectoliter. In some sandy districts this variety is chosen above all others because it succeeds on poor soil.

52819. "Mansholt I."

This variety was obtained by Dr. Mansholt from a natural cross of Deensche reuzenhaver (Danish giant oat). It makes a vigorous growth which sometimes lodges on very rich soil, but it is to be recommended for fertile sandy soils. The grain is yellow, heavier than that of Gouden regen, but the weight per hectoliter is not as high. The husk is very thin.

52820. "Mansholt II B."

A variety introduced into the trade in 1912, which, because of its excellent properties has been extensively grown. The straw is fairly stiff, and the yield in long stender grain is very good. In the better soils it has become a competitor of the zegehaver.

52821. "Zegehaver (Triumphal)."

52822. "Zwarte President (Black President)."

This variety has straw which is medium long and weak. The yield on light soils is very good, but on heavy soil the yield is below that of most of the white varieties. Its soil requirements are few. and it ripens very early. The husk is thin, so that it is a first-class feeding oat.

52823 to 52825. Hordeum distiction palmella Harlan. Poaceæ.

Barley.

52823. "Chevalier (Chevalier, spring variety)."

A variety with a long narrow well-filled head. The grain yield is good and the weight per hectoliter is very high.

For previous introduction, see S. P. I. No. 5842.

52824. "Goud (golden)."

Svalofs goud. A variety with short, thin but strong straw, and small, full, somewhat yellow grain. It is preferred above other varieties by many growers and is extensively cultivated.

52825. [No label.]

52826 and 52827. LINUM USITATISSIMUM L. Linaceæ.

Flax.

52826. "Blawbloeilynzaad."

Blue-flowered flax, the original seeds of which were imported from Russia.

52827. "Withloeilynzaad."

White-flowered flax. In the better flax districts this white-flowered variety has been increasingly cultivated during the last few years because it gives high yields of seeds and fiber. This form can better withstand unfavorable weather and is less particular about soil conditions.

52818 to 52834—Continued.

52828 and 52829. PISUM SATIVUM L. Fabaceæ.

Garden pea.

52828. "Hand-picked peas."

52829. "Mansholt kortstroo erwten (Mansholt short-straw peas)."

52830. Triticum aestivum L. Poaceæ.

Common wheat.

(T. vulgare Vill.)

"Japhet zomertarwe (Japhet summer wheat)."

For previous introduction, see S. P. I. No. 44949.

Broad bean.

52831 to **52834**. Vicia faba L. Fabaceæ.

52831. "Gelezen wierboonen (wier beans, hand picked)."

A variety smaller than the waalsche boon, and satisfactory on less

fertile soils, where it gives good yields.

52832. "Paardeboon (horse beans)."

This variety thrives in all kinds of soils from the heaviest clay to the lightest sandy soils. In rich soils it may grow too much to leaves so that the yield is decreased.

52833. "Tuinboon (garden beans)."

A variety generally known and cultivated as the broad bean which is in the trade in Groningen. The yield is usually very good, up to 50 hectoliters per hectare. It requires, however, a fairly fertile, mediumheavy soil. When picked green it is a very nutritious and tasteful vegetable.

52834. "Witkiem (white-germ beans)."

52835 to 52840.

From Bussum, Netherlands. Seeds presented by J. C. Th. Uphof, plant breeder, Nederlandsche Élitezaad Maatschappij. Received March 23, 1921. Quoted notes by Mr. Uphof. Other notes adapted from *Groninger Zaaizaadvereeniging*, January 5, 1921.

52835. AVENA SATIVA L. Poaceæ.

Oats.

"Zegehaver."

This variety, Svalofs-Zegehaver, has replaced nearly all the white varieties formerly cultivated in Groningen, it produces an abundance of long straw which withstands lodging, and large grain, and has a large weight per hectoliter. This variety thrives best in fairly rich soil.

52836 and 52837. Beta vulgaris L. Chenopodiaceæ.

Beet.

52836. "Mangelwurzel-Barres."

Barres van Sludstrup. First and second crops from seed of a variety imported from Denmark. The yield of reddish brown medium-long beets is very high.

52837. "Sugar beet, improved by the Netherlands Élite Seed Co."
52838 and 52839. Hordeum distiction palmella Harlan. Poaceæ.

Barley.

52838. "Chevalier."

For previous introductions, see S. P. I. No. 5842.

52839. "Princesse."

Svalofs Princessegerst. A variety with medium-long and very leafy straw, full grain, and very wrinkled husk. The yield is very good.

52840. Hordeum vulgare pallidum Seringe. Poaceæ.

Barley.

"Oldambtster wintergerst (Oldambtster winter barley)."

52841. Melicocca bijuga L. Sapindaceæ.

Genip.

From Nassau, New Providence, Bahamas. Plants presented by Neville D. Sands, secretary, Board of Agriculture. Received February 21, 1921.

"A diecious tree common in the West Indies and sometimes called 'Spanish lime.' It reaches 20 to 25 feet in height and has light-green compound leaves, with clusters of small white flowers in early spring. The fruit, which ripens in August, has a brittle shell covering the acid edible pulp which incloses the large seed." (Sands.)

"One of the local names of this tree is 'honeyberry.' It is cultivated for its edible fruit in the West Indies, Brazil, and Paraguay. The seeds are rich in starch and are used as we use the chestnut in the United States." (W. W. Stockberger.)

For previous introduction, see S. P. I. No. 44883.

52842 to 52844. Triticum Aestivum L. Poaceæ.

(T. vulgare Vill.)

Common wheat.

From Bussum, Netherlands. Seeds presented by J. C. Th. Uphof, plant breeder, Nederlandsche Élitezaad Maatschappij. Received March 23, 1921. Quoted notes by Mr. Uphof. Other notes adapted from Groninger Zaaizaadvereeniging, January 5, 1921.

52842. "Imperiaal."

A new variety from the Instituut voor veredeling van landbouwgewassen (Institute for improvement of agricultural crops). (Groninger Zaaizaadvereeniging, Aug. 22, 1919.)

52843. "Japhet zomertarwe (Japhet summer wheat)."

A variety with stiff straw, red grain, and white chaff. Of all varieties of summer wheat this has proved the best so that it has nearly replaced all other varieties. In Groningen it is used nearly as much for summer as for winter wheat. On many soils it gives approximately nearly as high yield as winter wheat. The soil requirements are similar to those of oats. The seeds require early sowing and must be treated with formalin before sowing.

52844. "Millioen (Million)."

52845 to 52848. Solanum Tuberosum L. Solanaceæ. Potato.

From Groningen, Netherlands. Tubers presented by C. Broekema, director, Groninger Zaaizaadvereeniging. Received March 31, 1921. Quoted notes by Mr. Broekema.

52845. "Bravo. Grown by Mr. Veenhuigen, and known as an excellent winter potato in which very few black ones are present after storage. The yield is up to 400 hectoliters per hectare."

52846. "Eigenheimer. A very good potato which grows in clay and sandy soils."

An early yellow-fleshed variety good for table use and resistant to Phytophthora.

For previous introduction, see S. P. I. No. 12597.

52847. "Groningen Kron. An extraordinarily good potato of high yield, recommended for winter storage. Originated by Mr. Velhuis at Oosterhoogebrug."

52848. "Roode Star. A well-known potato, but more susceptible to diseases than Groningen Kron and Bravo, which are not so well known."

52849 to 52851.

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received March 28, 1921.

52849. Amygdalus davidiana (Carr.) Zabel. Amygdalaceæ. (Prunus davidiana Francb.)

For stock experiments.

For previous introduction and description, see S. P. I. No. 36807.

52850. DIOSPYROS LOTUS L. Diospyraceæ.

For stock experiments.

For previous introduction and description, see S. P. I. No. 44535.

52851. Pyrus ussuriensis Maxim. Malaceæ.

Pear.

For stock experiments.

For previous introduction and description, see S. P. I. No. 47301.

52852 and 52853. Rubus idaeus L. Rosaceæ.

European raspberry.

From Wimborne, England. Plants presented by J. J. Kettle, Corfe Mullen. Received March 11, 1921.

52852. "Perfection." (Kettle.)

52853. "Lloyd George Perpetual." (Kettle.)

52854. Cocos nucifera L. Phænicaceæ.

Coconut.

From Buitenzorg, Java. Seeds presented by Dr. I. Boldingh, acting head of the Division of Plant Breeding, Java Department of Agriculture. Received March 29, 1921.

"Klappa-guding." [Boldingh.]

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