Issued April 17, 1918.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1915.

(No. 42; Nos. 39682 to 40388.)

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1915 (NO. 42; NOS. 39682 TO 40388).

INTRODUCTORY STATEMENT.

Owing to the disturbed condition of ocean traffic and the uncertainty of getting perishable plant material in, no expeditions were undertaken except that into the Province of Kansu, China, which had been planned for two years. Nevertheless, an unusual number of interesting and important plants are described in this number of the inventory. Mr. Frank N. Meyer, who made the Kansu expedition, although hampered by the difficulty of getting good interpreters who were willing to accompany him to the borders of Tibet, succeeded in getting as far as the capital of Kansu Province, but was obliged to retrace his steps from that point.

He discovered a number of very interesting plants, however, among which perhaps the most important will be found to be some large-fruited wild freestone peaches, *Amygdalus* spp. (No. 40001 to 40006); the Tangutian bush almond, *Amygdalus tangutica* (Nos. 39898, 40010, and 40011), a species very resistant to drought and cold; a wild pear, *Pyrus ussuriensis* (No. 40019), of the melting, juicy type, quite distinct from the characteristic hard, gritty ones of China; a wild species of grape, *Vitis* sp. (No. 40026), with small bunches of black edible berries; wild hardy apricots, *Prunus armeniaca* (Nos. 40012 and 40013), which may enable breeders to extend the area of successful apricot culture farther northward; a very hardy dwarf crab apple, *Malus* sp. (No. 39923), from an altitude of 9,000 feet in Kansu; a wild gooseberry, *Ribes alpestre giganteum* (No. 39916), growing 15 feet tall, found on dry embankments, a promising hedge plant for the cold semiarid sections of the United States; a very vigorous-growing currant, *Ribes* sp. (No. 39910), from 7,000 feet altitude, which makes a bush 25 feet tall; a wild cherry, *Prunus setulosa* (No. 39911), which has possibilities as a stock plant; Potanin's peach, *Amygdalus persica potanini* (Nos. 40007 to 40009), a bushy form resembling otherwise *A. davidiana*, which has been so successful as a stock, but

which, according to Mr. Meyer, is likely to prove even more drought resistant than the latter species and be useful as a stock in the dry regions of this country; two wild plums, *Prunus* spp. (Nos. 40014 and 40015), with possibilities for breeding purposes, from Shensi Province; and a citrus species (Nos. 39897 and 40039), with fruits resembling those of a sour mandarin, which would appear to have unusual hardiness.

Of shade trees and shrubs for dooryards, Mr. Meyer secured a poplar, *Populus suaveolens przewalskii* (No. 39900); a beautiful evergreen bush, *Daphne tangutica* (No. 39914), suited to regions like Long Island; a bush honeysuckle, *Lonicera* sp. (No. 39915), for low hedges in the colder sections of the country; a Chinese rowan, *Sorbus* sp. (No. 40021); an ideal cover for shady portions of the dooryard, *Schizandra sphenanthera* (No. 40025); a valuable late-flowering porch climber with white flowers, *Polygonum* sp. (No. 40034); and Wilson's horse-chestnut, *Aesculus wilsonii* (No. 40037), from near Chenghsien, Kansu, a new form of this valuable avenue tree.

Of the introductions made through correspondents the following are the most noteworthy:

Four varieties of corn, *Zea mays* (Nos. 39936 to 39939), were collected by Mr. F. Kingdon Ward in the Valley of Nmaihka in Upper Burma, where a remarkable corn culture exists at an altitude of 5,000 to 6,000 feet, which appears to be very ancient. On one of these varieties (No. 39937) Mr. Collins has found signs of the characteristic waxy endosperm which has heretofore appeared only on corns from eastern China and nowhere else in the world, and this fact may be of value in determining the origin of this remarkable corn. A surprisingly interesting collection of Spanish corn varieties, *Zea mays* (Nos. 40259 to 40294), from Spain and the Canary Islands and different portions of the mainland, which was made by Señor Valero, an official agricultural engineer who recently visited this country, has already unusually excited the interest of the corn specialists.

So much interest attaches to the spineless cactus that the discovery in Hawaii of a form without spines and with very few spicules, *Opuntia* sp. (No. 39853), which is supposed to have been brought there by Don Marin and which in comparison with Burbank's spineless cactus has shown its ability to live on dry islands of the Hawaiian group where the Burbank cactus has quickly perished, will interest a wide circle of experimenters.

The Porto Rican black walnut, *Juglans portoricensis* (No. 40236), which matures its nuts in April and May; the red bush nut from New South Wales, *Hicksbeachia pinnatifolia* (No. 39871); the late-blooming varieties of English walnut, *Juglans regia* (Nos. 39839 to 39844 and 39881 to 39886), from Grenoble, France, to which our attention was directed by Prof. J. Russell Smith; the Tibetan tree hazelnut, *Corylus*

chinensis (No. 39907), which grows to 100 feet in height and of which Mr. Meyer has secured seeds in China; the wild small-fruited but probably very hardy walnuts from Kansu, *Juglans regia* (No. 40016); and a new form of the comparatively disease-resistant Chinese chestnut with slender trunk, *Castanea* sp. (Nos. 40035 and 40036), will be of particular interest to nut specialists.

Extensive introductions of sweet-potato varieties have been made through Mr. Roig from the experiment station at Santiago de las Vegas, where many trials have been conducted with this vegetable, *Ipomoea batatas* (Nos. 39729 to 39735, 39741 and 39742, 39799 to 39802, 39831 to 39833, 39941 to 39945, 40237 to 40258, and 40388).

A Japanese gentleman visiting this country, Mr. Kuwashima, has directed attention to the fact that one of the highest priced vegetables in Japan is the Mitsuba or Mitsuba-jeri, *Deringa canadensis* (No. 39869), a native of this country as well. The young leaves are eaten boiled and the roots are fried.

Dr. Trabut has sent in a wild pear, *Pyrus mamorensis* (Nos. 40297 and 40331), from the Moroccan forests of Mamora, which is resistant to drought and thrives in sandy noncalcareous soils.

Thirteen varieties of plum, *Prunus bokhariensis* (Nos. 40223 to 40235), adapted to the warm South, from Seharunpur, India, have been sent in by Mr. Hartless. They begin fruiting in May and bear for two months.

His Majesty the Ameer of Afghanistan sent through his special envoy, Mr. Jewett, a remarkable collection of dried fruits and seeds representing varieties of tree and field crops which are grown in his country. The most interesting of these were the samples of dried white mulberry, *Morus alba* (No. 40215), which in Afghanistan is considered a very important article of food and proved upon analysis to have the food value of dried figs. As Kabul has a cold winter climate and is subjected to intense summer heat, the cultivation of a sweet, drying variety of mulberry may be worth considering for the Great Plains of this country. Those sent by the Ameer were extremely palatable.

The best market apple of southern Italy and Sicily is the Limoncella (No. 39829). Dr. Gustav Eisen, who sent in bud wood of it, considers it superior to any variety now grown in southern California, where it is likely to succeed best.

Of strictly southern or subtropical introductions, the following are worth mentioning: The black sapote from the Isle of Pines, *Diospyros ebenaster* (No. 39719); the famous durian of Java, *Durio zibethinus* (No. 39709), noted at the same time for its delicious flavor and offensive odor; a rare species of anona, *Annona sclero-derma* (No. 40305), from Guatemala, of richer flavor than the sour-sop; the Harrar fig from Abyssinia, *Ficus* sp. (No. 39828), which

can stand heavy summer rains and may thrive in Texas; the sycamore fig, *Ficus sycomorus* (Nos. 39827, 39857, and 39858), which is at the same time a shade tree and a fruit tree of minor importance, interesting because of the ancient methods practiced to liberate the fig insects from the fruit; and the bushukan or finger citron of Japan, *Citrus medica sarcodactylis* (No. 39940), a curious dwarf potted plant grown for its fragrant flowers and the perfume of its fruits.

Of shade trees, park shrubs, and plants for the dooryards of the city, as well as country homes, there are an unusual number in this inventory. They include the best of the Egyptian tamarisks, *Tamarix aphylla* (No. 39856), remarkably successful as a timber tree on reclaimed desert lands where the irrigation water is quite saline, and three species of tamarisks from the Caucasus, *Tamarix hohenackeri* (No. 39691), *Tamarix pentandra* (No. 39692), and *Tamarix* sp. (No. 39693); the giant-fruited oak of Zacuapam, Mexico, *Quercus insignis* (No. 39723), with acorns 2½ inches across; two remarkably fragrant flowered species of Pittosporum from the Riviera, where they have been found successful, *P. floribundum* and *P. macrophyllum* (Nos. 39727 and 39728); the Guadeloupe Island palm, *Erythea edulis* (No. 39740), suggested as possibly hardy in the South Atlantic coast region; a collection of correctly named varieties of Japanese flowering cherries, *Prunus serrulata* (Nos. 39743 to 39798 and 39820 to 39826), presented by the municipality of Tokyo and taken from the cherry-tree arboretum maintained by this municipality itself by Mr. E. H. Wilson, of the Arnold Arboretum; a collection of cotoneasters, *Cotoneaster* spp. (Nos. 40162 to 40175), many of which have proved especially adapted to dooryard use; a collection of barberries, *Berberis* spp. (Nos. 40139 to 40153), from the Kew Gardens, to test in comparison with Thunberg's barberry, which has become one of the most popular of spiny dooryard ornamentals; the large wild cherry tree of Japan, *Prunus serrulata sachalinensis* (No. 40190), a long-lived timber tree, which grows to be 80 feet tall and centuries old and has not yet been used as a stock by the Japanese, though probably the hardiest of all Japanese species and superbly beautiful with its masses of pink blooms; a new linden, probably a hybrid, *Tilia euchlora* (No. 40197), which, because of its large bright-green leaves and their freedom from insects, is being planted as a street tree on the Continent; a new species of flowering quince, *Chaenomeles japonica* (No. 40161), most charming of the red-flowered shrubs, the fruits of which make excellent preserves, and its relative, the large-fruited Chinese quince, *Chaenomeles lagenaria cathayensis* (No. 40160), the large ornamental fruits of which are used for perfume purposes; and two new roses for the rose breeders, one from the Himalayas, *Rosa webbiana* (No. 40191), and the other

from central China, with delicate purplish rose blooms, *Rosa sertata* (No. 40193).

Through the courtesy of Prof. Sargent, of the Arnold Arboretum, seeds have been received of a number of the rare shade, park, timber, and ornamental trees from foreign countries which have proved hardy at Jamaica Plain, Mass., and are worthy of a wider trial in the Northern States (Nos. 39983 to 39998).

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

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

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 20, 1916.

INVENTORY.

39682 to 39690.

From Sibpur, near Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Garden. Received January 11, 1915.

"Collected on the eastern Himalayas." (*Calder.*)

39682. CREPIS JAPONICA (L.) Bentham. Cichoriaceæ.

A common eastern Asiatic herb.

39683. POGOSTEMON FRATERNUS Miquel. Menthaceæ.

Distribution.—An herbaceous perennial related to patchouli and belonging to the mint family, found at an altitude of 3,000 to 5,000 feet in the Sikkim Himalayas in India and in Java.

39684. BLUMEA MYRIOCEPHALA DC. Asteraceæ.

Distribution.—A composite shrub with leaves 6 to 10 inches long and small heads of flowers in a pyramidal panicle; found in the Sikkim Himalayas in India.

39685. MARSDENIA TENACISSIMA (Roxb.) Wight and Arnott. Asclepiadaceæ.

A climbing plant distributed throughout the lower Himalayas, ascending to 5,000 feet, from Kumaon to Assam and Burma. The plant is fond of dry, barren localities, twining on the bushes and small trees. The bark of the stems yields a large quantity of beautiful fine silky fiber, which is extracted by cutting the stems into sections and then scraping them clean with the finger nails or with a stick. The mountaineers of Rajmahal make their bowstrings from this fiber, because of its strength and durability. In Dr. Roxburgh's tests of twine made from this fiber, he found that in the dry and wet states it bore a strain of 248 and 343 pounds, when hemp in the same state bore 158 and 190 pounds. More recent tests, however, place it below hemp in strength, but above it in elasticity. The fiber is much used in making fishing nets, and is not liable to injury by submersion in water. One of the chief characteristics of this fiber is its elasticity, and it is considered to be the second best fiber in India. This species, though producing a good fiber, is not in general cultivation, being a climber; difficulties exist with which the Indian cultivator has not yet attempted to deal. A milky juice exudes from the cuts on the stems which thickens into an elastic substance, which acts in the same way as India rubber in removing black-lead marks. (Adapted from *Watt, Dictionary of the Economic Products of India,* and *C. R. Dodge, Useful Fiber Plants of the World.*)

39686. CARYOPTERIS PANICULATA C. B. Clarke. Verbenaceæ.

"A spreading shrub, from Upper Burma; branches terete, slender, pubescent. Leaves mostly obtuse or rounded at the base. Panicles axillary, subsessile one-half to 2½ inches, distinctly panicled, rachis dis-

39682 to 39690—Continued.

tinct, often 20 to 60 flowered. Corolla pubescent, deep red." (*Hooker, Flora of British India, vol. 4, p. 597.*)

Of similar value perhaps to *C. mastacanthus.*

39687. HOYA GLOBULOSA Hook. f. Asclepiadaceæ.

Distribution.—A stout, handsome, asclepiadaceous climber with orbicular leaves and umbels of cream-colored flowers, found up to an altitude of 3,000 feet in the Himalayas of Sikkim and Assam, in India, and succeeding under the same treatment as *H. carnosa.*

39688. TRIUMFETTA PILOSA Roth. Tiliaceæ. **Burweed.**

An herbaceous hairy or bristly tropical weed with yellow flowers in dense cymes.

39689. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ.
(*Erianthus fulvus* Nees.)

"A perennial grass found in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. Stems 6 to 8 feet high, silky hairy just above the panicle. The leaves are 2 to 3 feet long and one-fourth inch to 1 inch wide, slightly rough and with the margins of the sheath hairy. Panicle 8 to 18 inches, grey white or tinged with purple. Spikelets about one-tenth inch long with the basal hairs 3 to 4 times as long as the spikelets." (*Collett, Flora Simlensis.*)

Introduced for the work of the Office of Forage-Crop Investigations.

39690. NEYRAUDIA MADAGASCARIENSIS (Kunth) Hook. f. Poaceæ.

"A species found on the plains of north India, ascending to 5,000 feet, throughout tropical Asia and Africa and Madagascar. A perennial grass with leafy, solid stem 6 to 10 feet high. The leaves are flat, 1 or 2 feet long and up to 1 inch wide, with base clasping the stem. Ligule very short and hairy. Spikelets purple-brown, narrow, slightly flattened, one-fourth to one-third inch long, 4 to 8 flowered (flowers all fertile except sometimes the uppermost), in a shining, silky erect panicle 1 to 3 feet long. The branches are in half whorls and more or less spreading." (*Collett, Flora Simlensis.*)

39691 to 39693. TAMARIX spp. Tamaricaceæ. **Tamarisk.**

From Caucasus, Russia. Presented by the Tiflis Botanic Garden. Received January 7, 1915.

39691. TAMARIX HOHENACKERI Bunge.

39692. TAMARIX PENTANDRA Pallas.

"This shrub or small tree is one of the most decorative tamarisks in cultivation, flowering in great profusion in July and August. In the wild state it ranges from the Balkan Peninsula through southern Russia to Turkestan, and from Asia Minor to Persia, adorning the banks of rivers, particularly in their lower reaches and estuaries. Like other species of this genus, it thrives well in saline soils, but is by no means dependent on a more than ordinary amount of salts in the ground. The flowers are usually rose-colored, but sometimes white or nearly so." (*Botanical Magazine, pl. 8138.*)

39693. TAMARIX sp.

39694 to 39697.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 7, 1915.

39694. SOLANUM DULCAMARA L. Solanaceæ.

A vine of the nightshade sort.

39695. ZANTHOXYLUM BUNGEI Planchon. Rutaceæ.

Hua chia.

39696. CLEMATIS sp. Ranunculaceæ. **Clematis.**

Purple mountain clematis.

39697. LONICERA sp. Caprifoliaceæ.

Red-berried shrub; flowers like woodbine.

39698. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Santa Fe, Isle of Pines. Presented by Mr. H. S. Jones. Cuttings received January 18, 1915.

See S. P. I. No. 39719 for description.

39699 and 39700. CITRUS spp. Rutaceæ.

From Catania, Italy. Presented by Mr. Joseph E. Haven, American consul. Received January 16, 1915.

39699. CITRUS BERGAMIA Risso. **Bergamot orange.**

39700. CITRUS AURANTIUM L. **Bitter orange.**

"To the bitter orange plant is grafted the bud wood of the Bergamot orange, as Bergamot oranges do not grow from a Bergamot seed." (*Haven.*)

39701. OPHIOPOGON JAPONICUS (L.) Ker. Liliaceæ.

Grown at the Plant Introduction Field Station, Rockville, Md.

"A small evergreen plant, with grasslike leaves, growing to a height of 3 to 6 inches and bearing racemes of small white flowers followed by pale-blue berries. Much used in Italy as a ground cover in the shade of trees where grass will not grow." (*Peter Bisset.*)

39702 to 39705. DIOSCOREA spp. Dioscoreaceæ. **Yam.**

From Guam. Presented by the Experimental Station of Guam, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received January 13, 1915.

For a general discussion of the yams of Guam, see W. E. Safford, Useful Plants of Guam, pages 257 to 263, 1905.

39702. *Nika.*

39703. *Nika cimarron.*

39704. *Dago agaga.* (Red yam.)

39705. *Dago hava.* (Southern yam.)

39706. RHUS sp. Anacardiaceæ.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 7, 1915.

Cha lu kou.

39707. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Foley, Ala. Purchased from Mr. J. L. Sebastian. Received January 9, 1915.

Seed from S. P. I. No. 21013, sent him in February, 1908.

39708. VANILLA sp. Orchidaceæ. **Vanilla.**

From Tampico, Mexico. Presented by Mr. Thomas H. Bevan. Cutting received January 12, 1915.

39709. DURIO ZIBETHINUS Murr. Bombacaceæ. **Durian.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received January 11, 1915.

See S. P. I. Nos. 28082, 34072, and 37103 for previous introductions.

"A very large, handsome, pyramid-shaped tree, native of the Malayan Archipelago and commonly cultivated in the Straits, Burma, Java, etc., for the sake of its celebrated fruit. The latter is produced on the older branches, varies somewhat from round to oval in shape, and usually weighs from 5 to 7 pounds or more. It is armed with thickly set, formidable prickles about one-half inch long; when ripe it becomes slightly yellow and possesses an odor which is intensely offensive to most people, especially on first acquaintance with it. The cream-colored pulp surrounding the seed is the edible portion; this is most highly prized by the Malays and other oriental people, and is also relished by Europeans who acquire a taste for it. Firminger describes it as 'resembling blancmange, delicious as the finest cream,' while Mr. Russel Wallace considered that 'eating durians is a sensation worth a voyage to the East.' The large seeds may be roasted and eaten like chestnuts. Pounded into flour they are said to be sometimes made into a substance like 'vegetable ivory.' The durian tree thrives in the moist low country of Ceylon up to 2,000 feet elevation and luxuriates in deep alluvial or loamy soil. In Peradeniya Gardens there are magnificent specimens well over 100 feet in height. They usually flower in March or April, and the fruit is ripe in July or August. Durian fruits are variable in size, shape, flavour, and quantity of pulp, according to variety. The trees also vary in productiveness, some varieties being almost barren. Selection and high cultivation should therefore be practiced in order to obtain the best fruits. The tree is readily propagated by seed if sown fresh; the seed is of short vitality and germinates in 7 to 8 days." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 142.*)

39710. QUERCUS SUBER L. Fagaceæ. **Cork oak.**

From Gibraltar, Spain. Procured through Mr. Richard L. Sprague, American consul. Received January 4, 1915.

"Spanish cork oak acorns gathered in the cork woods near Alpandiere and Gaucin station, Province of Malaga, 45 miles north of Gibraltar. These acorns are of fine quality." (*Sprague.*)

See S. P. I. No. 36925 for previous introduction.

39711. CHENOPODIUM BONUS-HENRICUS L. Chenopodiaceæ. **Good King Henry.**

From Lincoln, Lincolnshire, England. Purchased from Pennell & Sons. Received January 2, 1915.

For experimental use as greens; not for distribution.

39712. CITRUS BERGAMIA Risso. Rutaceæ. **Bergamot orange.**

From Naples, Italy. Presented by Mr. Jay White, American consul. Received January 5, 1915.

"A small tree; leaves oblong oval, with long, winged petioles; flowers small, white, very fragrant; fruits pyriform, 3 to 4 inches in diameter, thin skinned, pale yellow when ripe; pulp acid; seeds oblong, many. Extensively cultivated in Calabria for the essential oil which is expressed from the peel and used in making eau de Cologne and other perfumes. (*Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

39713. CASTANOPSIS sp. Fagaceæ.

From Changning, Kiangsi, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received January 5, 1915.

"While crossing some hills near here I came across some chestnut trees which are new to me. I think that, though smaller, the nuts have a better flavor than the common kind." (*Bousfield.*)

39714. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Fairhope, Ala. Presented by Mr. C. O. White. Received January 2, 1915.

Seeds from S. P. I. No. 21013 sent to Mr. White in 1908.

39715 and 39716.

From Calcutta, India. Presented by the Botanic Garden, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 4, 1915. Quoted notes by Mr. Piper.

39715. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepensis* Pers.)

"This Indian variety of Johnson grass differs in producing more abundant rootstocks and in having a larger, looser panicle with drooping branches."

39716. ANDROPOGON ANNULATUS Forsk. Poaceæ.

"An abundant grass in northern India often cut for hay."

Stems one-half to 3 feet long, branching, often half climbing, bent at the lower joints and then ascending; leaves mostly basal, 6 to 12 inches long, narrow, rigid, upper surface hairy. Spikelets in pairs on five to eight unequal spikes 1 to 2½ inches long and forming a digitate cluster at the top of the stem. (Adapted from *Collett, Flora Simlensis, p. 603.*)

39717 and 39718.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 2, 1915.

39717. CASTANEA sp. Fagaceæ. **Chestnut.**

Chestnuts from Anhwei.

39718. SOLANUM DULCAMARA L. Solanaceæ.

An ornamental vine with red berries.

39719. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Santa Fe, Isle of Pines. Presented by Mr. H. S. Jones. Received January 4, 1915.

"From fine ripe fruits from 2½ to 3 inches in diameter. The fruits are just beginning to ripen (December 28) and will last until about the middle of February." (*Jones.*)

"The *sapote prieto* or *sapote negro* (black sapote) of Mexico, an interesting fruit belonging to the persimmon family. The tree grows in compact, shapely form and is of very ornamental appearance with its oblong-oval, glossy leaves about 4 inches long. In appearance the fruits greatly resemble some varieties of the kaki or Japan persimmon; in place of being bright orange, however, they are light green when ripe, and measure 2½ to 3 or even 4 inches in diameter. In shape they are oblate or distinctly flattened and the persistent, light-green calyx is quite prominent.

"The interior of the fruit, when ripe, is anything but attractive in appearance, the flesh being dark brown or almost black in color, and of a greasy consistency. The flavor is sweet, but rather lacking in character; for this reason the Mexicans frequently serve the fruit cut up, or mashed up, with orange juice; it is a first-rate dish. The seeds look like those of the persimmon and are not very numerous.

"According to Mr. Jones, the fruit ripens in the Isle of Pines from the last part of December to the middle of February. The tree is rare outside of certain parts of Mexico, but has done well at Mr. Jones's place. It seems worthy of much wider dissemination throughout the Tropics. Types from the cooler parts of Mexico have withstood a little frost in southern California, yet the tree can not be considered very hardy." (*Wilson Popenoe.*)

For previous introductions, see S. P. I. Nos. 24600 and 39698.

39720. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Panama. Secured by Mr. H. Pittier, of the Bureau of Plant Industry. Received January 4, 1915.

"This shipment may contain specimens of the *Burica*, *San Blas*, which the natives call *coco de cuchilla*, and possibly specimens of the *Montiosa* variety." (*Pittier.*)

39721. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

From Tientsin, China. Procured through Mr. Samuel S. Knabenshue, American consul general. Received May 14, 1914.

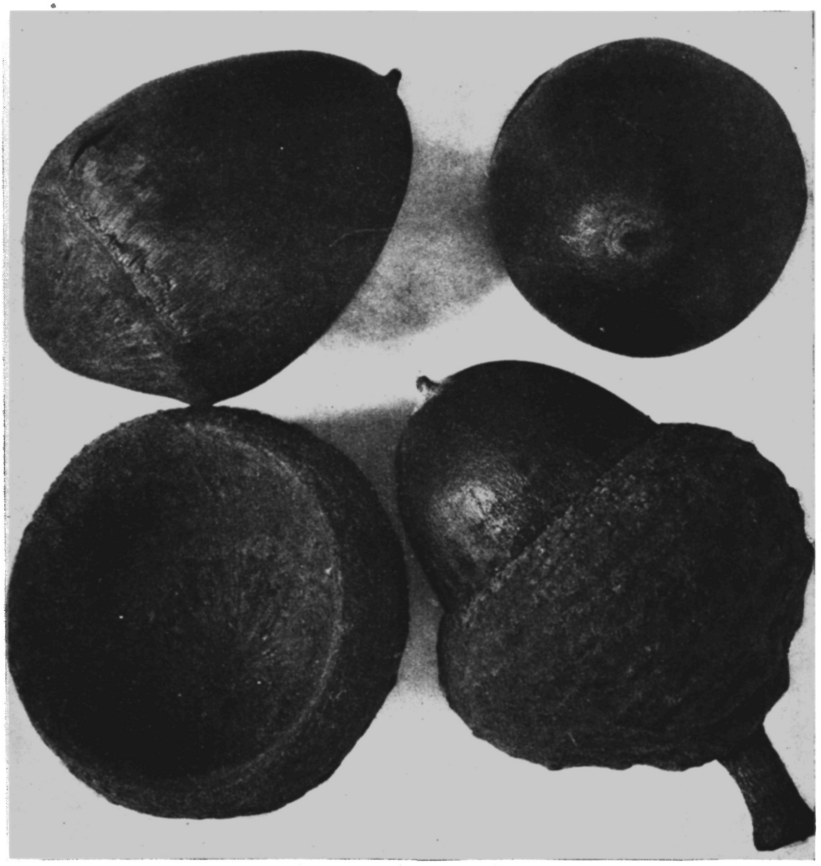
39722. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From Budapest, Hungary. Presented by the American consul.

39723. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received January 7, 1915.

"These acorns were sent to me by a friend, Señor Guillermo Ziche, from Huatusco, and were collected in the Sierras west of town at about 1,500 to 1,600 feet altitude. I am sure you will be able to grow the oaks in the southern part of Florida, where the palms (*Roystonea* (*Oreodoxa*) *regia*) grow. They need a moist climate or subtropical forests to do well." (*Purpus.*)



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

A white oak which occurs about midway down the flanks of Mount Orizaba, forming there trees 60 to 80 feet high branching 30 or 40 feet from the ground. Believed by Dr. C. A. Purpus capable of acclimatization in Florida, Porto Rico, and Hawaii. The acorns are edible. Photographed, natural size, by Mr. E. L. Crandall, Washington, D. C., March 14, 1914 (P13834FS).

THE SYCAMORE FIG (FICUS SYCOMORUS S. P. I. NOS. 39827, 39857, AND 39858).

From the wood of this "sycamore" of Scripture, the "Tree of Life" of the Egyptians, the ancient coffins were made. It is a true fig tree and was introduced into Egypt, probably from Yemen on the east coast of the Red Sea, in very early times. It bears figs of inferior quality which are inhabited by the fig insect (*Sycophaga crassipes*). These figs are not fit to eat unless their tips are cut off to let the fig insects escape. From the time of Pliny even the Egyptian boys have operated on these sycamore figs, using a kind of thimble made of iron plate ending in an iron "finger nail." The figs are borne on small leafless fleshy branches arising directly from the trunk, and it is the practice to beat the trunk of the tree with a hammer to increase its fruitfulness. The illustration shows the scars thus induced. Photographed by S. C. Mason (P20231CP).

"The tree is rapid in growth and quite different in habit from most oaks. It reaches an ultimate height of 60 to 80 feet or more, is quite erect, and sends out large branches at the height of 30 or 40 feet from the ground. It is found in considerable abundance about midway down the flanks of Mount Orizaba, being most common about Chiapas, according to Dr. C. A. Purpus, who has recently been collecting in that region. It is a white oak, maturing its fruit the first season, and, being a white oak, its fruit has sufficient edible quality to be available at least for stock food.

"The only other oaks that approximate it in size, according to Dr. William Trelease, of the University of Illinois, who called the attention of this association to the species, 'are a close relative, *Quercus strombocarpa*, of the same region, and a Guatemalan black oak, *Q. skinneri*, the latter apparently an equally large tree and with acorns 2 inches in diameter, but presumably bitter or astringent like our own black acorns.'

"The nuts of the *Quercus insignis* are usually about 2 inches in diameter, but may reach 2½ inches. Their weight is from 50 to 65 grams each. In view of its range, the tree is naturally to be supposed unsuited to a temperate climate, but Dr. Purpus writes, 'I think it a very useful tree, which could be raised in Florida, Cuba, Porto Rico, etc.' The Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture is now endeavoring to introduce it to those regions on a large enough scale to give it a chance of success. If it is found to be well adapted, it is possible that native species of oaks could in some cases be grafted over with the productive new one, thus yielding a large crop of acorns with very little trouble or care. Hybridizing experiments should also be tried with some of the best North American oaks, with a view to seeing whether the size of their acorns can not be increased." (*The Journal of Heredity, vol. 5, p. 406, 1914.*)

For an illustration of the giant acorns of this Mexican oak, see Plate I.

39724 to 39726.

From Tientsin, China. Presented by Dr. Yamei Kin, Peiyang Woman's Medical School and Hospital. Received January 8, 1915. Quoted notes by Dr. Kin.

39724. BRASSICA PEKINENSIS (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

"Seed from Shantung of the fine, specially white *pai ts'ai*. It is grown in the same way as the Chihli *pai ts'ai*, but is larger, not so tall, and said to be of better keeping quality."

39725 and 39726. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

"White melon that is very delicate in flavor and easily grown."

39725. Larger seeds. 39726. Smaller seeds.

39727 and 39728. PITTOSPORUM spp. Pittosporaceæ.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky, Jardin d'Acclimatation. Received January 6, 1915. Quoted notes by Dr. Proschowsky.

39727. PITTOSPORUM FLORIBUNDUM Wight and Arnott.

"This species has large leaves and is of comparatively rapid growth. It has numerous small flowers, which are very fragrant. It is one of the most floriferous species I possess, and is new to the Riviera."

For previous introductions, see S. P. I. Nos. 39044 and 39129.

39727 and 39728—Contd. (Quoted notes by Dr. A. Robertson-Proschowsky.)

39728. PITTOSPORUM MACROPHYLLUM Laut. and K. Sch.

"The plant has existed in my garden for more than twenty years. It is the most beautiful of the dozen or so *Pittosporum* species which I cultivate. The leaves occasionally attain nearly the size of those of *Magnolia grandiflora*, and the flowers are perhaps not surpassed in fragrance by any other flower. Indeed, the fragrance is most exquisite. Would not such highly fragrant flowers be of value for the extraction of perfume?"

For previous introduction, see S. P. I. No. 11644.

39729 to 39735. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Tubers received January 7, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

39729. "*Candela.* From Trinidad, Santa Clara. White inside; yielding 34,260 arrobas per caballería."

39730. "*Camarioca.* From Punta Brava, Havana. Yellow inside; yielding 26,834 arrobas per caballería."

39731. "*Pan con vino.* From Madruga, Havana. Red outside, striped with violet inside, very sweet; yielding 48,695 arrobas per caballería."

39732. "*Hache.* From Jiguani, Oriente. Pale yellow inside; yielding 36,521 arrobas per caballería."

39733. "*Camarcto.* From Cienfuegos. Saffron colored inside; yielding 15,060 arrobas per caballería."

39734. "*Mongorro.* From Isle of Pines. Deep yellow inside; yielding 23,408 arrobas per caballería."

39735. "*Miseria.* From El Caney, Oriente. Pale yellow inside; yielding 14,530 arrobas per caballería."

39736 and 39737.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 11. 1915.

39736. CELASTRUS sp. Celastraceæ.

"*Chiang ych shu.*"

39737. RHYNCHOSIA VOLUBILIS Lour. Fabaceæ.

"*I ho tzŭ.*"

A twining herb with tomentose, subrotund, ternate leaves and many yellow axillary flowers.

Distribution.—Eastern China and Indo-China.

39738. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Yokohama, Japan. Procured from the Yokohama Nursery Co. Received January 18, 1915.

"Tochigi production; slender tall variety."

39739. EUONYMUS sp. Celastraceæ.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 14, 1915.

"*Yen chih shu.* Leaves are like laurel; fruit is a little bright-scarlet seed protruding from a little husk." (*Bailie.*)

39740. ERYTHEA EDULIS (Wendl.) Watson. Phœnicaceæ.
Guadeloupe Island palm.

From Santa Barbara, Cal. Presented by Mr. W. H. Morse, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received January 21, 1915.

"This palm has been found in the wild state only on Guadeloupe Island, off the coast of Lower California, but it has been planted widely in the coast region of California and undoubtedly is one of the finest, and at the same time one of the hardiest, of the whole series of ornamental palms. In California it appears to be more hardy than Washingtonia, and since Washingtonia is being grown at Charleston and other Atlantic coast points, the Guadeloupe Island palm may also be able to survive. At least it should be given a fair trial. It may not be as well suited to Florida, on account of the hot, humid summer. Trachycarpus also does not thrive in Florida. We would suggest that seedlings be grown for experimental planting in the Carolinas and other Atlantic Coast States." (*Cook.*)

39741 and 39742. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.
Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Tubers received January 16, 1915. Quoted notes by Mr. Roig.

39741. "(No. 213.) *Centauro;* pale yellow inside; from Imias, Oriente; yielding 19,130 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39742. "(No. 92.) *Tornasol;* yellow. From Puerto Principe, Camaguey; yielding 9,918 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39743 to 39798. PRUNUS SERRULATA Lindl. Amygdalaceæ.
Flowering cherry.

From Tokyo, Japan. Presented by Mr. E. H. Wilson, Arnold Arboretum. Cuttings received January 15 and 23, 1915. Quoted notes by Mr. Wilson.

A collection of named varieties of Japanese flowering cherries. These are from the collection owned by the municipality of Tokyo, and dried flowering specimens are now in the herbarium of the Arnold Arboretum. The supplementary serial numbers are Wilson's collection numbers.

39743 and 39744.

"To be grown on the ordinary Japanese cherry stocks."

39743. No. 2. **39744.** No. 3.

39745. No. 4. "To be grown on *Prunus serrulata sachalinensis* stock."

39746 to 39798.

"To be grown on the ordinary Japanese cherry stocks."

39746. No. 5. **39748.** No. 7.
39747. No. 6. **39749.** No. 8.

39743 to 39798—Continued.

39750. No. 9.
39751. No. 10.
39752. No. 11.
39753. No. 12.
39754. No. 13.
39755. No. 14.
39756. No. 15.
39757. No. 16.
39758. No. 17.
39759. No. 18.
39760. No. 19.
39761. No. 20.
39762. No. 21.
39763. No. 22.
39764. No. 23.
39765. No. 24.
39766. No. 25.
39767. No. 26.
39768. No. 27.
39769. No. 28.
39770. No. 29.
39771. No. 30.
39772. No. 31.
39773. No. 32.
39774. No. 33.
39775. No. 34.
39776. No. 35.
39777. No. 36.
39778. No. 37.
39779. No. 38.
39780. No. 39.
39781. No. 40.
39782. No. 41.
39783. No. 42.
39784. No. 43.
39785. No. 44.
39786. No. 45.
39787. No. 46.
39788. No. 47.
39789. No. 48.
39790. No. 49.
39791. No. 50.
39792. No. 51.
39793. No. 52.
39794. No. 53.
39795. No. 54.
39796. No. 55.
39797. No. 56.
39798. No. 57.

39799 to 39802. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Received January 18, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

39799. "(No. 29.) *Camagucy;* yellow inside. From Puerto Principe. Yielding 41,982 arrobas per caballería."

39800. "(No. 118.) *Yema de huevo;* yellow. From Colon, Matanzas. Yielding 6,260 arrobas per caballería."

39801. "(No. 30.) *Colorado brujo;* yellow flesh. From Puerto Principe. Yielding 10,436 arrobas per caballería."

39802. "(No. 72.) *Chino blanco;* white. From Taco Taco, Pinar del Rio. Yielding 18,156 arrobas per caballería."

39803 to 39807. ZEA MAYS L. Poaceæ. **Corn.**

From Oroya, Peru. Collected by Dr. J. N. Rose, United States National Museum.

"Corn obtained from Chola women, at an altitude of 12,200 feet, in July, 1914." (*Rose.*)

39803. Light yellow.
39804. Mixed blue and white.
39805. Red.
39806. Brownish.
39807. White.

39808 to 39816. ANNONA CHERIMOLA × SQUAMOSA. Annonaceæ.

Atemoya.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received January 11, 1915.

Cuttings of the *atemoya*, a new hybrid between the cherimoya and the sugar-apple.

"In 1908, at the subtropical laboratory, Miami, Fla., the writer successfully hybridized the cherimoya and the sugar-apple, the sugar-apple and the custard-apple, the cherimoya and the mamon, and the mamon and the sugar-apple. Several hundred seedlings resulted from this work, part of which were planted out in 1910, the hybrids between the cherimoya and the sugar-apple showing remarkable vigor and thriftiness. In 1911, hybrid seeds of the same combination from a cross made in 1910 were brought to the Philippines and the seeds sown in March of the same year. These hybrids exhibited the same remarkable vigor, and some attained a height of 2.3 meters in one year and bloomed when they were 16 months old. No fruits resulted, however. This year (1913), in the course of the reorganization work at Lamao, where the plants are growing, it became necessary to transplant the hybrids, and their fruiting is on that account unfortunately delayed for another year." (*Wester, Philippine Agricultural Review, vol. 6, 315, July, 1913.*)

The further history of these hybrids is told in the Review for February, 1914: "The blossoming season of the cherimoya is somewhat in advance of that of the custard-apple, but owing perhaps in part to the shock and retardation due to the transplanting, a few flowers appeared in June on one of the transplanted hybrids. One of these was pollinated with pollen from the custard-apple (*Annona reticulata* L.), with the result that it set, and a fruit developed and ripened October 8, 1913. The following is a description of the fruit: Size small, weight 280 grams; length 7.7 cm., equatorial diameter 7.6 cm.; cordiform in shape, with prominent carpels and distinct areoles; exterior yellowish green, almost glabrous; skin very thick and tough; flesh white, tender, and melting, with a slight trace of fiber, juicy, subacid, rich, and aromatic; flavor excellent, very similar to a good cherimoya with a dash of the delicate sweetness of the sugar-apple; seeds 4 to 7, similar in shape to cherimoya seed, but darker colored. The fruit is rather small, but regular and well shaped, about the size of a sugar-apple, which was to be expected considering that the father parent, the cherimoya, was also undersized. With the employment of large-fruited cherimoyas for breeding work we may also anticipate a progeny with larger fruits. The *atemoya* plants, of which there are 23 that have not yet fruited, are very similar in appearance to the cherimoya, and the fruit is also practically identical with the prominent-carpelled cherimoyas. Superior to the sugar-apple, it is not claimed that the *atemoya* is an improvement upon the cherimoya, but it has been hoped by crossing the cherimoya with the sugar-apple the excellent flavor of the subtropical cherimoya, which does not succeed well in the low latitudes near the Equator, might be imparted to the progeny, and that the other parent from the lowlands would impart to it adaptability to a tropical climate. It would seem that this anticipation has been realized in the above instance. The name *atemoya*, which is here being proposed for this new race of fruits, is derived from a combination of one of the old original names of the sugar-apple, *Ate panniccnsis* (quoted from Hernandez, in his work 'Nova Plantarum, Animalium et Mineralium Mexicanorum Historia,' published in 1651), and cherimoya." (*Wester.*)

Of the nine plants represented by cuttings, No. 4 [S. P. I. No. 39809] represents the plant which fruited in 1913; the remainder first bore fruit in 1914.

39808. No. 3. "This proved to be one of the best among the hybrids that fruited this season." (*H. T. Edwards.*)

39809. No. 4. "Fruited last year." (*H. T. Edwards.*)

39810 to 39816.

"These proved to be the best among the hybrids that fruited this season." (*H. T. Edwards.*)

39810. No. 5.
39811. No. 6.
39812. No. 11.
39813. No. 12.
39814. No. 14.
39815. No. 16.
39816. No. 17.

39817 to 39819.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received January 16, 1915. Quoted notes by Mr. Hamilton.

39817. CYMBIDIUM SUAVE R. Brown. Orchidaceæ.

Distribution.—An epiphytal orchid with narrow leaves 1 foot long and racemes of red-blotched greenish flowers, found along streams in Queensland and New South Wales.

39818. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

"Large-fruited passion fruit. Season 1914."

39819. RUBUS sp. Rosaceæ. **Wild raspberry.**

"Wild raspberry, *Evelyn Table-land No. 2.*"

39820 to 39826. PRUNUS SERRULATA Lindl. Amygdalaceæ. Flowering cherry.

From Tokyo, Japan. Presented by Mr. E. H. Wilson, Arnold Arboretum. Cuttings received January 15 and 23, 1915.

"To be grown on the ordinary Japanese cherry stocks." (*Wilson.*)

39820. No. 58.
39821. No. 59.
39822. No. 60.
39823. No. 61.
39824. No. 62.
39825. No. 63.
39826. No. 64.

39827. FICUS SYCOMORUS L. Moraceæ. Fig.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received January 26, 1915.

"No. 3. Var. *beledi.* A variety which is most commonly eaten at Alexandria." (*Brown.*)

"The tree is cultivated in Egypt and is identical with the sycamore of Scripture. *Ficus sycomorus*, or the Egyptian fig, seems to be invariably infested with the insect *Sycophaga crassipes*, which is the same insect supposed to effect caprification in Malta, according to Rev. T. F. Marshall. This fig never produces ripe seed in Egypt, though it has been introduced from the earliest times. Not only are the ancient coffins made of the wood, but it was adopted as the sacred 'Tree of Life.' It probably came from Yemen, where Prof. Dr. Schweinfurth saw many seedling trees grown spontaneously. The tree bears three crops per annum, in May, June, and August–September. Boys cut off the top of the

figs of the first two crops only. The figs have no pleasant flavor until the operation has been performed; then the figs become very sweet, but remain smaller than when cut open. The object is to let the insect escape. Those that are left become watery and tasteless and are full of namoos or Sycophaga. The instrument used in Egypt for removing the 'eye' or top of the sycamore fig is a kind of thimble made of iron plate ending in a spatula like a finger nail. It is fixed on the thumb of the right hand. The operation is made only on fruits which shall be picked the following day. The day after the operation the fig is quite ripe. The male flowers in those figs are all aborted and the females never have perfect seeds. The figs of the third generation are larger, of an agreeable taste, and sweet scented; but they are not operated upon, only because in August and September, though the trees are much fuller of fruit than in May and June, the people have so much to do at that time. They are seldom sold and only eaten by the owners of the trees, or else they are abandoned to the field mice, birds, and dogs, which latter are very fond of them. These *nilg* fruits are full of Sycophaga. It is a very interesting fact that Pliny also describes the process as closely corresponding with this modern method." (*Muschler, Manual Flora of Egypt, vol. 1, p. 248.*)

For an illustration of this remarkable tree, see Plate II.

39828 and 39829.

From Rome, Italy. Presented by Dr. Gustav Eisen. Cuttings received January 26, 1915. Quoted notes by Dr. Eisen.

39828. FICUS sp. Moraceæ. Fig.

"*Harrar.* A fig from Abyssinia, most interesting and different from *Ficus carica.* Possibly a variety of *Ficus pseudocarica.* Fruit medium; outside violet brown, pulp reddish brown-vermilion, brilliant. Sweeter and better flavored than any other variety when fully ripe. Growth of branches somewhat pendent, leaves like *Broussonetia papyrifera.* Abundant bearer and hardy. Suited, I think, to Texas, Arizona, and southern California. May also do well in some other parts of the South, as it can stand considerable summer rain."

39829. MALUS SYLVESTRIS Miller. Malaceæ. Apple.
(*Pyrus malus* L.)

"*Limoncella* or *Limoncello* apple. Middle and southern Italy, especially Naples down to and including Sicily. The only apple adapted to a warm and dry climate, at the same time possessing qualities which compare favorably with those of good northern apples. It is the best variety of apple grown in Italy for the general market. Medium or below medium, apex truncate, constricted below the apex, wider at base. Oblong, much longer than wide. Stalk short, slender, core long, narrow, solid, with very few seeds, flesh solid, white, sweet and subacid, crisp and juicy. Color of skin lemon yellow, shaded to a very slight pinkish flush. Flavor strong, agreeable, resembling that of certain red Cabernet grapes. Very fine shipper. Ripe from the end of November to February. This variety is not to be preferred to our better American apples in the Northern States, its value consisting in its adaptability to warm countries where the northern apples do not thrive. Should do well in California, Arizona, and Texas in localities with deep and rich soil. It is superior to any California apples grown on the central and southern plains and compares well with those grown in the mountains, except as to size. Retails at 35, 45 to 50 centesimi a kilo, or from ½ to 1 cent American each, more or less, according to size."

39830. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepensis* Pers.)

From Kirkee, Bombay, Poona, India. Presented by Mr. W. Burns, Ganeshkhind Botanical Gardens, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 26, 1915.

39831 to 39833. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Tubers received January 25, 1915. Quoted notes by Mr. Roig.

39831. "No. 75. *Cascarillo;* white. From Madruga, Havana. Yielding 23,791 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39832. "No. 199. *Picadito;* white. From Trinidad, Santa Clara. Yielding 12,617 arrobas (of 25 pounds each) per caballería (33⅓ acres.)"

39833. "No. 98. *San Pedro blanco,* white. From Taco Taco, Pinar del Rio. Yielding 25,217 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39834. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Guemes, Argentina. Presented by Mr. Henry F. Schultz, through Mr. L. J. Keena, American consul general, Buenos Aires. Received January 23, 1915.

"The cherimoya was introduced into Campo Santo from Peru about 50 years ago, and while the famous 'oldest residents,' who heard the tales of the original importers, claim that the fruits have degenerated greatly, it must be admitted that the quality of the present-grown cherimoyas in this region is very fine indeed. I have never eaten as good cherimoyas in Central America or in the United States as are produced here; their flavor and aroma are exquisite and their texture velvety and most delicious. The beautifully fragrant, creamlike pulp melts in the mouth like the best ice cream, and, were it not for the somewhat objectionable seeds, a finer fruit could hardly be imagined. After sampling the locally produced cherimoya I feel no hesitancy in withdrawing the statement which I have made in the States, before visiting this country, that cherimoya culture had no important future in the United States. California can undoubtedly produce at least as good cherimoyas as are raised in this country, and as soon as people acquire a taste for them and learn to know and appreciate the fruit cherimoya culture will become quite an important addition to horticulture in that State." (*Schultz.*)

For detailed information, see report from the American consul, dated December 18, 1914.

39835. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Rome, Italy. Presented by Dr. Gustav Eisen. Received January 26, 1915.

"A different variety from those sent before (S. P. I. No. 34698). Hardy, seeds smaller." (*Eisen.*)

39836. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ.
(*Rottboellia exaltata* L. f.)

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received January 23, 1915.

Distribution.—An annual grass with stems 4 to 10 feet high, ranging throughout India, ascending to 7,000 feet in Gurhwal.

39837. ADENOPHORA VERTICILLATA Fisch.

From Harbin, Manchuria. Presented by Mr. Lewis S. Palen. Received January 18, 1915.

"Chinese *Ssu yeh ts'ai*, or 'Four-leaf plant.' Sample taken in September, 1914, on the Sungari River, 50 miles above its confluence with the Amur. It grows all through the woods here and on the open plain, coming earlier in the spring than almost any other save the wild onion. About 6 inches to 1 foot high by the end of May. It makes a delicious green for stewing by the middle of May in a climate where the frost is not out of the ground more than 4 or 5 inches by the middle of April. If it could be introduced at home, it might prove of considerable value. It has an excellent flavor and is superior, in my estimation, to many of the greens used in America. We prefer it to spinach." (*Palen.*)

39838. MYRICARIA GERMANICA (L.) Desv. Tamaricaceæ.

From Darjiling, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens, Seharunpur, India, who procured it from Mr. G. H. Cave, Lloyd Botanic Gardens, Darjiling. Received January 23, 1915.

See S. P. I. No. 39630 for previous introduction and description.

39839 to 39844. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Grenoble, France. Presented by Mr. Thomas W. Murton, American vice consul. Received January 2, 1915.

All are late-blooming varieties from Tullins, Isere, the name of the orchard (*Clos*) from which the nuts came being given in each case.

"As instructed, I made a first trip, on June 23, to Tullins, Isere, and neighboring walnut-growing districts, where I located several fine, vigorous, healthy-looking specimens of the late-blooming variety of walnut trees, cuttings from which are desired later by the Department of Agriculture for experimental purposes.

"It will be my duty also to forward to this department at harvesting time samples of the nuts produced by these trees for comparison and possible sowing.

"This variety, though a good producer, is little appreciated by growers hereabouts, for the reason that the fruit it bears is lighter in weight than most other kinds and consequently not so profitable from a pecuniary point of view; indeed, there is a growing tendency on the part of the farmers in this region to eliminate all such trees from their plantations on this account. As a matter of fact, several of those that I have marked are destined to be cut down in the near future, and the probability is that little by little this particular species will disappear entirely from the region of the Isere to make way for the more esteemed and much preferred grafted *Mayette*, the cultivation of which has greatly increased within the past four or five years in and around Tullins, where several new orchards have been laid out independently of individual plantings.

"On the other hand, the fact should not be lost sight of that the fruit of the late-blooming walnut tree is fine in appearance, relatively large in size, bright in color of both shell and interior skin, and of good taste, although perhaps the meat is not so well nourished or as fine of flavor as the *Mayette* or *Franquette*, but in my opinion it compares favorably with the quality known as *Parisians*, and properly cared for and grafted should prove a good producer." (*Murton. Report dated at Grçnoble, France, July 1, 1914.*)

39839. No. 1. Clos Masson.
39840. No. 2. Clos Durand.
39841. No. 3. Clos May.
39842. No. 4. Clos Lafarge.
39843. No. 5. Clos Durand.
39844. No. 6. Clos Bernardin (altitude 2,000 feet).

39845 to 39852. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Cuttings received February 1, 1915.

"The following varieties are largely grown here." (*Edwards.*)

39845. Common *Negros purple.*
39846. *Pampanga dark purple.*
39847. *Luzon No. 1.*
39848. *Luzon No. 2.*
39849. *Cebu light purple.*
39850. *Inalmon.*
39851. *Laguna white.*
39852. *Pampanga light purple.*

39853. OPUNTIA sp. Cactaceæ. Prickly-pear.

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, Hawaii Experiment Station. Received February 1, 1915.

"A variety believed to have been introduced into Hawaii by Don Marin." (*Higgins.*)

"A number of years ago the station collected in Honolulu several slabs of an almost spineless cactus. Dr. W. T. Brigham states that he has known this cactus for a long time and that he believes it was introduced by Don Marin. Dr. Brigham suggests that this cactus be called the *Manini cactus* (the Hawaiian form of Marin). These cactus slabs were grown into plants, which after subsequent subdivision have developed into a hedge nearly 100 feet long.

"An opportunity offered to test the hardiness of this cactus in comparison with a number of other drought-resisting plants and several varieties of Burbank's cactus. All of these plants were set out on the island of Kahoolawe in an excessively dry region somewhat exposed to wind. At the end of six months the place was visited again, when it was found that none of the plants had grown except the Marin cactus, which was growing satisfactorily. In the few tests which the station has been able to make, this cactus, under dry conditions, has grown about three times as fast as the Burbank varieties.

"Plant averaging 6 to 8 feet in height, shrubby, and much branched. . . . Petals averaging 25, outer ones short and fleshy, inner ones long and thin, rose to pink in color. . . . The joint changes to a succulent and juicy fruit, 1½ to 2 inches long, 1 to 1½ inches wide, pear shaped to globose, areoles with numerous small spicules, claret red; pulp deep claret red, many seeds, watery and almost tasteless. Rapid growth, very productive, and best propagated from slab cuttings, since the seeds are liable to be cross-fertilized with the spiny Opuntias.

"Since this cactus is of rapid growth and comparatively free of spines, it is worthy of attention as an ornamental hedge and as a fodder plant." (*Report of the Hawaii Agricultural Experiment Station, 1914, p. 17 and 32.*)

39854 and 39855. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

From Madrid, Spain. Presented by Señor Gregorio Cruz Valero. Received January 14, 1915. Quoted notes by Señor Valero.

39854. "Seeds of a single winter melon. This is cultivated here alternately with cereals in dry lands. It does especially well in dry farming. The earth is argillaceous, calcareous, and silicate to a great depth. In Tunis, after the cereal which precedes it is harvested, it receives in September or October a good working to a depth of 30 cm., to receive the water from the autumn rains. In February it is given another more superficial working, and at the coming of spring, the first of March or April, it is given a third working, preparatory to sowing. Sowing requires the opening of holes to a depth of 25 cm. or less. After this a layer of manure is placed in the holes to a depth of 4 cm., and then loose earth. On this four or five seeds are sown and covered with loose earth. The successive operations consist of continuous efforts to prevent the dust mulch from being lost and to avoid evaporation. During the growing season there is little rain and storms are rare. The distance between the hills is 2 to 2.25 meters, according to the condition of the earth, and about the same between the rows. The harvesting is done in September. The degree of ripeness at which the fruit should be separated from the plant is known by the fact that it is quite white and has reached the highest development, and before the odor is noticed. I have said that four or five seeds should be placed in each hill, but after germination, when they have reached a development of 25 to 30 cm., the two strongest, or the strongest plant, is left and the distance between the plants is made accordingly."

39855. "Mixed winter melon seed, selected from the same variety as S. P. I. No. 39854."

39856 to 39858.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received February 3, 1915. Quoted notes by Mr. Brown.

39856. TAMARIX APHYLLA (L.) Karsten. Tamaricaceæ. **Tamarisk.**

"This is by far the best of the Egyptian species for cultivation as a timber tree on desert land. We have employed it largely as a wind and sand break, at the sewage farm at Khanka, which is situated on what was unreclaimed desert land. The cuttings were planted along shallow water channels, containing in one case chlorine equivalent to sodium chloride to the extent of 1,272 parts per million and in another case to the extent of 2,028 parts per million. *Tamarix aphylla* very rarely produces seed here."

Distribution.—A tree 20 to 30 feet high, found in Algeria and Egypt in northern Africa, and from Persia and Arabia eastward to India.

39857 and 39858. FICUS SYCOMORUS L. Moraceæ. **Fig.**

39857. "Var. *Roumi;* usually eaten at Cairo."

39858. "Var. *Kilabi;* never eaten."

For an illustration of this remarkable tree, see **Plate II.**

39859. LOROMA AMETHYSTINA O. F. Cook. Phœnicaceæ. **Palm.**

From Santa Barbara, Cal. Presented by Mr. C. B. Hale, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received February 3, 1915.

"Seeds of a palm that has proved to be well suited for outdoor planting in California. It has been grown under several names, *Ptychosperma elegans*, *Seaforthia elegans*, *Archontophoenix alexandrae*, and *Archontophoenix cunninghamiana*. But after a study of the original descriptions of these genera and species, the California palm does not appear to be referable to any of them, and has to be described as new. A preliminary account is being published in the Journal of the Washington Academy of Sciences, with the name *Loroma amethystina*. Although the species is well known in California and is undoubtedly available through dealers under the different names, it may be worth while to make at least a limited distribution of seedlings from the original tree on which the new genus and species are being based. The type individual is in the collection of Mr. C. B. Hale, under the care of Mr. W. H. Morse. The palm is larger and has longer and more spreading leaves than the true *Ptychosperma* or *Seaforthia elegans* [S. P. I. No. 38112]. On the other hand, it is a smaller palm than the true *Archontophoenix alexandrae*. It may be worth while to have a considerable planting of this palm made at the new Miami garden, in order to test its adaptability to the local conditions. On account of the former confusion of names, we do not know whether the reports that have been made regarding the behavior of *Seaforthia* and *Ptychosperma* in Florida relate to this palm or to others." (*Cook.*)

39860 and 39861.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 3, 1915.

39860. ABIES SACHALINENSIS NEMORENSIS Mayr. Pinaceæ. **Sachalin fir.**

Wilson No. 7869.

The species is described as "a tree 130 feet high, native of northern Japan, Saghalien, etc., but so liable to injury by late spring frost in this country as to be of no value. It has the *nordmanniana* arrangement of leaf, but in the forward-pointing leaves, which are three-fourths to 1¼ inches long and very white beneath, it resembles *A. veitchii;* buds white, resinous. Cones 2½ to 3½ inches long. Introduced in 1878 by Maries for Messrs. Veitch. I saw a tree about 16 feet high at Murthly Castle, near Perth, in 1906, but even there not in the best of health." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 117.*)

39861. TAXUS CUSPIDATA Sieb. and Zucc. Taxaceæ. **Yew.**

Wilson No. 7778.

"A tree 40 to 50 feet high in Japan, with a trunk girthing about 6 feet; in cultivation a low tree or spreading shrub; older bark reddish brown. Leaves one-half to 1 inch long, one-twelfth to one-eighth inch wide; linear, tapered rather abruptly at the apex to a fine point; rounded, and with a distinct stalk at the base one-twelfth inch long; dark green above, with a broad, tawny yellow strip composed of 10 to 12 stomatic lines on each side of the green midrib beneath. The leaves are arranged approximately in two ranks, and stand more or less erect from the twig, often forming a narrow V-shaped trough. Fruit red, as in *T. baccata.*

39860 and 39861—Continued.

"Native of Japan, introduced about 1855 by Fortune, and very hardy though slow growing. It thrives extremely well in the trying New England climate and is apparently one of the best evergreens introduced there. There are two distinct forms of it in cultivation, the one a tree, the other, var. *compacta*, a compact, low bush, wider than it is high. Whilst the general aspect is the same as that of the English yew, it can be distinguished by the marked yellow tinge of the under surface of the leaves, and by the longer, more oblong winter buds, with looser, more pointed scales." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 582.*)

39862 to 39864. LINUM spp. Linaceæ. **Flax.**

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received February 1, 1915.

39862. LINUM GRANDIFLORUM Desf.

Var. *roseum.*

39863. LINUM PERENNE L. 39864. LINUM CAMPANULATUM L.

39865. JACQUEMONTIA COELESTIS Planchon. Convolvulaceæ. **Nepal creeper.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Cuttings received February 6, 1915.

"The beautiful Nepal creeper; a free bloomer, not very tall growing. Flowers sky blue, quite showy." (*Regnard.*)

39866. CASTANEA sp. Fagaceæ. **Chestnut.**

From China. Presented by Rev. W. F. Hayward, American Church Mission. Received January 30, 1915.

39867. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received February 11, 1915.

39868. (Undetermined.)

From Monrovia, Liberia. Presented by Dr. C. C. Boone. Received January 20, 1915.

"Seeds of the best Liberian cherry." (*Boone.*)

39869. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ.
(*Cryptotaenia canadensis* DC.)

From Brooklyn, N. Y. Presented by Dr. C. Stuart Gager, director, Brooklyn Botanic Garden. Received February 11, 1915.

"*Mitsuba, Mitsuba-jeri*, a perennial herb of the order Umbelliferæ, growing wild in moist valleys, but much cultivated from seeds or by dividing the roots. In spring, young leaves come forth to a height of about 1 foot. They are eaten boiled, and the roots can also be eaten fried. One variety with fine threadlike petioles and shooting bushes 8 to 10 inches high is called *Ito mitsuba* (thread honewort)." (*Useful Plants of Japan, p. 12, No. 59.*)

Described by Mr. Kuwashima as one of the highest priced vegetables cultivated in Japan, and the young shoots are recommended as an excellent green salad.

39870 to 39874.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received February 12, 1915. Quoted notes by Mr. Harrison.

39870. (Undetermined.)

"Seeds of the Australian sour plum, a tree of palmlike habit of growth. The purple plums are formed in clusters on the bark of the tree."

39871. HICKSBEACHIA PINNATIFOLIA Mueller. Proteaceæ.

"*Red bush nuts.* This tree grows to the height of 30 or 40 feet, and the fruit is borne in racemes, attached to the bark and branches of the tree, each carrying 10 or 12 fruits. The flavor is not quite so good as the Queensland nut, *Macadamia ternifolia*, nor does it keep so well, but nevertheless they are sold in some fruit shops here at 12 cents per pint. I do not think they have been cultivated anywhere in the United States, but could easily be grown in any of the warm Southern States."

39872. HOVEA LINEARIS (Smith) R. Brown. Fabaceæ.

"A handsome blue-flowered leguminous shrub, 8 to 10 feet in height. Stock eat the foliage, and it is also a good fertilizing plant, rich in ammonia."

39873. KENNEDYA RUBICUNDA (Schneev.) Vent. Fabaceæ.

"A long, coarse vine, bearing a profusion of red flowers. The foliage is eaten occasionally by stock. It would be useful for arbors and should prove useful as a fertilizing plant. Very rich in ammonia."

39874. STERCULIA sp. Sterculiaceæ.

"A handsome ornamental shrub 12 to 15 feet in height. Grows in sandy soil. The pods, which are several inches in circumference, form in clusters of 5 to 7; when ripe they turn scarlet and when open the round, black seeds adhere to the edges of the capsule."

39875. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.

From Upper Burma, India. Presented by Mr. F. Kingdon Ward. Received February 8, 1915.

"Grown in Shan villages on the plain of Hkamti Loong (1,200 feet), but scarcely cultivated. Soil alluvial and sandy; with proper manuring and pruning would probably give an excellent fruit. Very juicy. Seems to differ from the ordinary Indian fruit." (*Ward.*)

39876. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Manila, Philippine Islands. Presented by Mr. Cleve W. Hines, sugar technologist, Bureau of Agriculture, Manila. Cuttings received February 15, 1915.

"*Negros purple morada.* One of the main reasons why this cane is quite popular here is on account of its soft shell or outer tissue, which facilitates its milling in the small native plants and gives a greater percentage of juice than the finer varieties. Improved varieties have given much better results in the large modern factories as well as increased yields in the fields." (*Hines.*)

39877 and 39878.

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received February 16, 1915.

39877. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

39878. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.** (*Pennisetum typhoideum* Rich.)

39879. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From China. Presented by Mr. W. Paddock, Ohio State University. Received February 11, 1915.

39880. GARCINIA MORELLA (Gaertn.) Desr. Clusiaceæ.

From Cienfuegos, Cuba. Presented by Dr. Emilio Cabada. Received February 16, 1915.

See S. P. I. Nos. 12693 and 17995 for previous introductions and description.

"Produces a small edible fruit, similar in shape and size to a cherry. The tree reaches a height of 10 to 15 meters and produces the best quality of Cambodian gamboge." (*L'Horticole Coloniale, Catalogue des Plantes Economiques pour les Colonies.*)

39881 to 39886. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Grenoble, France. Presented by Mr. Thomas W. Murton, American vice consul. Bud sticks received February 19, 1915.

See S. P. I. Nos. 39839 to 39844 for description.

All are late-blooming varieties from Tullins, Isere, France, the name of the orchard (Clos) from which the nuts came being given in each case.

39881. No. 1. Clos Masson.
39882. No. 2. Clos Durand.
39883. No. 3. Clos May.
39884. No. 4. Clos Lafarge.
39885. No. 5. Clos Durand (bis).
39886. No. 6. Clos Bernardin (altitude 2,000 feet).

39887. ANNONA RETICULATA L. Annonaceæ. **Custard-apple.**

From Quilimane, Portuguese East Africa. Presented by Mr. E. H. Heron, acting director of agriculture, Beira, Mozambique. Seed received February 2, 1915, as *A. senegalensis.*

"These prove to be seeds of *A. reticulata*, a cultivated species introduced into Africa from America. *A. senegalensis* is not as good as the ordinary cultivated species of *A. reticulata* and *A. squamosa*. It is, however, valuable on account of the size to which it grows as stock for other species, and it is of special botanical interest, since all other edible annonaceous fruits are of American origin, while it is African." (*Safford.*)

39888 and 39889. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Turin, Italy. Presented by the American consul. Received February 11, 1915.

39888. "No. 19. *Carmagnola.* Hemp is cultivated in the Provinces of Turin and Cuneo between Carmagnola and the Po. It is said that no other country in the world can produce such fiber and seed. Some botanists have classified Carmagnola hemp as a distinct variety

39888 and 39889—Continued.

under the name *Cannabis sativa excelsior*. The area under cultivation is 2,314 acres, and the production of fiber 11,110 tons (?). Carmagnola hemp is more productive and more vigorous than that of Emilia, and it is said to be resistant to Orobanche. Its stalks are 3 to 4 meters high. It is sown by hand, pulled by hand, and water retted. The yield is about 1,000 pounds per acre. Fiber of inferior quality is obtained from seed stalks." (*From abstract of report on Agriculture and Industries of Piedmont by Major Percy Chapman, Textile Mercury, October, 1914.*)

"It grows somewhat taller and thicker in stalk than the other varieties of hemp cultivated in this vicinity and is the most in demand by planters." (*Charles B. Perry, American consul, report of January 21, 1915.*)

39889. "No. 30. *Bologna* hemp is grown on the rich alluvial soils of the lower Po Valley, in the Provinces of Bologna, Ferrara, Modena, Emilia, and Rovigo, in northeastern Italy. Greater care is given to the crop in this region than anywhere else, and the result is hemp of the finest quality and highest price on the market. Nearly 200,000 acres are devoted to the crop each year, and the annual production is more than 80,000 tons. A 2-year rotation with wheat is practiced, the land being plowed 12 to 18 inches deep in June immediately after the wheat is harvested and thoroughly cultivated until the hemp seed is sown the following February. The crop is cut by hand, water retted, and broken mostly by machinery. Seed produced in Ferrara or Bologna gives a hemp with a light, hollow stick, while the Carmagnola variety gives a more woody stick with a smaller percentage of fiber." (*L. H. Dewey.*)

"*Ferrara* hemp is the common name of the Bologna type most grown in the Piedmont district." (*Charles B. Perry, American consul, report of January 21, 1915.*)

39890. CUCURBITA sp. Cucurbitaceæ.

From La Paz, Bolivia. Presented by Dr. J. N. Rose, National Museum, Washington, D. C. Received February 15, 1915.

"Seeds of a large pumpkinlike plant, obtained from the market at La Paz, Bolivia." (*Rose.*)

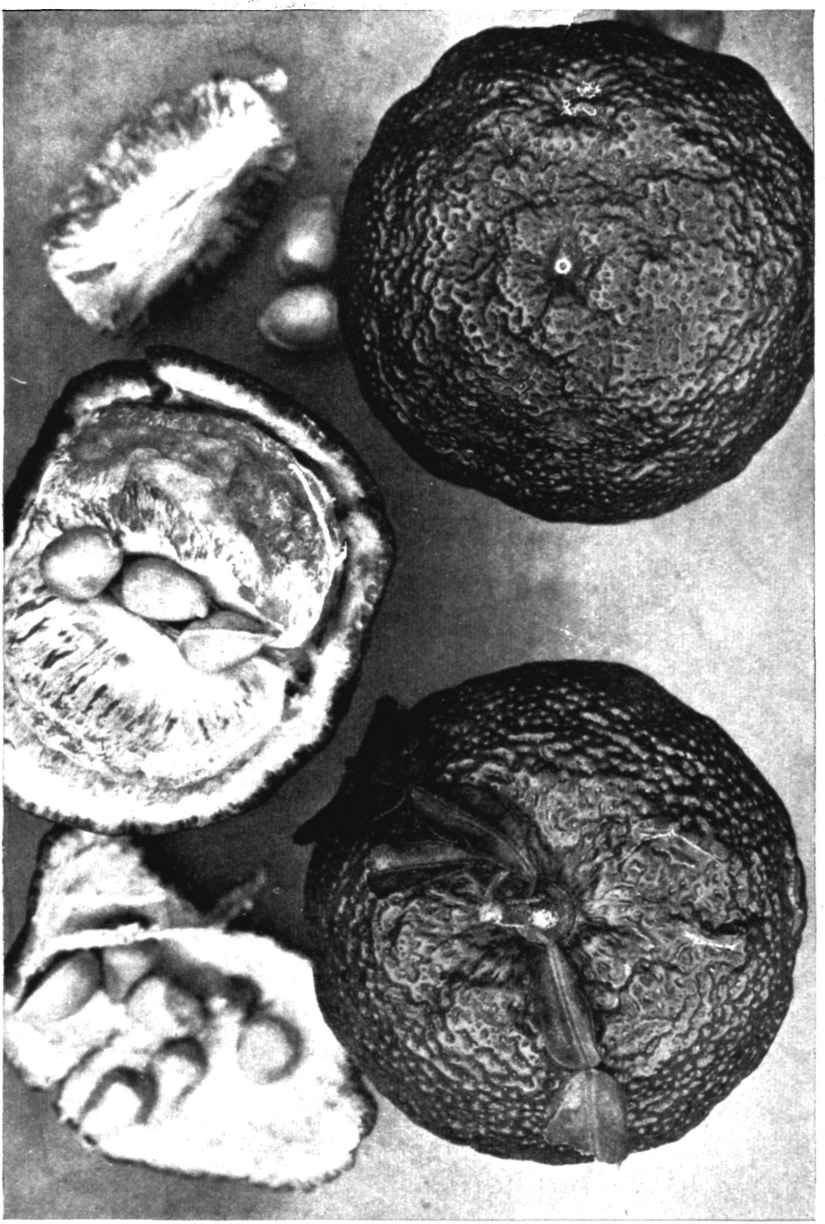
"A large globose, pumpkinlike fruit, found in the markets of Peru and Chile and said to have been cultivated in prehistoric times by the natives of those regions; highly esteemed by the modern inhabitants; smooth outside, with yellow flesh, and large seeds which are used as articles of food. Suitable for the warmer regions of the United States where irrigation is practiced." (*Safford.*)

39891. CITRULLUS VULGARIS Schrader. Cucurbitaceæ.

Watermelon.

From Burttholm, Vereeniging, South Africa. Presented by Prof. J. Burtt Davy, Transvaal Maize-Breeding Station. Received February 17, 1915.

"Seeds of the true *Tsama* melon, sent to me from Kuruman as having been collected in the heart of the Kalahari Desert. I send these because there is so



AN INTERESTING HARDY CITRUS FRUIT FROM KANSU, CHINA (CITRUS SP., S. P. I. NOS. 39897 AND 40039).

A peculiar loose-skinned fruit with light yellow rind, agreeable sharp-sour taste and lemon odor. The trees are thrifty and apparently prolific. This species is found at altitudes of 2,000 to 4,500 feet in a region where persimmons, figs, pomegranates, walnuts, and pears are cultivated. Photographed by Frank N. Meyer, October 20, 1914 (P13140FS).

THE TANGUTIAN BUSH ALMOND (AMYGDALUS TANGUTICA, S. P. I. No. 39898).

A very interesting bush almond from altitudes of 4,000 to 10,000 feet in the Province of Kansu. The fruits are very variable in size, with generally small stones, the kernels of which are used for oil extraction. The species may have value as a hedge plant for dry regions and also as an ornamental spring-flowering shrub in the cooler semiarid regions of the United States. The introduction of this species may suggest to breeders the possibility of producing a commercial bush almond. Photographed by Frank N. Meyer, Siku, Kansu, China, November 15, 1914 (P13093 FS).

much seed of other desert melons now distributed under the name *Tsama* that it is often doubtful whether people have the real thing." (*Davy.*)

This is the great forage melon of the Kalahari, described by explorers as of considerable value for cattle feed in that region.

39892. COLOCASIA ANTIQUORUM Schott. Araceæ. Egyptian taro.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Department of Agriculture, Gizeh branch. Tubers received February 20, 1915.

"The common name of the plant in Egypt is *Qolqas*. The plant is just coming into flower (October 6). It is an important crop in some districts of this country." (*Brown.*)

"This plant is of the same type as the specimens received from Syria and Madeira, as well as from some other parts of the world. It is inferior in quality to the dasheen." (*R. A. Young.*)

39893 to 39895.

From Burma, India. Collected by Mr. F. Kingdon Ward. Received February 8, 1915. Quoted notes by Mr. Ward.

39893. ELEUSINE CORACANA (L.) Gaertner. Poaceæ. **Ragi millet.**

"Grain grown to supplement maize and mountain rice for making flour. Grown by the Marus, Nmaihka Valley, on dry hillsides, not irrigated, 4,000 to 5,000 feet. Soil from disintegrated granite. Also by Lisus in Salwin Valley under similar conditions."

39894. NICOTIANA TABACUM L. Solanaceæ. **Tobacco.**

"Tobacco grown by the Marus, far Upper Burma, Valley of Nmaihka or eastern Irrawaddy. Altitude 4,000 to 5,000 feet. Soil from disintegrated granite. Monsoon rains in the summer, very hot. Winter cold but no snow; lies too low."

39895. ZEA MAYS L. Poaceæ. **Corn.**

"Maize grown by Lisus and Marus, Valley of Nmaihka and eastward, 5,000 to 8,000 feet. Poor soil from disintegration of granite rocks, but soil previously covered with forest which is cut and burnt on the spot. Heavy summer rainfall. Maize ripens in July and August."

39896. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Cuttings received February 23, 1915.

39897 to 39924.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Cuttings (except of 39914) received February 23, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

39897. CITRUS sp. Rutaceæ.

"(No. 1221. From near Lianjapa (near Hsiku), Kansu, China. October 19, 1914.) A peculiar species of citrus growing into a large tree, bearing loose-skinned, round, flattened fruits the size of mandarin oranges. Color of rind, light yellow; rind full of oil glands, smelling like a fine lemon; segments separating easily; fairly juicy and of an agreeable

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

sharp sour taste; contains plenty of large seeds. These sour mandarin fruits make a very pleasing 'ade cut up, rind and all, in a tumbler of water with some sugar added. They also taste well when cut up in slices in hot tea, while a few pieces of rind added to a soup or stew give a novel and agreeable flavor.

"The trees are of thrifty growth, making large heads of dark-green foliage; they are prolific bearers, apparently; young shoots armed with large spines. They are not grafted or budded, but propagated from seeds only. This citrus is found at altitudes of 2,000 to 4,500 feet, and where they grow one finds the following trees cultivated: *Diospyros kaki; Ficus carica; Punica granatum; Juglans regia; Pyrus sinensis; Morus alba; Hovenia dulcis; Ligustrum lucidum; Trachycarpus excelsus;* and *Phyllostachys* sp. Of value, possibly, as a tree for the home garden in sections north of the citrus belt proper."

For an illustration of this interesting fruit, see Plate III.

39898. AMYGDALUS TANGUTICA (Bat.) Korsh. Amygdalaceæ. **Almond.**
(*Prunus tangutica* Koehne.)

"(No. 1222. Village of Lantsai (near Hsiku), Kansu, China. October 28, 1914.) A bush almond found in rocks and cliffs along the right bank of the Hsiku River, collected at an altitude of 4,200 feet. Shrubs from 4 to 10 feet high, in sheltered places reaching even a height of 20 to 25 feet; densely branched, branches often zigzag running and ending in spines. Foliage small and of a glaucous green color. Fruits very variable in size, looks, and shape; skin downy and thin; stones ranging in size from that of a cherry stone up to a good-sized apricot stone, of many forms, some round and quite smooth, others pointed or heart shaped and grooved like peach stones, shells moderately thin, kernels small on the average and quite bitter; they are, however, eagerly collected by ground squirrels. Here and there local Chinese also collect them and express a clear oil from the kernels for culinary purposes. These kernels are also sparingly eaten after having been boiled first, so as to remove part of the bitter flavor.

"This Tangutian almond occurs in many places in the Province of Kansu, growing at altitudes of 4,000 to 10,000 feet. They are able to withstand a great degree of drought, cold, and dry heat. It is recommended as a factor in certain hybridization experiments, trying to create hardy bush almonds. As a stock for almonds it might be tested, but since it throws up many shoots from the base it may not have any commercial value. As a hedge plant for dry regions it also possesses value, while as an ornamental spring-flowering shrub it possibly could be employed in gardens and parks in the cooler parts of the semiarid United States. Chinese name *Yeh hsiao hsing,* meaning 'wild small apricot'; also *Mao t'ao,* meaning 'hairy peach.'"

For an illustration of these almonds as grown in China, see Plate IV.

39899. AMYGDALUS PERSICA POTANINI (Bat.) Ricker. Amygdalaceæ.
(*Prunus persica potanini* Batal.) **Potanin's peach.**

"(No. 1223. From village of Tchutsaitze (near Hsiku), Kansu, China. October 29, 1914.) A wild peach of the *davidiana* type, but differing from the last in various points. Collected at the base of sheltered mountains at an altitude of 4,300 feet. A tall shrub or even small tree, up to 30 feet in height bark of stem or trunk dark reddish

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

brown and quite smooth in the younger shoots; leaves like those of *Amygdalus davidiana*, but often broader in the middle and always less pointed. Fruits of round elongated form; skin covered with a heavy down, no edible flesh; stones of elliptical shape, grooves longer than in *A. davidiana*, shells very hard and thick, kernels elongated and relatively small. Found growing at altitudes of 4,000 to 7,000 feet, in side valleys away from the Hsiku River; thrives especially well in sheltered and warm mountain pockets. Of value especially like *A. davidiana* as a stock for stone fruits and possibly able to stand even more dry heat; also recommended as an ornamental spring-flowering tree, especially for the drier parts of the United States. Chinese name *Mao t'ao*, meaning 'hairy peach.'"

39900 to 39904.

From near Kagoba (south of Hsiku), Kansu, China. Collected November 1, 1914.

39900. POPULUS SUAVEOLENS PRZEWALSKII (Maxim.) Schneider. Salicaceæ. **Poplar.**

"No. 1224. A poplar, growing into a tall tree with a trunk of ashy gray color, looking quite distinct from any ordinary poplar; leaves large and somewhat grayish underneath. Found mainly where the soil retains its moisture. Of value as a stately avenue and park tree for those sections of the United States where winters are not too severe. Collected at an elevation of 8,000 feet. Chinese name *Shui pai yang*, meaning water white poplar.'"

For an illustration of these poplar trees as found growing in China, see Plate V.

39901. SALIX sp. Salicaceæ. **Willow.**

"No. 1225. A willow with scaly bark, mostly seen as a shrub, but grows also into a medium-sized tree. Found on exposed mountain plateaus up to 11,000 feet. Of value for windbreaks in northern localities."

39902. PRUNUS BRACHYPODA Batalin (?) Amygdalaceæ. **Cherry.**

"No. 1226. A wild cherry growing into a tall shrub or small tree, collected at an altitude of 9,000 feet. Bears fringed leaflets at base of leaf petioles. Colors up brilliantly in autumn. Of value possibly for breeding purposes, as a stock, and as an ornamental garden shrub for cool regions."

39903. EUONYMUS sp. Celastraceæ.

"No. 1227. A spindle wood, growing into a medium-sized tree with a dense, well rounded-off head of branches. Leaves round, elliptical, of opaque green color, and somewhat wrinkled. Collected at an altitude of 8,000 feet. Of value as an ornamental park tree for the cooler sections of the United States."

39904. FICUS sp. Moraceæ. **Fig.**

"No. 1228. A fig found growing in rocks, apparently of a shrubby nature; only seen once. Leaves quite elongated and rough to the touch. Collected at an altitude of 6,000 feet. Of value possibly in regions where the winters are not too severe."

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39905 to 39911.

From near Paodji (near Hsiku), Kansu, China. Collected November 6 and 7, 1914.

39905. DIPELTA YUNNANENSIS Franchet. Caprifoliaceæ.

"No. 1229. A shrub of the appearance of a Lonicera, but bearing triangular, winged fruits. Found in a few places on overgrown mountain slopes at altitudes of 7,000 feet. Of value possibly as an ornamental garden shrub."

39906. DEUTZIA sp. Hydrangeaceæ.

"No. 1230. A Deutzia of vigorous growth, from 6 to 10 feet tall, having large, silvery gray leaves, found between scrub on open mountain slopes at altitudes between 6,000 and 8,000 feet. Of value possibly as an ornamental garden shrub."

39907. CORYLUS CHINENSIS Franch. Betulaceæ. **Hazelnut.**

"No. 1231. A hazelnut growing into a tree 80 to 100 feet tall having a trunk often a few feet in diameter. Bark reddish brown and peeling off in loose layers like that of a birch. Leaves large, of elliptical shape, petioles long, nuts small and each inclosed in a protruded involucre; they are borne in clusters from two and three up to seven and eight. Shell very thick; kernels small, but edible. This hazel tree bears masses of catkins at the time the leaves come down; it looks very much like a birch or an alder, and, aside from its having a utilitarian use as a nut-bearing tree, it also has a decided value for ornamental purposes, especially when planted in a group or a grove of some extent. Through selection and by hybridization possibly strains can be obtained bearing larger nuts with thinner shells and possessing commercial value. The climate where these hazels thrive is not a very severe one, and the trees probably will not be able to stand extreme temperatures. Collected at an altitude of 7,000 feet."

39908. HYDRANGEA sp. Hydrangeaceæ.

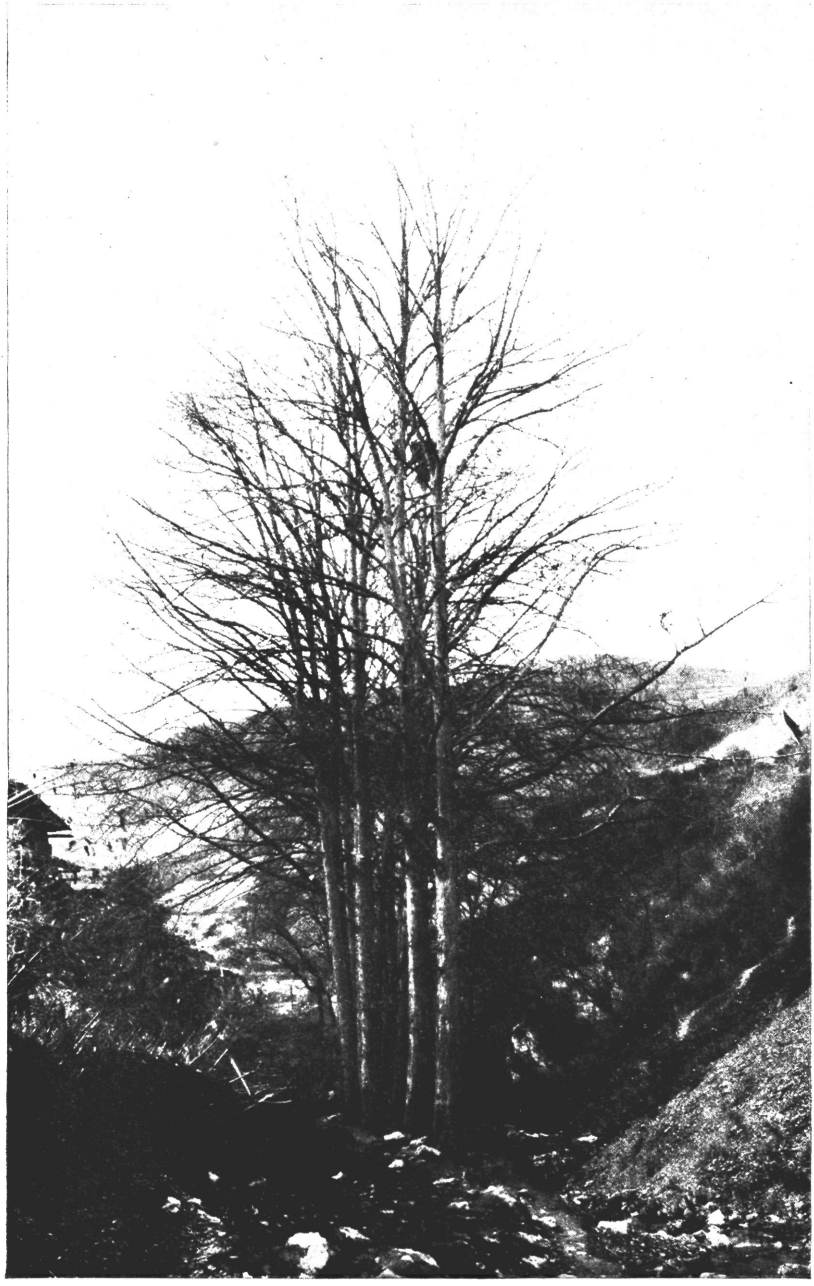
"No. 1232. A shrub of compact and robust growth. Collected in a grove of tall red birches, at an altitude of 8,000 feet. Of value as an ornamental shrub for shady places for the cooler sections of the United States."

39909. CORYLUS TIBETICA Batalin. Fagaceæ.

"No. 1233. A small tree found in between tall scrub on protected mountain sides at 8,000 feet altitude. Bears burs like those of a chestnut, which contain chinkapinlike nuts; it bears, however, also catkins like a hazel or an alder when it is leafless. Leaves somewhat like those of a chestnut, but of a thinner and less persistent structure. Of value possibly as a new nut-bearing tree, fit for regions where the winters are not too severe."

39910. RIBES sp. Grossulariaceæ. **Currant.**

"No. 1234. A currant of very vigorous growth, collected on a sheltered mountain side at an altitude of over 7,000 feet. The shrubs are of open growth and reach a height of 25 feet. Of value possibly for hybridization purposes."



A KANSU POPLAR (POPULUS SUAVEOLENS PRZEWALSKII, S. P. I. No. 39900).

A stately tall poplar with an ashy-gray trunk and large leaves, grayish beneath; a distinct type. It grows at an altitude of 8,000 feet in Kansu, in moist locations. Called by the Chinese the "Water White poplar." Photographed by Frank N. Meyer, November 1, 1914. (P13165FS).

A TALL-GROWING GOOSEBERRY FROM KANSU, CHINA (RIBES ALPESTRE GIGANTEUM, S. P. I. NOS. 39916 AND 40022).

A remarkably spiny tall wild gooseberry, growing at altitudes of 7,000 to 9,000 feet in the Province of Kansu. Suitable as a hedge plant. The berries are elongated, of medium size, and hang on the bush throughout most of the winter. These fruits are preserved by American missionaries and make a delicious tart jam. Photographed by Frank N. Meyer, near Yangsa, Kansu, November 29, 1914 (P13149FS).

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39911. PRUNUS SETULOSA Batalin. Amygdalaceæ. **Cherry.**

"No. 1235. A wild cherry growing into a tree 40 to 60 feet tall, with a good-sized trunk. Leaves somewhat tomentose. Collected at an altitude of 7,000 feet. Of value possibly as a stock and for breeding purposes."

39912. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"(No. 1236. Near Kuatsa, on the Hsiku River, Kansu, China. November 10, 1914.) A remarkably large and beautiful persimmon of very flat shape and bearing some furrows on top Color bright deep orange; seedless; nonjuicy; of excellent keeping qualities; can be eaten fresh or dried; not free from pucker. Quite a rare variety. Local name *Mo mo shih tzŭ*, meaning 'loaf of bread persimmon,' though many different forms pass under that name."

39913. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"(No. 1237. Near Hsiku, Kansu, China. November 14, 1914.) A persimmon of square shape, bearing generally a constriction close to the peduncle, also often furrowed vertically. Of light orange color, seedless; nonjuicy; a very good keeper, but of astringent properties when eaten fresh, therefore consumed when roasted or steamed, by which processes the pucker disappears for the greater part; also much eaten dried. Chinese name *Fang shih tzŭ*, meaning 'square persimmon.'"

39914. DAPHNE TANGUTICA Maxim. Thymelæaceæ.

"(No. 1238. Near Hsiku, Kansu, China. November 17, 1914.) A very beautiful evergreen bush of low and compact growth; foliage dark green and leathery; occurring on stony débris in sheltered ravines and in open woodlands at altitudes of 5,000 to 10,000 feet. Flowers white, with a slight violet tinge, faintly scented, appearing in early spring, though some stray ones can be seen in autumn also. Berries bright red and ripe at the end of May and in early June. This shrub is of high decorative value; it can be employed especially near houses and low walls, and may succeed in sections of the United States where the winters are not too severe, like Long Island, for instance. The plant is apparently easy to propagate from root cuttings, for roots that were seen sticking out amidst pebbles and stony débris and of which the top parts had been chopped off were observed to put forth new sets of branches. In the mountains to the north of Hsiku, where this Daphne occurs in abundance, one also finds great quantities of *Buxus sempervirens* and an evergreen species of Pteris, while ivy clings here and there against the rocks, all this often conveying the impression as if man had brought these plants together here and had made a wild garden of it."

"A low, densely branched, evergreen shrub, of close, neat, sturdy habit; young shoots hairy. Leaves leathery, thick, densely arranged toward the end of the twig; oval inclined to obovate; 1 to 2 inches long, one-half to three-fourths inch wide; stalkless, the base tapered, the apex rounded and notched, margin revolute; dark glossy green, smooth. Flowers produced during early May in a crowded cluster 3 inches across, terminating the branch, each flower borne on a short, conspicuously brown-felted stalk; perianth tube smooth, five-eighths inch long; rosy purple outside, glistening white, tinged with purple, inside; lobes ovate, one-third inch long. Fruit bright red.

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

"Native of western China; discovered by Mr. A. E. Pratt near Tachienlu, at 13,500 feet altitude. Introduced from the same spot by Wilson in 1901. I saw this delightful little bush flowering in the Coombe Wood nursery in April, 1909, and it was exquisitely fragrant, like lilac. The plant is of compact habit and will probably not grow much more than 1 to 2 feet high. It is apparently very hardy and if it can be propagated in sufficient quantity will make a valuable addition to cultivated Daphnes. It has some affinity with *D. odora*, but is easily distinguished by its thick, much smaller notched leaves and the shaggy young shoots and flower stalks." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 474.*)

Rooted plants.

39915 and 39916.

From near Taochow, Kansu, China. Collected November 25, 1914.

39915. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"No. 1240. A shrubby honeysuckle of somewhat spreading low growth, occurring in loess cliffs and on table-lands at altitudes of 8,000 to 10,000 feet. Leaves round, elliptical, small; branches angular, with the bark coming off in long, slender strips; berries red. This shrub is apparently very resistant to cold and to drought. Of value as an ornamental and as a low hedge shrub for the colder semiarid sections of the United States."

39916. RIBES ALPESTRE GIGANTEUM Janczewski. Grossulariaceæ. **Gooseberry.**

"No. 1241. A wild gooseberry, growing from 6 to 15 feet tall, found in dry loess embankments at altitudes of 7,000 to more than 9,000 feet. Remarkably spiny; berries medium large, of elongated shape and persisting throughout the greater part of the winter. These gooseberry fruits are preserved by the American missionaries at Kiucheng, and they supply a very delicious tart compote. Of value apparently as a fruiting shrub and as a hedge plant for the cold semiarid sections of the United States."

For an illustration of this tall-growing bush as found in China, see Plate VI.

39917 to 39920.

From near Yangsa (near Titao), Kansu, China. Collected November 29 and 30, 1914.

39917. SIBIRAEA LAEVIGATA (L.) Maxim. Rosaceæ.
(*Spiraea laevigata* L.)

"No. 1243. A shrub growing from 4 to 8 feet tall, found on somewhat moist ground, and in semishady situations; flowers white, in racemes, appearing in June. Of value as an ornamental shrub for the colder sections of the United States. Collected at an altitude of more than 9,000 feet."

"A deciduous shrub of sturdy, bushy habit, 2 to 5 feet high, with thickish, rather sparse, perfectly smooth, brown branchlets. Leaves entire, narrowly obovate; 2 to 4½ inches long, one-half to seven-eighths inch wide; stalkless, tapering at the base, the apex with a short, abrupt point; glaucous green and quite smooth. Flowers white, produced from April to early June in terminal spreading compound panicles 3 to 5 inches high. Native of Siberia; introduced to

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

Britain in 1774. This species, whilst not particularly showy, is quite distinct from all other spiræas in its foliage, which in shape and color is more suggestive of a spurge (Euphorbia) than the genus to which it belongs. Shrubs 4 feet high are often as much as 7 feet through." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 357, under Spiraea laevigata.*)

39918. PRUNUS STIPULACEA Maxim. (?) Amygdalaceæ. **Cherry.**

"No. 1244. A wild cherry, bearing apparently very small fruits; found in somewhat moist and semishady situations. Grows into a tall shrub with many stems. Collected at an altitude of more than 9,000 feet. Of value possibly as an ornamental shrub, as a stock, and for breeding purposes."

39919. PHILADELPHUS sp. Hydrangeaceæ.

"No. 1245. A mock orange, found between scrub on a mountainside at an altitude of 9,500 feet. Apparently extraordinarily floriferous, to judge by the mass of empty seed capsules that were left. Of value possibly as an ornamental garden shrub for the cooler sections of the United States."

39920. RIBES sp. Grossulariaceæ. **Currant.**

"No. 1246. A currant of medium tall growth, found beneath tall scrub on a mountain slope at an altitude of 9,500 feet. Of value possibly for breeding purposes."

39921 to 39923.

From Lienhuashan (near Taochow), Kansu, China. Collected November 30, 1914.

39921 and 39922. SALIX sp. Salicaceæ. **Willow.**

39921. "No. 1247. A remarkable variety of willow, growing into a tall shrub or a bushy small tree and of which the tops for the length of about 1 foot are of a bright yellow color. When seen from above on a sunny winter day they make a strikingly cheerful impression. Of special value for parks when planted in masses or in groups in glens or low-lying places, so that they can be viewed from above. Collected at an altitude of 9,000 feet. Proposed name *Golden-Top* willow. Where these Golden-Top willows grow deep-blue spruces, snowy white birches, and red-wooded dogwoods are also found. This, together with the purplish crags as a background, make a most wonderfully harmonious winter landscape."

39922. "No. 1248. A variety of the *Golden-Top* willow, but with the young twigs of a rich reddish brown color. Of value for parks when planted in masses or in groups in glens or low-lying places, so that they can be viewed from above."

39923. MALUS sp. Malaceæ. **Crab apple.**

"No. 1249. A peculiar species of crab apple, bearing its small fruits in bunches. These fruits are of the size of peas, are bright red, and possess an agreeably sour flavor; they probably could be well utilized for preserves. The trees are of somewhat dwarf growth and seem remarkably hardy. They may be of value as stocks, as ornamental trees for northern regions, and for breeding purposes. Collected at an altitude of 9,000 feet."

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39924. POPULUS SIMONII Carrière. Salicaceæ. **Poplar.**

"(No. 1250. Near Chenyatan (near Titao), Kansu, China. December 1, 1914.) A variety of Chinese poplar, the trunk of which is remarkably warty, while the wood seems to be curled, as in bird's-eye maple. Collected on sandy land at an altitude of 8,000 feet. For specialists in figured woods."

39925. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ.

Sword bean.

From Changning, Kiangsu, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received February 23, 1915.

39926. ANGRAECUM FRAGRANS Thouars. Orchidaceæ.

From Curepipe, Mauritius. Presented by Mr. A. D. de Grandpré. Received February 17, 1915.

The interest attached to this little orchid is due to the persistent vanillalike odor of the leaves when dry, which has led to its use as a tea in Bourbon, in Mauritius, and even to some extent in France. According to a notice of an article on this plant by a M. Gobley, in the Gardeners' Chronicle (1850, p. 599), communicated to the Chemical Gazette, it is considered a digestive and even recommended in diseases of the respiratory organs. The popular name is variously spelled Fahame, Faham, Fahan, Fahon, Fahum, and Faam, of the origin of which I have no information. It is a native of both Bourbon and Mauritius. Leaves few, toward the top of the stem, 3 to 4 inches long by one-half to three-fourths inch broad. Flowers solitary, axillary, 2 inches in diameter across the sepals, pure white, fragrant. (Adapted from *Curtis's Botanical Magazine, pl. 7161.*)

39927. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ.

(*Rottboellia exaltata* L. f.)

From Poona, Bombay, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received February 20, 1915.

"Seeds from my herbarium specimens." (*Burns.*)

Introduced for the work of the Office of Forage-Crop Investigations.

39928 and 39929.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received February 23, 1915.

39928. CANANGIUM ODORATUM (Lam.) Baillon. Annonaceæ.

(*Cananga odorata* Hook. f. and Thoms.) **Ylang-ylang.**

For previous introductions and descriptions, see S. P. I. Nos. 20908, 35243, and 38652.

39929. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

"A very fine climbing new species from east tropical Africa, with very intense, large, fiery orange flowers." (*Buysman.*)

See S. P. I. No. 39626 for previous introduction and description.

39930 and 39931. CARICA spp. Papayaceæ.

From Buenos Aires, Argentina. Presented by Sr. Benito J. Carrasco, director general, Botanic Garden. Received February 23, 1915.

"Indigenous plants of this country." (*Carrasco.*)

39930. CARICA PAPAYA L.

39931. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook.

39932 to 39939.

From Burma, India. Collected by Mr. F. Kingdon Ward. Received February 20, 1915. Quoted notes by Mr. Ward, except as otherwise indicated.

39932. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"Dwarf Capsicum grown by the Kachins, near Laza Mali Valley, northern Burma, latitude 26°; open cultivated areas, sandy soil, 1,000 to 2,000 feet; monsoon climate; ripe December, dry season."

39933. CHAETOCHLOA ITALICA (L.) Scribner. Poaceæ. **Millet.** (*Setaria italica* Beauv.)

"Millet from Kachin Hill tracts."

39934 and 39935. GOSSYPIUM spp. Malvaceæ. **Cotton.**

"Grown by Kachins in the mountains west of the Mali River, latitude 25° to 27° N., Upper Burma. Altitude 2,000 to 3,000 feet. Not irrigated. Monsoon climate. Soil friable clays or fine sands, all derived from sandstones."

39936 to 39939. ZEA MAYS L. Poaceæ. **Corn.**

"Grown by Naingvaws in the Valley of Nmaihka, Upper Burma, latitude 26° to 27° N. Altitude 5,000 to 6,000 feet. Soil derived from granite and other igneous rock. Climate, monsoon with frequent breaks of fine hot weather in summer. Not irrigated."

39936. Dark red. 39937. Variegated.

"Some of the seeds on the ear have an unmistakable waxy endosperm. This is the first time that this type of endosperm has been found outside the small region around Shanghai. The early Chinese accounts state that maize was introduced into China from the west, and this region of Upper Burma has always been under suspicion. That this type peculiar to China has reappeared from this region is very suggestive." (*G. N. Collins.*)

39938. Variegated. 39939. Dark yellow.

39940. CITRUS MEDICA SARCODACTYLIS (Nooten) Swingle. Rutaceæ. **Bushukan.**

From Yokohama, Japan. Scions purchased from the Yokohama Nursery Co. Received February 24, 1915.

"*Bushukan* differs from the common citron in having the segments of the fruit separated into fingerlike processes. The flowers are very fragrant and are used by the Chinese and Japanese for perfuming rooms and clothing. It is sometimes grown as a dwarf potted plant for ornament. It should be introduced into this country." (*Swingle. In Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 781.*)

39941 to 39945. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Tubers received February 19, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres.)

39941. "No. 6. *Papa;* white. From the station. Yielding 10,550 arrobas per caballería."

39942. "No. 200. *Mani;* white. From Trinidad, Santa Clara Province. Yielding 29,217 arrobas per caballería.

39943. "No. 182. *Santiago;* white. From El Caney, Oriente. Yielding 22,817 arrobas per caballería."

39944. "No. 198. *Papayon;* white. From Trinidad, Santa Clara Province. Yielding 6,792 arrobas per caballería."

39945. "No. 24. *Blanco.* From Luyano, Habana. Yielding 43,930 arrobas per caballería."

39946. PRUNUS MARITIMA Wangenheim. Amygdalaceæ.

From Wading River, Long Island, N. Y. Presented by Mr. E. S. Miller, through Mr. W. F. Wight. Received February 24, 1915.

Pomology No. 80370.

A deciduous shrub of low, compact habit, 4 to 8 feet high and more in diameter, with gray, downy young branchlets, becoming dark with age. Flowers white, one-half inch across, produced in May, usually in pairs or in threes at each bud on last year's shoots. Fruit red or purple, round or oblong, one-half to 1 inch in diameter. Native of the eastern United States, frequently inhabiting sandy or gravelly places near the coast. Its fruits are gathered for preserves, but they appear to vary in quality and sweetness. The flowers are borne profusely in this country [England], and the species is one of the most attractive of dwarf plums. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 242.*)

39947. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received February 24, 1915.

See S. P. I. No. 39723 for previous introduction and description.

39948 to 39951. NICOTIANA sp. Solanaceæ. **Tobacco.**

Collected by Dr. J. N. Rose, United States National Museum. Received February 18, 1915. Quoted notes by Dr. Rose.

39948. "Tobacco from Santa Clara, Peru. Collected July 3, 1914."

39949. "Tobacco seed from near San Bartelome, Peru. Collected July 20, 1914."

39950. "Like *Nicotiana glauca*, but leaves narrow. Collected August 12, 1914."

39951. "Collected September 3, 1914."

39952. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received February 26, 1915.

39953. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Santiago, Chile. Presented by Mr. W. A. Shelly. Received February 26, 1915.

39954. PERSEA INDICA (L.) Sprengel. Lauraceæ.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky, Jardin d'Acclimatation. Received February 26, 1915.

See S. P. I. Nos. 14498 and 19371 for previous introductions.

39955. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From California. Presented by Mr. F. O. Popenoe, West India Gardens, Altadena. Received March 1, 1915.

"Grown at Camarillo, Cal." (*Popenoe.*)

39956. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Hankow, China. Purchased from L. C. Gillespie & Sons. Received March 2, 1915.

39957. FERONIELLA OBLATA Swingle. Rutaceæ.

From Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture. Received March 1, 1915.

39958 to 39963. ZEA MAYS L. Poaceæ. **Corn.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received March 1, 1915.

39958. "No. 1. Native white (*Moro*). The native white which has been improved by selection during the past three years is very promising and may prove to be valuable elsewhere." (*H. O. Jacobson.*)

39959. No. 2. Native red (*Encarnado*).

39960. No. 3. *Tapol.*

39961. No. 4. *Dali-an.*

39962. No. 5. Native yellow (*Laguna*).

39963. No. 6. *Tiniquit.*

39964. DELONIX REGIA (Boj.) Rafinesque. Cæsalpiniaceæ.
(*Poinciana regia* Hook.) **Royal poinciana.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received March 1, 1915.

"*Chivato.*"

"A rapid-growing tree with broad top and wide-spreading branches. Leaves gracefully bipinnate, 30 to 60 cm. long, with 10 to 20 pairs of pinnæ, each pinna with numerous small oval leaflets; flowers large, in large racemes, bright scarlet, the upper petal striped with yellow; calyx segments valvate; petals five, clawed, obovate; stamens 10, free, exserted; pod flat, straplike, 15 to 60 cm. long.

"This handsome ornamental tree is a native of Madagascar. It has become widely spread and is now found in all tropical countries. It yields a yellowish or reddish brown mucilaginous gum containing oxalate of lime." (*Safford, Useful Plants of Guam.*)

39965. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ. **Chestnut.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 3, 1915.

"A small tree, frequently less than 30 feet high, according to Sargent, but occasionally much larger; young shoots sometimes very downy, with the down persisting through the first winter, sometimes merely scaly. Leaves oblong lanceolate, 3 to 7 inches long, 1¼ to 2 inches wide, heart shaped or rounded at the base, pointed; the teeth small, with bristlelike points; lower surface covered with a close gray down; stalk one-half inch long, downy. Nuts like those of *C. sativa*.

"Native of Japan; introduced in 1905, if not before, to Kew, where young plants are thriving very well. This is a valuable food tree in Japan, and Sargent observes that he never saw chestnuts offered in such quantities for sale in Europe or America as there. Ordinarily the nuts are smaller than those of the European tree, but from selected trees or varieties they are as large as the best European varieties." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 307.*)

39966. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Garden. Received February 23, 1915.

"From Kumaon Gardens, Naini Tal. Called *Garhwal Kaghzi*. I do not think, however, that this seed is true to the name given. *Kaghzi* is the vernacular for paper, and refers to its alleged thin or paper shell. Walnuts are grown only on the hills; the season is from September to December. Walnuts are common in the bazar at about 3 to 4 annas (6 to 8 cents) per hundred." (*Hartless.*)

39967 to 39982.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received February 11, 1915. Quoted notes by Mr. Gee, except as otherwise indicated.

39967 to 39972. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) **Soy bean.**

39967. "(No. 1. *Kua shu tou* (*Kwa zoh*). Melon-ripe bean.) This is so named because of its time of ripening. Seeds are sown about the first of May and cropped late in June when melons are ripe. Used only as a vegetable."

39968. "(No. 2. *Chia chia san tou* (*Kah kah sen*). Pod pod three bean.) Planted in the middle of May and reaped during September. Used as a vegetable and for manufacturing oil."

39969. "(No. 3. *Hung hsiang chih tou* (*Ong siang sze*). Red familiar bean.) These are 'Loving beans,' as the characters suggest. Planted in the middle of May and harvested about September. Used both as vegetables and in the manufacture of oil."

39970. "(No. 4. *Hei tou* (*Huk*). Black bean.) Owing to their color, these are called 'Black beans.' Planted in the first part of June and reaped in the middle of October. Used as a vegetable and in the manufacture of oil."

39971. "(No. 5. *Ku li ch'ing* (*Kwa lea ching*). Bone inside green.) Planted early in June and harvested in late October. Used only in making oil."

39967 to 39982—Continued. (Quoted notes by Mr. N. Gist Gee.)

39972. "(No. 6. *Shih tzŭ ho tou* (*Zee tee 'ah*). Persimmon-seed bean.) Planted in the first part of June and cropped in the middle of September. They are largely used as vegetables."

39973. PISUM SATIVUM L. Fabaceæ. **Pea.**

"(No. 7. *Hsiao han* (*Siao ca*). Small cold.) This bean is so named because of the time of planting. The Chinese characters mean 'early winter.' Planted in the middle of October and cropped in late May of the next year. Used as food when young."

39974 to 39977. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

39974. "(No. 8. *Pa yüeh pai tou* (*Pah yuih*). Eighth-month white bean.) The combined meaning of its color and its time of ripening indicates the name. Planted in May and harvested in September, which is the eighth month of the Chinese calendar. Used to make oil. This and No. 9 [S. P. I. No. 39975] are the best two for oil manufacture."

39975. "(No. 9. *Shui pai tou* (*Gee buh*). Water-white bean.) Planted in late May and reaped in September. Used to manufacture oil; one of the best two for oil manufacture."

39976. "(No. 10. *Niu t'a pien* (*Nue duh pea*). Cow crush flat.) Its use and time of harvesting are the same as those of the *Gee buh* [S. P. I. No. 39975]. The beans are trodden out by cows; hence the name."

39977. "(No. 11. *Wu ch'iao tou* (*Oh tsah*). Sparrow's cackling (or magpie) bean.) Planted about the last part of June and cropped in mid-October. Used largely to make oil."

39978. GLEDITSIA SINENSIS Lam. Cæsalpiniaceæ. **Honey locust.**

G. sinensis is distinguished from *G. caspica* by never apparently having more than 14 leaflets to each simply pinnate leaf. It is found on the mountains near Peking as a tree 40 feet high. Cultivated on the Continent in Paris, Montpellier, Florence, etc., but not in England, according to Henry. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 596.*)

39979. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"(No. 13. *Shih tou* (*Ze*). Sowing (or fall) bean.) Planted in the fourth month of the Chinese colendar (May) and reaped in July. Used largely as a vegetable when young."

39980. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

"(No. 14. *Ch'ih tou* (*Tsih*). Red bean.) Planted in the first part of June and cropped in the middle of September. Used as food when mixed with rice."

39981. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"(No. 15. *Pai pien tou* (*Buh pee*). White flat bean.) Planted in the first part of June and cropped in late September. Used as a vegetable and to make cakes."

39982. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"(No. 16. *Lü tou* (*Loh*). Green bean.) Planted in the early part of June and cropped early in September. Used the same as the *Ch'ih tou* [S. P. I. No. 39980]. Called 'green bean' because of its color, probably."

39983 to 39998.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 26, 1915. Collected in Japan by Mr. E. H. Wilson.

39983 to 39987. ABIES spp. Pinaceæ. **Fir.**

39983. ABIES MARIESII Masters. **Maries's fir.**

Wilson No. 7595.

"A tree 40 to 50, occasionally 80, feet high, of compact, pyramidal form; young shoots very densely covered with red-brown down, which persists several years; buds small, globose, completely encased in resin. Leaves one-third to 1 inch long, one-twelfth inch wide; dark shining green and deeply grooved above; glaucous beneath, with two broad bands of stomata; apex rounded and notched. The lower ranks spread horizontally, whilst the upper shorter ones point forward and completely hide the shoot. Cones 3 to 4 inches long, about 2 inches wide, rounded at the top, egg shaped, purple when young; bracts hidden.

"Discovered on Mount Hakkoda, in Japan, by Charles Maries in 1878, and introduced by him at the same time. It is one of the rarest of silver firs, and scarcely a good tree exists in the country. I saw a small healthy specimen at Scone Palace in 1906. Two years later, in Mr. Hesse's nursery at Weener, in Hanover, I saw a healthy batch he had raised from seeds. I do not know that it has borne cones in this country. (The fir figured in the Botanical Magazine, t. 8098, is *A. webbiana.*) Maries's fir is best distinguished by the thick red-brown covering of down on the twigs." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 123.*)

39984. ABIES SACHALINENSIS (Schmidt) Masters. **Fir.**

Wilson No. 7613.

"A tree 130 feet high, native of northern Japan, Sakhalin, etc., but so liable to injury by late spring frost in this country as to be of no value. It has the *nordmanniana* arrangement of leaf, but in the forward-pointing leaves, which are three-fourths to 1½ inches long and very white beneath, it resembles *A. veitchii;* buds white, resinous. Cones 2½ to 3½ inches long. Introduced in 1878, by Maries, for Messrs. Veitch. I saw a tree about 16 feet high at Murthly Castle, near Perth, in 1906, but even there not in the best of health." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 117.*)

39985. ABIES SACHALINENSIS NEMORENSIS Mayr.

Wilson No. 7869.

See S. P. I. No. 39860 for previous introduction and description.

39986. ABIES UMBELLATA Mayr.

Wilson No. 7707.

"*Abies umbellata* is quite closely allied to, and may be merely a form of, *A. brachyphylla*, but the leaves are more distinctly separated into two opposed sets, and the V-shaped opening left by the uppermost leaves is much wider; they are also longer (up to 1½ inches), the stomatic bands beneath are narrower and duller white, the apex is much more tapered, and the double points made by the notch are sharp, almost spiny. An interesting distinction is pointed out by Henry in the corrugation of the branchlets; in *A. umbellata* this is less apparent in the second and third years; in *A. brachyphylla* it is more pronounced. A cut branchlet bears a considerable re-

39983 to 39998—Continued.

semblance to that of *A. firma*, but the downy unroughened surface of the shoot of the latter at once distinguishes it. *A. umbellata* appears to have all the beauty and hardiness of *A. brachyphylla*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 119.*)

39987. ABIES VEITCHII OLIVACEA Shirasawa. Fir.

Wilson No. 7525.

The species is described by Bean (*Trees and Shrubs Hardy in the British Isles, vol. 1, p. 127*), as "a tree 50 to 70 feet high; young shoots brown, furnished with a more or less scattered, minute down; buds globose, very resinous, purplish. Leaves one-half to 1⅜ inches long, one-sixteenth inch wide, the base tapered, the apex cut off straight and notched; dark glossy green and grooved above, vividly white with stomatic lines beneath. All the leaves point forward, and most of them curve more or less upward; a few occur underneath the shoot, but most of them are above it or at the sides. On lateral shoots growing erect or nearly erect the leaves are arranged about equally around the twig. Cones cylindrical, 2 to 2½ inches long, about 1 inch wide; blue-purple at first.

"Discovered on Fujiyama, Japan, by John Gould Veitch in 1860. Introduced by Maries in 1879. Among silver firs this species is very distinct, on account of the narrow truncate leaves pointed forward and curling upward and intensely blue-white beneath. The best tree I have ever seen is at Murthly, which in 1906 was just over 30 feet high; it is a particularly handsome conifer in a small state, but appears inclined to develop a somewhat lanky habit with age."

"*Aoshirabe* (Japanese). This tree differs from the species chiefly in the characters of the cones, which are cylindrical, somewhat obtusely pointed, 7 cm. (2.8 inches) long, and 25 mm. (1 inch) in diameter, olive-yellow, while those of *A. veitchii* show a deep blue-violet color." (*H. Shirasawa, Mitteilungen der Deutschen Dendrologischen Gesellschaft, p. 256, 1914.*)

39988. ACER CAPILLIPES Maxim. Aceraceæ. Maple.

Wilson No. 7747.

"A deciduous tree, sometimes 30 to 35 feet high, the branchlets erect when young and marked with whitish stripes running lengthwise; branchlets smooth. Leaves reddish when young, three lobed; 3 to 5 inches long, about three-fourths inch wide; smooth, doubly toothed, the terminal lobes triangular and larger than the side ones; veins and stalks usually red. Flowers greenish white, in drooping slender racemes 2½ to 4 inches long. Fruits smooth, numerous, in drooping racemes; key one-half to three-fourths inch long; wings rounded at the end, one-fifth inch wide, spreading at an angle of 120° to almost horizontal.

"Native of Japan, introduced to cultivation by Prof. Sargent, who found fruiting trees in Japan in October, 1892, and sent young trees to Kew a year or two later. It has proved hardy. It is one of the handsome group with striated branches, including *A. pennsylvanicum* and *A. rufinerve*, to both of which it is closely allied and bears much resemblance in shape of leaf, but is readily distinguished by the absence of down on leaf, young wood, and flower stem." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 136 and 137.*)

39983 to 39998—Continued.

39989 to 39991. BETULA spp. Betulaceæ. **Birch.**

39989. BETULA SCHMIDTII Regel.

Wilson No. 7687, from the Province of Shimotsuke, Hondo, around Lake Chuzenji, at an altitude of 1,200 to 1,600 meters. October 20, 1914.

"A tree 30 to 35 meters tall, girth 2.1 to 3 meters. This is a well-marked species characterized by the narrow but stiff erect catkins and by the fine denticulations of the short-petioled leaves. The bracts are rather short, with obtuse or acute lobes, the middle one being twice longer than the erect lateral lobes. This remarkable birch is rare in Japan, and I saw it only on the wooded shores of Lake Chuzenji and in the ascent there from Nikko. It is a large tree, with thick branches and black bark which falls off in thick, rather small plates of irregular shape." (*Plantae Wilsonianae, vol. 2, p. 475–476.*)

39990. BETULA JAPONICA KAMTSCHATICA (Regel) Winkler.

Wilson No. 7669, from the Province of Shimotsuke, Hondo, around Yumoto, on Senjogahara, October 19, 1914.

"Slender tree, 8 to 20 meters tall, girth 0.3 to 0.9 meter, bark pure white, common, fruit pendulous." (*Plantae Wilsonianae, vol. 2, p. 487.*)

39991. BETULA GROSSA Sieb. and Zucc.

Wilson No. 7680, from the Province of Shimotsuke, Hondo, around Lake Chuzenji, October 21, 1914.

"*Yoguro-minebari.* A tree 20 to 25 meters tall, girth 2.1 to 3 meters, fruit erect." (*Plantae Wilsonianae, vol. 2, p. 477.*)

39992. JUNIPERUS LITORALIS Maxim. Pinaceæ. **Juniper.**

Wilson No. 7740.

Distribution.—A prostrate shrub found along the sandy shores of the islands of Japan.

39993. ACANTHOPANAX SCIADOPHYLLOIDES Franch. and Savat. Araliaceæ.

Wilson No. 7649.

A tall, glabrous shrub with alternate branches. Leaves alternate, long petiolate (12 to 25 cm.), digitately five parted; the upper often three parted or occasionally simple. Leaflets long petiolate (1 to 3 cm.), ovate from a rounded or slightly attenuate base, slightly acuminate at the apex, sharply denticulate, pale green above, somewhat glaucous beneath. Flowers white, arranged in more or less dense panicles. Japan. (Adapted from *Franchet et Savatier, Enumeratio Plantarum Japonicarum, v. 2, p. 378, 1879.*)

39994 and 39995. LARIX spp. Pinaceæ. **Larch.**

39994. LARIX KURILENSIS Mayr.

Wilson No. 7328.

See S. P. I. No. 35171 for previous introduction and description.

39995. LARIX DAHURICA PRINCIPISRUPPRECHTII (Mayr) Rehd. and Wilson.

The Korean larch.

TRUNK OF POTANIN'S PEACH (AMYGDALUS PERSICA POTANINI, S. P. I. No. 40007).

A wild peach of the type of *A. davidiana*, but seldom growing so large; maximum 30 feet. Occurs at altitudes of 4,000 to 7,000 feet in side valleys, especially in well-sheltered warm mountain pockets. Its fruits are not edible, but as a stock for stone fruits it may prove more drought resistant even than *davidiana*. Its behavior on a hillside location is shown in the illustration. Photographed by Frank N. Meyer, October 29, 1914 (P12108FS).

A HARDY WILD PEAR TREE IN KANSU, CHINA (PYRUS SP., S. P. I. NO. 40019).

This remarkable wild pear, according to Rehder, stands close to if it is not identical with *Pyrus ussuriensis*, which has aroused so much interest because of its resistance to pear blight. It occurs in the mountains at altitudes of 8,000 feet in company with the Siberian crab, *Populus tremula*, and *Picea obovata*, all northern plants. Though the fruits from the wild tree are hard, acrid, and inedible, the species appears to have given rise to cultivated forms of this pear, which, unlike the true Chinese pear (*Pyrus sinensis*), are melting in character and not hard and gritty. As a stock or for breeding purposes such a vigorous wild pear can hardly fail to be of value. Photographed by Frank N. Meyer near Tchenyatau, Kansu, December 1, 1914 (P12129FS).

39983 to 39998—Continued.

"The typical form of *L. principis rupprechtii* as represented by the specimens from Wutaishan (collected by Purdom and Meyer) looks quite distinct from typical *L. dahurica*, but the specimens from Weichang, together with others from Manchuria, Amurland, and Korea, form a series which gradually merge into typical *L. dahurica*. With *L. sibirica* Ledebour, with which it has been compared, it agrees only in the size of its cones, but differs in their perfectly glabrous, more spreading, and thinner scales not incurved on the margin, truncate, or (particularly in the Weichang specimens) even emarginate at the apex, and in the more conspicuous bracts which are often, particularly in the lower part of the cone, more than half as long as the scales; in all these characters *L. principis rupprechtii* agrees with *L. dahurica*, and it seems therefore best to consider it a variety of this species, distinguished by the more numerous scales. Purdom and also Meyer speak of this larch as forming forests on the northern slopes of Wutaishan and in its neighborhood where, according to Meyer, the snow does not melt until well into May. In the Weichang region Purdom remarks that the tree is now becoming very scarce." (*Rehder and Wilson, Plantae Wilsonianae, vol. 2, p. 21, 1914.*)

39996. PICEA KOYAMAI Shirasawa. Pinaceæ. **Spruce.**

Wilson No. 7528.

A small, cone-shaped Japanese spruce, up to 10 m. (32½ feet) high; the trunk reaches a diameter of 25 cm. (10 inches). The young trees present an appearance similar to those of *P. excelsa*. Young twigs reddish brown, smooth; buds cone shaped, short; scales brown, covered with resin; needles short, thick, obtuse, four sided, standing thickly and obliquely on the twigs; straight or often somewhat bowed, 7 to 13 mm. (one-fourth to one-half inch) long, seeming blue-white from a distance. Cones elliptic oval, obtuse, brownish yellow-green, 3.5 to 6 cm. (1.4 to 2.4 inches) long, 2.5 cm. (1 inch) broad. (Adapted from *H. Shirasawa, Mitteilungen der Deutschen Dendrologischen Gesellschaft, p. 254, 1914.*)

39997. TAXUS CUSPIDATA Sieb. and Zucc. Taxaceæ. **Yew.**

Wilson No. 7778.

For previous introduction and description, see S. P. I. No. 39861.

39998. VIBURNUM FURCATUM Blume. Caprifoliaceæ.

Wilson No. 7624.

"A native of Japan and China. This also has the showy sterile marginal flowers, but its stems are more uniformly erect. It differs also in the shorter stamens, which are only half the length of the corolla, and in the shape of the furrow in the seed. It succeeds in gardens no better than *V. alnifolium*, although there was a healthy plant at Abbotsbury, near Weymouth, a few years ago. It is a native of northern Japan at low levels and of the mountainous parts of the south. The foliage turns brilliant scarlet to reddish purple in autumn. It is a bush 12 or more feet high in a wild state." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 642.*)

Distribution.—The Provinces of Hupeh and Szechwan in China and on Sakhalin Island and in Japan.

39999. QUERCUS sp. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received March 5, 1915.

Selected from a lot of *Quercus insignis*.

40000 to 40039.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 2, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

40000 to 40006. AMYGDALUS spp. Amygdalaceæ. **Peach.**

40000. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"(No. 2138a. July to November, 1914.) Cultivated and escaped peaches, collected along the roadsides in the Chinese Provinces of Honan, Shansi, Shensi, and Kansu at various altitudes. To be sown to obtain new types, possibly."

40001 to 40006. AMYGDALUS spp.

40001. "(No. 2139a. Sianfu, Shensi, China. August 30, 1914.) Wild peaches having larger fruits than the ordinary wild ones, said to come from near Tzewu, to the south of Sianfu, but some also probably collected from trees in gardens which were raised from wild seeds. When seen wild this peach generally assumes a low bush form of spreading habit; when planted in gardens and attended to, it grows into a small tree, reaching a height of 12 to 20 feet, with a smooth trunk of dark mahogany-brown color. The leaves are always much smaller and more slender than in cultivated varieties, while their color is much darker green. They seem to be somewhat less subject to various diseases than the cultivated sorts, and they are most prolific bearers, although the fruit is of very little value, on account of its smallness and lack of flavor. In gardens around Sianfu this wild peach is utilized as a stock for improved varieties. It is also grown as an ornamental; said to be literally covered in spring with multitudes of shell-pink flowers. See also No. 2123a [S. P. I. No. 39428]."

40002. "(No. 2140a. Tsing Range, Shensi, China. September, 1914.) Wild peaches, occurring in the foothills of the higher mountains at altitudes of 2,000 to 5,000 feet, generally found at the edges of loess cliffs and on rocky slopes. There is a great deal of variation to be observed as regards size and shape of leaves, density of foliage, and general habits."

40003. "(No. 2141a. Near Paichiatien, near Fenghsien, Shensi, China. September 17, 1914.) Wild peaches found on a mountain side, at an altitude of 4,000 feet; these small trees and bushes had borne such a heavy crop that the ground beneath them was covered with a layer, a few inches thick, of the small, yellowish, hairy fruits. The local inhabitants didn't consider them worth collecting even, and they were rotting and drying up."

40004. "(No. 2142a. Kagoba (south of Hsiku), Kansu, China. October 3, 1914.) Wild peaches occurring as tall shrubs in loess cliffs at the Tibetan frontier at altitudes of 6,000 to 8,000

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

feet. Save for some children who eat these wild peaches, they are otherwise considered worthless wild fruit. Local name *Yeh t'ao*, meaning 'wild peach,' and *Mao t'oa*, meaning 'hairy peach.'"

40005. "(No. 2143a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) Wild peaches found on stony mountain slopes in a wild, very sparsely populated country. No fruit trees whatsoever are cultivated by the local settlers in the mountains, and the way some of these peach bushes grow excluded them from ever having been brought there by any man or even any quadruped; only birds might have transported them."

40006. "(No. 2144a. Tchutsaitze (near Hsiku), Kansu, China. November 2, 1914.) Wild-growing peach of tall, bushy growth, having the looks and habits of a type midway between the wild peach and Potanin's peach. Collected at an altitude of 4,500 feet, at the foot of a dry mountain."

40007 to 40009. AMYGDALUS PERSICA POTANINI (Batal.) Ricker. Amygdalaceæ. (*Prunus persica potanini* Batal.)

40007. "(No. 2145a. Tchutsaitze (near Hsiku), Kansu, China, October 29, 1914.) Potanin's peach, collected at an altitude of 4,300 feet. Scions sent under No. 1223 [S. P. I. No. 39899], which see for further remarks."

For an illustration of the trunk of this peach tree as found growing in China, see Plate VII.

40008. "(No. 2146a. Near Tchutsaitze (near Hsiku), Kansu, China, November 3, 1914.) A variety of Potanin's peach having very much larger stones than the ordinary variety. Collected at an altitude of 6,000 feet. Of value especially as a stock for stone fruits; also recommended as an ornamental spring-flowering tree, especially for the drier parts of the United States."

40009. "(No. 2147a. Near Paoji (near Hsiku), Kansu, China. November 9, 1914.) Potanin's peach, collected from mountain sides, where it is much cut for its fine straight shoots, which serve for pipestems and for whip butts. Altitude, 7,000 feet."

40010 and 40011. AMYGDALUS TANGUTICA (Bat.) Korsh. Amygdalaceæ. (*Prunus tangutica* Koehne.)

40010. "(No. 2148a. Lantsai (near Hsiku), Kansu, China. October 29, 1914.) The Tangutian almond, collected at an altitude of 4,200 feet. Scions sent under No. 1222 [S. P. I. No. 39898], which see for further notes."

40011. "(No. 2149a. Near Kiucheng (New Taochow), Kansu, China, November 27, 1914.) The Tangutian almond, collected along the banks of the Tao River, at an altitude of 9,450 feet. It was here that the Russian traveler G. N. Potanin obtained some of his material in 1885. For further remarks, see No. 1222 [S. P. I. No. 39898]."

40012 and 40013. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

40012. "(No. 2150a. Near Lantsai (near Hsiku), Kansu, China. November 3, 1914.) Wild apricots, occurring very commonly in

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

the mountains at altitudes of 5,000 to 9,000 feet. The natives collect the stones, crack them, take the kernels out, and eat them, after having boiled them. They still taste bitter, however. Of use possibly in extending apricot culture farther north; also as stocks for stone fruits in semiarid regions and as hardy spring-flowering park trees for the cooler parts of the United States."

40013. "(No. 2151a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) Wild apricots, coming from a different district; otherwise the same remarks apply to them as to the preceding number."

40014 and 40015. PRUNUS spp. Amygdalaceæ. **Plum.**

40014. "(No. 2152a. Near Kwanyintang (between Paochi and Fenghsien), Shensi, China. September 15, 1914.) A wild plum, found on somewhat stony mountain slopes at altitudes between 4,000 and 5,000 feet. Grows into a tall bush, densely branched and often spiny on the young shoots. Fruits the size of a large marble, of yellowish green color, flavor very spicy, although sour near the skin and the stone. Of value possibly to supply compotes and for breeding experiments."

40015. "(No. 2153a. Kagoba (south of Hsiku), Kansu, China. October 31, 1914.) A wild plum, growing into a tall bush or even a small tree, found on sloping stretches of loess land at the foot of mountains near the Tibetan frontier at altitudes of 6,000 to 8,000 feet. Of value possibly, like the preceding number."

40016. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

"(No. 2145a. Hsiku, Kansu, China. October 26, 1914.) Wild walnuts, growing on sheltered mountain sides and in narrow valleys at altitudes of 5,000 to 8,000 feet. There is some variation in the size and quality of nuts from various trees, but in general these wild walnuts are small, hard shelled, and not sweet. The trees may, however, be much hardier than the Persian strain of walnuts, and possibly they could be utilized in extending walnut culture farther north."

40017 and 40018. CEPHALOTAXUS DRUPACEA SINENSIS Rehd. and Wilson. Taxaceæ.

40017. "(No. 2155a. Near Kwanyintang (between Paoki and Fenghsien), Shensi, China. September 15, 1914.) An evergreen conifer, growing into a tall shrub or rarely into a gnarled small tree. Resembles in general habits *Cephalotaxus fortunei*, but of denser, less open growth, especially beautiful when young, or two or three years after it has been cut down to the ground; for this plant throws up sets of new shoots more compact in growth than the original stems. It withstands a great amount of shade, and thrives even among bowlders and stony débris. Of value as an ornamental evergreen, especially for shady places, for those parts of the United States where the winters are not too severe. Collected at an altitude of 4,000 feet."

40018. "(No. 2156a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) The same as the preceding number [40017], but coming from a different locality; collected at 5,000 feet altitude. Locally this shrub is called *Shui pei shu*, meaning 'water conifer.' Its seeds are collected by the people and eaten

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

boiled, apparently to remove a poisonous principle. They are rich in oil, but taste bitterish even after having been boiled. Of value like the preceding number."

40019. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

"(No. 2157a. Near Tchenyatau (near Titao), Kansu, China. December 1, 1914.) A species of wild pear, growing to be a large tree, with a wide-spreading, dense head of branches. Bark of dark color and in the main trunk even blackish and deeply furrowed in old specimens. Young branches often ferociously spiny and especially so in suckers. Leaves small and with much shorter peduncles than in *Pyrus chinensis*. Fruits globose, flattened. Calyx persistent, peduncle generally short; much variation exists as regards size, but the fruits of this species of pear are generally small; the flesh is also acrid and often quite hard, though some of the larger ones are edible after having been frozen. This pear is not found in the warm valleys, but it thrives best at altitudes of about 8,000 feet, in company with such hardy trees and shrubs as *Picea obovata*, *Populus tremula*, *Malus baccata*, *Hippophaë rhamnoides*, *Syringa amurensis*, *Rhamnus dahurica*, *Sorbaria sorbifolia*, and others. This pear has apparently given rise to some locally cultivated forms bearing small, sour fruits, which are juicy, however, and melting, and not hard and gritty, like the poorer strains of *P. chinensis*. Of undoubted value as a stock for pears in cold sections and as a factor in breeding experiments in trying to extend successful pear culture farther northward."

For an illustration of this hardy pear tree as found growing in China, see Plate VIII.

40020. MALUS sp. Malaceæ. **Crab apple.**

"(No. 2158a. Lienhuashan (near Taochow), Kansu, China. November 30, 1914.) A peculiar species of crab apple of which scions were sent under No. 1249 [S. P. I. No. 39923], which see for further information."

40021. SORBUS sp. Malaceæ. **Rowan.**

"(No. 2159a. Lienhwashan (near Taochow), Kansu, China. November 30, 1914.) A species of rowan of tall, shrubby growth; found in somewhat shady places at altitudes of 8,000 to 10,000 feet. Leaves small and pinnate, berries of pale yellow color, in some species apparently white. Possessing a good flavor, though somewhat bitter; of use, however, for preserves. This rowan is of value possibly as a tree for the home garden, especially for the cooler sections of the United States."

40022. RIBES ALPESTRE GIGANTEUM Janczewski. Grossulariaceæ. **Gooseberry.**

"(No. 2160a. Near Yangsa (near Titao), Kansu, China. November 29, 1914.) A very spiny wild gooseberry, with quite elongated fruits. Collected at an altitude of more than 9,000 feet. For further information, see No. 1241 [S. P. I. No. 39916]."

For an illustration of this tall-growing bush as found in China, see Plate VI.

40023. PRINSEPIA UNIFLORA Batalin. Amygdalaceæ.

"(No. 2161a. Near Sanszemiau (near Taochow), Kansu, China. December 1, 1914.) A fruit-bearing, spiny shrub, suggested as a possible

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

new fruiting bush for the semiarid sections of the United States, collected at an altitude of 6,500 feet. See also remarks under No. 2127a [S. P. I. No. 39432]."

40024. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"(No. 2162a. Hsiku, Kansu, China. October 20, 1914.) A variety of *Ghoorma* persimmon, with fruits much larger than the ordinary sort; shape also different, being flattened globose; color yellow, changing later on into blackish. Taste much like a *kaki*, making one think that *D. lotus* possibly could be developed into a promising fruit-bearing tree adapted especially for mild-wintered semiarid regions."

40025. SCHIZANDRA SPHENANTHERA Rehd. and Wilson. Magnoliaceæ.

"(No. 2163a. Paoki, Shensi, China. September 12, 1914.) A perennial woody vine of slender growth, found between tall scrub in shady places; foliage not unlike that of *Actinidia kolomikta*, but somewhat thinner and with red petioles. The carmine-red berries are borne in small spikes on fleshy stalks, and they hang down gracefully; these berries are the size of currants; they possess a subacid, spicy, aromatic taste, somewhat too pronounced to make it acceptable right away to most Caucasian people. The Chinese eat them much and claim they purify the blood and dislodge waste matter from the body. By selection better varieties could be obtained, no doubt, which might prove to be quite acceptable to the western palate. This vine deserves to be experimented with for the following purposes: As an ornamental cover vine for shady places, as a possible new fruiting vine to be grown on trellises on northern exposures, and as a medicinal plant having apparently some value as a blood cleanser. Chinese name *Wu wei tzŭ*, meaning 'fruit of five tastes.'"

40026. VITIS sp. Vitaceæ. **Grape.**

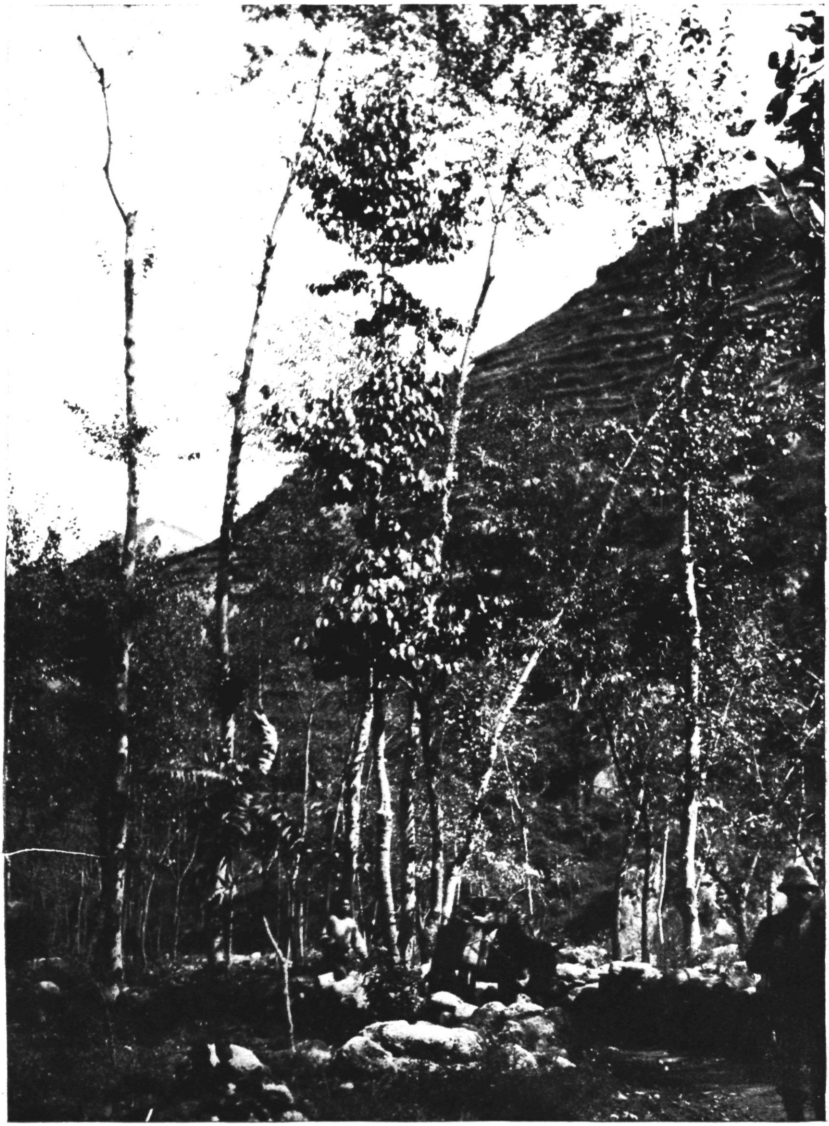
"(No. 2164a. Near Kwanyintang (between Paoki and Fenghsien), Shensi, China. September 15, 1914.) Wild grapes, overrunning tall scrub and trees on mountain sides at altitudes between 3,000 and 5,000 feet. The small bunches of blackish blue berries are collected by the people and eaten, but no attempts seem to be made to domesticate these wild grapes. Of value possibly in breeding experiments, as stocks, and as ornamental cover vines for pergolas, etc. There may be several distinct forms among these seeds."

40027. DIPELTA YUNNANENSIS Franchet. Caprifoliaceæ.

"(No. 2165a. Near Paoji (near Hsiku), Kansu, China. November 6, 1914.) A shrub of the appearance of a Lonicera when seen in winter, but bearing triangular winged fruits. Cuttings sent under No. 1229 [S. P. I. No. 39905], which see for further information."

40028. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. **Tuchung.**

"(No. 2166a. Huihsien, Kansu, China. September 28, 1914.) A Chinese caoutchouc tree, found wild on densely forested mountain slopes in southwestern Shensi and southeastern Kansu; also much cultivated in gardens and here and there planted along roadsides. This tree has the peculiar property of exhibiting rubberlike threads of shining whitish color whenever pieces of bark or leaf are snapped across, but it shows this peculiarity strongest of all in its winged fruits, which fact is often shown by the Chinese to those who have never seen it before.



A HARDY GUM-PRODUCING TREE IN KANSU, CHINA (EUCOMMIA ULMOIDES, S. P. I. No. 40028).

The Tu chung or Shih mien shu tree of Kansu is planted with poplars along roadsides, and its long slender stems are used for house building. It grows to 80 feet in height, preferring shelter from other trees. It has proved hardy at Washington. Its bark and leaves contain a peculiar gum, which as yet has been imperfectly investigated by chemists, but which among the Chinese is highly prized. The ground-up bark is given as a heart stimulant, and is said to especially benefit confirmed opium smokers. Photographed by Frank N. Meyer near Fuorryi, Kansu, October 7, 1914 (P12164FS).

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

They call this tree on this account *Shih mien shu*, meaning 'stone cotton tree,' reference being made apparently to the resemblance of this caoutchouc or rubber to asbestos. The bark of this Eucommia is a valuable drug, used as a heart stimulant and said to benefit especially those whose hearts have become affected by overindulgence in opium. The bark is called *Tu chung*, meaning 'heart's ease,' and the tree also passes under that name, although in Shensi and Kansu the name *Shih mien shu* is the one commonly used. It seems that the bark is mostly taken from trees that are from 7 to 12 years old. Here and there the Chinese have taken advantage of the rapid growth the Eucommia makes when young, and they have planted them along roadsides, together with poplars. The long, slender, and straight stems are used for house-building purposes. This tree reaches a height of 80 feet, but it seems to grow best when sheltered by other trees. Of value as a quick-growing ornamental tree for parks in those sections of the United States where the winters are not too severe. It also might be planted in plantations, after careful inquiries have been made as to the amount of bark China could take annually, and its bark exported to China. Obtained from the garden of the Belgian Roman Catholic missionaries in Huihsien."

"A deciduous tree, not yet found by Europeans in a wild state, but from 20 to 30 feet high, as seen cultivated by the Chinese. It probably reaches a large size. Leaves alternate, ovate to oval, long and slender pointed, toothed, 2 to 8 inches long, slightly hairy on both surfaces when young, becoming smooth above. Flowers unisexual, the sexes on separate trees; they are inconspicuous, the males consisting of brown stamens only; female ones not seen by me. Fruit flat and winged, 1-seeded, rather like an enlarged fruit of wych-elm, oval oblong, 1½ inches long, tapering at the base into a short stalk, apex notched.

"Introduced to France from China about 1896, and a few years later to Kew, where several plants raised from the original plant (a male) are 15 to 20 feet high and have several times flowered. It was first discovered in China by Henry as a cultivated tree, 20 to 30 feet high, but as its bark is and has been for 2,000 years highly valued by the Chinese for its real or supposed tonic and other medicinal virtues, it is never allowed to reach its full size, but is cut down and stripped of its bark. To Europeans the most interesting attribute of this tree is its containing rubber. What its commercial value may be is doubtful; the rubber is apparently of inferior quality, but the tree is of peculiar interest, as the only one hardy in our climate that is known to produce this substance. If a leaf be gently torn in two, strings of rubber are visible. At Kew, grown in good loam, it has proved absolutely hardy and a vigorous grower; it can be propagated by cuttings made of half-ripened wood put in gentle heat. Wilson introduced seeds to the Coombe Wood nursery, from which, no doubt, trees of both sexes have been raised. Some authors place it in the witch-hazel family." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 534–535.*)

For an illustration of these gum-producing trees as found growing in China, see Plate IX.

40029. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ. Palm.

"(No. 2167a. Huihsien, Kansu, China. September 28, 1914.) The Chinese fan or coir palm, cultivated in gardens in southern Shensi and southern Kansu as an ornamental tree, reaching a height of 30 to 40

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

feet. Withstands successfully winter temperatures, unprotected, of —12° C. (+11° F.), as happened in Huihsien on November 1, 1895, when all the other palms around there died. Of value as a fine ornamental garden and park tree for all parts of the United States where the mercury does not go much below 10° F. Chinese name *Tsung shu*, meaning 'coir palm tree.' Obtained like the preceding number, 2166a [S. P. I. No. 40028]."

40030. ABELMOSCHUS MANIHOT (L.) Medic. Malvaceæ. **Hibiscus.** (*Hibiscus manihot* L.)

"(No. 2168a. Near Tsaichiapu, Shensi, China. September 9, 1914.) A species of Hibiscus, with many large flowers of clear yellow color; cultivated here and there on fertile flats along the Wei River as a vegetable. The petioles of the flowers, just before they expand, are picked and also the young tops; these are dried in the wind or in the sun and when dry, ground into a powder, which is sprinkled over flour noodles to make them more gelatinous, or it is added to soups and sauces to make them mucilaginous. The taste of this powder is slightly subacid, and not unpleasantly so. Possibly a good jelly could be made from it. Chinese name *Chih ts'ao*."

40031. ASPARAGUS TRICHOPHYLLUS FLEXUOSUS Trautv. Convallariaceæ.

"(No. 2169a. Near Yangsa (near Titao), Kansu, China. November 30, 1914.) An asparagus of trailing habits and having spiny bracts; found wild among low scrub in a loess bank. Apparently rare. Of value possibly in breeding experiments and as a trailing garden perennial."

40032. ALANGIUM CHINENSE (Lour.) Rehder. Cornaceæ. (*Marlea begonifolia* Roxb.)

"(No. 2170a. Near Yuyinchen (between Liangtang and Huihsien), Kansu, China. September 26, 1914.) A shrub or small tree, belonging to the Cornaceæ, bearing leaves of many forms, some being very large and of lop-sided, elliptical shape, while others have five points and are small, resembling leaves of *Liquidambar styraciflua*. Found in somewhat damp places at the foot of embankments or along streams. Of value as a striking looking garden and park shrub for mild-wintered regions."

40033. OSTEOMELES SCHWERINAE Schneider. Malaceæ.

"(No. 2171a. Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) A very dense-growing shrub, from 2 to 5 feet tall, having small, dark-green, finely pinnate leaves. Found on dry stony wastes and in rock cliffs. Bears small bluish black berries in the late fall of the year and is said to bloom profusely in early summer with conspicuous white flowers. Of value as a shrub for rockeries and as a lining bush along pathways running irregularly."

"An evergreen shrub, growing probably 6 to 8 feet high in the open, considerably more against a wall; the long, slender, flexible branchlets covered with short gray hairs. Leaves pinnate, 2 to 4 inches long, composed of 8½ to 15½ pairs of leaflets, covered, more especially beneath, with gray down; main stalk hairy, channeled above. Leaflets oblong-oval or obovate, with a short abrupt point, stalkless, one-quarter to five-eighths inch long, about one-third as wide. Flowers white, one-half to two-thirds inch diameter, produced in June in branching corymbs 1½ to 3 inches across, terminating lateral twigs; calyx lobes ovate-lanceo-

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

late, hairy outside, smooth within. Fruit egg shaped, one-fourth to three-eighths inch long, at first dark red, blue-black when ripe, smooth, crowned by the persistent calyx; 5-seeded.

"Native of Yunnan and other parts of China; originally raised in the Jardin des Plantes at Paris from seed which had been sent from Yunnan by the Abbé Delavay in 1888; introduced to Kew in 1892. Forms nearly allied to this Chinese plant occur throughout the southeast Pacific region as far as the Sandwich Islands and New Zealand. The whole were at first included under *O. anthyllidifolia* Lindley, but the west Chinese plant has been separated on the strength of its smooth fruit, less hairy calyx lobes, and usually but not always narrower leaves, thus leaving Lindley's name for the tropical and subtropical woolly fruited plants. They are extremely closely allied, but perhaps the latter could not be grown out of doors with us.

"*O. schwerinae* is a shrub of distinct appearance, its foliage very suggestive of some of the Leguminosæ; it is also very elegant in habit and attractive in blossom. But we do not find it hardy in the open, although it survives mild winters. It makes a very delightful wall plant. It can be increased by cuttings made of moderately ripened wood placed in gentle heat. Seed ripens only in favorable years." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 113.*)

40034. POLYGONUM sp. Polygonaceæ.

"(No. 2172a. Tung Tung (near Tangchangpu), Kansu, China. November 19, 1914.) A Polygonum of slender woody growth; a vine, found on open places here and there, covering often whole blocks of scrub or rocky cliffs with its masses of showy white flowers, which appear in late summer and are produced in the greatest profusion. Foliage relatively small and resembling leaves of buckwheat. Able apparently to withstand much drought and adverse conditions. Of decided value as a porch, arbor, pergola, and trellis vine for the greater part of the United States. Collected at an altitude of 5,000 feet."

40035 and 40036. CASTANEA sp. Fagaceæ. **Chestnut.**

40035. "(No. 2173a. Huihsien, Kansu, China. September 28, 1914.) A species of chestnut of medium tall growth; trunk more slender, and bark smoother than in *C. mollissima*, while the leaves, burs, and nuts are smaller. Loves apparently shady situations and damp soil. Of value as a nut-bearing tree, especially for the southeastern United States. Obtained like No. 2166a [S. P. I. No. 40028]."

40036. "(No. 2174a. Chenghsien, Kansu, China. October 4, 1914.) A species of chestnut, said to occur wild in the mountains; apparently the same as the preceding number, 2173a [S. P. I. No. 40035]. Where these chestnuts grow in gardens one also finds some of the following trees, showing how mild the climate is: *Ligustrum lucidum, Trachycarpus* (*Chamaerops*) *excelsus, Hovenia dulcis, Diospyros kaki, Punica granatum, Phyllostachys bambusoides* (*P. quilioi*), etc."

40037. AESCULUS WILSONII Rehder. Æsculaceæ. **Horse-chestnut.**

"(No. 2175a. Chishan, near Chenghsien, Kansu, China. October 1, 1914.) A Chinese horse-chestnut growing into a large tree with an enormous spread of head. Of value as a beautiful shade tree, especially

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

for those parts of the United States where the winters are not too severe. Collected in a temple compound at an altitude of 6,000 feet."

"This beautiful tree has been usually confused with *A. chinensis* Bunge, which differs in its nearly glabrous short-petiolulate leaves sparingly pilose only on the veins below and cuneate at the base, in the smaller flowers and chiefly in the subglobose slightly depressed fruit truncate and slightly impressed at the apex, with thick walls, in the dry fruit 3 to 4 mm. thick, and in the smaller seeds with the hilum occupying one-half or more than one-half of the surface of the seed. It is also closely allied to *A. indica* Colebrooke, which differs in its larger flowers with much broader petals, in the inflorescence with less crowded ascending ramifications, and in the cuneate glabrous leaflets; *A. punduana* Wallich, which more resembles our species in its inflorescence and flowers, is easily distinguished by its very short-stalked cuneate and glabrous subcoriaceous and indistinctly serrulate leaflets." (*Sargent, Plantae Wilsonianae, vol. 1, p. 499.*)

40038. QUERCUS sp. Fagaceæ. **Oak.**

"(No. 2176a. Near Yaopuko (near Chenghsien), Kansu, China. October 6, 1914.) An oak, having medium large, somewhat undulate leaves; grows up into a medium-sized tall tree with a dense head of foliage. Of value as a shade and timber tree for those sections of the United States where the winters are not very severe. Collected at an altitude of 3,500 feet."

40039. CITRUS sp. Rutaceæ.

"(No. 2178a. Lianjapa (near Hsiku), Kansu, China. October 19, 1914.) A peculiar species of citrus of which scions were sent under No. 1221 [S. P. I. No. 39897], which see for further information."

For an illustration of this interesting fruit, see Plate III.

40040 to 40064.

From Sydney, New South Wales. Presented by Mr. J. H. Maiden, Botanic Gardens. Received February 18, 1915. A collection of proteaceous shrubs and trees recommended for trial in the United States.

40040. CONOSPERMUM TAXIFOLIUM Smith. Proteaceæ.

An erect twiggy shrub, with its stem and few branches more or less pubescent, sometimes glabrous. Leaves numerous, scattered, rigid, from one-half to three-fourths of an inch long, linear lanceolate, with a very sharp point. The peduncles are axillary, arising singly from several of the upper leaves, so that taken collectively they form a sort of corymb. Each peduncle is simple or forked, pubescent, furnished with remote, ovate bracts, and terminated by several sessile, pubescent, whitish flowers. (Adapted from *Curtis's Botanical Magazine, pl. 2724.*)

Distribution.—Along streams and near the coast in New South Wales and Queensland, and in Tasmania.

40041 to 40046. GREVILLEA spp. Proteaceæ.

40041 and 40042. GREVILLEA BANKSII R. Brown.

40041. Var. *Alba.* "An evergreen shrub or tree, 12 to 20 feet high. Queensland." (*Guilfoyle, Australian Plants, p. 193.*)

40040 to 40064—Continued.

40042. Received as var. *forsteri*, but *forsteri* is a red-flowered variety of *G. robusta*. This plant on flowering proves to be *G. banksii*.

40043. GREVILLEA CALEYI R. Brown.

Distribution.—A slender shrub about 6 feet tall with handsome pinnately divided leaves which are softly villous underneath and with short racemes of beautiful small red flowers, found in the vicinity of Port Jackson in New South Wales.

40044. GREVILLEA HILLIANA F. Mueller. **Silky oak.**

An Australian tree 50 to 60 feet high and 2 to 3 feet in diameter. Leaves variable, ranging from entire, ovate oblong, 6 to 8 inches long to deeply pinnatifid with 5 to 7 oblong or lanceolate lobes several inches in length (the whole leaf then being more than 1 foot long), glabrous above, more or less silky pubescent beneath. Flowers white, small, and very numerous, in dense, cylindrical racemes, 4 to 8 inches long. (Adapted from *Maiden, Forest Flora of New South Wales, p. 53.*)

40045. GREVILLEA LAURIFOLIA Sieber.

Distribution.—A low or trailing shrub with silky tomentose branches and broadly lanceolate leaves which are smooth above and silky below and with short racemes of small flowers, found on the slopes of the Blue Mountains in New South Wales.

40046. GREVILLEA TRITERNATA R. Brown.

Distribution.—An erect bushy shrub with finely divided leaves having narrow, sharp-pointed segments and terminal racemes of small flowers; found along mountain streams in New South Wales.

40047 to 40053. HAKEA spp. Proteaceæ.

"Drought-resistant plants which endure moderate frosts and are therefore well adapted to the drier parts of the South and Southwest. In California they are grown as far north as Sacramento. One of these, *H. laurina*, produces strikingly handsome flowers; *H. elliptica* is prized for the bronze color of its young foliage; while the spiny leaved species are serviceable for planting in public parks or in any place where it is necessary for shrubs to protect themselves from pedestrians or vandals.

"Hakeas may be propagated by cuttings taken from ripened shoots, but they are almost universally grown from seeds. These are gathered from year-old capsules, which are very hard and must be dried for some time before they will open. The seeds are sown in winter or early spring in the ordinary mixture of sand, leaf mold, and loam; they germinate easily, even without heat. The young seedlings are pricked off into boxes and held in the lath house for a season before planting in the open. For best results Hakeas should be grown in light well-drained soil and need but little water after they are once established; much moisture is injurious except during the summer months." (*Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1427–1428.*)

40047. HAKEA ACICULARIS (Vent.) Knight.

Distribution.—A tall shrub or small bushy tree with cylindrical, sharp-pointed leaves 1 to 3 inches long and white flowers, found from Port Jackson to the Blue Mountains in New South Wales.

40040 to 40064—Continued.

40048. HAKEA DACTYLOIDES (Gaertn.) Cav.

Distribution.—A tall shrub with erect branches, narrow 3-nerved leaves 2 to 4 inches long, and small white flowers in axillary clusters, found along streams in New South Wales.

40049. HAKEA GIBBOSA (Smith) Cav.

Distribution.—A shrub with cylindrical, sharp-pointed leaves 1 to 3 inches long and small white flowers in sessile, axillary clusters, found in the vicinity of Port Jackson in New South Wales.

40050. HAKEA LEUCOPTERA R. Brown.

"This plant is commonly known as the *needle bush* or *pin bush*, and from its fleshy roots a good drinking water can be obtained in the arid regions in which it grows. A circle a few inches deep is dug around the base of the tree; the roots, which run horizontally, are soon discovered. They are divided from the tree and torn up, many of them being several feet in length. They are then cut into pieces, each about 9 inches long, and placed on end in a receiver; and good, clear, well-tasting water is obtained. The timber obtained from this tree is coarse grained and soft; it takes a good polish and is sometimes used for tobacco pipes, veneers, etc. Specific gravity, 0.818." (*Maiden, Useful Native Plants of Australia.*)

"An evergreen shrub, 5 to 8 feet high, with white flowers." (*Guilfoyle, Australian Plants, p. 201.*)

40051. HAKEA MICROCARPA R. Brown.

Distribution.—A shrub up to 6 feet in height, with cylindrical leaves from 1 to 4 inches long and bearing axillary clusters of white flowers with tubes 4 inches long, found in Tasmania and in New South Wales and Victoria, ascending the Australian Alps to an elevation of 6,000 feet.

40052. HAKEA PUGIONIFORMIS Cavanilles.

"Seeds of this plant were received among some of the first arrivals from Botany Bay. It is a free grower and attains a height of 4 or 5 feet, forming a handsome greenhouse shrub and producing plenty of flowers. These are odoriferous, and although not showy have a neat and lively appearance. It may be propagated by cuttings with facility. The most proper soil for it is a mixture of loam and peat It is by no means a tender plant and merely needs protection from frost in the winter season. It usually blooms in the latter part of the summer." (*Loddiges's Botanical Cabinet, vol. 4, p. 353.*)

40053. HAKEA ULICINA CARINATA Mueller.

"Leaves usually linear lanceolate or linear, pungent, 4 to 8 inches long, prominently 1 to 3 nerved beneath; perianth and pedicels glabrous; fruit rarely above one-half inch long, with a short straight beak. The foliage resembles the European furze." (*Bailey Cyclopedia of American Horticulture.*)

Distribution.—A tall shrub found near Adelaide and on the Bugle Range in South Australia.

40054 and 40055. ISOPOGON spp. Proteaceæ.

40054. ISOPOGON ANEMONEFOLIUS (Salisb.) Knight.

Stem shrubby, 3 feet high, villous. Leaves scattered, rigid nerved, smooth, erect, lengthened downward so as to resemble

40040 to 40064—Continued.

long footstalk, branched at the upper part into about three pairs of pinnæ, the lowermost of which are longest and various forked at the end; points all armed with a callous reddish mucro or gland. Common flower solitary, globose, sessile. Calycine scales ovate acuminate, very woolly except the margin, completely imbricate, forming a globose cone stuffed with a fine white cottony substance. Corolla 1-petaled, tubed; tube longer than limb, which is 4-cleft, hairy, tortuose. Anthers linear, 2-lobed, sessile; style exserted, club shaped. Stigma conical, acute; the style and stigma have a singular appearance in this species, something like two cones with their bases applied together, but when the flowers first open these parts are so entirely covered with the pollen as to appear 4-sided. (Adapted from *Curtis's Botanical Magazine, pl. 697,* and *Johnson, Gardeners' Dictionary.*)

40055. ISOPOGON ANETHIFOLIUS (Salisb.) Knight.

Distribution.—A low shrub 3 to 4 feet high with leaves resembling those of dill (*Anethum graveolens* L.) and bearing conical heads of small yellow flowers, found from Port Jackson to the Blue Mountains in New South Wales.

40056. LAMBERTIA FORMOSA Smith. Proteaceæ.

"Another very striking plant was the Honey flower, with small, pointed glaucous leaves that could inflict a good sharp prick on marauding fingers. The Lambertia, which is said to be confined to this State, has numbers of heavy bell-shaped flowers of scarlet and pink that are usually sticky with a rank honey, much sought after by the pretty little honey eaters, who dip their long, curved bills deep down into these showy blossoms and thus help to propagate the species." (*H. M. Vaughan, An Australian Wander-Year, p. 72.*)

40057. MACADAMIA TERNIFOLIA F. Mueller. Proteaceæ.

Queensland nut.

See S. P. I. No. 18382 for previous introduction and description.

40058 to 40060. PERSOONIA spp. Proteaceæ.

40058. PERSOONIA ANGULATA R. Brown.

Distribution.—A shrub with linear-lanceolate sharp-pointed leaves crowded on the erect branches and with small solitary axillary flowers, found on the slopes of the Blue Mountains in New South Wales.

40059. PERSOONIA MEDIA R. Brown.

Distribution.—A tall, erect shrub with elliptical, falcate leaves and small axillary flowers which are followed by dark-colored berries, found in the valley of the Brisbane River in Queensland and along the Hastings and Clarence Rivers in New South Wales.

40060. PERSOONIA MYRTILLOIDES Sieber.

Distribution.—A spreading shrub about 4 feet high with oblong-ovate leaves and small yellowish white flowers in the axils of the upper leaves, found in the Blue Mountains in New South Wales and at an altitude of 4,000 feet in the Nangatta Mountains in Victoria.

40061 and 40062. PETROPHILA spp. Proteaceæ.

40040 to 40064—Continued.

40061. PETROPHILA PULCHELLA (Schrad.) R. Brown.

Stem shrubby, erect. Leaves alternate, filiform, twice or three times irregularly pinnate; leaflets unequal, divaricate when full grown and not unaptly resembling the antlers of a reindeer, whence it has been known by the name *rangiferina* among cultivators. Flowers white, collected into an oblong-ovate cone, terminal. Bracts obcordate acuminate, quite entire, imbricate, one to each corolla. Corolla 4-petaled; petals equal, adhering half way in the tube, but separating spontaneously when they fall off. Anthers oblong, attached without filament a little below the tip of the petal, as in the rest of the genus. Ovary surrounded with a white, hairy pappus, oblong, thickened at the base, and gradually tapering upward till it terminates in a style that is longer than the corolla, recurved, but after deflorescence erect. Stigma club shaped, hispid, and persistent. (Adapted from *Curtis's Botanical Magazine, pl. 796,* and *Johnson, Gardeners' Dictionary.*)

40062. PETROPHILA SESSILIS Sieber.

Distribution.—A white-flowered shrub 8 to 12 feet high, much resembling *P. pulchella,* but with the segments of the leaves more divaricate and the branches silky tomentose, found on the Blue Mountains in New South Wales and along Moreton Bay in Queensland.

40063. STENOCARPUS SINUATUS Endl. Proteaceæ.

As long ago as 1828 the lamented Allan Cunningham discovered this plant on the banks of the Brisbane River, Moreton Bay, with other interesting novelties. Not, however, meeting with the subject in flower, he took no further notice of it in his journal than to remark that "it is a slender tree, of most remarkable habit, with leaves large from the extremities of the branches, glossy and lobed, or lancinated." Had he seen its blossoms elegantly arranged in candelabrumlike bundles, clothed with the most vivid orange-scarlet silky pubescence, he would assuredly have ranked it amongst the most important of his numerous additions to the Australian flora. It is a plant constituting a small tree 16 feet or more high, with a slender trunk, branched, and bearing the ample and glossy evergreen foliage at the extremities of the branches. Leaves alternate, 1 to 2 feet in length, obovate lanceolate. Flowers umbellate; umbel compound; peduncles lateral from an old branch, or sometimes terminal. (Adapted from *Curtis's Botanical Magazine, pl. 4253,* and *Johnson, Gardeners' Dictionary.*)

40064. TELOPEA SPECIOSISSIMA (Smith) R. Brown. Proteaceæ.

"By many people this plant is known as the *tulip* or *native tulip.* It bears neither affinity nor resemblance to that flower and the name is probably a corruption of Telopea. This plant is known as the *waratah,* which is doubtless an aboriginal name, but its origin does not appear to be clear at the present time. It is a stout, erect, glabrous shrub 6 to 8 feet high bearing a strikingly handsome flower which has come to be recognized as the national flower of New South Wales. It lends itself in a remarkable degree to decorative treatment and hence is frequently depicted literally, or as a motif, in wrought iron, wood and stone carving, stained glass, and pottery decoration. The fruit is technically known

40040 to 40064—Continued.

as a follicle. One *waratah* flower (composed, of course, of a large number of individual flowers) matures, under favorable circumstances, 12 to 20 follicles. The *waratah* is found in the coast and mountain districts of New South Wales, from the Hunter River in the north to the Clyde and Braidwood district in the south. It is one of those plants which finds its southern limits where the sandstone formation ends; it does not pass over to the granite. It delights in rocky situations, and if it were not for the fact that it grows in the Blue Mountains and other coast ranges, frequently in very rough country, it would be threatened with extinction. This plant may be raised from seed, which readily germinates when fresh. The *waratah* is a plant which is coming increasingly into favor in private gardens, and under cultivation it attains a luxuriance unknown in its wild state. It is one of the most gorgeous of all subtropical plants under cultivation. Our experience with it is that it flowers the third year from seed. It is a stout, erect shrub of 6 to 8 feet, Leaves cuneate oblong or almost obovate, 5 to 10 inches long, mostly toothed in the upper part, tapering into a rather long petiole, coriaceous, penniveined with the midrib prominent, a few rarely quite entire. Flowers crimson, in dense ovoid or globular heads or racemes about 3 inches in diameter. Involucral bracts colored, ovate lanceolate, the inner ones 2 to 3 inches long, the outer ones few and small, surrounded by a dense tuft of floral leaves like the stem ones, but smaller and more entire. Bracts under the pairs of flowers very short; pedicels thick, recurved, one-fourth to one-half inch long. Perianth glabrous, nearly 1 inch long. Ovules 12 to 16, fruit recurved, 3 to 4 inches long. Seeds 10 to 20, the nucleus broad, obliquely quadrate, the wing obliquely truncate, one-fourth to one-half inch long." (*Maiden, Flowering Plants and Ferns of New South Wales, part 1, 1895.*)

40065. LITHOCARPUS CORNEA (Lour.) Rehd. Fagaceæ.
(*Quercus cornea* Lour.) **Evergreen oak.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received March 6, 1915.

See S. P. I. No. 35320 for previous introduction and description.

40066 to 40068.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 4, 1915.

"Collected in Japan by Mr. E. H. Wilson."

40066. CLETHRA BARBINERVIS Sieb. and Zucc. Clethraceæ.

Wilson No. 7039.

"A deciduous shrub, 3 to 6 feet high in cultivation, more bushy and less erect than the American species; young shoots at first sprinkled with a minute starry down. Leaves often clustered at the end of the twig, oval or obovate, more tapering at the base than at the apex; 2 to 5 inches long, 1 to 2¼ inches wide; hairy at first on both sides, but especially so on the midrib and nerves beneath, toothed; stalk one-fourth to three-fourths inch long. Flowers white, one-third inch across, produced from July to September in a rather compact, terminal panicle 4 to 6 inches long, covered with white, starry down; calyx and seed vessel hairy; stamens smooth.

40066 to 40068—Continued.

"Native of Japan and China; introduced in 1870. It is a very pretty shrub where it thrives, but it is not so hardy as *C. alnifolia*, although it will survive all but the severest winters near London. The leaves have usually two more pairs of veins than the American species." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 372.*)

40067. PRUNUS SSIORI Schmidt. Amygdalaceæ. **Bird cherry.**

Wilson No. 7648.

Distribution.—A wild cherry found on Sakhalin Island, in Honshu and Hokushu in Japan, and in southern Manchuria and western China.

"Although, according to Sargent, this bird cherry is a common tree in Yezo [Hokushu] and in the mountain forests of Hondo [Honshu], Japan, it has only recently been brought into cultivation. The same author (*Forest Flora of Japan, p. 38*) observes that it is always easily distinguished by its pale, nearly white bark. Young shoots smooth. Leaves oblong, often inclined to obovate, the apex drawn out into a long slender point, the base more or less heart shaped, the margin closely set with fine, almost bristlelike teeth; thin membranous, smooth above and the same beneath except for the tufts of brownish down in the vein-axils; stalk slender, 1 to 1½ inches long, with one or two glands near the blade. Flowers small, white, produced in slender, glabrous, cylindrical racemes 4 to 6 inches long and about 1 inch wide. The species has been found in Manchuria and Sakhalin. 'The wood is very hard and close grained, and is used by the Ainos for numerous domestic purposes.' (*Sargent.*)" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 254.*)

40068. SCHIZOPHRAGMA HYDRANGEOIDES Sieb. and Zucc. Hydrangeaceæ.

Wilson No. 7671.

"A deciduous climbing shrub, reaching 40 or more feet high in a wild state; young stem smooth, reddish, and furnished with aerial roots. Leaves broadly ovate with a rounded, heart-shaped or tapering base; 4 to 6 inches long, 2½ to 4 inches wide; strongly veined, coarsely and angularly toothed, deep green and smooth above, but paler, rather glaucous, and with silky hairs beneath; stalk 1 to 2 inches long. The leaves near the inflorescence are tapered at the base; those on sterile shoots heart shaped. Flowers small, yellowish white, slightly scented, produced during July in a broad, flattish, cymose inflorescence 8 or 10 inches across. The chief feature of the inflorescence is the bracts, one of which terminates each main branch of the cyme, and is heart shaped or ovate, pale yellow, 1 to 1½ inches long; flower stalks furnished with a thin, loose down.

"Native of Japan, where, along with *Hydrangea petiolaris*, it forms a conspicuous feature in the forests, often covering the trunks of large trees. In gardens it is rare, the plant grown under the name being almost invariably *Hydrangea petiolaris*, which it resembles in habit, but in respect to leaf and inflorescence it is quite distinct. It flowered with the late Mr. Chambers at Haslemere in 1905 for the first time, so far as I am aware, in this country. It has since flowered with Miss Willmott at Warley and with Sir E. Fry near Bristol. The floral bracts are variable in size and shape." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 505.*)

This vine will cling to a brick or cement wall just as English ivy will, and it forms a beautiful cover with its white bracts. It is hardy and deserves a place in all gardens. (*Fairchild.*)

40069 to 40071.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Gardens. Received March 3, 1915.

40069. ARCHONTOPHOENIX ALEXANDRAE (Muell.) Wendl. and Drude. Phœnicaceæ. **Palm.**

A showy and elegant palm, completely spineless, and with tall, stout, 70 to 80 foot trunks, which are conspicuously ringed by the annular scars of the fallen leaves. Leaves divaricate, terminal, several feet long, forming a large crown, pinnately divided, the segments entire or toothed, numerous, the longer ones 1½ feet long, one-half to 1 inch broad, acuminate and entire or slightly notched, green above, ashy glaucous beneath; in very young specimens the leaves are undivided or simply bipartite; midrib prominent, the ribs more slender; rachis very broad and thick, glabrous or slightly scurfy, keeled above, convex beneath, the petiole slightly tomentose, and channeled above; inflorescence appearing much below the leaves, about 1 foot long, consisting of two long flattened, ultimately pendent and deciduous spathes, inclosing the short-peduncled and much-branched, pendulous spadices; flowers monœcious, greenish yellow, sessile on the branches of the spadix; in male flowers the eight perianth segments are unique in the family; female flowers with three perianth segments, sometimes more; fruit a drupe, ovoid globular, containing a single fibrous seed. Seldom ripening fruit on plants cultivated outdoors in California, and rather tender when young. Native of Queensland. (Adapted from *Norman Taylor. In Bailey, Standard Cyclopedia of Horticulture.*)

40070. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

See S. P. I. Nos. 26170, 33781, and 36714 for previous introductions and descriptions.

40071. SPATHODEA NILOTICA Seemann. Bignoniaceæ.

Distribution.—A bushy tree 15 to 20 feet high with racemes of large scarlet flowers, found in the upper Nile Valley, in Kongo Free State, and in German East Africa.

40072 and 40073.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul. Received March 3, 1915. Quoted notes by Mr. Goding.

40072. PASSIFLORA sp. Passifloraceæ. **Passion fruit.**

"Seeds collected from plants growing 10,000 feet above sea level."

40073. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Wild cherry.**

"*Capulies.* Wild cherry; grows in cold districts."

See S. P. I. Nos. 36371 and 38637 for previous introductions and descriptions.

40074. ENKIANTHUS CAMPANULATUS (Miq.) Nichols. Ericaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 8, 1915.

Wilson No. 6897. A variety collected in Japan by Mr. E. H. Wilson.

The species is described as "a deciduous shrub usually 4 to 6 feet high, occasionally a small tree, branches in whorls; young shoots smooth, reddish.

Leaves produced in a cluster at the end of the twig, or alternate on strong growths; obovate to oval, tapered more gradually toward the base, finely toothed, 1 to 2½ inches long, one-half to 1¼ inches wide, hairy on the veins of both surfaces, dull green; stalk one-eighth to five-eighths inch long. Flowers produced during May from the terminal bud of the previous year's growth in a hairy raceme sometimes almost reduced to an umbel. Corolla bell shaped, one-third inch long, pendulous, with five rounded lobes, pale creamy yellow, veined and tipped with red; calyx with five lanceolate, pointed divisions one-sixth inch long; stamens very short; flower stalk downy, one-half to 1 inch long. Seed vessel egg shaped, one-third inch long.

"Native of Japan, introduced in 1880 by Maries, for Messrs. Veitch. This is the most satisfactory of the species of Enkianthus in our gardens, being quite hardy and flowering freely. It is sometimes cut by late frost. In the Arnold Arboretum, Massachusetts, where the frosts are much more severe than ours, it succeeds remarkably well. The leaves turn golden and red in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 512.*)

40075. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From Guemes, Argentina. Presented by Mr. H. F. Schultz, director, Agricultural Experiment Station, Guemes. Received March 4, 1915.

"Seed from fruits cultivated in San Lorenzo de Jujuy. I consider this variety of passion fruit a very important acquisition for the localities where it may be feasible to grow it in the United States. I have eaten different varieties of *P. edulis* and the very large *P. quadrangularis* of Panama, the fruits of which, as you know, sometimes attain a length of 25 cm. and a diameter of 15 cm. I consider the fruits very delicious and peculiarly tempting to the palate, as well for a breakfast fruit as for dessert, and most important perhaps for soft-drink manufacture, this latter especially on account of its rich and pleasing flavor and fragrance. The few plants which I have been growing here and which are now about a year old, have already yielded quite a number of fruits, which are light-purple skinned, of usual egg-shaped form, and from 5½ to 7 cm. long and 4½ to 5 cm. in diameter. The seeds are eaten, together with the peculiarly tinted, greenish pulp, because they form no disturbing element at all. It requires a little practice to separate the mass of pulp and seeds from the tough, leathery exterior by means of a teaspoon after the fruit is halved, just as it is necessary for the novice to acquire the desired proficiency in eating a grapefruit without danger to his own and his neighbor's eyes and clothes. The fruits do not seem to possess any of the narcotic principles which Grisebach states are present in some Passiflora species, for I have repeatedly eaten a dozen fruits at a sitting, and my children eat from 10 to 20 a day without any bad effects. The fruits keep a very long time and are palatable and wholesome even after the leathery skin has dried or crumpled up. I presume that these passifloras are more peculiarly suited to California than to Florida conditions, because San Lorenzo is situated in a dry, warm climate where frosts are very uncommon. Truly enough the short rainy season, which lasts from about January until March, during which time there are copious precipitations, agrees quite well with these plants, too, for which reason they may also do surprisingly well in Florida. Mr. Smyth, from whom I obtained this strain, states that his plants last, according to soil conditions, from 3 to 8 years, while I understand that in Queensland they fruit for 20 to 50 years." (*Schultz.*)

40076 to 40093. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

Numbered March 15, 1915.

40076 to 40088.

Presented by the Usumbwa Company, Nyembe Bulunswa, Port Tabora, German East Africa.

40076. Brown durra. *Holongo wape.*

40077. White durra. *Mgegene.*

40078. White durra. *Mkulapolo.*

40079. White durra. *Yembayemba.*

40080. White durra. *Ikululukizi.*

40081. *Kangwala.*

40082. *Upolo.*

40083. *Kagiri.*

40084. White durra. *Luwele.*

40085. *Upolo wamagohe.*

40086. Red shallu. *N.*

40087. Brown durra. *K.*

40088. Brown durra. *T.*

40089 to 40093.

From Victoria, Kamerun, German West Africa. Presented by the director of the experiment station.

40089. Brown durra. *Gabli sambull.* From the Mora residency in the German lands near Lake Chad. Sown at the rainy season.

40090 to 40093.

From Pittoa near Garua. Brown durra.

40090. *Gewerie.*

40091. No. 3. *Danki-polari.*

40092. No. 4. *Dschundi Rei.*

40093. *Bita* (from Tahiti). Red shallu.

40094 to 40098.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received March 1, 1915, Quoted notes by Mr. Itié except as otherwise indicated.

40094 and 40095. CAPSICUM spp. Solanaceæ. Red pepper.

40094. "Seeds of *chili masch.* Spontaneous. Little shrub, perennial. Leaves and flowers small. Fruit very short, almost round. White and reddish at first and then black or brown when mature. Very piquant."

40095. "*Pico de paloma,* seeds of chili. Spontaneous. Is distinguished from the preceding [S. P. I. No. 40094] by its larger fruit, attaining from 1 to 2 cm. in size. Likewise very piquant."

40096. RICINUS COMMUNIS L. Euphorbiaceæ. Castor bean.

"Seeds of *higuerilla.* Gathered in the fields of the station. Spontaneous in the State, but not known, in spite of its abundant fruiting qualities and its richness in oil. At least two varieties are distinguished—one with brown petioles and one with white petioles. The seeds sent are of the latter."

40097. DIPHYSA SUBEROSA S. Watson. Fabaceæ.

"Seeds of *chipilcoite.* This legume grows wild in this State and is sown also for stakes for fences. Its wood is one of the most appre-

40094 to 40098—Continued. (Quoted notes by Mr. G. Ittié.)

ciated for its durability and resistance to the agents of decay, damp, and insects. It keeps well in water. It is used much for telegraph posts, sleepers, and to strengthen the base of poles of more common wood."

40098. SPONDIAS LUTEA L. Anacardiaceæ.

"Seeds of *Hobo*. Wild and cultivated. This is the wood most commonly employed for fences by reason of its easy propagation, for hedges and for the wonderful rapidity of its growth. The white and light wood is employed for the manufacture of packing boxes."

"*Jobo*. A large tree, with rounded head, compound leaves, and odorous white flowers in racemes, and yellow fruits resembling large jocotes (*Spondias purpurea*). They are very aromatic and the taste is acid and refreshing. The wood is white and soft and appears not to be used except in the fences of the tierra caliente." (*Pittier, Las Plantas Usuales de Costa Rica.*)

40099. QUERCUS SUBER L. Fagaceæ. **Cork oak.**

From Campo Seco, Cal. Procured from Mrs. Edward Maher. Received February 23, 1915.

40100. PYRUS sp. Malaceæ. **Pear.**

From Chingchowfu, Shantung, China. Presented by Rev. W. M. Hayes. Cuttings received March 27, 1915.

"Chinese winter pear. This variety is really not ripe until the next spring after it is picked, and while not as luscious as a good apple, yet it fills a vacancy in April and May very acceptably." (*Hayes.*)

40101. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens, Received March 13, 1915.

40102. PLEIOSPERMIUM ALATUM (Wight and Arn.) Swingle. Rutaceæ.
(*Limonia alata* Wight and Arn.)

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received March 16, 1915.

A small spiny tree from southern India and Ceylon, with 4 to 5 celled small soft-rinded orangelike fruits, about an inch in diameter, each cell having 1 to 2 seeds, surrounded by dark-colored, strong-smelling, mucilaginous gum. From the fact that *P. alatum* grows abundantly in the drier parts of Ceylon, it would be desirable to test it as a stock on which to graft citrus for culture on the drier types of soil. (Adapted from *Swingle, Journal Washington Academy of Sciences, vol. 6, p. 426–431, 1916.*)

40103. GARCINIA TINCTORIA (DC.) W. F. Wight. Clusiaceæ.
(*Garcinia xanthochymus* Hook.)

From Utakamand, India. Presented by Mr. F. H. Butcher, curator, Botanic Garden and Parks. Received March 17, 1915.

"A symmetrical cone-shaped bushy tree, growing to 25 or 30 feet high, native of South India and Malaya. It bears large leathery leaves, 12 to 16 inches long and 2½ to 3½ inches in width. The handsome yellow fruit, produced in great

abundance in December and January, is of the form and size of a small orange, usually with a pointed projection at the end, the tender thin skin being smooth and polished. The yellow juicy pulp is of an acid but refreshing taste. The tree is propagated by the large seeds, and thrives up to about 3,000 feet or more." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

40104. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Alajuela, Costa Rica. Presented by Mr. F. W. Smith, at the request of Dr. Inksetter. Cuttings received March 18, 1915.

40105. VITIS VINIFERA L. Vitaceæ. **Grape.**

From Alicante, Spain. Presented by Señor Gregorio Cruz Valero, director, Estacion Enologica. Cuttings received March 18, 1915.

"The *Lairen* grape, I am of the opinion, is the same as *Listan* or *Palomino*, at the present time extensively grown in California as the *Golden Chasselas*." (*George C. Husmann.*)

40106 to 40138.

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received March 8, 1915. Quoted notes by Mr. Noss.

"From an exhibition in Kawamata, near Fukushima City."

40106 to 40127. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

40106. "*Mochidaizu* (*dai*, large; *zu*, bean), used in *mochi* (glutinous rice boiled and pounded in a mortar)."

40107. "No. 2. *Nakatedaizu* (second early), used in *miso* (beans, etc., pickled in salt and made into soup), *tofu* (bean curd)."

40108. "No. 3. *Shichi-ri-korobi-daizu* (20-mile rolling), used for *tofu, miso*, and *soy*."

40109. "No. 4. *Yuki-no-shita-daizu* (under the snow), used for *tofu, soy*, and *miso*."

40110. "No. 5. *Wasedaizu* (early), used for *tofu, soy*, and *miso*."

40111. "No. 6. *Misodaizu*."

40112. "No. 7. *Ko-tsubu-daizu* (small grain), used for *miso* and *natto* (buried, fermented, and eaten as a relish)."

40113. 'No. 8. *Kinako-daizu*, made into *kinako* (a flour used in cooking) and also *natto*. Said to have been brought by soldiers from Manchuria.

40114. "No. 9. *Tamazukuridaizu* (name of a county near Sendai), used boiled."

40115. "No. 10. *Asahidaizu* (morning sun), used for *natto*."

40116. "No. 11. *Darumadaizu* (Dharma, whose image is a roly-poly, can not be upset), used boiled and for *tofu*."

40117. "No. 12. *Taiwandaizu* (Formosa), used boiled."

40118. "No. 13. *Hato-koroshi-daizu* (dove killer), used boiled."

40119. "No. 14. *Usu-ao-daizu* (light green), used for *kinako* and boiled."

40106 to 40138—Continued. (Quoted notes by Rev. C. Noss.)

40120. "No. 15. *Ao-daizu* (green), used for *kinako* and boiled."

40121. "No. 16. *Aka-kuki-daizu* (red stalk), used for *natto* and *miso*."

40122. "No. 17. *Fuku-shiro-daizu* (clothing white), used for *tofu*."

40123. "No. 18. *Hachi-ri-han-daizu*" (21 miles), used boiled. The name *Hachi-ri-han-daizu* involves a curious play on words. *Hachi-ri-han* means 'eight ri (a ri is 2½ miles) and a half,' which is just a little short of *ku-ri*. Now, *ku-ri* means nine ri, and *kuri* also means chestnut, so the expression in question means that the beans so named are almost equal to chestnuts."

40124 to 40127. "Beans are used boiled."

40124. "No. 19. *Yoshiwaradaizu* (harlot quarters in Tokyo)."

40125. "No. 20. *Chadaizu* (tea, alluding to the color)."

40126. "No. 21. *Kichidaizu* (lucky)."

40127. "No. 22. *Kurodaizu* (black)."

40128. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"*Mamegaki* (bean persimmon). The edible Japanese persimmon is grafted on the stock of this tree."

40129 to 40134. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"Beans are made into *an* (boiled, strained, and mixed with brown sugar) and boiled and mixed with boiled rice to make *akameshi* (red food)."

40129. "No. 24. *Akaazuki* (*aka*, red; *azuki*, little bean)."

40130. "No. 25. *Nakateazuki* (second early)."

40131. "No. 26. *Shiroazuki* (white)."

40132. "No. 27. *Okuteazuki* (late)."

40133. "No. 28. *Kataazuki* (mottled, figured)."

40134. "No. 29. *Dainagon azuki*."

40135. PHASEOLUS COCCINEUS L. Fabaceæ.

"No. 23. *Daikwodaizu* (great light), boiled and made into cakes."

40136 to 40138. PISUM spp. Fabaceæ.

"The pods are boiled in soup with miso."

40136. PISUM ARVENSE L. **Field pea.**

"No. 32. *Itaria Osaya* (Italian large pod)."

40137 and 40138. PISUM SATIVUM L. **Pea.**

40137. "No. 31. *Nion Saya*."

40138. "No. 30. *Nion Kinu Saya* (Japan silk pod)."

40139 to 40201.

From Kew, England. Presented by the director, Royal Botanic Gardens. Received March 5, 1915.

40139 to 40153. BERBERIS spp. Berberidaceæ. **Barberry.**

40139. BERBERIS sp.

Received as *Berberis vilmoriniana*.

40139 to 40201—Continued.

40140. BERBERIS HOOKERI VIRIDIS Schneider.

Differs from the typical form in having the leaves bright green underneath.

40141. BERBERIS SUBCAULIALATA Schneider.

See S. P. I. Nos. 37497 and 39575 for previous introductions and description.

"This species belongs to the same group as *B. stapfiana* [S. P. I. No. 37975], but it has globose fruits ripe in November, more distinctly angled branchlets, and larger leaves; the general aspect is otherwise very similar." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40142. BERBERIS AGGREGATA Schneider.

See S. P. I. Nos. 34550 and 39574 for previous introductions and description.

"A small, spreading bush. Leaves in rosettes about nine together, ovate to oblanceolate, entire or with a few teeth or spiny hairs in the upper half, dull green above, gray-green beneath, usually about one-half inch long and one-fourth inch broad. Berries small, creamy green, suffused with coral, in dense sessile clusters. China." (*Kew Bulletin of Miscellaneous Information, 1914, Appendix, p. 58.*)

40143. BERBERIS ANGULOSA Wall.

See S. P. I. Nos. 27115 and 33016 for previous introductions.

"A deciduous shrub, 4 feet or more high, with erect, grooved branchlets covered when young with a short, dark down. Leaves dark, glossy green, clustered in the axils of stiff spines, which are sometimes single, but usually wedge shaped, 1 to 1½ inches long, leathery, narrowing at the base to a very short stalk or none at all, the apex either rounded or pointed, often terminating in a short tooth; the slightly curled back margins are either entire or have 1 to 3 spiny teeth at each side. Flowers solitary, on stalks one-half to 1 inch long, or on short two to four flowered racemes; orange-yellow, globose, one-half to two-thirds inch across; outer sepals narrow oblong, inner one twice as wide; petals obovate. Fruit elliptical, two-thirds inch long, scarlet.

"Native of north India; first discovered in Kumaon early in the 19th century and in 1849 by Hooker in the Sikkim Himalayas, at 11,000 to 13,000 feet. It is absolutely hardy at Kew, and, although not one of the showiest barberries, is noteworthy for its unusually large flowers and berries. The latter are eatable, and, being less acid, are more palatable than most barberries." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 234.*)

"*Berberis angulosa* is a rare Himalayan species and one of the largest flowered and fruited of the 13 found in that mountain range; it is also one of the most distinct. In Sikkim it forms a shrub 4 feet high and more . . . and forms a striking object in autumn from the rich golden yellow and red coloring of the foliage." (*Curtis's Botanical Magazine, pl. 7071.*)

40144. BERBERIS ARISTATA DC.

See S. P. I. Nos. 27116, 32789, and 33017 for previous introductions.

"A very handsome shrub, of spreading, elegant habit, as much as 10 feet high and 15 feet in diameter, with smooth young branchlets

40139 to 40201—Continued.

becoming gray the second season. Ordinarily it is deciduous, but young plants or vigorous sucker growths will retain their foliage through the winter. Leaves 3 to 7 in a tuft, 1½ inches long in each tuft, obovate, green on both sides, or often whitish beneath; always spine tipped, but varying from few or numerous teeth on the margins to none at all. Each tuft of leaves springs from a single or triple spine, sometimes 1¼ inches long, and produces one drooping raceme 2 to 3 inches long. Flowers numerous, bright golden yellow. Berries spindle shaped or oblong, up to one-half inch long, red, covered with blue-white bloom.

"Native of the Himalayas, and represented by a great number of slightly varying forms, all of which are valuable garden plants. Of all deciduous barberries this is the strongest growing; it is also one of the most ornamental. It is an admirable shrub on a spacious lawn, almost as striking when loaded with its fine trusses of blue-white berries as when it is in bloom. So well adapted to our climate is it that it has been found wild in English hedgerows, having grown there, no doubt, from seeds deposited by birds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 235–236.*)

40145. BERBERIS CONCINNA Hook. f.

See S. P. I. Nos. 27117 and 33018 for previous introductions.

"The seeds (of the original collection) were gathered from small bushes growing in the Lachen Valley of the Sikkim Himalayas, at an elevation of 12,000 to 13,000 feet; it there formed a small, low bush, 1 to 3 feet high, with spreading almost prostrate branches, thickly covered with small leaves of a deep-green hue and polished above, snowy white and glaucous below; these colors, the large oblong scarlet berries, and red branchlets giving the shrub a singularly neat and pretty appearance when in fruit." (*Hooker. In Curtis's Botanical Magazine, pl. 4744, 1853.*)

"A low, deciduous bush, 3 feet high, of close, compact habit, branches furrowed. Leaves lustrous green above, white beneath, obovate, 1 inch or less long, tapering at the base to a short stalk, the midrib ending in a tuft of leaves. Flowers solitary, on a slender stalk 1 to 1½ inches long, pendent, globose, deep yellow, one-half inch across. Berries oblong, fleshy, red, one-half to three-fourths inch long.

"Native of the Sikkim Himalayas, at 12,000 to 13,000 feet; introduced to Kew by Sir Joseph Hooker about 1850. A very pretty barberry, and distinct through the vivid whiteness of the under surface of the leaves. It is best propagated by seeds, which it produces most seasons." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 238.*)

40146. BERBERIS DIAPHANA Maxim.

Scarlet-fruited, yellow-flowered bush, 1 to 2 meters high, from western Szechwan, China, nearly related to *B. macrosepala* of the Sikkim Himalayas, which has puberulous branchlets and is not found in China, and to *B. yunnanensis*, which has thinner, mostly entire, leaves, three to eight flowered, often rather elongated inflorescences, and only three to four ovules and seeds. This barberry may be distinguished by its chartaceous leaves, distinctly reticulate on

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both sides, and mostly spinose serrate, one to four flowered inflorescence, and by the more numerous (six to eight) ovules and seeds. (Adapted from *Schneider, in Plantae Wilsonianae, vol. 1, p. 354, 1913.*)

40147. BERBERIS GAGNEPAINI Schneider.

See S. P. I. Nos. 32701 and 37495 for previous introductions and description.

"An evergreen shrub, 3 to 6 feet high. Leaves lanceolate, 2 to 4 inches long, one-fourth to three-fourths inch broad, tapering very much toward the apex, coriaceous, spiny on the margin, spines at the bases of the leaves tripartite, one-half to two-thirds inch long. Flowers in fascicles of usually five to nine, delicate yellow, borne on red pedicels. Fruits ellipsoid, glaucous purple. This is figured in Curtis's Botanical Magazine, pl. 8185, as *B. acuminata*, but the true *B. acuminata* Franch. is less compact in habit, has larger, coarser, and thicker leaves, and stouter spines. China." (*Kew Bulletin of Miscellaneous Information, 1910, Appendix iii, p. 60.*)

40148. BERBERIS POLYANTHA Hemsl.

See S. P. I. No. 32698 for previous introduction and description.

"A deciduous shrub, 6 to 10 feet high, the young shoots reddish brown, ribbed, not downy; thorns solitary or three pronged, one-half to 1 inch long. Leaves obovate and mostly rounded at the end, the larger ones toothed at the terminal half, the smaller ones frequently entire, all tapered and wedge shaped at the base; one-half to 2 inches long, one-eighth to two-thirds inch wide; finely netveined on both sides, not downy; stalk one-fourth inch or less long. Flowers yellow, produced during June and July in drooping panicles 3 to 4 inches long, 1 to 1½ inches wide, carrying 20 to over 50 blossoms. Fruit red.

"Discovered in 1899 by Mr. A. E. Pratt, near Tatsienlu, Szechwan, western China; introduced from the same region by Wilson in 1904. A very fine species, remarkable for the large and abundant flower panicles." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 246.*)

40149. BERBERIS PRATTII Schneider.

See S. P. I. No. 37496 for previous introduction.

"This western Szechwan shrub, 6 to 10 feet tall, was first collected by Mr. A. E. Pratt in the neighborhood of Tatsienlu. It was subsequently met with there and at Muping by Mr. E. H. Wilson, when collecting for Messrs. James Veitch & Sons. Originally included by Hemsley in *B. polyantha*, this Berberis has been kept apart by Schneider on account of its less closely reticulated leaves and narrower inflorescence. But while perhaps most closely related to *B. polyantha* Hemsley, *B. prattii* most resembles *B. brevipaniculata* C. K. Schneid., with which it has been confused in collections, though it is readily distinguished by the pale green but not glaucous lower surface of the leaves. Like *B. brevipaniculata*, our plant is a shrub of dense growth, forming a mass of twiggy branches out of which are thrust each year a number of long whiplike shoots. More beautiful when in flower than most Chinese species of the genus, it is

40139 to 40201—Continued.

still more effective when laden in September with its branches o salmon-red fruits. The shrub grows very freely and is apparentl quite hardy; the freedom with which it fruits promises to make it propagation easy. Like other species of Berberis, this one enjoy a well-drained loamy soil." (*Curtis's Botanical Magazine, pl. 8549.*

40150. BERBERIS STAPFIANA Schneider.

See S. P. I. No. 37975 for previous introduction and description.

"A deciduous, or partially evergreen, glabrous shrub, probably or 6 feet high, of elegant habit, the stems spreading and arching leaf clusters one-third inch apart, spines three pronged, very slende and needlelike, brown, one-third to three-fourths inch long. Leave oblanceolate, rounded to pointed at the apex, mostly entire, but some times toothed near the end, tapered at the base; one-half to 1 inc long, one-twelfth to three-sixteenths inch wide; scarcely stalked, c hard texture. Flowers pale yellow, globose, one-sixth inch wid borne four to seven together in axillary, stalkless, or very shortl stalked clusters. The stalk of the individual flower is one-eighth t one-sixth inch long. Fruit oval, carmine red with a slight bloom, on fourth inch long, containing two or three seeds.

"Native of western China; introduced to Kew from St. Petersbur in 1896, and later from Wilson's seeds. M. Maurice de Vilmorin ha also grown it for some years at Les Barres, in France. It is charming shrub, of free, graceful growth, allied to *B. wilsonae*, bu that species is distinguished by its downy shoots." (*W. J. Bea Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40151. BERBERIS VIRESCENS Hook. f.

See S. P. I. Nos. 27122 and 30753 for previous introductions.

"An elegant, deciduous shrub, 6 to 9 feet high; with smooth, red dish brown, shining branches, armed at each leaf tuft with a slende 3-parted or single spine up to three-fourths inch long. Leaves tw thirds to 1¼ inches long, obovate, thin, pale but bright green; th apex round or tipped with a small spine, the margins toothed c entire. Flowers one-third inch in diameter, pale greenish or sulphu yellow, and produced on slender, short stalks, either in panicles o short racemes. Berries slender, nearly one-half inch long, reddish covered with bloom.

"Discovered by Sir Joseph Hooker, at an elevation of 9,000 fee in Sikkim, in 1849, and introduced to Kew about the same time; thi barberry was not given specific rank until described 40 years afte It is not one of the most attractive of barberries in regard to it flowers or fruit, but its habit is elegant, and the red tinge of it stems is pleasing in winter. There are two forms of the species a Kew, one regarded as typical, with red fruits; the other, var. *macr carpa*, with large black fruits five-eighths inch long." (*W. J. Bea Trees and Shrubs Hardy in the British Isles, vol. 1, p. 251.*)

40152. BERBERIS WILSONAE Hemsl.

"An elegant, deciduous, sometimes partially evergreen shrub, 2 t 4 feet high, of spreading habit, and usually more in diameter branches comparatively thin, reddish brown, slightly downy, arme with slender 3-parted spines one-half to three-fourths inch long, an red when young. Leaves as a rule less than 1 inch long, otherwis

0139 to 40201—Continued.

entire, or occasionally three lobed at the apex; smooth, conspicuously veined, gray-green above, somewhat glaucous beneath. Flowers small, pale yellow, borne two to six together in fascicles or short racemes. Berries roundish, coral or salmon red, somewhat translucent, borne very abundantly. Native of western China; discovered and introduced about 1904 by Mr. E. H. Wilson, after whose wife it is named. This is one of the most charming new introductions from western China, of neat yet elegant habit, and most noteworthy for its prettily colored, abundant berries. The leaves are said by Wilson to assume brilliant tints in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

40153. BERBERIS YUNNANENSIS Franchet.

"A deciduous shrub, 3 to 6 feet high, of dense, rounded habit, with gray, smooth branchlets, armed with 3 or 5 parted spines. Leaves obovate, sometimes almost orbicular, three-fourths to 1½ inches long, one-third to two-thirds, rarely 1 inch wide, rounded or pointed at the apex, tapering to a stalk at the base; margins mostly entire on the flowering twigs, more often toothed on the sterile ones. Flowers pale yellow, three to eight in a cluster; three-fourths inch across, flower stalks slender, three-fourths to 1¼ inches long. Berries oval, bright red, one-half inch long. Native of western China: first discovered in Yunnan by Delavay in 1885, at an altitude of 10,000 feet. It reached cultivation by way of France, and was introduced to Kew in 1904. It is a pretty shrub, and is distinct in regard to the size of its flowers and fruit, both of which are amongst the largest in the genus. It is also one of the most beautiful in its autumn livery of crimson." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

40154 and 40155. BETULA spp. Betulaceæ. **Birch.**

40154. BETULA ERMANI Cham.

A tree said to become 100 feet high; bark of the trunk peeling, creamy white; that of the branches orange-brown. Leaves broadly ovate, with a straight or slightly heart-shaped base, taper pointed, coarsely triangular toothed; 2 to 3 inches long, 1½ to 2½ inches broad. Native of Manchuria, Korea [Chosen], Japan, and, like many other plants from the same region, very liable to injury by spring frosts, owing to its early start into growth. For this reason it does not form a clean trunk and is subject to fungoid attacks. (Abridged from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 256.*)

40155. BETULA ERMANI NIPPONICA Maxim.

A Japanese form. This variety thrives better in cultivation through starting later into growth, and makes a clean-grown, handsome birch—one of the most striking of the white-stemmed group. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 256–257.*)

40156. CALOPHACA WOLGARICA (L. f.) Fisch. Fabaceæ.

"A deciduous shrub, said to become 6 feet high, but rarely more than half as high in this country [England]; bark of branches downy when quite young, peeling when old. Leaves pinnate, 2 to 3 inches long, com-

40139 to 40201—Continued.

posed of 11 to 17 leaflets. Racemes produced from the leaf axils of the current year's growth, 3 to 5 inches long, very downy, carrying four to nine flowers toward the end. Flowers yellow, pea shaped, three-fourths to 1 inch long, each on a stalk one-eighth inch long; calyx downy, one-third inch long, with slender, pointed teeth. Pod three-fourths to 1¼ inches long, cylindrical, covered with glandular hairs, one or two seeded. Blossoms in June and July. Native of the southeastern part of European Russia, in the regions of the Rivers Volga (from which it takes its name) and Don. It is frequently found in arid places and on dry hillsides. Introduced in 1756. It is quite hardy in the south of England, but may need the protection of a wall in the north. It likes abundant sunshine, and during hot summers flowers profusely. It is only after such seasons that seeds ripen. As a rule, it is grafted on standards of laburnum or Caragana, when it forms a big, mop-headed plant with semipendent branches. Plants raised in that way are sometimes short lived, but it is probably the best and easiest way, for plants raised from seed are not easy to rear. They are very liable to decay through damp during the winter, and should for two years be kept in pots, then planted out on a well-drained site. When grafted on the laburnum, no special precautions are needed." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 282.*)

40157 and 40158. CARAGANA spp. Fabaceæ.

40157. CARAGANA AURANTIACA Koehne.

"A deciduous shrub about 4 feet high, with graceful, ultimately pendulous, leafy branches, long, slender, but little divided, and armed with triple spines. Leaves very short stalked, consisting of four narrow, linear leaflets, one-third to one-half inch long, one-eighth inch wide. Flowers three-fourths inch long, produced singly on a stalk one-fourth inch long, orange yellow; calyx three-sixteenths inch long, bell shaped, with five triangular, minutely ciliated teeth. Pod 1 to 1½ inches long, smooth, rather cylindrical, pointed, carrying four to six seeds.

"Native of central Asia; introduced in 1887 as a variety of *C. pygmaea*, of which it was at first regarded merely as a deeper colored form. It differs also in the more taper-pointed leaflets and in the shorter calyx. This and *C. pygmaea* are probably the prettiest of all Caraganas. Its habit is graceful, and it blossoms with great profusion, the flowers hanging thickly from the under side of the branch in a long row, three or four to the inch. It blossoms in May and June and can be easily propagated by late summer cuttings." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 288.*)

40158. CARAGANA FRUTEX (L.) Koch.

"A deciduous shrub up to 10 feet in height, with long, often erect, supple branches, not much divided except near the ends. Leaves composed of two pairs of leaflets, which are attached near the end of the common stalk, being themselves stalkless; they are obovate, rounded at the end, one-half to over 1 inch long, smooth, dull green. Flowers bright yellow, three-fourths to 1 inch long, produced singly on a stalk somewhat shorter than itself. Calyx one-third inch long, bell shaped, smooth. Pod 1½ inches long, one-eighth inch wide,

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cylindrical, smooth. In a wild state this species extends from the south of Russia to Japan. It was introduced in 1752. It is a pretty shrub in flower, and is often quite neat and graceful in habit, especially when 3 or 4 feet high, with its numerous thin twigs, rather pendulous. It is distinct in being unarmed and without down." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 290.*)

40159. CARMICHAELIA FLAGELLIFORMIS Colenso. Fabaceæ.

"A deciduous or often leafless shrub, 4 or 5 feet high, with numerous erect-growing, slender, grooved branches, flattened or convex when young, round when old. Leaves very small and inconspicuous, consisting of three or five tiny leaflets, which are somewhat larger in young plants than in old ones. Flowers purplish lilac, pea shaped, produced in axillary downy racemes; there are from one to three racemes at each joint of the twigs and from three to seven flowers in each raceme, the whole forming a short, dense cluster. The flowers, although small, about one-eighth inch long, are borne in extraordinary profusion. Pod one-fourth to one-half inch long, nearly as wide, ending in a stout-pointed beak, and containing usually two seeds. Native of New Zealand, long grown at Kew in a greenhouse, and for the last 20 years unprotected in the open ground, where, although slightly injured at the younger parts in severe winters, it is on the whole quite hardy and produces both flowers and seeds in abundance. It is not very showy or ornamental, but its flat, erect branches give it a quaint and unusual aspect. These green shoots perform the usual functions of leaves. It is not so attractive a plant as its ally, *Notospartium carmichaeliae*, but is hardier. The Notospartium differs in its stouter twigs and more pendulous habit, in its larger pink flowers, and in the longer, narrower, jointed pod containing more seeds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 292.*)

40160 and 40161. CHAENOMELES spp. Malaceæ. **Quince.**

40160. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehd.

"A deciduous shrub of open habit, sparsely branched and more or less thorny. The branches are tortuous, furnished with spiny spurs several inches long. Leaves short stalked, lanceolate, 3 to 5 inches long, finely toothed, pointed, tapering at the base; smooth above, reddish downy beneath. On the young growths of the year the stipules are large, broad, and leaflike, oblique, 1 inch long, toothed. On year-old shoots the leaves are in tufts springing from the axil of a spine; stipules small. Flowers two or three together in short clusters; each flower 1½ inches in diameter; petals white, round, overlapping; calyx ciliate. Stamens numerous, shorter than the petals. Fruit very large and heavy, 4 to 6 inches long, 2½ to 3½ inches wide; somewhat egg shaped, but abruptly contracted near the base. Seed three-eighths inch long, wedge shaped, pointed at one end. Although this quince is probably a native of China, nothing appears to be definitely known of its habitat. Henry collected it in the Province of Hupeh, China, but never undoubtedly wild. It has long been grown at Kew, and by Canon Ellacombe at Bitton, but its introduction is unrecorded. It is perfectly hardy and bears fruit freely, but this does not ripen always out of doors. Although not in any way showy, its habit is quaint, and the huge fruits stuck close

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to the branches have a curious and interesting appearance. Increased by seeds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 452*, under *Cydonia cathayensis.*)

40161. CHAENOMELES JAPONICA (Thunb.) Lindley. **Dwarf quince.**

"A low, spreading, deciduous thorny shrub, usually under 3 feet in height, considerably more in width; branchlets very downy when young. Leaves 1 to 2 inches long, obovate or oval to almost orbicular, toothed, tapering at the base to a short stalk, quite smooth; stipules large on the young growing shoots, ovate or broadly heart shaped, one-fourth to three-fourths inch wide. Flowers in almost stalkless clusters from the joints of the year-old wood, very abundant, orange-red, scarlet or blood red, 1½ inches across. Fruit apple shaped, 1½ inches in diameter, yellow, stained with red on the sunny side, fragrant. Native of Japan; introduced about 1869 by Messrs. Maule, of Bristol. This is one of the most charming of red-flowered dwarf shrubs, flowering from April to June, and when at its best, literally wreathing its branches with blossom. It bears fruits freely, and they are pleasantly colored and scented in early winter; though harsh and acid when raw, they make an excellent conserve. Besides its dwarfer habit, it differs from its near ally, *C. japonica* [*C. lagenaria*], in having more obovate or rounded leaves, minutely warted twigs, and more coarsely toothed leaves. (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 453*, under *Cydonia maulei.*)

40162 to 40175. COTONEASTER spp. Malaceæ. **Cotoneaster.**

40162. COTONEASTER AFFINIS BACILLARIS (Wall.) Schneider.

"A deciduous shrub, 15 or more feet high, said to be found also as a small tree, of very graceful habit. Branches arching and often pendulous toward the end, the whole forming a wide-spreading mass more in diameter than in height; twigs smooth, or slightly downy. Leaves 1 to 3 inches long, one-third to half as wide, of variable shape, usually oval, ovate, or slightly obovate, pointed, smooth or becoming so; stalk one-fourth to one-half inch long. Flowers white, one-third inch across, borne numerously in cymose clusters, 1 to 2 inches across, at the end of short axillary branches. Fruit roundish, one-fourth inch or less in diameter, purplish brown or nearly black. Native of the Himalayas up to 10,000 feet. This is one of the most useful of cotoneasters, and one of the most graceful. It has been largely planted on the margins of the island of the lake at Kew, where the branches overhang the water and have the elegance of a willow, with the added attractions of abundant flowers and fruits. As a flowering shrub, this is one of the prettiest in the genus, but its fruits have not the bright color that gives to many cotoneasters their greatest charm. The wood is strong and elastic, and is valued in its native regions for making walking sticks and spear shafts. The species is variable in the shape and amount of down on the leaves, and no clear line can be drawn between it and *C. affinis*, which has woolly leaves. (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40163. COTONEASTER DAMMERI Schneider.

"A prostrate, evergreen shrub, with slender creeping stems keeping close to the ground; young wood downy. Leaves obovate or

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oval, three-fourths to 1¼ inches long, one-fourth to five-eighths inch wide; margins incurved, apex usually rounded, downy on the lower surface when young, ultimately quite smooth on both sides; stalk one-eighth to one-fourth inch long; veins in four to six pairs. Flowers solitary, occasionally in pairs, on downy stalks one-fourth inch long, pure white, one-third to one-half inch in diameter; calyx downy, with broad triangular lobes. Fruit coral red, globose, or rather top shaped, one-fourth inch wide. Native of central China; found by Henry near Ichang, and introduced in 1900 by Wilson from western Hupeh, where it occurs at 5,000 to 7,000 feet altitude. It is quite hardy and is very distinct among cotoneasters for its perfectly prostrate habit. Its fruits are brightly colored, and the plant will no doubt prove useful as an evergreen carpet shrub; also for covering sunny slopes, as it is very vigorous. It occurs wild on heaths and rocky ground." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

40164. COTONEASTER DIVARICATA Rehd. and Wilson.

"A deciduous shrub up to 6 feet high, of spreading habit; young shoots clothed with grayish hairs, becoming the second year smooth and reddish brown. Leaves roundish oval, sometimes ovate or obovate, tapered abruptly toward both ends, the apex mucronate; one-third to 1 inch long, one-fourth to five-eighths inch wide, smaller on the flowering shoots; dark glossy green, and soon smooth above, sparsely hairy beneath; veins in three or four pairs; leafstalk one-twelfth inch or less long. Flowers usually in threes at the end of short twigs, often supplemented by solitary ones in the axils of the terminal leaves, rosy white; calyx lobes triangular; they and the tube loosely woolly. Fruit red, egg shaped, one-third inch long, carrying two stones. Native of western Hupeh and western Szechwan, China; first found by Henry in the latter Province about 1887; introduced to the Coombe Wood nursery by Wilson in 1904. It is one of the handsomest in fruit of Chinese cotoneasters and was given a first-class certificate by the R. H. Society in the autumn of 1912. It is allied to the Himalayan *C. simonsii*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40165. COTONEASTER FOVEOLATA Rehd. and Wilson.

"A deciduous shrub, 10 to 20 feet high; young shoots covered with yellowish gray, bristly hairs, becoming smooth and grayish the second year. Leaves oval to ovate, slender pointed, usually wedge shaped, sometimes rounder at the base; 1½ to 4 inches long, three-fourths to 1¾ inches wide; dull green and soon smooth above, sparsely hairy beneath, more so on the midrib and veins; margins downy, veins in 3 to 6 pairs, the blade often puckered between them; stalk woolly, one-sixth inch or less in length. Corymbs three to seven flowered, on a stalk about one-half inch long, and hairy, like the young wood; flowers one-third inch wide; petals rose-tinted white; calyx tube woolly, the lobes triangular and woolly only on the margins. Fruit red, finally black, roundish, one-fourth to one-third inch wide, carrying usually three or four stones. Native of western Hupeh, China; introduced by Wilson in 1908. It has not flowered under cultivation but is growing vigorously." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

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40166. COTONEASTER FRANCHETI Bois.

"An evergreen shrub, 8 to 10 feet high, with slender, gracefully arching branches, which the first year are covered with a dense, pale brown wool. Leaves oval, tapering toward both ends, from three-fourths to 1¼ inches long, about half as wide, pointed; upper surface rather hairy when young, lustrous green later, lower surface covered with a thick, whitish, afterwards pale-brown felt; stalk one-eighth inch or less long. Flowers borne in corymbs of 5 to 15 flowers, terminating short, lateral, leafy twigs; petals erect, white, touched with rose on the outside; calyx felted like the under surface of the leaves. Fruit oblong, one-fourth to one-third inch long; orange scarlet. Native of Tibet and western China; first raised in France about 1895, by Mr. Maurice de Vilmorin, from seed sent by the Abbé Soulié. It is a shrub of very elegant growth, whose fruits are freely borne, but lose in brilliancy by the grayish down, more or less dense, which covers them. It was first confused with *C. pannosa;* the distinguishing characters may be defined as follows: Leaves rather longer than in *pannosa,* but with stalks scarcely half as long, the upper surface somewhat lustrous; flowers not so numerous in each cluster, petals erect and rose tinted; fruits larger, longer, and not of so deep a red. It flowers in May, and the fruit is ripe in October." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40167. COTONEASTER HENRYANA (Schneid.) Rehd. and Wilson.

"An evergreen shrub, 10 to 12 feet high, of sparse habit; the branches gracefully pendulous; young shoots hairy, becoming the second year smooth, and of a dark purplish brown. Leaves 2 to 4½ inches long, about one-third as wide, narrowly oval or obovate, finely pointed, dark green, and somewhat rough to the touch above; covered beneath when young with a grayish wool which mostly falls away by the second season, that which remains becoming brown and confined to the midrib and veins, the under surface still remaining brownish white; veins in 9 to 12 pairs; stalk one-fourth to one-half inch long, hairy. Flowers white, produced about the middle of June in corymbs 2 to 2½ inches across, terminating leafy twigs less than 1 inch long, that spring from the axils of the still-persisting leaves of the previous year; stamens 20, with purple anthers; calyx and flower stalks hairy. Fruit brownish crimson, egg shaped, one-fourth inch long. Native of central China; introduced by Wilson in 1901. A handsome and distinct evergreen, and probably the largest leaved of cotoneasters with persistent leaves. Allied to *C. salicifolia.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 410.*)

40168. COTONEASTER MULTIFLORA Bunge.

"A deciduous shrub or small tree, 10 to 12 feet high; branches slender, pendulous, or arching, and smooth except when quite young. Leaves thin in texture, varying in shape from ovate and oval to roundish, three-fourths to 2½ inches long, one-half to 1½ inches wide; usually blunt or rounded at the end; hairy when quite young, but soon becoming smooth above; pale and often smooth, never permanently woolly beneath; stalk one-fourth to one-half inch long. Flowers white, produced in branching clusters of 3 to 12 or more, not pleasantly scented. Fruit round or pear shaped, red. Native of

40139 to 40201—Continued.

Soongaria and other parts of the northwestern borders of China; introduced in 1837. This is one of the most elegant of cotoneasters. There is a specimen at Kew with a single well-formed trunk supporting a crown of pendulous or arching branches; the whole 10 to 12 feet high. When the branches are wreathed with the abundant blossom in May and June, this tree makes a most charming picture. The same or a closely allied shrub has recently been introduced by Wilson from western China, but 1,500 or more miles to the southwest of the first habitat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 413.*)

40169. COTONEASTER PANNOSA Franchet.

"An evergreen shrub of free and elegant habit, 10 feet or more high; branches arching and slender, covered with whitish felt when young. Leaves oval, tapering toward both ends, one-half to 1 inch long, about half as wide; always dull green above, covered with whitish felt beneath; stalk up to one-fourth inch long. Flowers one-fourth to three-eighths inch across, borne in corymbs of as many as 15 or 20; petals white, spreading; calyx woolly. Fruits scarcely one-fourth inch long, dull red. Native of Yunnan, China, up to 9,000 feet altitude; raised in Paris in 1888, from seed sent there by the Abbé Delavay. Introduced to Kew in 1892. The differences between this species and *C. francheti* [S. P. I. No. 40166] have already been alluded to under that species. Both are characterized by extreme elegance of habit and by being very woolly on young bark, flower stalk, calyx, and under surface of leaves; but *C. pannosa* has duller leaves, is less hairy, when young, on the upper surface, more spreading whiter petals, and shorter, rounder fruits of a deeper red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40170. COTONEASTER RACEMIFLORA (Desf.) Koch.

"A deciduous shrub up to 6 or 8 feet high, with slender branches, gray felted when young, becoming smooth and reddish brown later. Leaves oval or ovate, sometimes roundish, tapering toward the base, one-half to 1¼ inches in length, dark green and ultimately smooth above; gray felted beneath. Flowers white, in clusters of 4 to 12 or more on felted stalks. Fruit roundish, bright red. Native of southeastern Europe, Asia Minor, etc. Its identity has been much obscured, owing to a confusion with *C. lindleyi*, a taller, more robust shrub with much larger leaves and black fruits, also known as *C. nummularia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40171. COTONEASTER DIELSIANA Pritzel.

"A deciduous shrub, 8 feet, perhaps more, high, with long, extremely slender, arching or quite pendulous branches; branchlets downy when young. Leaves one-half to 1½ inches long, three-eighths to 1 inch wide, ovate; hairy above when young, covered beneath with felt, at first white, afterwards pale brown; veins prominent. Flowers three to seven in a cluster, terminating side shoots 1 inch or so long; calyx and flower stalk hairy, calyx lobes shallowly triangular. Fruit scarlet, round or rather pear shaped; one-quarter inch long. Native of central China; introduced for Messrs. Veitch by Wilson in

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1900. It flowers in June, and the fruit is in full color in September and October; it is then one of the most effective of cotoneasters. The habit is singularly graceful, the long whiplike shoots spreading outward and downward in every direction. The name *applanata* refers to the distichous arrangement of the branches of young plants, which gives them the appearance of a well-trained tree." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408,* under *C. applanata.*)

40172. COTONEASTER ACUTIFOLIA VILLOSULA Rehd. and Wilson.

"A deciduous shrub of bushy habit, 5 to 7 feet high, branches often pendulous; young twigs downy. Leaves pointed, ovate-lanceolate to oval, 1 to 2½ inches long, half as wide; dull green, and with scattered hairs above, paler and hairy beneath, especially when young; veins in five or six pairs; stalk one-twelfth to one-eighth inch long. Flowers white, three or more together in corymbs; stalks and calyx woolly, lobes of calyx triangular. Fruit reddish at first, finally black, one-third inch in diameter, smooth. Native of northern and western China. This is not one of the handsomest of cotoneasters and is, perhaps, a poor form of *C. lucida.* There has been much confusion between the two, owing to *C. lucida* also having been called *C. acutifolia,* but from that species the present one is distinguished by its dull green, not shining, more hairy leaves, and its woolly calyx and flower stalks. Var. *villosula* has young shoots clothed with yellowish gray loose hairs, becoming smooth and purplish brown the second year. Leaves 1½ to 4½ inches long, one-half to 2¼ inches wide, larger and more drawn out at the apex than in the type. Petals rose-tinted white. Fruit roundish pear shaped, two-fifths inch long, woolly, ultimately shining black. Native of western Hupeh; introduced by Wilson in 1900. A very vigorous shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 405.*)

40173. COTONEASTER AFFINIS Lindley.

"The identity of this species is somewhat confused, but what is usually grown under the name is an ally of *C. bacillaris* and *C. frigida.* It has the woolly young leaves, young wood, and flower stalks of the latter, but the purplish brown fruit of *C. bacillaris.* It is a shrub 10 to 15 feet high and deciduous. Leaves oval, acute, or bluntish at the apex, up to 3½ inches long. Native of the Himalayas; introduced in 1828." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40174. COTONEASTER AMOENA Wilson.

"A densely branched, stiff-habited evergreen bush of spreading habit, 3 to 5 feet high; young shoots slender but rigid, felted with gray wool. Leaves oval or ovate, tapered about equally to both ends, terminated by a fine point; one-third to three-fourths inch long, one-fourth to two-fifths inch wide; glossy green and with loose hairs above, clothed beneath with a thick, grayish wool; veins in 2 to 4 pairs; stalks one-twelfth to one-eighth inch long. Flowers white, one-fifth inch wide, borne in 6 to 10 flowered corymbs; petals roundish; stamens 20; calyx woolly, with triangular-ovate teeth. Fruit bright red, roundish obovoid, broadest above the middle, one-fourth inch long, packed in umbellike clusters at the end of

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short twigs that have sprung from the growths of the previous year. Native of Yunnan, China; introduced by Wilson about 1904 to the Coombe Wood nursery. It is most closely allied to *C. francheti* among older species, but is dwarfer and stiffer in habit, the leaves smaller, the berries a richer red, especially on the exposed side." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40175. COTONEASTER ZABELI Schneider.

"A deciduous shrub, 6 to 9 feet high; young shoots covered with loose grayish hairs, becoming smooth the second year and dark brown. Leaves one-half to 1½ inches long, half to two-thirds as wide; variable in shape, but usually oval or ovate, mostly blunt to rounded at the apex; but sometimes pointed, the base rounded to truncate; dark dull green above, with loose, appressed hairs, clothed beneath with yellowish gray felt; stalk one-eighth inch long, felted. Flowers in clusters of 4 to 10, small, rose colored; stamens 20; flower stalk and calyx felted. Fruit red, roundish, pear shaped, downy, one-third inch long. Native of western Hupeh, China; introduced in 1907 by Wilson, who described it as the common cotoneaster of the thickets of western Hupeh. It is allied to *integerrima* and *tomentosa;* from the former it differs in its felted calyx, and from both in the more numerously flowered inflorescences." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 416.*)

40176. COROKIA BUDDLEIOIDES Cunningham. Cornaceæ.

"A small tree, with long, narrow leaves, shining above and downy beneath. Flowers in slender panicles. Corolla one-fourth inch long, yellow. Drupe, orange-red. North Island: Mangonui to East Cape. Flowers December. Native name *Korokia-taranga.*" (*Laing and Blackwell, Plants of New Zealand.*)

40177. DEUTZIA LONGIFOLIA Franchet. Hydrangeaceæ.

See S. P. I. Nos. 34533 and 34600 for previous introductions and description.

"A deciduous shrub 4 to 6 feet high; young shoots sparsely scurfy; afterwards smooth, bright brown, peeling. Leaves narrowly oval lanceolate, rounded or tapered at the base, slender pointed, finely toothed; 1½ to 5 inches long, one-fourth to one-half inch wide, upper surface dull grayish green, sprinkled with pale, flat, usually 5 or 6 rayed, stellate hairs; under surface grayish white, covered with a close feltlike layer of many-rayed stellate scales, the midrib and chief veins furnished on each side with few to many white simple hairs. Flowers in corymbose panicles, 2 to 3 inches long and wide, produced in June at the end of short 2 to 6 leaved twigs; each flower is about 1 inch across, rich purplish rose, paling at the margins of the petals. The wings of the inner stamens are deeply bilobed at the top, the anthers set in the notch; calyx lobes linear oblong, persistent, covered like the calyx tube and flower stalks with pale, starry scurf. Fruit one-fourth inch across. Native of western China; introduced by Wilson in 1905. This is one of the finest of the Chinese Deutzias, both in size of flower and richness of tint. It is closely allied to *D. discolor*, but is distinguished by the longer, narrower leaves, more distinctly veined beneath, and especially

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by the simple hairs along the midrib—absent in *discolor;* the wings of the inner stamens are deeply bilobed in *discolor*, but the lobes do not reach up to or above the anther, as in *longifolia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 483.*)

40178. DIPELTA VENTRICOSA Hemsl. Caprifoliaceæ.

"A deciduous shrub, 6 to 15 feet high; young shoots downy. Leaves oval or ovate-lanceolate, rounded at the base, the apex long and taper pointed, edged with a few gland-tipped teeth, sometimes quite entire; 2 to 6 inches long, three-fourths to 1¾ inches wide; downy on the margins and slightly so on both surfaces; stalks one-eighth to one-third inch long. Flowers produced at the end and in the leaf axils of short side shoots; usually they are solitary in the leaf axil and in a terminal corymb of three. Corolla between tubular and pitcher shaped; 1 to 1¼ inches long, and three-fourths inch wide at the mouth; the tube protruded on one side near the base; 5-lobed, the lobes rounded, and the two upper ones the smaller; deep rose outside, paler within, except in the throat, which is orange colored. Calyx with five awl-shaped lobes, one-third inch long, fringed with short hairs. Flower stalk slender and furnished with several bracts at the base of each flower. These bracts, the largest two-thirds inch long, one-third inch wide, are persistent and become attached to the fruit, which is also covered by the persistent calyx. Distinct from *Dipelta floribunda* in the smaller bellied corolla. Native of western China; discovered and introduced by Wilson in 1904; flowered in the Coombe Wood nursery in May, 1908. It thrives very well, and promises to be an ornamental as well as interesting shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 497.*)

40179 and 40180. EUONYMUS spp. Celastraceæ.

40179. EUONYMUS PLANIPES Koehne.

"A deciduous shrub or small tree, closely allied to *E. latifolius*, and of similar habit and dimensions. The leaves are like those of that species in most respects, but are more coarsely toothed, and the stalk is not channeled on the upper side. The fruit is rosy red and 5-lobed, as in *E. latifolius*, but differs in having the top conical; nor are the wings of each lobe flattened and knifelike as in *E. latifolius*. Except in these respects the two differ but little. Native of Japan; introduced to Kew from the Arnold Arboretum in 1895, as *E. macropterus*; it has borne fruit for several years past, and promises to be as handsome as *latifolius*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 541.*)

40180. EUONYMUS YEDOENSIS Koehne.

"A deciduous shrub or small tree, of sturdy, flat-topped habit, growing 10 feet or more high; branches stiff; young shoots smooth. Leaves obovate, usually broadly so, sometimes oval, tapered at both ends, but more abruptly at the apex, minutely toothed; 2 to 5 inches long, 1½ to 3 inches wide, smooth, strongly veined beneath; leaf stalk one-third to five-eighths inch long. Flowers with styles of varying length. Fruit pinkish purple, about the size of those of *E. europaeus*; seeds with an orange-colored coat, but not much exposed. Native of Japan; named by Prof. Koehne in 1904. It is

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allied to *E. europaeus*, but is distinguished by the brown-purple anthers. I have not seen it in flower, but there is a fine bush in the vicarage garden at Bitton, near Bristol, where its leaves turn a brilliant red in early autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 543–544.*)

40181. HELIANTHEMUM FORMOSUM (Curt.) Dunal. Cistaceæ.

"A low shrub with wide-spreading branches, growing 2 to 3 feet high, but more in width, the young shoots erect, the whole plant gray with short down, intermixed with which are numerous whitish, stellate, or long simple hairs. Leaves oblong, oval, or obovate; one-half to 1½ inches long, one-fourth to one-half inch wide; 3-nerved at the narrowed base, the apex rounded or abruptly pointed. Flowers borne at the end of short side twigs, clustered, but appearing successively; each flower is 1½ inches in diameter, bright rich yellow, each petal with a conspicuous brownish purple blotch near, but not reaching to, the base. Sepals three, ovate, taper pointed, very hairy. Native of central and south Portugal; introduced in 1780; perhaps the most beautiful of all the sun roses we cultivate. It is perfectly hardy, and I have never seen it permanently injured by frost, even 30° to 32°. It is admirable for covering a dry, sunny bank, and remains well furnished with foliage through the winter. It commences to flower in May." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 612.*)

40182. HYDRANGEA BRETSCHNEIDERI Dippel. Hydrangeaceæ.

See S. P. I. No. 38812 for previous introduction and description.

"A deciduous shrub, 8 to 10 feet high, forming a sturdy bush, old bark peeling; young branches smooth. Leaves oblong to ovate, 3 to 5 inches long, 1 to 2¼ inches wide; rounded or wedge shaped at the base, slender pointed, regularly toothed; dull and smooth above, hairy on the veins and sometimes over the whole surface beneath. Corymbs flattened, 4 to 6 inches across, with a considerable number of large sterile flowers at the margins; these are three-fourths to 1¼ inches across, the three or four sepals rounded or obovate, white, afterwards rosy. The small, perfect flowers are dull white; flower stalks clothed with erect bristly down. The seed vessels are egg shaped, the persistent calyx forming a raised band round the middle. Native of China; introduced from the mountains about Peking, in 1882, by Dr. Bretschneider. Planted in a sunny position in good soil, it makes a really handsome shrub, flowering in June and July, perfectly hardy and always vigorous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 624.*)

40183. INDIGOFERA GERARDIANA Wallich. Fabaceæ.

"A deciduous shrub with downy, slightly ribbed branches. At Kew, where it is almost invariably cut back to the ground each winter, it sends up a dense thicket of erect, scarcely branched shoots, 2 to 4 feet high, clothed from top to bottom with leaves. Where the climate is milder the shoots survive, and it then becomes a much-branched shrub, perhaps 6 or 8 feet high. On a wall at Kew it is 10 feet high. Leaves pinnate, 2 to 4 inches long, composed of 6 to 10 pairs of leaflets and an odd one; leaflets three-eighths to five-eighths inch long, obovate or oval, clothed with gray appressed hairs on both sides, the apex notched or rounded and having a short, bristlelike tip. Racemes produced from the leaf axils in succession from below upward, on the terminal part of the shoot. They

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are 3 to 5 inches long, bearing short-stalked, pea-shaped flowers one-half inch long, rosy purple, two dozen or more on each raceme. Calyx downy, with lance-shaped lobes. Pod deflexed when ripe, 1½ to 2 inches long, one-eighth inch wide, cylindric, 6 to 10 seeded. Native of the northwestern Himalayas. Commencing to blossom about the end of June and continuing until the end of September, having also foliage of great beauty and luxuriance, this is one of the most ornamental of late-flowering shrubs. It has the disadvantage of starting late into growth, and it is not until June that the stools become well furnished. For this reason it is not suitable for planting alone in masses. It likes abundant sunshine, and does not flower so freely in dull seasons." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 655.*)

Distribution.—Temperate and subtropical slopes of the western Himalayas from the Salt Range to Kumaon, in India, and west to Afghanistan.

40184 to 40187. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

40184. LONICERA ORIENTALIS LONGIFOLIA Dippel.
(*Lonicera kesselringi* Regel.)

"It has oblong or oval-lanceolate leaves 1½ to 2½ inches long, rarely more than three-fourths inch wide. Flowers pink, smaller than in *orientalis*, the corolla tube only slightly swollen, stalk one-third inch long. Introduced from Kamchatka in 1888." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 51.*)

40185. LONICERA TRICHOSANTHA Bureau and Franchet.

"A deciduous bush, of vigorous growth and rounded, dense, leafy habit, probably 8 feet or more high, the whole plant with a pale grayish aspect; young shoots at first downy, becoming smooth later in the season. Leaves oval, often inclined to obovate, rounded or broadly wedge shaped at the base and short pointed or rounded at the apex, 1 to 2 inches long, one-half to 1¼ inches wide; dull gray-green above, paler beneath, both sides at first downy, becoming almost smooth, especially above; stalk one-eighth to one-fourth inch long. Flowers pale yellow, fading to a deeper shade; corolla one-half to three-fourths inch long, hairy outside. Calyx bell shaped, but split into two parts. Berries red. Native of Szechwan, China; discovered by the Russian traveler Potanin. Introduced in quantity by Wilson about 1908. A robust species of the same class as *deflexicalyx* and *quinquelocularis*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

40186. LONICERA DEFLEXICALYX Batalin.

"A deciduous shrub of elegant spreading habit; branches often horizontal or drooping, the branchlets in opposite rows; young shoots purple, downy. Leaves 1½ to 3 inches long, scarcely half as wide, rounded at the base, narrowly ovate, pointed, dull green and downy above; grayish and hairy beneath, especially when young; stalk one-third inch long. Flowers in pairs from each axil along the branchlets, all expanding upwards; corolla yellow, five-eighths inch long, downy outside, the lower lip much deflexed, tube shorter than the lobes; stamens hairy at the base; style wholly hairy; stalk one-fourth inch long; fruit orange-red. Native of China and Tibet;

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introduced in 1904. A strikingly elegant, free-growing shrub, very hardy and floriferous, showing its flowers to good advantage by producing them on the upper side of the long, feathered branches. It flowers in May and June, and grows probably 8 feet or so high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 41.*)

40187. LONICERA QUINQUELOCULARIS TRANSLUCENS (Carr.) Zabel.

"This is very closely allied to and perhaps only a form of *L. quinquelocularis*. The leaves are longer pointed, more markedly ciliate, and the upper surface rougher than in *quinquelocularis;* the corolla tube also is shorter and more protuberant on one side. A sturdy bush, 10 feet high, that flowers freely." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 54.*)

40188. PICRASMA QUASSIOIDES (Don) Bennett. Simaroubaceæ.

"*Picrasma ailanthoides* Planchon. A slender, deciduous tree, 20 to 40 feet high, with very handsome young bark of a reddish brown, conspicuously marked with yellow spots. Leaves pinnate, 10 to 15 inches long, glabrous, consisting of 9 to 13 leaflets, which are glossy green, 1 to 4 inches long, ovate, unequal at the base, round or pointed at the apex, sharp toothed at the margin, and with a very short stalk. Flowers green, one-third inch across, in a lax, branching corymb 6 to 8 inches long, and often nearly as wide; stalks downy. Fruit a berry, about the size of a pea, rather obovoid, with the calyx still attached. This tree, according to some authorities, is a form of *P. quassioides*, a species which, in that sense, is spread in a wild state from Japan and China through the Himalayas as far south as Java. This is, no doubt, extending the specific limits of *P. quassioides* too far. No tree from Java would be as perfectly hardy in our climate as is this. The above description is based on trees growing at Kew which were introduced from Japan in 1890. They have flowered and borne fruit several times, and young plants have been raised from the seed. They have no beauty of flower or fruit, but of the foliage in autumn Sargent observes, 'few Japanese plants I saw are as beautiful as this small tree.' The leaves turn first orange, then scarlet. The whole tree is permeated by a singularly bitter principle. Its nearest ally among hard trees is Ailanthus." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 165.*)

40189 and 40190. PRUNUS spp. Amygdalaceæ.

40189. PRUNUS MAXIMOWICZII Rupr.

"A deciduous tree, up to 20 or 30 feet high, with a slender trunk; branchlets downy, the down persisting through the first winter. Leaves ovate or oval, pointed at the apex, rounded at the base; 1½ to 3 inches long, three-fourths to 1¼ inches wide; doubly toothed, downy on the midrib and veins beneath and with scattered hairs above; stalk one-third to one-half inch long, downy. Flowers rather dull yellowish white, about five-eighths inch across, produced in mid-May on stalked racemes 2 to 3½ inches long, remarkable for the large leaflike bracts with which they are furnished; from 6 to 10 flowers occur on a raceme, each flower on a downy stalk one-half to three-fourths inch long; calyx hairy, with pointed, toothed lobes. Fruit globose, one-sixth inch wide, shining, at first red, then black; ripe in August. Native of Korea [Chosen], Manchuria, and

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Japan; introduced by Sargent to the United States in 1892 and by him sent to Kew in 1895. The tree is interesting and very distinct among cherries because of the conspicuous bracts on the inflorescence, which remain until the fruit is ripe; but neither in flower nor fruit is it particularly attractive, as cherries go. For its autumn coloring it may prove valuable, as it turns a brilliant scarlet both in Japan and North America. It is very hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

40190. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehd.)

"A deciduous tree, 40 to 80 feet high, with a trunk sometimes 3 feet in diameter; young shoots smooth. Leaves obovate to oval, drawn out at the apex into a long, slender point; rounded; sometimes slightly heart shaped at the base, sharply toothed, 2 to 4 inches long, about half as wide; quite smooth on both surfaces, often reddish when young; stalk smooth, one-half to 1 inch long, with a pair of glands near the blade. Bracts red, oblong, one-half inch long, edged with small glandular teeth. Flowers 1¼ to 1½ inches across, of a lovely deep blush color, produced two to six together in short-stalked umbels, each flower with a stalk 1 to 1¼ inches long; petals obovate, notched at the broad apex; calyx tubular, with five ovate, pointed lobes one-fourth inch long, smooth and entire; stamens deep rose. Fruit a small black cherry, one-third inch wide. Native of Japan; introduced by Sargent to Kew in 1893. This splendid cherry, probably the finest of the true cherries as a timber tree, is also one of the most beautiful in its blossom. It flowers in April. In June, 1910, I saw the trees first introduced to America in the Arnold Arboretum; they were then laden with an extraordinary profusion of small black cherries. The seeds germinate freely after lying dormant a year." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 250.*)

"*Prunus sargentii* is a large, long-life tree of great vigor, perfectly hardy here in New England and, for these reasons alone, ought to be tried as stock for the flowering cherries of Japan, exclusive of *Prunus pendula, P. subhirtella,* and their forms.

"My studies in Japan have convinced me that the failure to succeed with Japanese cherries in western lands is due to their being worked on a stock which, though quick growing, is short lived and not suited to the rigors of such a climate as that of New England. I therefore turn to the Japanese species where vigor and hardiness are proved, *P. sargentii.*

"It has yet to be shown that the Japanese cherries will grow on this particular stock, but such evidence as I have accumulated is most encouraging, and I make bold to prophesy that fully 90 per cent will be found to thrive on *P. sargentii,* but they must be worked high enough to prevent them getting off on their own roots.

"*Prunus sargentii* and its varieties are found scattered in woods on the mountain sides throughout the length and breadth of Japan, but are nowhere very abundant. The type is found from the Nikko region northward. Both the type and its forms are commonly planted, and many fine avenues and groves occur in different parts

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of Japan—for example, at Yoshino near Nara, at Arashigama near Kyoto, Kogami near Tokyo, at Nikko and Chuzenji; at Noboribeten near Muroran, at Onumakoen near Hakodate, etc. The last two mentioned places are in Hokkaido [Hokushu]." (*E. H. Wilson, letter of April 11, 1915.*)

40191 to 40193. Rosa spp. Rosaceæ. **Rose.**

40191. Rosa webbiana Wallich.

"A graceful shrub of thin habit, 4 to 6 feet high, whose long, slender branches are armed with straight spines one-third to one-half inch long, often in pairs; stems often blue-white when young. Leaves 1 to 3 inches long, usually smooth, sometimes downy, composed of five to nine leaflets; common stalk with tiny prickles beneath. Leaflets obovate, broadly oval, or almost round, one-fourth to three-fourths inch long, toothed toward the end. Flowers 1½ to 2 inches across, pale pink, produced singly on short lateral twigs; flower stalks one-third to one-half inch long, smooth or slightly glandular; sepals about one-half inch long, lanceolate, terminating in a short tail, ciliate; calyx tube is more or less glandular. Fruit pitcher shaped, bright red, three-fourths inch long, apart from the persisting sepals with which it is crowned. Native of the Himalayas, at from 6,000 to 18,000 feet elevation. This delightful rose, so distinct in its thin, graceful habit, its pale yellowish prickles, its tiny leaves, and glaucous young stems, is also very pretty in June when covered with its blush-tinted flowers and in autumn when carrying its bright-red fruits. It can best be propagated by layering, also by seeds when the plant is sufficiently isolated to be safe against cross-fertilization, but is still very rare in cultivation. It has a recently introduced ally in *R. willmottiae*, from western China." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 447.*)

40192. Rosa hugonis Hemsl.

"A bush of rounded habit, 8 feet high and more in diameter; branches slender, sometimes gracefully arching, armed with straight, flattened spines of varying length, which are associated on the barren shoots with numerous bristles. Leaves 1 to 4 inches long, quite smooth. Leaflets 5 to 11, oval or obovate, one-fourth to three-fourths inch long; finely toothed, deep grass green. Flowers 2 inches across, bright yellow, solitary on short lateral twigs; flower stalk smooth, slender, three-fourths inch or less in length; calyx tube smooth, sepals one-half inch long, entire, downy inside. Fruit smooth, nearly round, one-half to five-eighths inch wide, black when ripe, the calyx persisting at the top. Native of western China; first raised at Kew in 1899, from seed sent to England by Father Hugh Scallan (Pater Hugo), a missionary in its native country. It is a most charming rose and the most vigorous of the yellow-flowered species, beautiful even when not in flower for its luxuriant, feathery masses of foliage. It shares with *R. sericea* the distinction of being the earliest of roses to flower, usually by mid-May. It is allied to the Scotch rose, but differs markedly in habit. It is perfectly hardy, free, but neat and not rampant in growth. The spines vary much in character and are often altogether absent from some portions of

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the shoots; the largest are thin, flattened, triangular, one-half inch long, reddish, and translucent." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 429.*)

40193. ROSA SERTATA Rolfe.

"A shrub of elegant habit, up to 5 feet, perhaps more, high; branches glaucous, graceful, and slender, armed with spines up to one-half inch long, in pairs or scattered. Leaves 2 to 4 inches long, composed of 7 to 11 leaflets, which are stalkless, oval to oblong, sharply toothed; one-third to three-quarters inch long, three-sixteenths to three-eighths inch wide; gray-green above, glaucous beneath; stipules edged with glandular hairs. Flowers few or solitary, on short twigs, 2 to 2½ inches across, flower stalk two-thirds to 1¼ inches long, glandular-hairy or smooth; petals broadly obcordate, delicate purplish rose; calyx lobes ovate-lanceolate, tapering to a long, narrow point, minutely downy, sometimes glandular downy, sometimes smooth; anthers deep yellow. Fruit deep red, egg shaped, three-quarters inch long, the sepals persisting at the top. Native of central China; introduced by Wilson in 1907 and flowered at Kew in June, 1910. It is an extremely elegant and pretty rose, allied to *R. webbiana* and *R. wilmottiae*. From the former of these it differs 'in its laxer habit, its few, slender, straight, stipulary thorns, and its more slender, beaked fruit.' (*Curtis's Botanical Magazine.*) *R. wilmottiae* is smaller in its leaves and flowers." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 443.*)

40194 and 40195. RUBUS spp. Rosaceæ.

40194. RUBUS GIRALDIANUS Focke.

"A vigorous deciduous shrub up to 8 or 10 feet high; its biennial stems much branched toward the summit, pendulous at the ends, covered with a vividly white, waxy covering, not downy, armed rather sparsely with broad-based spines. Leaves pinnate, consisting of usually nine leaflets, and from 5 to 8 inches long; the main stalk downy and armed with hooked spines. Leaflets 1½ to 2½ inches long, three-quarters to 1¼ inches wide, the terminal one the largest; ovate or rather diamond shaped; lateral ones oval-lanceolate; all unequally and rather coarsely toothed, slender pointed, smooth above, white beneath with a close felt. Inflorescence a terminal panicle; the flowers small and of little beauty, purple. Fruit black. Native of China; first found in the Province of Shensi by Giraldi, later in Szechwan by Wilson, who introduced it in 1907. Its claims to recognition in the garden are its remarkably white stems, which are as striking in this respect as those of *R. biflorus*, and its pendulous branches, which give a remarkable fountainlike aspect to the shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458.*)

40195. RUBUS OMEIENSIS Rolfe.

"A large, straggling shrub, with round stems, unarmed, but furnished with small, stellate hairs. Leaves of maplelike form, five or obscurely seven lobed, with a heart-shaped base; 3 to 7 inches long and as much wide; irregularly toothed, stellately downy beneath, less so above; stalk 2 to 3 inches long; stipules one-half to three-quarters inch long, cut up into deep, narrow segments. Panicles many

40139 to 40201—Continued.

flowered, terminal; flowers one-half inch across, with downy stalks; calyx downy, the lobes pointed, triangular; petals purple. Native of western China, and found on Mount Omi by Wilson, who introduced it for Messrs. Veitch, with whom it flowered in August, 1908. It grows up to 6,000 feet elevation and will probably be perfectly hardy. It makes growths 10 to 12 feet long in a season. The stipules are rather remarkable." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

40196. STRANVAESIA DAVIDIANA UNDULATA (Decne.) Rehder and Wilson. Malaceæ.

"A low, spreading evergreen shrub, or a tree over 20 feet high, with very downy young branchlets. Leaves leathery, oval-lanceolate, pointed, glossy green, 1½ to 3½ inches long, one-half to 1¼ inches wide; entire, downy only on the midrib and margins; stalk one-third to one-half inch long, downy. Flowers white, produced in June in terminal, hairy-stalked corymbs, 1½ to 2½ inches wide; each flower about one-half inch across; petals soon falling; calyx with five triangular lobes, silky hairy when young; stamens about 20. Fruit brilliant red, of the shape and size of common haws. Native of China; introduced by Wilson for Messrs. Veitch about 1901. Unlike the previous species, this appears to be quite hardy. It flowers with great freedom, but the blossoms last in beauty a very short time. Its great charm as a garden shrub is in its abundant crop of bright-red fruits. The leaves, as in Photinia, turn red sometimes before falling. The specific name refers to the frequently wavy margins of the leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 556,* as *S. undulata.*)

40197. TILIA EUCHLORA Koch. Tiliaceæ.

"A tree as yet about 40 feet high in this country, but probably considerably higher naturally, of graceful, often rather pendulous growth; young shoots smooth. Leaves roundish ovate, oblique and heart shaped at the base, with short, tapered points; 2 to 4 inches long, often more in young trees, and as much or more wide; rich glossy green and smooth above, pale green beneath and smooth, except for tufts of hairs in the axils of the veins; marginal teeth small, regular, and slender; stalk smooth, 1 to 2 inches long. Flowers produced in the latter half of July, three to seven together in cymes 2 to 4 inches long, yellowish white. Floral bract linear-oblong, or narrowly lance shaped, 2 to 3 inches long, one-fourth to five-eighths inch wide, smooth, shortly stalked. Fruit distinctly ovoid, tapered to a point, shaggy, with pale-brown wool, one-fourth to one-third inch long.

"Of doubtful origin; introduced about 1860. In some respects this is the most beautiful of the limes, on account of its bright-green large leaves and pleasing form. It is remarkably free from insect pests. In the summer of 1909, when not only limes but nearly every other tree and shrub was infested with aphides and other pests, I examined specimens of this lime at intervals during the summer and never found a single parasite on the leaves. Yet it is quite uncommon in this country. On the Continent, however, its qualities are better appreciated, and it is being much planted in streets. Its brilliantly glossy, rounded, nearly glabrous leaves and pendulous branches very well distinguish it. It has been suggested that it is a hybrid between *T. cordata* and the scarcely

40139 to 40201—Continued.

known *T. caucasica* found in the Caucasus." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 590.*)

40198 to 40201. VIBURNUM spp. Caprifoliaceæ.

40198. VIBURNUM LOBOPHYLLUM Graeb.

"A deciduous shrub, with young shoots smooth or soon becoming so, dark reddish brown when mature. Leaves ovate to roundish or broadly obovate, abruptly narrowed at the apex to a short point; mostly rounded, sometimes broadly wedge shaped at the base; coarsely toothed except toward the base; 1½ to 4 inches long, seven-eighths to 3¼ inches wide; smooth or downy only on the midrib and veins; veins in five to seven pairs; leafstalk one-fourth to 1 inch long. Corymbs 2 to 4 inches wide, with seven main branches, which, like the secondary ones, are minutely downy and glandular. Flowers white, one-fourth inch across, stamens longer than the corolla, anthers yellow. Fruit bright red, roundish, one-third inch long. Native of western China; introduced by Wilson in 1901, and again in 1907 and 1910. It belongs to the confusing group of red-fruited Asiatic Viburnums containing *wrightii, betulifolium, dilatatum*, etc." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 652.*)

40199. VIBURNUM HENRYI Hemsl.

"An erect, evergreen shrub, becoming 10 feet high, having a treelike habit; branchlets stiff, smooth. Leaves narrowly oval, oblong, or obovate; 2 to 5 inches long, 1 to 1¾ inches wide; shortly pointed, wedge shaped or rounded at the base, shallowly toothed, dark shining green above, paler beneath, smooth on both sides or slightly furnished with stellate down on the stalk and midrib; stalk slightly winged, one-half to three-fourths inch long. Panicles stiff, pyramidal, 2 to 4 inches wide at the base, and about as long; flowers perfect and uniform, white, one-fourth inch across, opening about midsummer. Fruits oval, one-third inch long, at first red, then black. Native of the Patung district of central China, discovered there by Henry in 1887; introduced by Wilson for Messrs. Veitch in 1901. It is distinct among hardy Viburnums through its long, narrowish, nearly or quite smooth leaves, its stiff, thin, erect habit, and especially its pyramidal panicles. At Coombe Wood it has proved quite hardy since its introduction. It was given a first-class certificate by the Royal Horticultural Society in September, 1910, for its beauty in fruit." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 649.*)

40200. VIBURNUM PHLEBOTRICHUM Sieb. and Zucc.

Viburnum phlebotrichum is very distinct from *V. wrightii* in the smaller, narrower, ovate to oblong, shorter stalked leaves, the more numerous, silky, whitish hairs on the veins beneath, the quite smooth and slender-stalked cymes, the purple calyx, and especially the very short stamens. Native of Japan. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 660.*)

40201. VIBURNUM RHYTIDOPHYLLUM Hemsl.

"An evergreen shrub, perhaps eventually 10 feet high and as much through; the stout branches thickly covered with starry down. Leaves ovate-oblong; 3 to 7½ inches long, 1 to 2½ inches wide; pointed

40139 to 40201—Continued.

or blunt at the apex, rounded or slightly heart shaped at the base; upper surface glossy, not downy, but deeply and conspicuously wrinkled; lower one gray with a thick felt of starry down; stalk one-half to 1½ inches long. Flowers produced on large terminal umbellike trusses 4 to 8 inches across, which form into bud in the autumn and remain exposed all through the winter and until the blossoms expand the following May or June. They are a dull yellowish white, about one-fourth inch in diameter. Fruit oval, one-third inch long, at first red, then shining black. Native of central and western China; introduced by Wilson for Messrs. Veitch in 1900. This remarkable shrub is one of the most distinct and striking, not only of Viburnums, but of all the newer Chinese shrubs. It appears to be quite hardy, and flowers well in spite of the curious habit of forming its inflorescences and partially developing them in autumn. Its beauty is in its bold, wrinkled, shining leaves and red fruits. The flowers are dull and not particularly attractive. It was given a first-class certificate by the Royal Horticultural Society in September, 1907. During that month of the year its fruits are red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 655.*)

40202. Sabicea sp. Rubiaceæ.

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell. Received March 15, 1915.

"*Tomwamwe*, a fruit (berry) that grows in clusters on a vine which resembles very much the honeysuckle of the South. The berry is very fine flavored, somewhat resembling the strawberry, although not the equal of that fruit. It makes a beautiful jelly." (*Stockwell.*)

40203 to 40205.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist in charge, Lamao Experiment Station. Received March 15, 1915.

40203. Cucumis sativus L. Cucurbitaceæ. Cucumber.

"The *India* cucumber. Size, large, 22 to 30 cm. long, averaging 26 cm. in circumference; average weight 850 grams; form oblong, cross section more or less triangular; color brown, the surface cracking as the cucumber attains maturity, exposing the flesh and giving it the appearance of being reticulated; surface fairly smooth; flesh perhaps somewhat less tender than the standard cucumber of the Temperate Zone, nevertheless very good; seed abundant.

"The seed of this variety was presented to the Bureau of Agriculture by Mr. A. C. Hartless, superintendent of the Seharunpur Botanical Garden, United Provinces, India, in 1911, and was sown at the end of the rainy season the same year at the Lamao Experiment Station. From the seed saved another sowing was made in January, 1913, together with a large number of imported varieties of cucurbits of all classes. In this trial the *India* showed itself hardier and superior to all the cucurbits planted in the resistance to insect pests, which practically destroyed the rest, notwithstanding frequent application of arsenical sprays. The variety is of vigorous growth and a satisfactory yielder and is unques-

40203 to 40205—Continued.

tionably one of the best varieties adapted to local conditions, everything taken into consideration, that has been introduced into the Philippines.

"A large area has lately been planted to *India* at the Lamao Experiment Station with a view of producing seed for general distribution throughout the Philippines another year.

"India is the original home of the cucumber, and the variety under consideration seems to be an improvement upon the aboriginal form that is especially adapted to tropical conditions.

"According to Mr. Hartless, this cucumber is grown throughout India as a climber during the rainy season. Notwithstanding its extensive cultivation in India, it is a curious fact that this distinct cucumber variety has never received a variety name. Coincident to its wide dissemination throughout the Philippines it has therefore been considered expedient to christen the variety in order to distinguish it from other varieties, and it has been named *India* in honor of the ancestral home of the cucumber." (*Wester, The Philippine Agricultural Review, vol. 7, no. 2, Feb., 1914.*)

40204 and 40205. HIBISCUS SABDARIFFA L. Malvaceæ. **Roselle.**

40204. "*Temprano* roselle, 20 days earlier than other varieties." (*Wester.*)

"Plant of medium vigor and upright growth, branching profusely, rarely exceeding 1.25 meters in height; stems light red; leaves palmately 5-lobate with conspicuously narrow lobes; flowers normal; pollen golden brown; calyx of the same general form as the *Victor*, but smaller, average length 45 mm., width 25 mm., with epicalyx 39 mm. The variety is prolific, and the fruiting season is 20 days earlier than *Victor* and *Rico*.

"When the *Victor* fruited for the first time at Lamao in 1911 one plant was conspicuous for its earliness, and seed was saved from this plant and sown the following year. The early trait of the parent was transmitted to the progeny, and the earliest plant was again isolated and the seed sown in 1913. In harvesting the fruit and seed of the third generation the early habit and other characteristics that distinguish this new strain from its parent, the *Victor*, seem to be sufficiently well fixed to merit its recognition as a separate variety, and it has been named *Temprano* on account of its early habit.

"The *Temprano* is more subject to leaf-blight than any of the other varieties mentioned in this paper, and therefore, on account of its deficiency in vigor, it is not recommended for planting on a large scale. In fact, the *Temprano* is of more value in a subtropical than a tropical country, where early frosts at the approach of the cold season destroy the ordinary varieties before their fruiting season is over." (*Wester, The Philippine Agricultural Review, vol. 7, no. 6, June, 1914.*)

40205. "*Altissima.* Plant of upright habit, vigorous, attaining a height of 2.5, sometimes exceeding 3.5 meters, branching sparsely or not at all; leaf lobes narrow; flowers normal; pollen golden yellow; full-grown calyces 25 mm. long, 22 mm. wide, including epicalyx 27 mm.; calyx lobes thin and fibrous, and thickly covered with short, stiff bristles; seed pod almost totally filling cavity.

40203 to 40205—Continued.

"The above description applies to two varieties, seed of which was received by the Bureau of Agriculture from the Gold Coast, West Africa, in 1911, and which in some respects differ radically from all other forms examined by the writer. They differ from each other in that one kind belongs to the red type of roselle, while the other form is intermediate between the red and the green. They evidently have no economic value on the Gold Coast, for our correspondent forwarded the seed with the remark that it was an 'interesting plant.'

"Because of the fibrous and spiny character of the small calyces of the two forms belonging to *Altissima* they have no culinary value. However, their habit of growth is favorable to the production of long fiber, and according to Mr. M. M. Saleeby, chief of the fiber division of this bureau, the two forms of *Altissima* are far superior to jute and all other varieties of roselle (including four from India) in habit, growth, and yield. As yet, the fiber of the *Altissima* has not been carefully studied, but it is apparently suitable for all uses in which jute fiber is now employed. The commercial possibilities of the fiber of the *Altissima* are now being investigated by Mr. Saleeby; the results will be published in a future issue of the Review.

"In India roselle is grown chiefly for its fiber, and in a limited way it is considered as a food plant in the Old World Tropics, the equatorial belt of the Western Hemisphere, and Australia. According to Mr. W. E. Safford, Bureau of Plant Industry, United States Department of Agriculture, before the advent of artificial refrigeration the wealthy planters in certain parts of Mexico sent Indian runners to the snow-capped mountains in their neighborhood to bring down ice or snow for making roselle sherbet.

"It may be of interest to readers in foreign countries to know that roselle soda water, roselle sundaes, roselle sherbet, and roselle ice cream are now included among the other standard offerings of a similar character in some of the best restaurants and ice-cream parlors in Manila, and it is confidently believed that if the roselle products were advertised and featured in the United States it would be a question of only a short time when their real excellence would win for them general recognition; the culture of roselle would then become an industry of considerable importance among the minor crops of the Tropics and subtropics." (*Wester, The Philippine Agricultural Review, vol. 7, p. 268–269, 1914.*)

40206 and 40207. MALUS spp. Malaceæ.

From Albano, Stockholm, Sweden. Presented by Dr. Veit Wittrock, director, Botanic Garden. Received March 16, 1915.

40206. MALUS ZUMI (Mats.) Rehder. **Crab apple.**

"A small tree of pyramidal habit; young wood slightly downy. Leaves ovate or oblong; 1½ to 3½ inches long, three-fourths to 1½ inches wide; tapering or rounded at the base, smooth except when quite young; stalks about 1 inch long. Flowers pink in bud, becoming white after opening, 1 to 1¼ inches diameter, produced in clusters of four to seven; calyx lobes woolly, especially inside; flower stalks 1 to 1½ inches long. Fruit one-half inch diameter, globose, red.

40206 and 40207—Continued.

"Native of Japan; introduced to North America in 1892 by Sargent, and thence to Kew in 1905. It is one of the group of Japanese crabs to which *Pyrus toringo* and *P. sargenti* belong, distinguished by small fruits marked at the apex by the scar of the fallen calyx. It is said to be superior to *P. toringo* as a garden tree in the Arnold Arboretum, being covered there in May by a mass of flowers, and in autumn by 'attractive bright red fruits.' It differs from both its allies in its oblong leaves being only slightly or not at all lobed, and from *P. sargenti* in its wider flowers and less crowded petals. The fruits are larger than the pealike ones of *P. toringo*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 300.*)

40207. × MALUS KAIDO Dippel.

"Perhaps a hybrid between *spectabilis* and *ringo*. It has larger, more deeply colored flowers than the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 297.*)

40208. BERBERIS GLAUCESCENS St. Hilaire. Berberidaceæ. **Barberry.**

From Nancy, France. Presented by the director, Botanic Garden. Received March 15, 1915.

"A shrubby species with 3-parted spines one-fourth to two-thirds inch long, brownish yellow in color, leaves subsessile, about one-half to 1½ inches long and one-third to two-thirds inch broad, obovate oblong, obtuse, mucronulate, entire, glabrous, and glaucescent. Flowers globose, about the size of those of *Berberis vulgaris*, all parts very smooth. Found in the woods of the Province of Cisplatina near the border of old Lusitania near the city of Maldonado." (*Saint-Hilaire, Flora Brasiliae Meridionalis, vol. 1, p. 47, 1825.*)

40209 to 40211.

From Nanking, Kiangsu, China. Presented by Rev. Joseph Bailie, University of Nanking. Received March 24, 1915. Quoted notes by Mr. Bailie.

40209. CASTANEA sp. Fagaceæ. **Chestnut.**

"Scions from trees inside of the city of Nanking, and I am not quite sure that they ought not to be grafted before we can expect them to produce true. They are about the largest chestnuts we have in China."

40210. AMYGDALUS PERSICA PLATYCARPA (Decne.) Ricker. Amygdalaceæ. (*Prunus persica platycarpa* Bailey.) **Flat peach.**

"Scions of the *pien t'ao*, or 'flat peach;' early choice."

40211. PRUNUS sp. Amygdalaceæ. **Cherry.**

"Large red."

40212 to 40219.

From Kabul, Afghanistan. Presented by His Majesty Habibullah Khan, Ameer of Afghanistan, through Mr. A. C. Jewett. Received February 23, 1915. Quoted notes by Mr. Jewett, except as otherwise indicated.

40212 and 40213. AMYGDALUS COMMUNIS L. Amygdalaceæ. **Almond.**

"Paper-shell almonds."

40212 to 40219—Continued. (Quoted notes by Mr. A. C. Jewett.)

40214. ELAEAGNUS ANGUSTIFOLIA L. Elæagnaceæ. **Oleaster.**

"*Sinjid* from Kabul."

40215. MORUS ALBA L. Moraceæ. **Mulberry.**

"The dried mulberries form the principal food of the poor people of the mountain districts of Kohistan. In the valleys of Kohistan and around Kabul there are extensive orchards of this mulberry, all irrigated, and the yield seems to be heavy. There is a howl if you cut down a mulberry tree. When the mulberries are ripe, they sweep under the trees and let the fruit fall down and dry them, just as they do the plums in California. For eight months the people live entirely on these mulberries. They grind them and make a flour and mix it with ground almonds. My men come month after month with their shirts filled with them. They can carry in their shirts enough of these dried mulberries for five days' rations. These men are commandeered and they bring their food with them. They get no other food whatever; mulberries and water is the whole diet. They sit down on the rocks, and they lunch and dine on nothing but these dried mulberries."

40216. PINUS GERARDIANA Wallich. Pinaceæ. **Pine.**

"Pine nuts."

"A moderate-sized evergreen of the inner, dry, and arid northwest Himalayas, generally between 6,000 and 10,000 feet; mountains of northern Afghanistan and Kafiristan; also Hariab district at 7,000 to 11,000 feet." (*Gamble.*)

"The chief product of this species is the almondlike seed, contained in the cones. The cones ripen in October, are plucked before they open, and heated to make the scales expand. The seeds are then removed and are largely eaten by the natives and stored for winter use. In Kunawar they are said to form a staple food with the inhabitants. They are also exported to the plains from the hills of the Punjab, and large quantities are imported annually into India from Afghanistan. The wood is hard, durable, and very resinous, but rarely utilized, since the tree is so highly valued for its seeds." (*Watt, Commercial Products of India.*)

40217 and 40218. PISTACIA VERA L. Anacardiaceæ. **Pistache.**

"Laughing pistachio from Herat."

40219. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

"Sun-dried apricots from Kandahar."

40220 and 40221. CYDONIA VEITCHII Trabut. Malaceæ. **Pyronia.**

From Algiers, Algeria. Presented by Dr. L. Trabut, Government botanist for Algeria. Received March 19, 1915.

"Different plants from those sent you in 1914, although coming from the same sowing. This is nearer to Pyrus than to Cydonia." (*Trabut.*)

40220. *Pyronia 538–A.* **40221.** *Pyronia 538–B.*

See Journal of Heredity, vol. 7, p. 416–419, September, 1916, for a discussion of these interesting hybrids.

40222. CITRUS BERGAMIA Risso. Rutaceæ. **Bergamot orange.**

From Bronte, Sicily. Presented by Mr. Charles Beek. Received March 25, 1915.

"The Bergamot orange grows all down the coast of Calabria from above Scilla to the end of the boot and is not cultivated in Sicily; it grows all along the seashore and is cultivated intensely, i. e., highly manured and watered with the greatest care." (*Beek.*)

40223 to 40235. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. **Plum.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Garden. Plants received March 20, 1915. Quoted notes by Mr. Hartless.

"Country varieties. This is a race of plums the origin of which has not yet been satisfactorily settled. By some botanists it is supposed to be a distinct species from either the Japanese or European plums. They are undoubtedly much more adapted for semitropical conditions than any other varieties. They can be cultivated with success either in the plains (of northern India especially) or on the hills. Some of them are very good indeed as a dessert, and all can be utilized in cooking and preserving. For general culture in the plains these are to be strongly recommended. In the vernacular they are generally known as *Alubokhara* and *Alucha*. The difference between the two is not very marked; but a practiced person can detect them. The former is much more free growing than the *Alucha*, and the fruits are slightly more oval in shape. No. 1 to No. 6 are the oldest known varieties. Nos. 7 to 14 are termed plums by the malis, but to others are generally classed as *Alubokharas*. They have been collected from various sources in northern India, and as they have distinguishing characters they have been named according to these. They all fruit freely on the plains, coming into fruit about the beginning of May and lasting for nearly two months."

40223. "No. 1. *Alubokhara*. Large. Later than No. 2 [S. P. I. No. 40224]. Good for dessert but not good for cooking."

40224. "No. 2. *Alubokhara*. Small. Earlier than No. 1 [S. P. I. No. 40223]."

40225. "No. 4. *Alucha*. Purple. One of the best in my opinion."

40226. "No. 5. *Alucha*. Red. The best of the *Aluchas*."

40227. "No. 6. *Alucha*. Yellow."

40228. "No. 7. *Alubokhara*. Dwarf early yellow. Good for dessert."

40229. "No. 8. *Alubokhara*. Early large red. Good for dessert."

40230. "No. 9. *Alubokhara*. Early round. Good for dessert."

40231. "No. 10. *Alubokhara*. Kabul Greengage. Is one of the best."

40232. "No. 11. *Alubokhara*. From Ladak. Is better for cooking."

40233. "No. 12. *Alubokhara*. Large red. Good both for dessert and for cooking."

40234. "No. 13. *Alubokhara*. Large yellow. Good both for dessert and for cooking."

40235. "No. 14. *Alubokhara*. Late yellow. Good both for dessert and cooking."

40233. JUGLANS PORTORICENSIS Dode. Juglandaceæ. **Walnut.**

From Adjuntas, Porto Rico. Presented by Mr. D. W. May, Agricultural Experiment Station, Mayaguez, Porto Rico, who secured the nuts from Mr. Bartolomé Barceló, Adjuntas. Received March 19, 1915.

"There is perhaps but one tree of this kind all around this district, and the people did not seem to know what it was. The owner of the tree informs me that these walnuts mature in April." (*Barceló.*)

40237 to 40258. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Received March 22, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

40237 to 40243. White group.

40237. "No. 24. *Blanco.* From Luyano, Havana. Yielding 43,930 arrobas per caballería."

40238. "No. 87. *Papa.* From Camaguey. Yielding 10,017 arrobas per caballería."

40239. "No. 93. *Amarrate conmigo.* From Taco Taco, Pinar del Rio. Yielding 15,026 arrobas per caballería."

40240. "No. 124. *Sequito.* From Bayamo, Oriente. Yielding 24,347 arrobas per caballería."

40241. "No. 155. *Rayo.* From Imias, Oriente. Yielding 3,869 arrobas per caballería."

40242. "No. 182. *Santiago.* From El Caney, Oriente. Yielding 22,817 arrobas per caballería."

40243. "No. 200. *Manf.* From Trinidad, Santa Clara. Yielding 29,217 arrobas per caballería."

40244 to 40256. Red group.

40244. "No. 19. *Vuelta-arriba.* From Santiago de las Vegas, Havana. Yielding 25,808 arrobas per caballería."

40245. "No. 34. *Maleta.* From Santiago de las Vegas, Havana. Yielding 84,869 arrobas per caballería."

40246. "No. 49. *Cienfuegos.* From Santiago de las Vegas, Havana. Yielding 28,813 arrobas per caballería."

40247. "No. 57. *Andrinito.* From Santiago de las Vegas, Havana. Yielding 9,130 arrobas per caballería."

40248. "No. 62. *Matojo.* From Cienfuegos, Santa Clara. Yielding 53,000 arrobas per caballería."

40249. "No. 71. *Tuno.* From Taco Taco, Pinar del Rio. Yielding 29,739 arrobas per caballería."

40250. "No. 97. *Manila colorado.* From Taco Taco, Pinar del Rio. Yielding 9,313 arrobas per caballería."

40251. "No. 99. *San Pedro colorado.* From Taco Taco, Pinar del Rio. Yielding 13,434 arrobas per caballería."

40252. "No. 121. *Mulato.* From Santiago de las Vegas, Havana. Yielding 27,304 arrobas per caballería."

40237 to 40258—Continued. (Quoted notes by Mr. J. T. Roig.)

40253. "No. 129. *Botija.* From Nueva Gerona, Isla de Pinos Yielding 28,696 arrobas per caballería."

40254. "No. 195. *Sabanilla colorado.* From Trinidad, Santa Clara. Yielding 45,174 arrobas per caballería."

40255. "No. 255. *Mambf.* From Camaguey. Yielding 30,469 arrobas per caballería."

40256. "No. 233. *Isla de Pinos.* From San Luis, Pinar del Rio Yielding 12,521 arrobas per caballería."

40257 and 40258. Violet group.

40257. "No. 21. *Vueltabajero.* From Botanical Garden, Havana Yielding 36,347 arrobas per caballería."

40258. "No. 227. *Manf morado.* From Camaguey. Yielding 19,217 arrobas per caballería."

40259 to 40294.

From Alicante, Spain. Presented by Señor Gregorio Cruz Valero, engineering director of the Estacion Enologica de Cocoentaina. Received March 18, 1915. Quoted notes by Señor Valero.

40259 to 40279. ZEA MAYS L. Poaceæ. **Corn.**

40259 to 40266. "From the Province of Navarra."

40259. *Aricun*, from the Baztan Valley.

40260. *Rojo de Tudela*, from Tudela.

40261 to 40264. "From Pamplona."

40261. *Hembrilla jirafa.*
40262. *Cuenca.*
40263. *Hembrilla petit.*
40264. *Hembrilla.*

40265. "*Hembrilla del pueblo*, from Aranguren."

40266. "*Rojo de Ardanaz*, from Ardanaz."

40267. "Gathered from the neighborhood of Vitoria, in the Province of Alava."

40268. "From near San Sebastian, Province of Guipuzcoa."

40269 to 40271. "From the region of Galicia, in the Province of Corunna."

40269. *Corriente del pais.*
40270. *Flamenco.*
40271. *Del pais mejorado.*

40272 to 40279. "From the Canary Islands."

40272. From Batan.
40273. From Santa Brigidia.
40274. From Tafira.
40275. From Teror.
40276. From Agaete.
40277. From Telde.
40278. From Jinamar.
40279. From Los Hoyos, Arucas.

40280. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

"*Garbanzos*, from the Canary Islands."

40281. LATHYRUS SATIVUS L. Fabaceæ.

"*Chicharo blanco de Lanzarote*, from the Canary Islands."

40259 to 40294—Continued. (Quoted notes by Señor G. C. Valero.)

40282. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. **Lentil.**
(*Lens esculenta* Moench.)

"*Lenteja*, from the Canary Islands."

40283 to 40285. PISUM SATIVUM L. Fabaceæ. **Pea.**

"From the Canary Islands."

40283. (No notes.) 40285. *Arvejas.*

40284. *Arbejon de Lanzarote.*

40286 and 40287. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

"From the Canary Islands."

40286. *Frijol.* 40287. *Judias de color.*

40288 and 40289. VICIA FABA L. Fabaceæ. **Broad bean.**

"From the Canary Islands."

40288. *Habas moras.* 40289. *Haba Castellana.*

40290. LUPINUS ALBUS L. Fabaceæ. **Lupine.**

"*Altramuces de Hierro*, from the Canary Islands."

40291. LATHYRUS TINGITANUS L. Fabaceæ. **Tangier pea.**

40292. LATHYRUS SATIVUS L. Fabaceæ.

Chicharaca de Hierro.

40293. PHALARIS CANARIENSIS L. Poaceæ. **Canary grass.**

"*Alpiste*, from the Canary Islands."

40294. VICIA MONANTHOS (L.) Desf. Fabaceæ.

"*Lentejos de Tenerife*, from the Canary Islands."

40295 and 40296. QUERCUS spp. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received March 24, 1915.

40295. QUERCUS INSIGNIS Martens and Galleotti.

See S. P. I. No. 39723 for previous introduction and description.

40296. QUERCUS sp.

40297. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 22, 1915.

"Seeds of a Moroccan pear, spontaneous, growing in abundance, from the forest of the Mamora. I believe this will make a good stock." (*Trabut.*)

40298. ERAGROSTIS sp. Poaceæ. **Perennial teff.**

From Burttholm, Union of South Africa. Presented by Prof. J. Burtt Davy, Transvaal Maize Breeding Station. Received March 23, 1915.

"Seed of a native species of Eragrostis, a perennial, which is a most excellent summer pasture and hay grass and one which establishes itself very readily on plowed ground, forming pure stands. It prefers a sandy loam, with a rainfall of about 26 inches in summer, and stands about 10 degrees F. of frost in dry weather. I have called it perennial teff and should like you to try it on the poor sandy lands of Florida." (*Davy.*)

40299 and 40300. HIBISCUS SABDARIFFA L. Malvaceæ. **Roselle.**

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station, through Mr. Paul Popenoe. Received March 25, 1915.

40299. "*Archer* roselle. Plant robust, frequently exceeding 1.60 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those in the red types; 'eye' yellowish; pollen pale yellow; stigma green; full-grown calyx greenish white, sparsely covered with short, stiff bristles; average length of calyx 45 mm., width 26 mm., including epicalyx 32 mm.

"The *Archer* is very prolific, and the fruit is somewhat less acid than that of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety that is said to resemble champagne in taste and appearance.

"Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested in the Lamao Experiment Station the same year. It has been named in honor of Mr. Archer, with whom the writer has had the privilege of being in correspondence for many years, and who has greatly assisted the Bureau of Agriculture in the introduction of many useful and decorative tropical American plants.

"The green type of roselle, to which the *Archer* belongs, was described as *Hibiscus digitatus* by Cavanilles in 1790, but it is now considered to be a form of *H. sabdariffa* L." (*Wester, The Philippine Agricultural Review, vol. 7, p. 267–268, June, 1914.*)

40300. "*Victor* roselle. This variety is distinguished by having the unifoliolate leaves of the young plant change early into leaves deeply 5-lobed, these leaf characters remaining until the flowering period, when the leaves become 3-parted or again unifoliolate. The stems and calyces are reddish. The pollen is a golden brown. The calyces average about 45 to 50 mm. in length and 28 mm. in equatorial diameter, tapering toward the apex; the calyx lobes are frequently convolute, and the fleshy spines subtending the calyx lobes are longer and more slender than in the *Rico*, and are curved upward. The *Victor* is more upright in habit than the *Rico* and somewhat earlier in fruiting, due probably to its having been cultivated in Florida for several years." (*Wester, The Philippine Agricultural Review, vol. 5, p. 126, Mar., 1912.*)

40301. ACROCOMIA CRISPA (H. B. K.) C. F. Baker. Phœnicaceæ. **Palm.**

From Cuba. Presented by Mr. C. T. Simpson, Littleriver, Fla. Received March 25, 1915.

"A most striking and beautiful palm, growing in a variety of soils and situations throughout the greater part of Cuba. The stem is seldom more than 8 inches in diameter at the base, but it rapidly expands to 2 feet or more, carrying its size up almost to the handsome, somewhat spiny leaves. In poor soil it seldom attains a height of over 20 feet, but in rich valleys it grows up to 60 feet. The very hard seeds had better be carefully cracked." (*Simpson.*)

40302. BAUHINIA KAPPLERI Sagot. Cæsalpiniaceæ.

From Littleriver, Fla. Presented by Mr. C. T. Simpson. Received March 25, 1915.

"A small tropical tree bearing large, handsome, pinkish flowers variegated with yellow and spotted with red. A rapid grower and abundant bloomer." (*Simpson.*)

40303. ELAEIS MELANOCOCCA Gaertn. Phœnicaceæ. **Oil palm.**

From Cristobal, Canal Zone. Obtained by Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 30, 1915.

"Large, spreading, low palm with short, thick, erect, or slightly trailing trunk. Grows in low, moist land close to the sea. Closely related to *Elaeis guineensis*, the African oil palm. Oil extracted in small quantities by the natives from the kernels. Appears suitable for plantings in Florida." (*Cook.*)

40304 to 40306. ANNONA spp. Annonaceæ.

From Cajabon, Guatemala. Presented by Mr. W. F. Curley, at the request of Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 24, 1915.

40304. ANNONA RETICULATA L. **Custard-apple.**

"*Raxpac*, or *Anona morada* of warm climate; red fruit. (*Curley.*)

40305. ANNONA SCLERODERMA Safford. **Poxte.**

"The fruit is spherical or subglobose, with a hard shell having the surface divided into polygonal areoles by obtuse raised ridges. The seeds are comparatively large, compressed, and smoothly polished. The leaves are coriaceous, oblong, and acuminate, with the secondary nerves not prominent." (*Safford.*)

Mr. O. F. Cook, in his field notes, makes the following entry: "The fruit called by the Kekchi Indians, of Alta Verapaz, *boxte*, or *boshte*, is curious rather than beautiful. The shell is divided into angular depressed areoles by raised ridges. When mature the ridges are dark brown and the areoles between them green. The pulp is readily separable into slender pyramids. These are normally 1-seeded, but in many cases they are seedless. The texture of the pulp is perfect, the flavor aromatic and delicious, with no unpleasant aftertaste. It is much richer than the soursop, with a suggestion of the flavor of the *zapote blanco*, or *matasano* (*Casimiroa edulis*), but not in the least objectionable. It can be eaten most conveniently with a spoon. The most fragrant pulp is close to the rind. The seeds separate from the surrounding pulp more readily than in most Annona fruits."

40306. ANNONA SQUAMOSA L. **Sugar-apple.**

"*Pac*, or white-meat anona, not the *Tzunun* of cold country." (*Curley.*)

40307 to 40310. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

From Rosario, Argentina. Presented by Mr. William Dawson, jr., American consul. Received April 29, 1915. Quoted notes by Mr. Dawson.

"I am informed by dealers and growers at Rosario that flax grown in this district is not classified according to the botanical variety. The only classification is that based on the size and quality of the grain, which depends chiefly on the soil and methods of cultivation. Flax is grown in this district exclu-

sively for the seed, the fiber being burned. The following remarks are taken from an article on flax, written by Señor Carlos D. Girola and published in the reports of the agricultural and live-stock census of 1908, volume 3, pages 409 and 410:

"There exists no botanical or even agricultural classification of the varieties of flax grown in Argentina, and seeds vary so greatly according to soils and the conditions under which obtained that it is often difficult to establish by mere ocular examination the current classification which divides linseed into two main groups: *Linos grandes* (large flax or linseed) and *linos pequeños* (small flax or linseed), or *linetas*. The *linos grandes* were originally brought from southern Europe and particularly from the south of Italy. The *linos pequeños*, or *linetas*, seeds of which are smaller than those of the *linos grandes*, came from northern Europe, especially Russia, and resemble in form and color the linseed of Riga, Pskof, etc. The *linos grandes* require a richer soil and more temperate climate than does the smaller variety. The latter stands the cold better and gives satisfactory yields in less fertile soils where the *linos grandes* would not prosper. On account of its suitability for colder climates the *lineta* occupies the southern zone of the belt where flax is cultivated."

40307. "This is an average linseed representing the standard commercial product of the Province of Santa Fe."

40308. "This seed is typical of a high-grade linseed of the *lineta* type (small grain)."

40309. "Classed as a high-grade linseed."

40310. "Seed of a somewhat inferior linseed."

40311 to 40324. LATHYRUS spp. Fabaceæ.

40311 to 40315. From Kew, England. Presented by Sir David Prain, director, Royal Botanic Garden. Received April 27, 1915.

40311. LATHYRUS CIRRHOSUS Seringe.

Glabrous annual. Stem four-sided, wing angled. Leaflets two to three pairs. Flowering peduncles, one to three. Found in the Pyrenees Mountains. (Adapted from *De Candolle, Prodromus, vol. 2, p. 374, 1828.*)

40312. LATHYRUS GRANDIFLORUS Sibthorp and Smith.

Everlasting pea.

Perennial climbing legume. Leaves with one pair of leaflets.

"Stem winged, 4 to 6 feet long; leaflets large, ovate, obtuse, mucronulate, undulate, tendrils branched, short; stipules small; peduncles two to three flowered, longer than the leaves; shield large, obcordate, notched, broad, rose purple, wings dark purple; pod linear, 3 inches. June, July. Larger vine than *L. latifolius*, but weaker and less rampant. Flowers as large as those of the sweet pea. Free flowering, succeeding in any soil, not requiring much light. Adapted to banks, along walk margins in woods, among strong shrubs, and as a covering for rocks." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 888.*)

40313. LATHYRUS POLYANTHUS Boiss. and Blanche.

A glabrous, somewhat glaucous Lathyrus with prostrate or ascending angular stems, large ovate stipules, single-flowered peduncles, and yellow corolla. Found in Syria and Mesopotamia. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 602.*)

40311 to 40324—Continued.

40314. LATHYRUS SETIFOLIUS L.

A glabrous annual, with climbing or prostrate stems, 2 to 5 cm. (8 to 20 inches) long, slightly winged. Leaves short petioled, the lower without, the upper with branched tendrils. Leaflets long, narrow linear. Stipules hastate, usually linear lanceolate. Peduncles one flowered. Flowers scarlet red. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1040.*)

40315. LATHYRUS UNDULATUS Boiss.

Perennial climbing legume. Leaves with one pair of leaflets.

"Stems twining, broadly winged; leaflets oblong; peduncles five to six flowered; flowers a mauve red. A form intermediate between *L. latifolius* and *L. rotundifolius*. A somewhat tender species, said to be six weeks earlier than any other." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 888.*)

40316 to 40324. From Edinburgh, Scotland. Presented by Dr. I. Bailey Balfour, Royal Botanic Garden. Received April 26, 1915.

40316. LATHYRUS MONTANUS Bernh.

"Perennial, stem simple, angled, smooth; leaflets five to eight pairs, large, elliptic lanceolate, pointed, glaucous below; peduncles many flowered, a little shorter than the leaves; flowers large, orange-yellow. June, July. Forests of the Alps. A shade-enduring species with flowers erect in spikelike clusters and adapted to borders and rockeries." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40317. LATHYRUS NISSOLIA L.

An erect or ascending nearly glabrous annual, 2 to 4 meters (8 to 16 inches) high, with simple, rarely branched, 4-angled stem. Petioles leaflike, without tendrils. Stipules small, subulate. Peduncles slightly pubescent, one (rarely two) flowered. Flowers purple. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1023.*)

40318. LATHYRUS SPHAERICUS Retzius.

A small annual, usually not over 75 cm. (2½ feet) high. Leaflets of the upper leaves 8 cm. (3 inches) long and 1 to 6 mm. (one-twenty-fifth to one-fourth inch) broad. Stipules hastate lanceolate, longer than the petiole. Flowers less than 1 cm. (three-eighths inch) long, brick red. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1037.*)

40319. LATHYRUS SYLVESTRIS L. Flat pea.

See S. P. I. Nos. 20776 and 32415 for previous introductions and description.

40320. LATHYRUS UNDULATUS Boiss.

See S. P. I. No. 40315 for description.

40321. LATHYRUS VENETUS (Mill.) Rouy.

Stem prostrate, usually branching underground. Leaflets broadly oval, subacute, 4 cm. (1.6 inches) long, 2 cm. (0.8 inch) broad, short ciliate. Peduncles thicker than in *L. vernus*. Flowers nearly half as large. Petals clear purple, the standard darker with dark stripes.

40311 to 40324—Continued.

Pods covered with small brown to red glands. Seeds brown. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol 6, p. 1049.*)

40322. LATHYRUS VERNUS (L.) Bernh. **Spring bitter vetch.**

"Perennial, stem simple, somewhat pubescent, 1 to 2 feet long; leaflets two to three pairs, ovate acuminate, light green; stipules entire; peduncles five to seven flowered, shorter than the leaves; flowers blue-violet; keel shaded with green, nodding. May, June. Hills and woods, southern and central Europe. The most popular Orobus; a compact, tufted plant, growing quickly in sun or a little shade; best in deep, sandy loam, in a sheltered position; hardy." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40323. LATHYRUS VERNUS FLACCIDUS Arcang.

"Differs from the species in its narrower and longer leaflets and lanceolate stipules." (*Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1048.*)

Distribution.—Southern France and northern Italy.

40324. LATHYRUS VERNUS (L.) Bernh.

Var. *azureus.* A blue-flowered form.

40325 and 40326. HORDEUM spp. Poaceæ. **Barley.**

From Chungking, China. Presented by Mr. E. Carleton Baker, American consul. Received April 21, 1915.

"Barley is not grown to any extent in the vicinity of Chungking. As stated by Mr. E. H. Wilson, the botanist, in his book on Szechwan, 'it is only in the mountainous Tibetan borderland that it is largely grown. The Chinese do not care for the meal, and the grain is chiefly used for making spirits and for feeding pigs and other domestic animals.'" (*Baker.*)

40325. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

40326. HORDEUM VULGARE PALLIDUM Seringe.

40327. STUARTIA MONADELPHIA Sieb. and Zucc. Theaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum, which secured it from Dr. H. Shirasawa, Forest Experiment Station, Meguro, near Tokyo, Japan. Received April 28, 1915.

Yama tsia (Japanese). An ornamental small tree or shrub with alternate subflexuous branches; alternate, serrate, ovate-oblong leaves and small white flowers solitary in axils of the leaves. The flower is subtended by a pair of ovate or oblong bracts. Calyx five parted. Corolla regular, five petals. Stamens indefinite, monadelphous. Styles five. (Adapted from *Siebold and Zuccarini, Flora Japonica, p. 181.*)

"A deciduous shrub or small tree, 30 feet high; bark peeling, young shoots clothed at first with fine hairs. Leaves oval or ovate oblong, 1½ to 4 inches long, five-eighths to 1¾ inches wide; wedge shaped at the base, tapered at the apex, toothed; at first hairy on both surfaces (but more densely so above) and at the margin, becoming almost smooth; bright green on both sides; stalk hairy, one-eighth to one-fourth inch long. Flowers solitary in the leaf axils, 1 to 1½ inches across, white, fragrant. Stamens numerous, downy; style united into one column, 5-rayed at the top; bracts, sepals, and petals silky at the back.

"Native of Japan and China; introduced from the latter country by Wilson about 1901. Whether this is quite the same as the Japanese form is not certain, but in both countries they are characterized by hairiness of leaf and shoot, and are thereby distinguished from *S. pseudo-camellia.* Little is known of it in gardens, where only small plants exist, but it does not appear to be equal in beauty to the other species." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 553.*)

40328 to 40330. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

From Erfurt, Germany. Purchased from Haage & Schmidt. Received April 26, 1915.

40328. CHRYSANTHEMUM LEUCOPILODES Hort.

"A subalpine perennial with silver-white leaves and large yellow flower heads. Suitable for rockery. Asia Minor." (*Haage & Schmidt, catalogue.*)

40329. CHRYSANTHEMUM KURDICUM Hort.

40330. CHRYSANTHEMUM MACROPHYLLUM Waldst. and Kit.

A somewhat villous, erect Chrysanthemum with pubescent, nearly sessile, pinnately parted leaves; broadly lanceolate, dentate lobes; composite corymbs; subglobose involvucres; white-ray flowers and whitish disk flowers. Eastern Europe. (Adapted from *De Candolle, Prodromus, vol. 6, p. 58.*)

40331. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 24, 1915.

"Seeds of a Moroccan pear from the Mamora. It occurs with the cork oak in the forest of Moroccan Mamora. Very resistant to dryness in the sandy, noncalcareous soils. This vigorous tree will probably form a good stock. The fruit is rather large; the seeds very large." (*Trabut.*)

40332. ACTINIDIA ARGUTA (Sieb. and Zucc.) Planch. Dilleniaceæ.

From Chosen (Korea). Presented by Mr. D. F. Higgins, Peking, China, Received April 26, 1915.

"Korean, *darch.* These seeds are in rather small fruits, on account of the lateness of the season when they were gathered. They were secured through the kindness of Mr. P. C. Kang, of Holkol, Chosen (Korea), a Korean friend of mine. It is characteristic of the spirit of the Koreans that the coolies had to go about 8 miles and over a pass which required an ascent and descent of more than 2,000 feet and would receive but 20 sen (a little less than 10 cents, United States currency) apiece for their day's work (half pay), because they could not secure first-rate specimens of the *darch* fruit." (*Higgins.*)

40333. MEIBOMIA UNCINATA (Jacq.) Kuntze. Fabaceæ.
(*Desmodium uncinatum* DC.)

From San Jose, Costa Rica. Presented by Mr. Otón Jiménez L., Costa Rican National Museum. Received April 27, 1915.

"This seed was secured with much difficulty on the banks of the Rio Torres, because at this inopportune time the inflorescences contain few seeds." (*Jiménez L.*)

40334 to 40336. LATHYRUS spp. Fabaceæ.

From Cambridge, England. Presented by Dr. R. Irwin Lynch, Botanic Garden. Received April 26, 1915.

40334. LATHYRUS HETEROPHYLLUS L.

Plants gray-green, up to 3 m. (10 feet) long. Lower leaves with one pair, upper with two to three pairs of leaflets. Petioles winged on the upper portion and not between the leaflets. Leaflets lanceolate, acuminate. Flowers purple. Throughout Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 6, p. 1017.*)

40335. LATHYRUS PALUSTRIS L. **Marsh pea.**

"Stem slender, 1 to 3 feet long, glabrous or somewhat pubescent, often winged, rather erect; leaflets two to four pairs, oblong lanceolate, acute, 1 to 2 inches long; tendrils branched; stipules small, lanceolate; peduncles two to eight flowered, scarcely longer than the leaves; flowers purplish, one-half inch long; pod 2 inches long. Summer. Northern North America and northern Europe, in moist places. A good bog plant." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40336. LATHYRUS SYLVESTRIS L. **Flat pea.**

See S. P. I. Nos. 20776 and 32415 for previous introductions and description.

40337. PHALERIA BLUMEI (Decne.) Bentham. Thymelæaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received April 26, 1915.

"The bark of this shrub is used for cordage; it is a rare species." (*Buysman.*)

Bushy glabrous shrub with opposite nearly oblong leaves, 6 inches long and 2 inches broad. Numerous white or yellowish flowers in terminal heads. Fruit a drupe with a succulent but not very thick epicarp. Found throughout the Malay Archipelago, southern Asia, and the islands of the North and South Pacific.

40338. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received April 23, 1915.

See S. P. I. Nos. 24600 and 39719 for previous introductions and description.

40339 to 40344.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn. Received April 27, 1915. Quoted notes by Mr. Gwynn.

40339. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ.
(*Hibiscus esculentus* L.)

"Seed of okra that I have continually raised in this country for the last 25 years, from seed sent from North Carolina."

For previous introductions, see S. P. I. Nos. 33749, 34465, and 37806.

40340. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"*Mamoni.* Tree melon; grows to a height of 5 to 6 yards. Excellent for man, animals, and fowls."

40341. CUCURBITA sp. Cucurbitaceæ.

"*Andiy.* A cross between squash and pumpkin. The plant is of tremendous growth and surpasses anything in the pumpkin line I have ever seen. Yields enormously."

40339 to 40344—Continued. (Quoted notes by Mr. T. R. Gwynn.)

40342. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

"*Mandiyu.* I planted this in August, and it is now just beginning to bloom. If a cold snap comes in June or July there will be no yield this year, but the plant, cut down something like a foot from the ground, will produce next year. The plant grows to be some 3 to 4 yards in height and yields to its full capacity for some 8 to 10 years. It is no good in comparison with our cotton."

40343. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"Fruit about the size of a walnut; green skin and red meat; leaf thick, coarse, and rough. Tree about the size of a grafted apple. It is not cultivated here. There are several varieties of this fruit; I send the one I think the best."

40344. ROLLINIA sp. Annonaceæ.

"*Aretácu.* Luxuriant tree. Fruit small and of little use on account of seed."

40345 to 40348.

Presented by Mr. H. M. Curran. Received April 30, 1915. Quoted notes by Mr. Curran, except as otherwise indicated.

40345. ANACARDIUM sp. Anacardiaceæ. **Cashew.**

"From Para, Brazil. An edible, wild, red-fruited cashew nut. Large tree."

40346. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"From Santos, Brazil. Similar in size to the Philippine papaya."

40347. CHRYSOPHYLLUM CAINITO L. Sapotaceæ. **Star-apple.**

"From Trinidad, British West Indies. Star-apple; purple fruit."

"A fairly handsome West Indian tree, with striking dark-green leaves, which are copper colored underneath. The purplish black, smooth fruit is round in shape, about 2½ to 3 inches in diameter, and usually two to four seeded, the seeds being brown and one-half inch long. In an unripe state the fruit contains a sticky white latex, but when fully matured the white, transparent, jellylike substance surrounding the seed is sweet and agreeable. The fruit when cut across presents a stellate form, the cells with their white edible contents radiating from the central axis; hence the name star-apple. The tree is well worth cultivating for ornamental purposes, or as shade for roadsides, etc. It thrives at Peradeniya, where it was first introduced in 1802. Propagated by seed, and thrives best in deep, rich, and well-drained soil." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 135.*)

40348. POUTERIA CAIMITO (Ruiz and Pavon) Radlkofer. Sapotaceæ. (*Lucuma caimito* Ruiz and Pavon.) **Abíu.**

"From Para, Brazil. Edible sapotaceous fruit; large, yellowish in color."

See S. P. I. No. 37929 for previous introduction and description.

40349 and 40350. LATHYRUS spp. Fabaceæ.

From Groningen, Netherlands. Presented by the director, University Botanic Gardens. Received May 1, 1915.

40349 and 40350—Continued.

40349. LATHYRUS MONTANUS Bernh.

For previous introduction and description, see S. P. I. No. 40316.

40350. LATHYRUS NIGER Bernh. **Black pea.**

"Stem erect or ascending, branched, angled, 1 to 2 feet long; leaflets six to eight pairs, elliptical or ovate, one-half to 1 inch long, light green, turning black when drying; stipules narrow, small peduncles six to eight flowered, longer than the leaves; flowers purple, small. June, July. Mountainous and rocky districts, middle Europe. Slender species, with short rootstocks, succeeding in the shade." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

See S. P. I. No. 22554 for previous introduction.

40351. SPONDIAS sp. Anacardiaceæ. **Ciruela.**

From Pacasmayo, Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 11, 1915.

"No. 33, March 25, 1915. Fruits scarlet or coral in color." (*Cook.*)

40352 to 40367. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

From Argentina. Presented by Mr. Leo J. Keena, American consul general, Buenos Aires, Argentina. Received May 3, 1915. Quoted notes by Mr. Keena.

"I append herewith the following information in regard to the linseed market, which may be of interest: Linseed in Argentina is cultivated exclusively for the seed, no advantage being taken of the fiber for textile purposes on account of lack of initiative in this country. During the season of 1913–14 the total area under cultivation was 4,396,774 acres, of which 1,375,112 acres corresponded to the Province of Santa Fe, 1,131,950 acres to Cordoba, and the balance equally divided between the Provinces of Entre Rios and Buenos Aires. During the year 1914 the total exports amounted to 938,016 metric tons."

40352. "Taken from a shipment of 70 tons from the station of San Guillermo, on the Central Argentina Railway."

40353. "Taken from a 300-ton shipment from the station of Morteros, on the Central Argentina Railway."

40354. "Taken from a 100-ton shipment from the station of Morteros, on the Central Argentina Railway."

40355. "Taken from a 70-ton shipment from the station of Timbres, on the Santa Fe Railway."

40356. "Taken from a 150-ton shipment from the station of Canada Rosquin, on the Cordoba and Rosario Railway."

40357. "Taken from a 400-ton shipment from the station of San Genaro, on the Central Argentina Railway."

40358. "Taken from a 100-ton shipment from the station of Coronel Bogado, on the Cordoba and Rosario Railway."

40359. "Taken from a shipment of 200 tons at the station of Morye, on the Santa Fe Railway."

40360. "Taken from a 30-ton shipment from the station of Carabelas, Province of Buenos Aires."

40361. "Taken from a 50-ton shipment from the station of Casilda, on the Central Argentina Railway."

40352 to 40367—Continued. (Quoted notes by Mr. L. J. Keena.)

40362. "Taken from a 25-ton shipment from the station of La Pereira, on the Central Argentina Railway."

40363. "Taken from a shipment of 50 tons from the station of Cayugueo, on the Central Argentina Railway."

40364. "Taken from a shipment of 50 tons from the station of Wildermuth, on the Central Argentina Railway."

40365. "Taken from a shipment of 200 tons from the station of Irigoyen, on the Central Cordoba Railway."

40366. "Taken from a 300-ton shipment from the stations of Pilar and Moisesville, on the Santa Fe Railway."

40367. "Taken from a 90-ton shipment from the station of Cruz, on the Central Argentina Railway."

40368. Rosa sertata Rolfe. Rosaceæ. **Rose.**

From Kew, England. Presented by Mr. Arthur W. Hill, assistant director, Royal Botanic Gardens. Received March 29, 1915.

For previous introduction and description, see S. P. I. No. 40193.

40369. Zea mays L. Poaceæ. **Corn.**

From Santa Rosita, Guatemala. Presented by Mr. John J. Gruchy. Received March 31, 1915.

"In regard to weevil-proof corn, I regret to say that further experience shows the corn to which you refer to be not entirely weevil proof, although it is more resistant to the weevil than the ordinary flint corns here, probably owing to the fact that it has a much thicker skin. It is a native sweet corn discovered by me when endeavoring to improve a yellow flint corn cultivated here. It was of extremely mixed type, so that a single ear would often contain grains of four or five quite distinct types. As a starter, I separated my seed into lots belonging more or less to the different types represented, and planted them separately for comparison. For several seasons after the segregation new types kept appearing, many of them quite different from the original planting, and finally I observed in some ears scattering grains which looked like sweet corn. I secured two distinct ears of sweet corn, one yellow and the other of a reddish brown color. At this altitude, 4,800 feet, I believe it takes between four and five months to mature. The reddish strain has been lost and I doubt if it reappears. As a roasting ear it is quite sweet, but the skins are so thick that I spit them out. This characterisic is quite undesirable in a sweet corn, but possibly if it could be transferred by crossing to a dent corn, it might help to increase its resistance to weevil while still green in the field." (*Gruchy.*)

40370 to 40376. Soja max (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received March 27, 1915. Quoted notes by Mr. Noss.

40370. "No. 33. *Hikagedaizu* (shade), produces in shady places; used for *miso*."

40371. "No. 34. *Dekisugidaizu* (excessive yield); used for *miso*."

40372. "No. 35. *Kurodaizu* (black); eaten boiled and sugared."

40373. "No. 36. *Nakatedaizu* (medium early); used for *miso*."

40370 to 40376—Continued. (Quoted notes by Rev. C. Noss.)

40374. "No. 37. *Hishidaizu* (water caltrop, alluding to the flattened shape); eaten parboiled and seasoned with shoyu and salt."

40375. "No. 38. Name unknown, cultivated from ancient times in Soma County, Fukushima Ken; used for *miso*."

40376. "No. 39. *Hakodate-nishiki-daizu* (Hakodate brocade); used for *miso*."

40377 to 40382. MEDICAGO spp. Fabaceæ.

From Sydney, New South Wales. Presented by Mr. G. Valder, undersecretary and director, Department of Agriculture. Received March 31, 1915.

From the Bathurst Experiment Farm. Selected.

40377 to 40381. MEDICAGO SATIVA L. **Alfalfa.**

40377. Bathurst No. 1.
40378. Bathurst No. 6.
40379. Bathurst No. 13.
40380. Arabian.
40381. Montana.

40382. MEDICAGO SATIVA VARIA (Mart.) Urban. **Sand lucern.**

40383 and 40384.

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received March 29, 1915.

40383. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

"Seeds of a tree which grows very well in many parts of our State." (*Knatz.*)

40384. COLOCASIA sp. Araceæ.

Mangarita. Tubers.

40385 to 40387.

From Nakskov, Denmark. Presented by Mr. R. Wiboltt. Received March 26, 1915. Quoted notes by Mr. Wiboltt.

40385. AVENA SATIVA L. Poaceæ. **Oat.**

"*Abed Danisk Giant No. 45.* The best Danish oat."

40386. HORDEUM DISTICHON NUTANS Schubl. Poaceæ. **Barley.**

"*Abed Binder*, 2-rowed novelty, 1915. This has been tried for a number of years by the Danish State experiment stations and is now acknowledged as one of the earliest and heaviest yielders of all kinds of 2-rowed barley."

40387. HORDEUM VULGARE L. Poaceæ. **Barley.**

"*Abed*, July, 6-rowed novelty, 1915. This has been tried for a number of years by the Danish State experiment stations and is now acknowledged as one of the earliest and heaviest yielders of all kinds of rowed barley."

40388. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.

Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Tubers received March 22, 1915.

"No. 68. *Ciclón*, white group. From Taco Taco, Pinar del Rio. Yielding 37,478 arrobas (of 25 pounds each) per caballería (33⅓ acres)." (*Roig.*)

INDEX OF COMMON AND SCIENTIFIC NAMES.

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