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U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1922

(No. 73; Nos. 55814 to 56144)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCATION DURING THE PERIOD FROM OCTO- BER 1 TO DECEMBER 31, 1922 (NO. 73; NOS. 55814 TO 56144)

INTRODUCTORY STATEMENT

To many it may not be apparent why the Province of Yunnan, which borders Tibet on China's western boundary, is a particularly likely place to search for plants for introduction into America.

Mr. Rock, our agricultural explorer, who has been collecting in this region now for nearly three years, shows by his notes and specimens in what way Yunnan plants are likely to be valuable to American horticulture.

The vast mountain area, in which he has been exploring, where snow-clad peaks 12,000 to 20,000 feet high rise from almost sub-tropical valleys and gorges thousands of feet deep have been channeled by the largest and longest rivers in Asia (the Mekong and the Yangtze) in their break through the mountains which bound the Tibetan table-land, furnishes a home for thousands of interesting plants which some day will enrich our horticulture.

It is true that other exploring botanists, like Forrest and Kingdon Ward, have visited it, but this is the first time that an American explorer, with the needs of our farms and gardens in mind, has hunted for plants which can be grown in American dooryards and has entered western China by its back door, so to speak, which is Bhamo, on the border of Burma.

Mr. Rock's itinerary, like that of Frank Meyer, will be given in detail in a later number of this series. It suffices for him to locate the region where he collected the plants in this inventory. This centers chiefly around Likiang and the Likiang Snow Range. Many of the plants were found in localities where the thermometer goes below 32° F. and heavy snowfalls occur. High tropical altitudes and temperate-region latitudes correspond, but only roughly so, for it has come to be well recognized that high alpine plants are accommodated to conditions which do not prevail at many places at sea level in the Temperate Zone. The heavy and continuous blanket of snow which characterizes many mountain regions makes it possible for many rather tender plants, such as the potato, for example, to live in the ground over winter. To illustrate, in the higher altitudes of the Rockies on its western slopes and also as far north as Cape Breton Island, Nova Scotia, potato tubers often remain unfrozen in the soil because the soil is blanketed with snow before freezing weather occurs, whereas otherwise they would be frozen in

the ground nearly every year as far south as the Carolinas. Then, too, there must be taken into consideration the length of day, the atmospheric pressure which affects the amount of oxygen and carbon dioxide in the air, and the effect which high mountain atmosphere has upon the actinic rays of the sun. In other words, it should never be forgotten that these plants are essentially cosmic machines run by the sun's energy and that in no two places on the globe do identical atmospheric conditions prevail.

Twenty-five years of experience has taught those of us who have been establishing new plants in America to be very cautious in predicting where plants will thrive, for no one can foresee except in a general way the degree of accommodation which any new plant will exhibit. The only way to find out is to test it, and Mr. Rock has sent in large quantities of seeds for trial.

Exploring alone in any country has its shady side, but in Yunnan, where the explorer may at any time meet bands of roving bandits and be subjected to the barbarities which only savages know how to inflict, Mr. Rock has had to meet conditions which have been almost unbearable.

This fact should be borne in mind by those to whom in the years to come these plants are sent for trial, and their value should be measured in terms of the dangers and hardships which they have occasioned. That Mr. Rock has been able to hold out and keep moving to America a stream of seeds and cuttings is the wonder of his friends.

One of the reasons for Mr. Rock's expedition to Yunnan was to discover what species of chestnuts grow there and secure their seeds. In this quest he has been successful.

On the summit of the Salwin Ridge, southwestern Yunnan, Mr. Rock found dense forests of a large species of chestnut (*Castanea* sp.; No. 56080) which grows to be 100 feet tall and 5 feet in diameter and bears sweet edible nuts the size of chinquapins. It is an excellent timber tree, ratoons freely from the stump, and no evidence of any disease was found upon it. Four days' journey west of Talifu he found a small forest species, only 60 feet tall (*Castanea* sp.; No. 56119), also with small nuts; and a tall species near Tali Lake which bore deliciously sweet nuts (*Castanea* sp.; No. 55984). Whether out of these species or others which he has collected will come one which will solve the chestnut problem is a question which will require years to answer. At any rate the first step—that of getting together the Asiatic chestnuts—has been taken.

From the discovery by Mr. Rock of numerous distinct species of wild apples growing in the mountains far removed from civilization, it would appear that western Yunnan is the region from which to get southern forms of this fruit with which to build up by hybridization an apple for our Southern States which now lie below the apple belt. This collection includes fruits varying from the size of cherries to those of large-sized crab apples. Some are trees 40 feet high, growing in hot, dry, rocky locations where little else besides the Yunnan pine grows, and others have long drooping branches. None of these has as yet been determined botanically.

Wild as well as cultivated peaches also occur in western Yunnan, and Mr. Rock reports there a clingstone white-fleshed peach

(*Amygdalus persica*; No. 55929) $3\frac{1}{2}$ to 4 inches in diameter, which he found growing wild in the Likiang Valley, and other trees 40 to 50 feet tall with fruits tasting like cherries (Nos. 55885 and 55888).

Among the numerous wild species of *Prunus* are plums with fruits the size of walnuts (*Prunus* sp.; No. 55824), a lemon-yellow form from regions subjected to extreme drought and intense heat from October to June (No. 55901), and small-fruited forms, from 12,000 feet altitude on the slopes of Satseto in pure limestone soils, which may prove of value for stocks.

Mr. Rock has collected species of *Rubus* bearing delicious orange-red berries from 12,000 to 13,000 feet altitude (Nos. 55891, 55892, and 55904) and others from the shade of the spruce forest with fruits orange-red and translucent and an inch in diameter (No. 55892), crimson-stemmed drooping-branched ornamental forms (No. 55893), and still others which are spineless (No. 56114).

Mr. Rock has sent in a wild grape (*Vitis* sp.; No. 55953) which he found covering rosebushes there. It is a prolific bearer and its dull-purple berries are very sweet, which is not usually the case with wild species of *Vitis*. He has sent nuts from a wild walnut tree 50 feet tall and with a spread of branches of 100 feet (*Juglans regia*; No. 55989); a tree hazelnut (*Corylus* sp.; No. 55987) which grows to be 60 to 80 feet tall and has handsome, very large leaves and large edible nuts; various as yet unidentified species of persimmon (*Diospyros* spp.; Nos. 56132 to 56134); the rare *Catalpa duclouxii* (No. 55931) which makes a tree 70 to 80 feet tall and 4 feet in diameter and produces hard durable timber suitable for building purposes that may contribute to the development of a superior hybrid catalpa for forest purposes. In the way of ornamental shrubs, lilies, and other ornamental plants the region has already become noted in England. Mr. Rock has sent seeds of a honeysuckle (*Lonicera* sp.; No. 55897); the rare *Osteomeles schwerinae* (No. 55992) with its dull-purple fruits which are sweet and edible; gorgeous primroses (*Primula* spp.); an edible-fruited viburnum (*Viburnum* sp.; No. 55950); an ornamental currant (*Ribes* sp.; No. 55890); the wild peony (*Paeonia delavayi*; Nos. 55898, 55937, 55994); and a striking new ornamental tree (*Cornus* sp.; No. 55955).

In addition to Mr. Rock's collections there have been received from various correspondents throughout the world a wild plum from Beirut (*Prunus ursina*; No. 55872) for trial as a stock in southern California; Goodman's Choice peach (*Amygdalus persica*; No. 55831), a great success in Australia, which if it succeeds in America as it has there might easily add millions to the California peach-canning industry; a new mango (*Mangifera indica*; No. 55839) from Gerrit P. Wilder, of Honolulu, which turns yellow while hard and keeps well for two weeks; 39 varieties of beardless spring wheat (*Triticum aestivum*; Nos. 55842 to 55870) originated by two noted plant breeders of New South Wales, J. P. Shelton and J. T. Pridham, of Sydney. Some of these varieties are said to produce better flour than the noted Hard Federation wheat, which is also of Australian origin.

Dr. P. J. S. Cramer, of the Java Department of Agriculture, presents two interesting varieties of sugar cane (*Saccharum officinarum*; Nos. 55829 and 55830) from the Sugar Experiment Sta-

tion at Pasoeroean, Java, one of which instead of producing sugar produces only starch in its stems and one whose flower heads are so hypertrophied as to be used as a vegetable by the Javanese.

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels, and the descriptive notes have been prepared by Paul Russell, who has had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 21, 1923.

INVENTORY¹

55814. *OLEA EUROPAEA* L. Oleaceæ.

Olive.

From Nice, France. Cuttings presented by Dr. A. Robertson Proschowsky. Received November 25, 1922.

Variety *Arbéquina*. This is a favorite among the Catalan nurserymen in the Province of Lerida, Spain, where it represents 92 per cent of the olives planted. It appears to be the one most resistant to the rather frequent drops in temperature on the Urgel Plain. The production is very high in the irrigated sections every year and every two years in the other sections. In habit the tree is spreading, with the secondary branches reflexed. In this region the olive trees are pruned every two years and often every year, with a special rejuvenating pruning every 10 or 12 years, in order to keep down the size of the trees and make easier the hand picking of the fruit. (Adapted from *Revue de Botanique Appliquée*, vol. 2, p. 26.)

55815. *DENDROCALAMUS SIKKIMENSIS* Gamble. Poaceæ. **Bamboo.**

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received November 1, 1922.

"Seeds of the largest bamboo of these forests, collected at an altitude of 2,000 feet." (*Cave.*)

A beautiful tufted bamboo native to Sikkim, India, where the dark-green culms reach a height of 60 feet or more and a diameter of 5 to 7 inches. The species is easily distinguished by its large reddish brown globular flower heads and densely velvety stem sheath. The long narrow leaves are said to be poisonous, and from the stems are made the "chungas," or native buckets, used for carrying water and milk and for churning. (Adapted from *Annals of the Royal Botanic Garden, Calcutta*, vol. 7, p. 82.)

For previous introduction, see S. P. I. No. 54450.

55816. *VOANDZELA SUBTERRANEA* (L.) Thouars. Fabaceæ.

From Ebolowa, Cameroon, West Africa. Seeds presented by Fred Hope. Received November 2, 1922.

A creeping annual leguminous plant which matures its fruits in the same manner as the peanut, whence its common name "groundnut." It is native to tropical Africa and is extensively grown in that continent, as well as in other tropical countries, for its edible seeds.

For previous introduction, see S. P. I. No. 55104.

55817 to 55819.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 4, 1922. Quoted notes by Mr. Rock.

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

55817 to 55819—Continued.

55817. *MALUS* sp. Malaceæ.

Apple.

"(Likiang, July, 1922.) A tree 40 feet high, found wild and semi-cultivated in the vicinity of Likiang. The handsome fruits, about 2 inches in diameter, are bright crimson with just a touch of yellow. The flesh is firm, not mealy, with an acid-sweet flavor. A delicious bright-red jelly is made by boiling the fruits whole, in the skin, 2 parts of apples to 1 part of water; the juice is strained and boiled with sugar, 3 parts of sugar to 5 parts of juice."

55818. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(Near Szemao, July, 1922.) A large tree, 40 feet or more in height, collected 30 li (9 miles) from Szemao, at 5,000 feet altitude. The red fruits are the size of walnuts, with loose, rather sour flesh. This should be good as a stock plant."

55819. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(Near Szemao, July, 1922.) A large tree 45 feet high, found in the mountains at an altitude of 6,000 feet. The dark-red fruits, the size of large walnuts, have hard flesh with a sour insipid flavor. This tree was free from disease and should make a good stock plant."

55820 to 55826.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 9, 1922. Quoted notes by Mr. Rock.

55820. *COTONEASTER* sp. Malaceæ.

"(No. 5749, August, 1922.) A very ornamental shrub 8 to 10 feet high, growing in open scrubland among limestone boulders at altitudes of 9,000 to 10,000 feet on the Likiang Snow Range. The leaves are densely packed along the stems; the pinkish flowers are numerous, as are also the scarlet and yellow fruits, the latter resembling miniature apples."

55821. *COTONEASTER* sp. Malaceæ.

"(No. 5781, August, 1922.) A prostrate shrub, growing on pure limestone rocks on the Likiang Snow Range at altitudes of 8,000 to 10,000 feet. It has small dark-green glossy leathery leaves, pinkish white flowers, and rich-red fruits and would make a splendid shrub for rockeries."

55822. *PRUNUS* sp. Amygdalaceæ.

Cherry.

"(August, 1922.) A tree 35 to 40 feet high, growing among limestone boulders at an altitude of 10,000 feet. It is a fine shapely tree, with glossy leathery foliage, racemes of white flowers, and dark-red glossy fruits the size of a pea.

"The temperature at the village of Nguluke, in the Likiang Plain, drops to below zero Fahrenheit in the winter, and a fall of 22 inches of snow in December is not uncommon."

55823. *PRUNUS* sp. Amygdalaceæ.

Cherry.

"(August, 1922.) A shapely tree, which grows at an altitude of 10,000 feet among limestone boulders on the Likiang Snow Range. It has long drooping racemes of cream-colored flowers and small yellowish green fruits which are sour when ripe."

55824. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(August, 1922.) A very hardy plum tree 35 to 40 feet high, growing semiwild in the vicinity of Likiang, at altitudes of 8,500 to 9,000 feet. The bright-red, perfectly round fruits are the size of large walnuts, clingstone, with yellow sweetish sour flesh which makes excellent jelly and jam."

55820 to 55826—Continued.

55825. *RUBUS BIFLORUS* Buch.-Ham. Rosaceæ.

"(July, 1922.) A rambling shrub, collected on the Likiang Snow Range at altitudes of 11,000 to 12,000 feet. The large leaves have woolly lower surfaces, the large calyx is foliaceous, and the subacid yellow fruits are the size of a thimble."

55826. *RUBUS* sp. Rosaceæ.

"(No. 5359. July, 1922.) A vigorous rambling shrub, collected at an altitude of 12,000 feet on the Likiang Snow Range. It has red spiny stems, leaves with white lower surfaces, pinkish purple flowers, and small dark-red fruits of a delicious sweet flavor."

55827. *CASTANEA SATIVA* Mill. Fagaceæ. **European chestnut.**

From Morristown, N. J. Nuts presented by Dr. C. S. Sargent, Arnold Arboretum, Jamaica Plain, Mass. Received October 27, 1922.

From a tree grown on T. H. Symington's place.

Introduced for department specialists engaged in chestnut-breeding experiments.

55828. *CUCUMIS SATIVUS* L. Cucurbitaceæ. **Cucumber.**

From Burringbar, New South Wales. Seeds presented by B. Harrison. Received October 11, 1922.

"*Harrison's Long*. A cucumber 2 to 3 feet long, with tender, crisp, and palatable flesh. This variety is the result of careful selection and cultivation." (*Harrison*.)

55829 and 55830. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From Pasoeroean, Java. Cuttings presented by J. Kuyper, assistant director, Sugar Experiment Station, Pasoeroean, at the request of Dr. P. J. S. Cramer, Director of the General Experiment Station, Buitenzorg. Received October 13, 1922. Quoted notes by Doctor Cramer.

55829. "*Teboe glonggong*. A variety with starch instead of sugar in its stems; this appears to be a botanically interesting variation."

55830. "*Teboc troeboeg*. A variety with hypertrophied flowers, used here as a vegetable."

55831. *AMYGDALUS PERSICA* L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Eastwood, near Sydney, New South Wales. Trees purchased from C. E. Vessey, Mount Tomah Nurseries. Received at the Plant Introduction Garden, Chico, Calif., September, 1922. Numbered October, 1922.

Goodman's Choice.

The following notes concerning the merits of this peach have been received from nurserymen in Australia:

From Herbert J. Rumsey, Dundas, New South Wales, June 13, 1922: "We have sent out a number of letters to friends who are in a position to know the behavior of this peach and its comparison with *Phillips Cling* [at present the standard canning variety in California]. We have had a reply from Mr. Goodman, who states that this is easily the best quality canning peach the canners have ever seen and that growers in that State (Victoria) are putting in more acres of it than of all other yellow clings together.

"His catalog description, quoted below, shows that it ripens about six weeks later than *Tuscan Cling*:

"Undoubtedly the greatest yellow-fleshed clingstone peach introduced for many years. The tree is a heavy bearer each season of medium-sized fruits that are admirable for canning. The skin has a red blush on the sunny side;

the flesh is beautifully rich and translucent; the variety is remarkable for even crops and gradual ripening, which means so much when the picking campaign is in progress. The peaches ripen toward the end of February and, as the name indicates, represent my choice for canning."

"We know the behavior of the clings generally in this State, and we find that they have a great tendency to be uneven in shape. Our own nurseryman states that *Goodman's Choice* is one of the best late peaches that he has come across, but as we have no growers for canneries around there we can not give an authoritative report from that point of view ourselves."

From G. W. Peart, manager for C. J. Goodman, Bairnsdale, Victoria, June 14, 1922: "The flesh of this peach is wonderfully rich for canning purposes, and the processed product is just as superior to other varieties in appearance as it is in taste. In quality it is superior to *Phillips Cling*. Canners in this State declare that they can obtain more dozens of high-grade quality canned peaches from a ton of *Goodman's Choice* than from any other variety. This means that canners pay higher prices for *Goodman's Choice*. The variety is a regular cropper and has never failed to set a good crop in 12 years except once when a record late frost ruined all the stone fruits in the district. Unlike *Phillips Cling*, all the fruits on the tree come up to first-class cannery requirements." In another letter, dated June 30, 1922, Mr. Peart says further: "This peach originated about 18 years ago in one of our canning peach orchards at Mossiface, Victoria. After careful testing, the late Charles J. Goodman planted 3,000 trees in 1910, and we commenced to sell trees in 1915. To-day I am selling more trees of this variety than of any other clingstone peach. Z. Akers, Shepparton Fruit Preserving Co., Shepparton, Victoria, has a block of 6-year-old *Goodman's Choice*, and he claims to have harvested an average crop of 3½ bushels of fruit per tree when the trees were just 4 years old."

From E. Meeking, Senior Fruit Inspector, Melbourne, Victoria, June 14, 1922: "The *Goodman's Choice* variety of peach is considered, in the opinion of those competent to judge, the best canning peach which has yet been produced. It is a good cropper, produces uniform fruits, is of excellent color and texture, and its flavor is considered superior to that of any other canning peach yet produced."

From L. J. Wicks, Highbury, South Australia, July 13, 1922: "As a canning fruit *Goodman's Choice* is certainly O. K. The texture is just right; it makes a rather pale sirup which, however, is remarkably clear."

55832 and 55833.

From Buitenzorg, Java. Seeds presented by Carl Hartley. Received October 11, 1922. Quoted notes by Mr. Hartley.

55832. *CITRUS NOBILIS DELICIOSA* (Ten.) Swingle. Rutaceæ.

Mandarin orange.

"A rather large, very loose-skinned mandarin orange grown in the highlands of western Java under the name *Djeroek Garoet*. The fruits from which these seeds were taken were juicy and of excellent flavor."

55833. *RUBUS FRAXINIFOLIUS* Poir. Rosaceæ.

"Collected at an altitude of about 3,500 feet on the Salak in western Java. The bush is often 2 meters high and very slightly thorny. The conical strawberry-red fruit, 2.5 centimeters long and 2 centimeters wide at the base, is inclined to be hollow and deficient in pulp, but it is not acid and the flavor is fairly good. The species may prove valuable in breeding work."

For previous introduction, see S. P. I. No. 31096.

55834. *DIOSCOREA* sp. Dioscoreaceæ.

Yam.

From China or Japan. Tuber presented by E. R. Sasser, Federal Horticultural Board. Secured by an inspector of the California State Department of Agriculture. Received October 2, 1922.

"Tuber long, slender, dark skinned, white fleshed, rather small. When cooked the flesh is firm, but fairly mealy and of very good flavor." (R. A. Young.)

55835 and 55836. AMYGDALUS PERSICA L. Amygdalaceæ.*(Prunus persica Stokes.)***Peach.**

From the Plant Introduction Garden, Chico, Calif. Seedling trees numbered October, 1922, for convenience in distribution. Quoted notes by J. E. Morrow.

A shipment of seeds of the peach variety *Tardio Amarillo* was received from southern Spain in November, 1916, and given S. P. I. No. 43570. As is well known, peach varieties do not come true to seed, and the two trees described below are promising seedlings from this shipment.

55835. "Tree No. 6, Test Nursery. Fruits $2\frac{1}{2}$ by $2\frac{1}{4}$ inches; average weight 4 ounces; color golden with a faint-red blush; basin deep and narrow, slight depression at suture; flesh yellow; pit yellow. Season September 5 to September 15, later than last year. This is a good canning clingstone peach and a heavy bearer."

55836. "Tree No. 8, Test Nursery. Fruits 2 by $2\frac{3}{8}$ inches; average weight 4 ounces; basin deep, narrow; suture only a thin line; flesh deep yellow; pit small, yellow; flesh of good texture and flavor. This peach should be propagated for canning purposes. It is of smaller size than last season and later in ripening."

55837. PHELEUM PRATENSE L. Poaceæ.**Timothy.**

From Kelburn, Wellington, New Zealand. Presented by E. Bruce Levy, biology section, Department of Agriculture, New Zealand. Received October 16, 1922.

"This seed, secured directly from the grower, represents a strain of timothy which has been grown in one district for 22 years." (*Lery*.)

Locally grown seed introduced for department specialists engaged in timothy-breeding investigations.

55838. TRIFOLIUM PRATENSE L. Fabaceæ.**Red clover.**

From Glavica, Dalmatia, Yugoslavia. Presented by the Knin Agricultural School, Glavica. Received October 14, 1922.

Seeds consisting of a mixture of "North" and "Composite" varieties, harvested in 1921 in Zetva, and obtained from a seed firm in Laibach, Slovenia, Yugoslavia.

Locally grown red-clover seed introduced for cultural and comparison tests.

55839. MANGIFERA INDICA L. Anacardiaceæ.**Mango.**

From Honolulu, Hawaii. Plant presented by Gerrit P. Wilder, through Willis T. Pope, horticulturist, Hawaii Agricultural Experiment Station. Received October 18, 1922.

"*Wooten*. The original was produced from seed of the mango known as No. 7, originally from Jamaica, and is growing on the property of J. L. Horner, Makiki St., Honolulu.

"A formal description of the fruit is as follows: In size it is medium to large; shape roundish; slightly flattened on the sides, no apex point evident; weight about 10 ounces; color when ripe a shade between orange-yellow and yellow-orange, with tinges of pink and red at the stem end and pale-yellow dots all over the surface; skin medium thin, tough, peeling qualities fair, very pleasing fragrance; flesh rich apricot yellow, very good texture; flavor excellent, juicy, sweet-acid; seed medium to small for size of fruit.

"An important characteristic of this variety is that while still solid it has a very beautiful color as if ripe, making it a very desirable marketing form. It is one of the very best of this seedling class of mangos. In moderate temperatures it will remain in good condition as ripe fruit for two weeks." (*Wilder*.)

55840. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

Plants raised from seed secured from D. W. Coolidge, Pasadena, Calif. Numbered October, 1922, for convenience in distribution.

Plants of this large-fruited seedling have been propagated at the Plant Introduction Garden at Chico, Calif., under P. I. G. No. 19420 and at Bell, Md., under P. I. G. No. 1846.

"The *yang-tao*, an ornamental deciduous climber native to Szechwan, China, has attracted considerable attention because of the high quality of its fruits. The leaves have a plushlike texture and an unusual dark-green color, and their large size and regular spacing add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often $1\frac{1}{2}$ inches across, and are produced in great abundance. The ovoid to globose russet-brown villous fruits are about 2 inches long. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is good when eaten fresh and also makes very fine jam and sauce." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 54460.

55841. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Montevideo, Uruguay. Seeds presented by Luis Guillot, Dirección de Paseos Públicos. Received October 18, 1922.

Introduced from tropical America in the hope of securing a strain immune to tomato leaf-spot.

55842 to 55870. TRITICUM AESTIVUM L. Poaceæ.
(*T. vulgare* Vill.) **Common wheat.**

From Sydney, New South Wales. Presented by J. P. Shelton, plant breeder, Department of Agriculture, Sydney. Received October 17, 1922. Quoted notes by Mr. Shelton.

"The varieties listed below are all beardless spring wheats, white grained, with medium to strong flour qualities, and all give commercial yields in some districts. Those marked 'strong flour' should give a flour of better bread-making qualities than those marked 'Hard Federation.'"

55842 to 55855. "(A) Varieties lately bred in New South Wales by J. T. Pridham, but not yet in general cultivation."

55842. *Aussie.*

55843. *Baldknob.*

55844. *Early Bird.* (Very early.)

55845. *Forelock.* (Bearded.)

55846. *Ghurka.* (Strong flour. Very early.)

55847. *Riverina.* (Early.)

55848. Selection 13 (C1) from Hard Federation. (Strong flour.)

55849. Selection 19 (C1) from Hard Federation. (Strong flour.)

55850. Selection 69 (A6) from Hard Federation.

55851. *Stamina.* (Strong flour. Early.)

55852. *Wagga* No. 49.

55853. *Wagga* No. 54. (Early.)

55854. *Wandilla.*

55855. *Waratah.* (Early.)

55856 to 55860. "(B) Varieties in general cultivation in New South Wales and Victoria."

55856. *Canberra.* (Very early and prolific.)

For previous introduction, see S. P. I. No. 42109.

55842 to 55870—Continued.55857. *Gallipoli*.55858. *Gresley*.55859. *Improved Steinwedel*.55860. *Minister*. (Strong flour and late.)

55861 to 55868. "(C) Varieties lately fixed in West Australia; some from crosses made in New South Wales."

55861. *Carrabin*. (Strong flour.)55862. *Cuballing*.55863. *Dindiloa*. (Strong flour.)55864. *Gerralying*. (Strong flour.)55865. *Merrèdin*.55866. *Nabawa*.55867. *Nangeenan*.55868. *Narrogin*. (Strong flour.)

55869 and 55870. "(D) Varieties for a hot climate with summer rainfall."

55869. *Boureng*.55870. *Bunge*.

For previous introduction, see S. P. I. No. 47380.

55871. PEUMUS BOLDUS Molina. Monimiaceæ.

From Santiago, Chile. Seeds presented by Salvador Izquierdo. Received October 13, 1922.

"*Boldo*. A small tree esteemed in Chile for its ornamental and medicinal value. The dried leaves are exported to Europe, where they are employed in diseases of the liver. An infusion of the flowers is also used medicinally. The fruits are eaten but are not of great value.

"The tree is dioecious and very aromatic in all its parts. It has opposite, rough, short-petioled, ovate leaves; the flowers, borne in small axillary racemes, are followed by fruits the size of our northern haws." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 54639.

55872. PRUNUS URSINA Kotschy. Amygdalaceæ. Plum.

From Beirut, Syria. Seeds presented by Alfred E. Day, American University of Beirut. Received October 14, 1922.

"A wild plum. The fruits of this particular tree are decidedly larger and sweeter than usual; they are about 1½ inches in diameter and yellow with pink cheeks." (*Day*.)

55873. COTONEASTER HEBEPHYLLA Diels. Malaceæ.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 18, 1922.

"(Likiang, August, 1922.) A deciduous shrub 10 to 18 feet in height, growing in limestone soil at an altitude of 10,000 to 11,000 feet on the Likiang Snow Range. It has long rambling branches, white flowers, and dark-carmine fruits and is quite ornamental." (*Rock*.)

55874 to 55884.

From Petrograd, Russia. Seeds presented by Prof. N. I. Vavilov, director, Russian Bureau of Applied Botany of the Agricultural Scientific Committee, through D. N. Borodin. Received October 19, 1922. Quoted notes by Mr. Borodin.

"The numbers refer to the inventory book of the Russian Bureau of Applied Botany."

55874 to 55877. *PISUM ARVENSE* L. Fabaceae. **Field pea.**

55874. "Vavilov's 'Mahor,' No. 193, 1921. From Varg on Goont, Pamir."

55875. "Vavilov's 'Mahor,' No. 194, 1921. From Sengi, Pamir."

55876. "Vavilov's 'Mushung,' No. 190. From Chil-Dare-Darviz, Pamir."

55877. "Vavilov's 'Mushung,' No. 195. From Kooliab, Pamir."

55878 to 55880. *PISUM SATIVUM* L. Fabaceae. **Garden pea.**

55878. "Pissarev's B/11, No. 317. From Irkutsk Government, Siberia."

55879. "Pissarev's No. 318. From Ust-Uda, Urkutsk Government, Siberia."

55880. "Pissarev's 'Tulunsky Hybrid,' No. 316. From Tulun, Siberia."

The fact that the following are without ligules is noted as being of interest to botanists, such forms being rare in this country:

55881. *SECALE CEREALE* L. Poaceae. **Rye.**

"Vavilov's rye, grown in Russia in 1921. From Pamir."

55882 to 55884. *TRITICUM AESTIVUM* L. Poaceae. **Common wheat.**
(*T. vulgare* Vill.)

55882. "Vavilov's wheat, No. 96. From Pamir."

55883. "Vavilov's wheat, No. 648. From Pamir."

55884. "Vavilov's wheat, No. 1569. From Pamir."

55885 to 55893.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 21, 1922. Quoted notes by Mr. Rock.

55885 to 55888. *AMYGDAUS PERSICA* L. Amygdalaceae. **Peach.**
(*Prunus persica* Stokes.)

55885. "(Puerhfu. August, 1922.) A large tree growing wild in the mountains at an altitude of 5,000 feet. The fruits are a beautiful red, clingstone, with juicy, rather strong-flavored flesh resembling that of a cherry."

55886. "(Puerhfu. August, 1922.) A large tree 50 feet in height, growing wild in the mountains at an altitude of 5,500 feet. The fruits are of fairly good size, yellow with a red cheek, clingstone, with yellow, very juicy flesh of excellent flavor.

55887. "(Likiang. August, 1922.) A large vigorous tree growing at an altitude of 8,500 feet. The large fruits, 2½ inches in diameter, are red and yellow on the surface, with firm snow-white, quite tasteless flesh. This should be a good stock plant."

55888. "(Puerhfu. August, 1922.) A large tree, 40 to 50 feet high, growing wild in the mountains. The fruits are the size of small apples, pure white outside, clingstone, with snow-white, very juicy flesh resembling that of a cherry.

55885 to 55893—Continued.

55889. *MALUS* sp. Malaceæ.

Apple.

"(Likiang, August 15, 1922.) A large vigorous tree growing wild and semicultivated. The fruits, the size of walnuts, are bright crimson with a touch of yellow on one side, with acid-sweet, very palatable flesh, are excellent for jam or jelly and also quite ornamental."

55890. *RIBES* sp. Grossulariaceæ.

"(No. 5833. Likang, August 16, 1922.) A shrub 6 to 15 feet in height, growing in alpine meadows at an altitude of 12,000 feet, where it is 5 or 6 feet high; also in fir forests, where it reaches a height of 15 feet. It is a beautiful plant with pendent branches loaded with flowers in early May. In the latter part of August the fruits appear; these are yellowish red berries the size of a pea, with an acid-sweet flavor."

55891 to 55893. *RUBUS* spp. Rosaceæ.

Raspberry.

55891. *RUBUS* sp.

"(Likiang, August 15, 1922.) A shrub 4 feet high, growing in protected gulches on the Likang Snow Range at an altitude of 12,000 feet. It bears delicious orange-red berries and may be only a form of the following [S. P. I. No. 55892]."

55892. *RUBUS* sp.

"(Likiang, August 15, 1922.) A shrub 4 feet high, growing on the Likang Snow Range at an altitude of 13,000 feet in the shade of *Larix thibetica* and also in fir and spruce forests. The large orange-red translucent berries, an inch in diameter, are very juicy and of delicious flavor. This is certainly worthy of cultivation."

55893. *RUBUS* sp.

"(Likiang, August, 1922.) A shrub growing in sheltered ravines on the Likang Snow Range at an altitude of 11,000 to 12,000 feet. It has crimson-stemmed drooping branches and trifoliolate leaves, with the lower surfaces slightly pruinose or silvery. The fruits, somewhat smaller than those of the preceding species, are obconical, darker red, and faintly pubescent."

55894 and 55895.

From Hongkong, China. Seeds presented by H. Green, superintendent, Botanical and Forestry Department. Received October 21, 1922.

55894. *GARCINIA OBLONGIFOLIA* Champ. Clusiaceæ.

A tree native to Hongkong, China, which is a relative of the mango-steen. It has narrow short-stalked leaves, terminal yellow flowers, and smooth fruits the size of a small apple. (Adapted from *Bentham, Flora Hongkongensis*, p. 25.)

"This species has just come into bearing in one of our greenhouses, and we find the fruit to be of very good quality for eating out of hand. The flavor suggests that of the mangosteen." (*Wilson Popenov.*)

For previous introduction, see S. P. I. No. 36497.

55895. *UYARIA CALAMISTRATA* Hance. Annonaceæ.

"A native fruit which grows wild here and is erroneously called by the natives 'Hill Lai Chi.'" (*Green.*)

A climbing plant, native to Hongkong, with rather thick oblong leaves, clustered yellowish flowers, and elliptical fruits about a third of an inch in length. (Adapted from *Journal of Botany*, vol. 20, p. 77.)

55896 to 55905.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received October 25, 1922. Quoted notes by Mr. Rock.

55896. COTONEASTER PANNOSA Franch. Malacææ.

"(No. 5818. August 20, 1922.) A very ornamental shrub 10 feet high, growing among limestone boulders in fir forests and alpine meadows on the Likiang Snow Range at altitudes of 9,000 to 12,000 feet. The flowers are whitish pink and the ovate fruits purplish black."

For previous introduction, see S. P. I. No. 40169.

55897. LONICERA sp. Caprifoliacææ.**Honeysuckle.**

"(No. 6058. August 25, 1922.) A shrub or small tree 20 feet in height, with a trunk a foot in diameter, which grows in limestone soil in the foothills near Likiang at altitudes of 9,000 to 10,000 feet. The flowers, which appear in early spring, are a deep orange-yellow, with a paler lower lip, and the small round fruits are tomato red."

55898. PÆONIA DELAVAYI Franch. Ranunculacææ.**Peony.**

"(No. 6059. August 25, 1922.) A very attractive, vigorous shrub 4 feet high, growing on steep slopes among limestone boulders and in alpine meadows at altitudes of 10,000 to 13,000 feet on the Likiang Snow Range. The deep-crimson flowers are 3 inches in diameter."

55899. PRIMULA SINOPURPUREA Balf. f. Primulacææ.**Primrose.**

"(No. 5783. August 25, 1922.) A very charming robust plant 3 feet in height, growing in acid soil in boggy meadows at an altitude of 14,000 feet on the Likiang Snow Range. The leaves are golden yellow beneath, and the large umbels of rich-purple flowers appear in April and early May. When in flower this plant is very striking."

For previous introduction, see S. P. I. No. 55339.

For an illustration of this Chinese primrose, see Plate I.

55900. PRIMULA VINCIFLORA Franch. Primulacææ.**Primrose.**

"(No. 5782. August 25, 1922.) One of the finest primulas found on the Likiang Snow Range. It grows in company with the preceding, *P. sinopurpurea* [S. P. I. No. 55899], in similar situations, though not nearly so common, for it does not seed readily. The deep indigo-blue flowers are an inch and a half across and, like the preceding, appear quite early."

For previous introduction, see S. P. I. No. 55340.

55901. PRUNUS sp. Amygdalacææ.**Plum.**

"(No. 6056. August 25, 1922.) A wild plum tree 20 to 25 feet high, of spreading habit, found in limestone soil on the eastern side of the Likiang Plain, opposite the Snow Range, at an altitude of 10,500 feet. It bears perfectly round fruits an inch in diameter, lemon yellow, opaque, with firm sour flesh which is somewhat sweet when absolutely mature. The tree is very healthy and an abundant fruiter and should make a good stock plant where hardiness is desired. The locality where it was collected is subject to drought from October to June, when the heat is intense, and snow falls in the winter."

For an illustration of this Asiatic plum, see Plate II.

55902. RUBES GLACIALE Wall. Grossulariacææ.

"(August 21, 1922.) A shrub 15 feet high, growing in alpine meadows at an altitude of 12,000 to 15,000 feet on the Likiang Snow Range. The flowers, which vary from cream colored to red, and the red oval berries make this shrub decidedly ornamental."

55903. RUBUS sp. Rosacææ.**Raspberry.**

"(No. 5834. August 16, 1922.) A raspberry with large rich-green leaflets, collected on the Likiang Snow Range at an altitude of 11,000



A HANDSOME CHINESE PRIMROSE (*PRIMULA SINOPURPUREA* BALF. F.; S. P. I. No. 55899)

Because of its vigor and free-flowering habit in the high mountains of western China, where it is native, this primrose seems likely to be more satisfactory in cultivation than other members of the "nivalis" section of the genus, to which this species belongs. It was found by J. F. Rock in boggy meadows on the Likiang Snow Range in northern Yunnan at an altitude of 12,000 feet. The plant grows to a height of about 3 feet, and the flower stalks and lower surfaces of the thick dark-green leaves are covered with golden meal. In May the rich rosy purple, fragrant flowers, each about an inch in diameter, are produced in clusters of 6 to 12 or more. (Photographed by J. F. Rock, Yunnan, China, May, 1922; P30216FS)



A DROUGHT-RESISTANT ASIATIC PLUM (PRUNUS SP.; S. P. I. No. 55901)

A hardy wild plum which is drought and heat resistant deserves trial as a stock for regions in the United States where dry hot summers combine with cold winters to make the growing of stone fruits very difficult. This species was discovered in limestone soil on the Likiang Snow Range, Yunnan, China, at an altitude of 10,500 feet, where it grows as a spreading tree 20 to 25 feet high. It bears a large number of round lemon-yellow fruits an inch in diameter. Its native region is subject at times to intense heat and drought, and snow falls in the winter. (Photographed by J. F. Rock, September 1, 1922; P30289FS)

55896 to 55905—Continued.

feet. The yellow fruits the size of a thimble have a delicious flavor. The plant thrives in limestone soil."

55904. RUBUS sp. Rosaceæ.

"(No. 6057. August 24, 1922.) One of the finest species of *Rubus* on the Likiang Snow Range, where it grows at an altitude of 13,000 feet in forests of *Larix thibetica*. The orange-yellow fruits are larger than any of the cultivated species of *Rubus* and are rich in color, juice, and flavor."

55905. ROSA sp. Rosaceæ.**Rose.**

"(No. 5835. August 20, 1922.) A shrub 10 feet high, growing in meadows on the Likiang Snow Range at altitudes of 12,000 to 15,000 feet. It is a very ornamental plant, with red stems and red, curved, beadlike fruits. There are innumerable varieties, the flowers varying in color from creamy white to red."

55906. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

From Palm City, Camaguey, Cuba. Seeds presented by Rudolph Russ. Received October 28, 1922.

Watermelon seeds introduced from Cuba for experimental purposes by department horticulturists.

55907. LEYCESTERIA GLAUCOPHYLLA (Hook f. and Thoms.) C. B. Clarke. Caprifoliaceæ.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received October 23, 1922.

A slender plant, closely allied to the honeysuckles, with pale-green leaves and bearing in the early winter a profusion of pink flowers in short axillary spikes. It is native to the subtropical Himalayas at an altitude of 5,000 feet. (Adapted from *Gardeners' Chronicle*, 1858, p. 700.)

55908 to 55910.

From Darjiling, India. Seeds secured from G. H. Cave, curator, Lloyd Botanic Garden, by H. J. Elwes, Colesborn, Cheltenham, England, and presented by J. N. Rose, United States National Museum, Washington, D. C. Received October 20, 1922.

55908. OSBECKIA CRINITA Benth. Melastomaceæ.

A much-branched shrub 4 to 8 feet high, with small, narrow bristly leaves and large purple or pure-white flowers borne in terminal clusters. This plant is abundant at altitudes of 4,000 to 8,500 feet in the mountains of Sikkim and Bhutan, India. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 517.)

55909. PIERIS FORMOSA (Wall.) D. Don. Ericaceæ.

A Himalayan bush, 15 to 20 feet in height, which bears large terminal clusters of white flowers resembling those of the lily of the valley. The glossy green foliage persists throughout the winter, making a very effective background for the flowers. (Adapted from *The Garden*, vol. 79, p. 111.)

55910. SYMPLOCOS GLOMERATA King. Symplocaceæ.

A shrub or small tree becoming 10 feet high, with narrow leathery leaves 6 inches long and axillary clusters of small white flowers. This shrub is rather common in the hills of Sikkim and Bhutan, India, at altitudes of 1,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 577.)

55911 to 55913. DAVIDIA spp. Cornaceæ.

From Kew, England. Presented by Dr. A. W. Hill, director, Royal Botanic Gardens, Kew. Received November 2, 1922.

55911. DAVIDIA INVOLUCRATA Baill.

Budwood of a handsome tree from western China, where it reaches a height of 60 to 70 feet; in habit and foliage it resembles a linden. The bright-green oval leaves, 3 to 6 inches long, are sharply toothed and slender stalked, and the globular heads of small flowers, borne on slender nodding stalks about 2 inches long, appear in May and are made unusually striking because of the two or three large white bracts. These bracts are of unequal size, the largest being from 4 to 7 inches long and 2 to 4 inches broad. (Adapted from *Horticulture*, vol. 10, p. 433.)

For previous introduction, see S. P. I. No. 49668.

55912 and 55913. DAVIDIA INVOLUCRATA VILMORINIANA (Dode) Hemsl.

This variety does not show any difference in flower characters from the preceding, but the leaves are smooth, and it may not prove as hardy as the typical form. (Adapted from *Horticulture*, vol. 10, p. 433.)

For previous introduction, see S. P. I. No. 52936.

55912. Seeds.

55913. Budwood.

55914. BERTHOLLETTIA NOBILIS Miels. Lecythidaceæ. Brazil nut.

From Santa Cruz de la Sierra, Bolivia. Seeds presented by Juan S. Bowles. Received November 1, 1922.

"The Brazil nut has never been successfully cultivated in any part of the United States, so far as known to us, and is probably too tropical in its requirements for even the mildest wintered sections of Florida and California. It may be possible to grow it in Porto Rico, the Canal Zone, parts of Hawaii, and the Philippines. Seeds received in past years have usually come from northern South America, where are found the principal centers of production. These seeds from Bolivia may yield trees which will be slightly less exacting in their requirements than those from regions nearer the Equator." (*Wilson Popenoe*.)

55915 to 55919. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Angol, Chile. Plants presented by the Instituto Agrícola Bunster, Angol. Received November 7, 1922.

"In the orchards of central Chile are cultivated numerous peach varieties of local origin. Most of them are clingstones, for this type is more popular in that country, apparently, than the freestone. Some of them are of large size and fine quality. In fact, they compare very favorably with the best peaches of other countries.

"The peach growers of California are interested in securing the best available clingstone varieties for the production of fruit to be used for canning and preserving. To this end an effort is being made by this office to secure interesting sorts from all parts of the world. The Chilean varieties are worth a careful trial. The following descriptive notes are adapted from the nursery catalogue of the Instituto Agrícola Bunster." (*Wilson Popenoe*.)

55915. Blanquillo de Mayo. A very late, productive variety, with medium-sized fruits; excellent for preserves.

55916. De Vino. A very good clingstone variety whose season is in March. The fruits are very large, with very dark-red flesh.

55917. Monstruoso amarillo de Viña del Mar. A freestone variety which ripens in February. The very large fruits are of excellent quality.

55918. O'Higgins. A clingstone variety which ripens in March. The large fruits are a clear yellow.

55919. Pavia blanco. The large fruits are of good quality and are excellent for preserves or for drying. Season, February and March.

55920. PLOCAMA PENDULA Ait. Rubiaceæ.

From Orotava, Canary Islands. Seeds presented by Juan S. Bolinaga. Received November 10, 1922.

"A species of low-growing shrub found on the slopes of the arid hillsides in the Canary Islands. It has a most beautiful weeping habit, giving the plants the appearance of tiny weeping willows not over 2½ to 3 feet high. This would be very beautiful as a cover for dry hillsides overlooking the sea. It has already been brought into cultivation and will probably withstand severe drought." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 21611.

55921. POSOQUERIA LATIFOLIA (Rudge) Roem. and Schult. Rubiaceæ.

From Ancon, Canal Zone. Seeds presented by James Zetek. Received November 14, 1922.

"The very conspicuous white flowers of this rubiaceous plant have a sweet perfume somewhat like that of the orange jessamine (*Chalcas exotica* Millsp.)." (*Zetek.*)

A shrub, sometimes 25 feet high, native to the forests of northern Bahia, Brazil, where it grows in dry sandy soil with but little water. It flowers in February, and its succulent fruits, which ripen in July, are sold in the native markets for making marmalade and jelly. The greatest value of the shrub, however, lies in the finely grooved rigid branches, which are highly prized for walking sticks. These are exported to England under the name of "Brazilian oak." (Adapted from *Kew Bulletin of Miscellaneous Information, 1904, p. 9.*)

A handsome plant, worthy of general trial in tropical regions.

55922. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

From Angol, Chile. Seeds presented by the Instituto Agrícola Bunster. Angol. Received November 13, 1922.

"The melons of Chile, which ripen during the months of February, March, and April, are famous for their delicate flavor and remarkable keeping quality. Recently a number of them have been shipped from Valparaiso to New York, reaching the latter market in good condition. This seed is to be tested in our Southwestern States." (*Wilson Popenoe.*)

55923. PUNICA GRANATUM L. Punicaceæ. Pomegranate.

From Tangier, Morocco. Seeds presented by Jules Goffart. Received November 14, 1922.

"A variety of pomegranate with white flowers and fruits, which I found in Reunion. In flavor the fruit is slightly more acid than most varieties. When in flower and in fruit the tree is very ornamental." (*Goffart.*)

For previous introduction, see S. P. I. No. 40856.

55924. DIOSCOREA PENTAPHYLLA L. Dioscoreaceæ. Yam.

From Aulnay sous Bois, France. Tubers presented by Prof. R. de Noter, École d'Acclimatation de Recherches Agricoles. Received December 7, 1922.

Variety *Hortorum.*

"*Igname rond de Chine* (round yam of China). The tubers made the first season, from plants grown from 'eyes' dug and replanted, weigh 1½ kg. each; the second year the tuber may weigh 4 to 5 kg. The plant requires light sandy clay or, better, calcareous, richly fertilized soil. The tubers are gathered at the first frost and stored in the cellar. Two years' storage does not injure but improves the tubers. This yam is an excellent vegetable of delicate flavor and makes delicious fritters, cakes, and soufflés. The leaves, after the harvest, are used as cattle feed." (*De Noter.*)

For previous introduction, see S. P. I. No. 52867.

55925. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.
(*C. decumana* Murr.)

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, Department of Agriculture, Buitenzorg. Received November 17, 1922.

"A red-fleshed pummelo of fair quality and well-developed color." (*Cramer.*)

For previous introduction, see S. P. I. No. 46336.

55926 to 55955.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 2, 1922. Quoted notes by Mr. Rock.

55926. ALEURITES sp. Euphorbiaceæ.

"(No. 6163. August 10, 1922.) Seeds of a tree 10 to 15 feet high, which grows wild on the lower slopes of the mountains of the Yangpi Valley, at an altitude of 6 600 feet. It is called *Tung-yu shu* by the natives; oil is obtained from the seeds and used for making oilcloth and also for burning."

55927 to 55929. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

55927. "(August 10, 1922.) Seeds of a half-wild peach growing near Yangpi, two days from Talifu. The tree is old, with large trunks; the large reddish and green fruits, 4 inches in diameter, are free-stone, with firm, sweet, white flesh which becomes red near the seed."

55928. "(Yangpi. August 10, 1922.) Seeds of a half-wild peach growing near a temple. The fruits are 1½ to 2 inches in diameter, clingstone, very juicy and sweet."

55929. "(August 20, 1922.) Seeds of one of the largest fruited peaches I know of, found growing wild in the Likiang Valley. The pointed fruits are 3½ to 4 inches in diameter, clingstone, with firm white flesh of fair flavor."

55930. CASTANEA MOLLISSIMA Blume. Fagaceæ. Chestnut.

"(No. 6165. Yangpi. August, 1922.) Seeds of a tree about 40 feet high which grows along the lower western slopes of the Tsangshan Range of the Yangpi Mountains. The trunk is about 2 feet in diameter, and the long narrow leaves are sharply serrate."

55931. CATALPA DUCLOUXII Dode. Bignoniaceæ.

"(No. 3097. Near Nguluke. September 8, 1922.) Cuttings of a tree 70 to 80 feet high, with a diameter of 4 feet or more, growing at an altitude of 9,400 feet in the Likiang Valley. At this altitude the trees do not bear seed. It is a very handsome tree, bearing in early spring large clusters of pinkish purple flowers. The hard, durable wood is very valuable and is used for building purposes."

55932. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. Hawthorn.

"(No. 6166. Yangpi. August 10, 1922.) Seeds of a shrub 5 feet high, found at an altitude of 6,000 to 7,000 feet on the lower slopes of the mountains of the Yangpi Valley. The edible fruits are boiled with sugar and candied like jujubes. Native name 'Shan li ko' (mountain pear fruit)."

55933. HEMEROCALLIS FORRESTII Diels. Liliaceæ.

"(Nos. 3841 and 4546. August 27, 1922.) Seeds of a very handsome plant about 2 feet high, growing with *Incarvillea grandiflora brevipes* on the Likiang Snow Range at an altitude of 11,000 feet. It has a thick rootstock, narrow lanceolate leaves, and deep golden orange tubular flowers 2 to 3 inches long borne in many-flowered spikes. It flowers only in very early spring and is suited only for pure limestone soil.

55926 to 55955—Continued.

55934. *INCARVILLEA GRANDIFLORA BREVIPES* Sprague. Bignoniaceæ.

"(Nos. 4127, 4128, 6122. August 27, 1922.) Seeds of a gorgeous perennial, a foot or more in height, found growing at an altitude of 9,000 to 11,000 feet on the Likiang Snow Range. It has a thick stout rootstock, a large rosette of rich-green leaves, and flowers 3 inches wide. These flowers, which appear in March and April, have a long yellow calyx tube and a corolla which is a rich reddish purple or vermilion. This plant, one of the most striking of early spring, grows in snow-white magnesium-limestone soil."

For an illustration of this variety, see Plate III.

55935. *LILIUM TIGRINUM* Ker. Liliaceæ.

Tiger lily.

"(Nos. 4889 and 5357. September 7, 1922.) Bulbs of an orange-flowered lily cultivated by the Mosos in Likiang for the bulbs, which are eaten as a vegetable; only the outer scales are sold, the inner part being kept for planting. This lily grows wild along watercourses in the Likiang Plain at an altitude of 9,000 feet. The numerous large flowers, orange with purple, are very attractive."

55936. *MELIOSMA CUNEIFOLIA* Franch. Sabiaceæ.

"(Nos. 4410, 4721, 6136. September 3, 1922.) Seeds of a beautiful flowering shrub or small tree 12 feet high, found growing at an altitude of 9,000 to 10,000 feet along watercourses on the northern end of the Likiang Snow Range, usually among limestone boulders. In habit it resembles the weeping willow, with drooping branches bearing on their apices large pyramidal clusters of cream-colored flowers. During June and July this shrub is an object of great beauty."

55937. *PAEONIA DELAVAYI* Franch. Ranunculaceæ.

Peony.

"(No. 6059. September 3, 1922.) Seeds of a very attractive vigorous shrub 4 feet high, growing in rather dry situations north of Likiang among limestone boulders at an altitude of 9,800 feet. The deep-crimson flowers are 3 inches in diameter."

For previous introduction, see S. P. I. No. 55898.

55938. *PAPYRIUS* sp. Moraceæ.

"(No. 6162. Langkung. August 16, 1922.) Seeds of a shrub or small tree 10 feet high, which grows along streams at an altitude of 7,000 feet."

This genus includes the well-known paper mulberry.

55939. *POLYGALA ABILLATA* Buch.-Ham. Polygalaceæ.

"(No. 6167. Yangpi. August 10, 1922.) Seeds of an ornamental shrub 3 to 4 feet high, found growing on the lower mountain slopes at an altitude of 7,000 feet. The bright-yellow flowers are borne in long spikes, and the seed pods are small."

For previous introduction, see S. P. I. No. 49646.

55940. *PRUNUS* sp. Amygdalaceæ.

Cherry.

"(September 8, 1922.) Seeds of a cherry tree 25 to 30 feet in height with a trunk 8 to 10 inches in diameter, which grows in the main gorge leading to the snow-capped peak Satseto (altitude 21,000 feet), among pure limestone rocks, at an altitude of 12,000 feet. The water in the stream bed of this gorge is like milk because of the limestone soil; in the winter the gorge is filled with ice.

"The leaves of this tree are flaccid and bluish green. The long-stemmed bright-red ovoid-oblong cherries appear very late, in September, and are borne singly in the axils of the leaves; the juicy, bitter, bright-red flesh is not firm, and the stone is small. This would probably make a good stock plant for alkaline regions."

55941. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(No. 6117. August 26, 1922.) Seeds of a wild plum tree about 20 feet high, which grows along banks of streams in the Likiang Plain at

55926 to 55955—Continued.

an altitude of 9,500 to 10,000 feet. The round lemon-yellow fruits are about an inch in diameter. The tree is a prolific bearer and grows in alkaline soil."

55942 to 55946. *ROSA* spp. Rosaceae.

Rose.

55942. *ROSA* sp.

"(Nos. 6125, 6127, 6128, 6129, 6130. August 30, 1922.) Seeds of a mixture of a number of closely related forms found in the limestone meadows of Saba, Likiang Snow Range, at an altitude of 11,000 feet. They are all shrubs 8 to 10 feet in height."

55943. *ROSA* sp.

"(No. 6121. August 28, 1922.) Seeds of a shrub 12 to 15 feet high, with long rambling branches, found along watercourses on the north end of the Likiang Plain at an altitude of 9,000 to 10,000 feet. It bears a large number of white flowers, which are followed by small ovoid orange fruits. When in bloom this shrub is a very striking object."

55944. *ROSA* sp.

"(No. 6126. August 30, 1922.) Seeds of a shrub 8 to 10 feet high, which grows in a limestone meadow called Saba, in the Likiang Snow Range, at an altitude of 11,000 feet. The flowers are either cream colored or red and the smooth fruits a dull red-brown."

55945. *ROSA* sp.

"(No. 6435. September 7, 1922.) Seeds of a lovely slender spineless shrub 8 to 10 feet in height, which grows in a deep gorge leading up to the main peak of the Likiang Snow Range, at an altitude of 6,000 feet, among spruce and fir forests and rhododendrons. The soil is usually much impregnated with lime. The shrub is very ornamental both in flower and in fruit. The single flowers are a deep rose red, and the yellow and scarlet shining fruits are long pear shaped."

55946. *ROSA* sp.

"(No. 6436. September 7, 1922.) Seeds of a slender, very attractive shrub which grows with the preceding No. 6435 [S. P. I. No. 55945] in the limestone gorge leading to the main peak of the Likiang Snow Range, at an altitude of 11,500 to 12,000 feet. The stems and branches are red and spineless except on the young shoots. The flowers are cream colored, and the crimson to carmine fruits are covered with a few soft bristles, are pear shaped, and about an inch in length."

55947. *SCILLA* sp. Liliaceae.

"(No. 6169. Kiuho. August, 1922.) Bulbs of a liliaceous plant found growing at an altitude of 7,000 feet. It bears spikes of small rich-purple flowers."

55948 and 55949. *VACCINIUM* spp. Vacciniaceae.

55948. *VACCINIUM DELAVAYI* Franch.

"(No. 6168. August 20, 1922.) Seeds of a very compact hardy shrub which grows on the Tsangshan Range at an altitude of about 8,000 to 9,000 feet. The edible berries, the size of small peas, are purplish black."

55949. *VACCINIUM* sp.

"(No. 6437. September, 1922.) Seeds of a shrub 2 feet high, which is very common from the Black River Valley to this locality (Likiang Snow Range), where it grows under pine trees. The flowers are a beautiful pink, and the edible dark-purple fruits, about the size of peas, are quite sweet."



A SHOWY ALPINE PLANT FROM WESTERN CHINA (*INCARVILLEA GRANDIFLORA BREVIPES* SPRAGUE; S. P. I. NO. 55934)

For many years the typical form of this relative of our trumpet vine has been known to horticulturists, but the variety here shown was discovered only a few years ago in western China, whence it was sent to Europe. It is a rather small perennial, a foot or two in height, and differs from the type in having large brilliant-red flowers with canary-yellow markings in the throat, as well as in having more compact flower clusters. The plant illustrated was growing in pure limestone drift on the lower slopes of the Likiang Snow Range, Yunnan, China, at an altitude of 10,500 feet. (Photographed by J. F. Rock, June 2, 1922; P30260FE)



A CHESTNUT FROM THE MOUNTAINS OF SOUTHWESTERN CHINA (CASTANEA SP.; S. P. I. No. 56080)

In recent years the common chestnut, formerly a conspicuous feature of forests and roadsides in the northeastern United States, has almost disappeared, owing to the ravages of chestnut blight (*Endothia parasitica*), a disease for which no remedy has been discovered. In an effort to obtain blight-resistant chestnuts the Department of Agriculture has introduced from China a number of interesting species. The one here shown is a large tree, about 100 feet tall, with a trunk 5 feet in diameter. The edible nuts are small, but J. F. Rock, through whom the introduction has been made, reports them to be of sweet flavor. (Photographed by J. F. Rock, near Shiaoshuichi, Yunnan, China, September 29, 1922; P30306FS)

55926 to 55955—Continued.

55950 to 55952. *VIBURNUM* spp. Caprifoliaceæ.55950. *VIBURNUM* sp.

“(No. 6061. September 7, 1922.) Seeds of a shrub 5 to 8 feet high, which is the most common *Viburnum* on the Likiang Plain; it grows almost everywhere, but especially along streams among limestone boulders and on the lower slopes of the Likiang Snow Range at an altitude of about 10,000 feet. In early spring appear the cymes of white flowers, followed by the drooping clusters of rich red-crimson fruits. These fruits are quite acid, but are used for jams and jellies, giving the jelly a rich-red color. When in fruit the plant is very ornamental; the fruits, which ripen after the first frost, remain firm for two months.”

55951. *VIBURNUM* sp.

“(No. 6160. Talifu. August 20, 1922.) Seeds of an ornamental shrub 5 to 6 feet high, with drooping branches, which grows at an altitude of 10,000 feet on the Tsangshan Range. The flowers are white to cream colored and the fruits black when ripe.”

55952. *VIBURNUM* sp.

“(No. 6161. Ningai. August 10, 1922.) Seeds of an ornamental shrub 4 feet high, found growing on limestone rocks. The flowers are white with a pinkish tinge, and the fruits are black.”

55953. *VITIS* sp. Vitaceæ.

Grape.

“(No. 6286. September 7, 1922.) Seeds of a very hardy wild grape found covering rosebushes along streams among limestone boulders in the northern end of the Likiang Snow Range at an altitude of 10,000 feet. The leaves are small, thick, and deeply three lobed. The vine is a prolific bearer. The small dull-purple fruits, a little larger than peas, with large seeds, are borne in racemes 3 to 4 inches long and are very sweet, with no acid taste.”

55954. (Undetermined.)

“(No. 6164. August 10, 1922.) Seeds of a tree 30 to 40 feet high, with a trunk 3 to 4 feet in diameter, which grows in deep gulches in the Yangpi Mountains, near Talifu, at an altitude of 10,000 feet. The leaves and fruit resemble those of a *Ziziphus*.”

55955. *CORNUS* sp. Cornaceæ.

“(September 3, 1922.) Seeds of an ornamental tree about 25 feet high, which grows in the Peshwe Valley, north of the Likiang Plain, at an altitude of 10,000 feet. The leaves are bright green above, white beneath, and the cream-colored flowers are in large cymes. The fruits are purplish black and very ornamental.”

55956 to 55963.

From Likiang, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 4, 1922. Quoted notes by Mr. Rock.

55956. *LONICERA XEROCALYX* Diels. Caprifoliaceæ.

Honeysuckle.

“(No. 5939. August 27, 1922.) A rare shrub 15 to 20 feet high, which grows at an altitude of 12,000 feet on an alpine meadow known to the Mosos as ‘Ma hoang pa tze’ (leech meadow). The shrub has horizontal branches, narrow leaves of a rich green, and large rich golden yellow flowers, which appear in May and June. It is an exceedingly handsome species. The small fruits are a tomato red.”

55957. *MECONOPSIS INTEGRIFOLIA* (Maxim.) Franch. Papaveraceæ.

“(Nos. 3358, 3385, 6114. August 27, 1922.) A fine alpine plant 2 feet or more in height, found rather commonly at an altitude of 14,000

55956 to 55963—Continued.

to 14,500 feet among limestone boulders on the Likiang Snow Range. The leaves are linear, with the basal ones forming a rosette, and covered with red hairs. The large bright-yellow flowers are 4 inches across."

55958 to 55963. *ROSA* spp. Rosaceæ.

Rose.

55958. *Rosa* sp.

"(No. 6118. August 27, 1922.) A handsome shrub with pendent branches, which grows in fir and spruce forests at an altitude of 11,000 feet in the main gorge leading to one of the peaks (21,000 feet altitude) of the Likiang Snow Range. The flowers, which appear in April and May, are rich pink to mauve. The shrub fruits in August."

55959. *Rosa* sp.

"(No. 6119. August 27, 1922.) A wild rose from the Likiang Snow Range."

55960. *Rosa* sp.

"(No. 6120. August 27, 1922.) A shrub 15 to 18 feet high, with long rambling branches, found at an altitude of 10,000 feet on the northern end of the Likiang Plain. It is a very ornamental species, with large single white flowers and scarlet fruits covered with soft spines."

55961. *Rosa* sp.

"(No. 6086. August 27, 1922.) A shrub 4 to 5 feet high, with small leaves, found at altitudes of 13,000 feet and higher, in rocky limestone situations on the Likiang Snow Range. It has very attractive pink flowers."

55962. *Rosa* sp.

"(No. 6089. August 27, 1922.) A very ornamental shrub 4 feet high, growing on the Likiang Snow Range at an altitude of 13,500 feet. The stems and spines are red, as are also the flowers. The fruits are scarlet and yellow."

55963. *Rosa* sp.

"(No. 6096. August 27, 1922.) A very small spreading shrub, with small leaves, found at an altitude of 13,500 feet on steep alpine meadows of the Likiang Snow Range, in company with junipers, aconites, and spireas. The flowers are red, and the pear-shaped fruits are orange-red."

55964. *ANNESLIA BREVIPES* (Benth.) Lindm. Mimosaceæ.

(*Calliandra brevipes* Benth.)

From Rio de Janeiro, Brazil. Seeds presented by J. Simão da Costa. Received November 23, 1922.

"A shrub with beautiful flowers, native to the arid zone of northeastern Brazil." (*Da Costa*.)

The plants of this genus are very attractive because of their graceful feathery foliage and globose flower heads. These flower heads consist of very numerous long purplish stamens which almost entirely hide the small corollas. (Adapted from *Hooker, Journal of Botany, vol. 2, p. 138.*)

55965 to 55971. *PYRUS* spp. Malaceæ.

Pear.

From Jamaica Plain, Mass. Trees presented by E. H. Wilson, Arnold Arboretum. Received November 11, 1922. Quoted notes by Mr. Wilson.

55965. *PYRUS CALLERYANA DIMORPHOPHYLLA* (Makino) Koidz.

"(No. 9635 W.) A variety which forms a tree about 30 feet high with a trunk about a foot in diameter, growing at Hazu, Ise Province, Japan. This tree was raised from seeds collected for me by the Yokohama Nursery Co. in the autumn of 1917."

55965 to 55971—Continued.**55966 to 55970. PYRUS USSURIENSIS Maxim.**

55966. "(No. 10657 W.) A variety with small edible fruits. These trees were raised from seeds which I purchased at Pukchin, Province of Keiki, Chosen, August 25, 1918."

55967. "(No. 11254 W.) A variety with small pear-shaped to round fruits. These trees were raised from seeds collected for me by T. Ishidoya at Keijo, Province of Keiki, Chosen, in the late autumn of 1918."

55968. "(No. 11260 W.) *Ishi-nashi*. A stone pear collected for me by H. Suzuki at Yamanaka, Mount Fuji, Japan, in the late autumn of 1918."

55969. (No. 11261 W.) *Pin li*. A flat short-stemmed pear, collected for me by the Yokohama Nursery Co. at Yugakujo, Manchuria, in the late autumn of 1918."

55970. "(No. 11262 W.) *Champa li* (long peduncled). A variety collected for me by the Yokohama Nursery Co. at Mukden, Manchuria, in the late autumn of 1918."

55971. PYRUS USSURIENSIS HONDOENSIS (Kik. and Nak.) Rehder.

"(No. 11266 W.) *Yama-nashi*. A variety collected for me by the Yokohama Nursery Co. at Nagano, Japan, in the late autumn of 1918."

55972 to 55974.

From Freetown, Sierra Leone, Africa. Seeds presented by W. N. Martin, Albert Academy, U. B. C. Received November 17, 1922.

55972. AMARANTHUS sp. Amaranthaceæ.

"A green variety used like spinach." (*Martin.*)

55973. CORCHORUS OLITORIUS L. Tiliaceæ.

This species appears to be important as a vegetable and is cultivated in many tropical countries for that purpose. In Nigeria and Uganda the leaves are used in soups, and in Sierra Leone the plant is used as a potherb. The young and tender leaves are used in salads. (Adapted from *Holland, Useful Plants of Nigeria, pt. 1, p. 115.*)

For previous introduction, see S. P. I. No. 52891.

55974. SYNTHESISMA EXILIS (Kippist) Newbold. Poaceæ. Fundi.

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

For previous introduction, see S. P. I. No. 52736.

55975. PHYLLOSTACHYS AUREA Carr. Poaceæ. Bamboo.

From Ermitage, Mons, Belgium. Seeds presented by J. H. de LeHaie. Received November 28, 1922.

"Height 10 to 15 feet; stems one-half to 1 inch in diameter, greenish yellow when young, becoming golden with age, erect, stiff; joints much shortened toward the base; branchlets slender, greenish yellow, becoming darker yellow

as the plant grows older, usually set at a rather acute angle; leaves 2 to 4 inches long, light green above, grayish beneath, one edge serrate, the other smooth; sheaths deciduous, marked with purplish spots and blotches.

"A handsome ornamental form, fairly hardy, and grown generally in public gardens throughout the world. This was one of the earliest introduced forms in California and is found there in many gardens. It is said to be quite drought resistant and with a little protection will survive the winters as far north as Washington, D. C." (*B. T. Galloway*.)

55976. ZEA MAYS L. Poaceae.

Corn.

From Buenos Aires, Argentina. Presented by D. S. Bullock, Agricultural Commissioner, Bureau of Agricultural Economics. Received November 28, 1922.

"From Entre Rios, Argentina." (*Bullock*.)

Maiz amargo (bitter corn). A variety of corn said to have been introduced into Argentina from Hungary in 1902, since which date it has become quite popular in some parts of northern Argentina because of its resistance to the attacks of locusts. A characteristic of this variety which distinguishes it from other varieties is its tendency to stool or produce side shoots. Unless planted close, each plant will produce under favorable conditions from 4 to 10 of these shoots. The leaves are often over 3 feet long and sometimes 4 inches wide and the stalks from 6 to 10 feet tall. There are two forms noted in Entre Rios, one with grayish white kernels and one with yellow kernels, the latter having longer ears than the former. Because of the numerous intergradations, however, it is very difficult to obtain typical ears of either form. The growing season of *maiz amargo* is long, sometimes as long as nine months. In Entre Rios it is sown in November. (Adapted from *Report No. 76, D. S. Bullock, Agricultural Commissioner*.)

55977. ARACHIS HYPOGAEA L. Fabaceae.

Peanut.

From Sydney, New South Wales. Seeds presented by G. W. Valder, under-secretary and director, Department of Agriculture. Received November 28, 1922.

"These seeds were originally sent from the United States under the name 'Mammoth.' The Chinese claim that this variety is too large for their purpose." (*Valder*.)

Introduced for the use of specialists in the Department of Agriculture.

55978. EUGENIA DOMBEYI (Spreng.) Skeels. Myrtaceae.

(*E. brasiliensis* Lam.)

Grumichama.

From Hilo, Hawaii. Seeds presented by Bro. Matthias Newell. Received October 23, 1922.

"The grumichama is found both wild and cultivated in southern Brazil, particularly in the States of Parana and Santa Catharina. Elsewhere, with the exception of Hawaii, it is scarcely known.

"The tree, which grows to the same size as the orange, is shapely and attractive in appearance, with ovate-elliptic, glossy deep-green leaves 2 to 3 inches long. The small white flowers are followed by pendent fruits, round or slightly flattened, the size of a cherry and deep crimson in color. The persistent green sepals which crown the apex are a distinguishing characteristic. The skin is thin and delicate, the flesh soft, melting, of a mild subacid flavor suggesting that of a Bigarreau cherry. The seeds are round or hemispherical when one or two in number; sometimes there are three or more, in which case the size is reduced and they are angular.

"The rapidity with which the fruits develop is surprising; within a month from the time of flowering they have reached maturity and are falling to the ground. Father Tavares states that all the trees do not ripen their crops at the same time, some blooming later than others and thus extending the fruiting season from November to February (in Brazil). Three varieties are distinguished by him, one with dark-red flesh, another with vermilion, and the third with white. All three are said to be equally good in quality. The fruit is usually eaten fresh, but may also be used to make jams and preserves.

"The grumichama (sometimes *grumizama*, to conform to old Portuguese orthography) has recently been planted in California and Florida. In the latter State it has withstood a temperature of 26° F. without injury, which indicates that it is subtropical, rather than strictly tropical, in character. It prefers a deep sandy loam, but succeeds in Florida on shallow sandy soils. Vaughan MacCaughy says: 'In the Hawaiian Islands it is usually about 20 feet high. It requires considerable moisture for its best development, as do all the Eugénias in our flora: the largest crops are borne by plants at the lower levels, up to 300 feet * * * flowering and fruiting continue from July until December, the main crop coming in the fall * * *. The first plants in Hawaii were probably introduced by the Spaniard Don Francisco de Paula Marin, who came to the islands in 1791.' The grumichama is sometimes listed as *Eugenia brasiliensis* Lam. *Stenocalyx brasiliensis* Berg. is another synonym.

"Seedlings are said to commence fruiting when 4 or 5 years old. They grow rather slowly. No one appears to have budded or grafted the species as yet. For its value as an ornamental plant, as well as for its pleasant fruit, the grumichama deserves cultivation throughout the Tropics and Subtropics." (*Wilson Popenoc.*)

For previous introduction, see S. P. I. No. 54777.

55979 to 55981. MYRCIARIA spp. Myrtaceæ.

From Rio de Janeiro, Brazil. Seeds presented by P. H. Rolfs, director, Escola Superior de Agricultura e Veterinária, Vicosá, Minas Geraes, Brazil. Received December 21, 1922.

55979. MYRCIARIA sp.

Jaboticaba.

The jaboticaba (*Myrciaria cauliflora*) is doing very well in Florida, and these seeds are introduced for testing in that State.

55980. MYRCIARIA sp.

Jaboticatuba.

"The fruits of this variety are much larger than those of the ordinary jaboticaba." (*Rolfs.*)

55981. MYRCIARIA sp.

Jaboticaba.

The jaboticaba (*Myrciaria cauliflora*), one of the commonest and most popular fruits of the vicinity of Rio de Janeiro, Brazil, now appears to be thriving in southern Florida, and these seeds are introduced for cultural experiments in that State.

55982. GUILIELMA UTILIS Oerst. Phœnicaceæ.

Pejibaye.

(*Bactris utilis* Benth. and Hook.)

From Limón, Costa Rica. Seeds presented by C. P. Chittenden, manager, United Fruit Co. Received November 16, 1922.

"A red-striped variety of pejibaye of very good eating quality." (*Chittenden.*)

For previous introduction and description, see S. P. I. No. 55807.

55983 to 55992.

From Yunnan, China. Collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November, 1922. Quoted notes by Mr. Rock.

55983. CASTANEA sp. Fagaceæ.

Chestnut.

"(No. 6256. Yangpi. September 19, 1922.) Seeds of a tall tree 40 feet or more in height, with a trunk 2 feet in diameter, found wild on the southwestern slopes of the Tsangshan Range at altitudes of 8,000 to 9,000 feet. The nuts, very sweet and of delicious flavor, are numerous in the burs, and the strong healthy trees are prolific bearers."

55983 to 55992—Continued.

55984. *CASTANEA* sp. Fagaceæ. Chestnut.

"(No. 6256a. September, 1922.) Seeds of tall trees found wild in the valleys of the Haitung Range, east of the Tali Lake, at an altitude of 8,000 feet. The nuts are larger than those from the mountains near Yangpi, but both are very sweet and delicious in flavor."

55985. *CHAENOMELES* sp. Malaceæ. Chinese quince.

"(Talifu. September 19, 1922.) Seeds of a quince, called in Chinese *Mu kua*, cultivated around Talifu. The tree is 50 to 80 feet tall, with a large trunk. The very aromatic fruits, rich yellow with a reddish tinge, have very firm, hard, yellow flesh."

55986. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Dasheen.

"(Talifu. September 22, 1922.) Tubers of a Chinese vegetable called *Yee-tao*, sold in the Talifu market. The plant is grown in dry ground, like corn or wheat, and not flooded. The tubers grow in great numbers around the base of the stem; they are white and mealy and eaten boiled, like potatoes. The flower stalk is about 2 feet long, of a pinkish mauve color, with a slender spathe of the same color, and with cream-colored flowers; the whole is eaten as a vegetable, either fried or boiled."

55987. *CORYLUS* sp. Betulaceæ. Hazelnut.

"(No. 3292. Nguluke. September 11, 1922.) Seeds of a tree 60 to 80 feet in height, with trunks 2 to 3 feet in diameter, found at altitudes of 9,500 to 10,000 feet among limestone boulders near springs at the foot of the Likiang Snow Range. The tree is handsome, with very large leaves, and bears large edible nuts.

55988. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. Hawthorn.

"(Talifu. September 20, 1922.) Seeds of a shrub 6 to 8 feet high, obtained from fruits sold in the Talifu market, where they are strung on fiber. These small applelike fruits mature in September. They have large seeds and rather sour flesh and are candied like jujubes. Chinese name *Shan li ko*."

For previous introduction, see S. P. I. No. 55932.

55989. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

"(Yangpi. September, 1922.) Seeds of wild walnut trees 40 to 50 feet in height, with a spread of nearly a hundred feet, found in the mountains at an altitude of 8,000 feet. The nuts are large, thin shelled, and sweet."

For previous introduction, see S. P. I. No. 54790.

55990. *MALUS* sp. Malaceæ. Apple.

"(No. 6558. Chienchuan, September 15, 1922.) Seeds of a wild apple, tree 20 feet high, with stiff spreading branches, found in a dry, hot, rocky location in the Chienchuan Valley north of Talifu. The fruits are a little larger than a pea, glossy as if varnished, bright red on one side and yellow on the other."

55991. *MECONOPSIS INTEGRIFOLIA* (Maxim.) Franch. Papaveraceæ.

"(Likiang. September, 1922.)"

For previous introduction and description, see S. P. I. No. 55957.

55992. *OSTEOMELES SCHWERINAE* C. Schneid. Malaceæ.

"(No. 6554. Langchiung. September 16, 1922.) Seeds of an ornamental, spreading shrub 2 to 3 feet high, found in the Langchiung Mountains at an altitude of 7,500 feet and common in the arid regions north and south of Talifu. It differs considerably from the Pacific species, *Osteomeles anihyllidifolia*; the flowers are pinkish white and very fragrant, and the sweet edible fruits are uniformly dull purple."

For previous introduction, see S. P. I. No. 40033.

55993. FRAXINUS MICRANTHA Lingelsh. Oleaceæ. **Ash.**

From Dehra Dun, India. Seeds presented by R. S. Hole, forest botanist. Received December 21, 1922.

A Himalayan ash with large leathery leaves about 9 inches long and lax terminal panicles of minute flowers. It is very similar to another Himalayan species, *Fraxinus floribunda*, from which it differs in leaf characters and in having a looser panicle. (Adapted from Engler, *Botanische Jahrbücher*, vol. 40, p. 217.)

55994 to 56018.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States, Department of Agriculture. Received November 21, 1922. Quoted notes by Mr. Rock.

55994. PÆONIA DELAVAYI Franch. Ranunculaceæ. **Peony.**

"(Nguluke. September 12, 1922.)"

For previous introduction and description, see S. P. I. No. 55898.

55995. PRIMULA BULLEYANA Forrest. Primulacæ. **Primrose.**

"(Heshwe. September, 1922.) Seeds of a very attractive primula collected three days' journey north of Likiang at an altitude of 9,000 to 11,000 feet. It is not a bog-loving plant but grows in pine forests."

55996. PYRACANTHA sp. Malacææ. **Fire thorn.**

"(Likiang. September 11, 1922.) Seeds of a shapely shrub 10 to 15 feet in height, which grows along stream beds in limestone soil throughout the Likiang Plain. It is common all along the road from Talifu to Likiang, and even south of Likiang. When in flower it is very ornamental, but it is especially attractive when loaded with its bright-scarlet fruits from August until winter."

55997. PYRACANTHA sp. Malacææ. **Fire thorn.**

"(No. 6527. September 14, 1922.) Seeds of a dense shrub 6 to 8 feet in height, which grows with *Prinsepia utilis* in arid situations in the valley beyond Lashipa, two days' journey south of Likiang. It has bright-yellow berries instead of the scarlet fruits which are so common."

55998 to 56016. PYRUS spp. Malacææ. **Pear.**

"All these wild pears, of which I am sending seeds, are used as stock plants; they are not planted, but are so numerous that the Chinese simply cut them down and bud them. The best pears come from the region between Tienwei, Talifu, and Haitung."

55998. PYRUS sp.

"(No. 6503. Lashipa. September 13 and 14, 1922.) A very hardy pear tree 15 to 20 feet high, found on the Lashipa Plain, one day's travel south of Likiang, at an altitude of 10,000 feet. It has very tough branches, small, oval-oblong, crenate, acute leaves, and bears large numbers of fruits which are the size of small marbles, yellow, acrid, and unpalatable. The tree is generally used by the natives as a stock plant. Wherever the tree grows wild they cut the trunk down to 2 feet from the ground and bud cultivated varieties of pears on it. The tree is exceedingly hardy and drought resistant and also can withstand being inundated."

55999. PYRUS sp.

"(No. 6508. Likiang. September 13, 1922.) A tree 20 feet tall, which is wild all over the region north of Talifu; collected near the village of Luchu on the southwest end of the Likiang Plain. The leaves are oblong, dark green with red veins and petioles, glossy above, acute or rounded at the base and apex. The fruits are the size of marbles, yellowish brown and spotted, acrid, and unpalatable. This tree had a cultivated variety budded on it; the lower branches were loaded with the wild fruit, and the main trunk had an unripe pear of the cultivated variety."

55994 to 56018—Continued.

56000. *PYRUS* sp.

"(No. 6509. September 13, 1922.) A wild pear tree 20 feet high, found on the Likiang Plain near the village of Lasadje. The leaves do not have red veins and petioles, and the fruits, which are smaller than a marble, are yellow, spotted, acrid, but perfectly black and sweet when ripe. This is a very good stock plant."

56001. *PYRUS* sp.

"(No. 6511. Lashipa. September 13, 1922.) A wild pear tree 15 to 20 feet high, from dry hillsides at an altitude of 9,000 feet, where it grows with *Pinus sinensis*. The leaves are small, oval-elliptical, with long stems. The small, yellowish brown fruits are the size of marbles."

56002. *PYRUS* sp.

"(No. 6539. September 15, 1922.) A wild pear tree 25 to 30 feet high, found in the hot valley of Nankaochai near Chienchuan Valley, two and one-half days' journey south of Likiang, at an altitude of 7,000 feet. It has long spreading whiplike branches and very numerous brownish yellow fruits the size of marbles, which are black when fully ripe."

56003. *PYRUS* sp.

"(No. 6553. September 15, 1922.) A wild pear tree 40 feet in height, found in arid regions in the mountains west of Tengchuan, two days' journey north of Talifu, at an altitude of 6,500 to 7,000 feet. The branches are long and mostly horizontal. The fruits are much larger than those of the other wild pears, with a rich yellowish brown skin and firm butter-yellow flesh which is acrid and unpalatable, though juicy. This species is quite rare; I have seen only two trees."

56004. *PYRUS* sp.

"(No. 6555. September 15, 1922.) A tree 40 feet high with rambling and ascending branches, found in a dry region of yellow clay or loam on a hillside beyond Tieuwei, three days' journey south of Likiang. This species is very rare, only one tree being seen, and is quite distinct from the other wild pears. The long-stemmed solitary fruits, smaller than a coffee berry, were few in number, oblong, and uniformly crimson."

56005. *PYRUS* sp.

"(No. 6556. September 16, 1922.) A wild pear tree 15 to 20 feet high, of very graceful habit and spineless, found in the Langchiung Valley near the Erhyin River, two days' journey north of Talifu. The leaves are bright green on both sides, and the bright yellowish brown fruits, larger than a marble, are juicy but acrid. The Chinese use this as a stock plant."

56006. *PYRUS* sp.

"(No. 6557. Langchiung Valley. September 16, 1922.) A wild pear tree 25 feet high, spineless, with dark-green, crenate, elliptic leaves and round, russet-brown, juicy, acrid fruits the size of small marbles and similar to those of No. 6556 [S. P. I. No. 56005]. The tree is a prolific bearer and is used here as a stock plant."

56007. *PYRUS* sp.

"(No. 6559. September 15, 1922.) A wild pear tree 25 to 30 feet high, with a stout trunk and stiff, spreading branches, found in the dry mountain range south of Chienchuan, three days' journey north of Talifu. The numerous fruits are about half an inch in diameter greenish brown with lighter spots. A good stock plant."

The following are seeds of domesticated varieties.

56008. *PYRUS* sp.

"(Talifu. September 20, 1922.)"

55994 to 56018—Continued.

56009. *PYRUS* sp.

“(Haitung, east of Tali Lake. September, 1922.)”

56010. *PYRUS* sp.

“(Haitung. September, 1922.)”

56011. *PYRUS* sp.

“(Haitung. September 19, 1922.)”

56012. *PYRUS* sp.

“(Talifu. September 20, 1922.)”

56013. *PYRUS* sp.

“(Tienwei. September 15, 1922.)”

56014. *PYRUS* sp.

“(Tienwei. September 15, 1922.)”

56015. *PYRUS* sp.

“(Tienwei. September 15, 1922.)”

56016. *PYRUS* sp.

“(Tienwei. September 15, 1922.)”

56017. *ROSA* sp. *Rosaceæ*.

Rose.

“(No. 6504. September 14, 1922.) Seeds of a spreading shrub or climber with huge rambling branches, 25 feet high with a spread of 30 feet or more, found growing wild, with *Rosa banksiae*, all over the Lashipa Plain, one day's trip south of Likiang. The flowers when first opened are yellow, becoming cream colored and the size of a half dollar. The orange-red fruits are borne in large ample panicles. The shrub is very ornamental in flower and in fruit.”

56018. *STYRAX LANGKONGENSIS* W. W. Smith. *Styracaceæ*.

“(No. 3198. Langchung. September 18, 1922.) Seeds of an ornamental shrub 1 to 2 feet tall, which grows in the arid region between Langchung and Shapl. at an altitude of 7,500 feet. The flowers are large, white, and drooping, with rich reddish brown calyxes.”

56019. *PRIMULA CHRYSOPA* Balf. f. and Forrest. *Primulaceæ*.

Primrose.

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received November 22, 1922.

“Come over and see *Primula chrysopa* next spring. It's a thing to say your prayers to.” (Bulley.)

A tufted perennial marsh-loving primrose from the Province of Yunnan, China, where it grows in moist stony alpine meadows. It has oblong, bright-green, somewhat fleshy, long-stemmed leaves and very attractive fragrant flowers borne in two to four flowered umbels on the summit of the slender scape. The calyx is green or purplish and the oblique corolla pale lilac with a golden eye. The entire plant is more or less covered with a white mealy powder. (Adapted from *Transactions of the Botanical Society of Edinburgh*, vol. 27, p. 277.)

56020. *GUILIELMA UTILIS* Oerst. *Phœnicaceæ*.

Pejibaye.

(*Bactric utilis* Benth. and Hook.)

From San Jose, Costa Rica. Seeds purchased through Otón Jiménez. Received December 19, 1922.

A shipment of seeds of the pejibaye. For an extended account of this interesting food palm, see the *Journal of Heredity*, vol. 12, pp. 154-166, April, 1921.

For previous introduction, see S. P. I. No. 55982.

56021. ESCALLONIA PHILIPPIANA (Engler) Masters. Escalloniaceæ.

From Exeter, England. Plants purchased from Robert Veitch & Son, The Royal Nursery. Received November 25, 1922.

This ornamental shrub, native to Chile, is the hardiest of all the Escallonias, and unlike the other species is deciduous. It forms a spreading shrub with gracefully arching branches and has small dark-green leaves which serve admirably as a background for the pretty star-shaped white flowers. (Adapted from *Gardening Illustrated*, vol. 38, p. 501.)

**56022. WARSZEWICZIA COCCINEA (Vahl) Klotzsch. Rubiaceæ.
Scarlet plume.**

From Gamboa, Canal Zone. Seeds presented by F. Marti. Received November 28, 1922.

"This is a remarkable ornamental tree; I first saw it on the banks of Gatun Lake at Rio Sucio. At a distance its racemes, over 2 feet long, with their brilliant-scarlet enlarged sepals, produced a startling splash of color against the dark-green foliage. The color is as vividly scarlet as the autumn colors of the sour gum, the sorrel tree, or some species of Japanese maple. The colored 'leaves' are in reality enlarged sepals. Only one flower in each cluster of flowers on the raceme has an enlarged sepal. Though the flowers themselves are not over a quarter of an inch in diameter, the enlarged sepals are often 2½ inches long. The fact that this tree blooms in summer, the wet season, whereas most of the showy flowering trees of the Tropics bloom in the dry season, would seem to make this an unusually valuable ornamental tree for tropical regions. It is certainly worthy of a place in every collection of tropical trees." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 54297.

**56023. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.
Chilean strawberry.**

From Guayaquil, Ecuador. Seeds presented by Dr. F. W. Goding, American consul general. Received December 7, 1922.

"These seeds were obtained at Guachi, near Ambato. While the fruit of the Chilean strawberry is inferior in flavor to that of our best cultivated strawberries, it is remarkable for its excellent shipping and keeping qualities; and it seems that varieties might be produced by selection which would merit cultivation on a commercial scale.

"The berry is much used for canning and preserving. It is also eaten fresh. It is a curious circumstance that this species of strawberry, whose fruits are commonly an inch to an inch and a half long, should be called *frutilla* (little fruit) in Chile, Peru, and Ecuador, while the much smaller fruit of *Fragaria vesca*, rarely over one-half an inch long, is termed *fresa*, or strawberry. This last-named species is cultivated commercially at Quillota, Chile, whence the fruit, which ripens earlier than that of *F. chiloensis*, is sent to the markets of Santiago.

"As far as I can ascertain by careful examination of the plants and fruits, the *frutillas* of Chile, Peru, and Ecuador are the same species. Neither in Peru nor in Chile, however, do the plants bear all through the year as they do on the sandy plains near Ambato, Ecuador. I imagine the difference in climatic conditions is the cause of this; on the Equator there are no well-defined seasons, and the plants remain active throughout the year, while in Chile the seasons are fairly well defined and vegetative activity ceases during a part of each year, as with us. The ripening season of *F. chiloensis* in the highlands of southern Peru and central Chile seems to extend, approximately, from the latter part of October to January." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 54630.

56024. CORNUS OFFICINALIS Sieb. and Zucc. Cornaceæ.

From Rochester, N. Y. Seeds presented by John Dunbar, Assistant Superintendent of Parks. Received December 8, 1922.

"This resembles *Cornus mas* when in flower, but the fruits ripen in October and November and are quite handsome." (*Dunbar*.)

This species, which is very closely allied to *C. mas*, is native to Chosen and is occasionally seen in cultivation. Like *C. mas*, it has yellow flowers and red fruits, but differs in having conspicuous patches of dense, rust-colored down on the lower surfaces of the leaves and also is somewhat coarser in habit.

56025. CUCURBITA MOSCHATA Duchesne. Cucurbitaceæ. Squash.

From Libia, North Africa. Seeds presented by Dr. E. O. Fenzi. Received December 8, 1922.

"Seeds of a local variety which weighs about 50 kilos (110 pounds). It is very popular with the natives, and with good reason, for the flesh is more intensely colored, sweeter, and of better flavor than any other variety I can remember having seen either in Italy or California." (*Fenzi.*)

56026. ORYZA SATIVA L. Poaceæ. Rice.

From Samarikota, India. Seeds presented by Dr. R. H. Forbes, Kulikoro, French West Africa. Received June 13, 1922. Numbered December, 1922.

"Rice from Samarikota, Madras Presidency, India." (*Forbes.*)

Introduced for department specialists engaged in rice-breeding experiments.

56027. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Albion, Brisbane, Queensland. Seeds presented by W. Ewart, secretary, Queensland Acclimatisation Society. Received December 8, 1922.

"*Bowen Hills.* This variety was raised from seeds obtained by the Queensland Acclimatisation Society from Bowen Hills and grown at Lawnton, Queensland, where it is considered the best of 60 varieties there cultivated. The plant is a vigorous grower, forms numerous large seed heads, and is remarkably free from disease and insect pests." (*Ewart.*)

56028. DAVIDSONIA PRURIENS F. Muell. Cunoniaceæ.

From Sydney, New South Wales. Seeds presented by J. H. Maiden, director and Government botanist, Botanic Gardens, Sydney, at the request of C. T. White, Government botanist, Brisbane. Received November 14, 1922.

Variety *jerseyana*. This variety differs from the northern Queensland form in being smaller in all its parts.

The northern form is a tree 30 or 40 feet high, of graceful erect habit, with drooping compound leaves 18 inches or more long; the terminal leaflet is often a foot in length. The reddish flowers are in clusters a foot or more long, and the fruit is an oval juicy drupelike berry the size of a goose egg, covered with a thin coating of irritating hairs; these, however, are easily removed by rubbing with a rough cloth, and then is exposed the smooth plumlike skin of the fruit. The soft, fleshy, rich-purple pulp, sharply acid in flavor, incloses a few small flat seeds. This fruit, which ripens in July in Queensland, is largely used by the settlers for making into jam and jelly. (Adapted from *Queensland Agricultural Journal*, vol. 2, p. 471, and *Bailey, Queensland Flora*, pt. 2, p. 538.)

56029. PHLEUM PRATENSE L. Poaceæ. Timothy.

From Ayr, Ayrshire, Scotland. Seeds purchased from McGill & Smith. Received December 8, 1922.

Locally grown seed introduced for department specialists engaged in timothy-breeding investigations.

56030. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

From Balavaini, Marovo Lagoon, Solomon Islands. Seeds presented by H. T. Fairbrother. Received December 18, 1922.

"Seeds of our native cucumber, which is far ahead of any other I have ever tasted. It is of medium size, with a smooth skin and an incomparable flavor." (*Fairbrother.*)

56031. CHRYSOPHYLLUM MAGALISMONTANA Sond. Sapotaceæ.

From Pretoria, Transvaal. Seeds presented by I. B. Pole Evans, chief, Division of Botany. Received December 18, 1922.

An ornamental evergreen shrub or small tree which is common on stony outcrops in the Transvaal on frostless ridges at an altitude of 6,000 feet near Johannesburg and also in the "Middle Veld" at altitudes below 4,000 feet. The fruits, up to an inch in diameter, are agreeably acidulous and most refreshing in hot weather; they are used by the white colonists for making preserves and jelly. The natives call the tree *Stam-rruchte*, because the flowers and fruits are borne on very short stalks on the stem and main branches. The tree tolerates great heat and drought. (Adapted from note of J. Burt Davy under S. P. I. No. 19384.)

For previous introduction, see S. P. I. No. 19384.

56032 to 56057. TRITICUM ÆSTIVUM L. Poaceæ.

(*T. vulgare* Vill.)

Common wheat.

From Tulun, Irkutsk, Russia. Seeds presented by Victor Pissareff, director of the Agricultural Experiment Station. Received December 9, 1922.

"These varieties of winter wheat have endured the winter at Tulun, which is considered beyond the northern limit of wheat growing." (*Pissareff.*)

56032. *Tulun 365.*

56045. *Tulun 389.*

56033. *Tulun 366.*

56046. *Tulun 390.*

56034. *Tulun 367.*

56047. *Tulun 392.*

56035. *Tulun 370.*

56048. *Tulun 398.*

56036. *Tulun 373.*

56049. *Tulun 403.*

56037. *Tulun 375.*

56050. *Tulun 408.*

56038. *Tulun 377.*

56051. *Tulun 405.*

56039. *Tulun 379.*

56052. *Tulun 416.*

56040. *Tulun 380.*

56053. *Tulun 418.*

56041. *Tulun 382.*

56054. *Tulun 425.*

56042. *Tulun 383.*

56055. *Tulun 456.*

56043. *Tulun 384.*

56056. *Tulun 457.*

56044. *Tulun 385.*

56057. *Tulun 458.*

56058 and 56059. CITRUS spp. Rutaceæ.

From Swatow, China. Plants presented by Rev. A. H. Page. Received December 21, 1922. Quoted notes by Mr. Page.

"These fruits, among the very best of the citrus fruits of China, grow chiefly in the low delta region crossed by the Tropic of Cancer, where there is a slight frost perhaps once in 10 years, during the period when the trees are dormant."

56058. CITRUS NOBILIS DELICIOSA (Ten.) Swingle. **Mandarin orange.**

"A tangerine which is as large and fully as sweet as the navel orange."

For previous introduction, see S. P. I. No. 45938.

56059. CITRUS sp.

"The 'soft orange,' which, like the tangerine, is easily peeled when thoroughly ripe. It will keep a long time without ice and becomes very sweet. It is only of medium size."

56060 to 56063. RIBES spp. Grossulariaceæ.

From Elstree, Herts, England. Presented by Hon. Vicary Gibbs. Received December 18, 1922.

56060. RIBES HENRYI Franch.

Plant. An unarmed evergreen shrub, about 3 feet high, native to the vicinity of Szechwan in Hupeh, China. The oval dark-green leaves are

56060 to 56063—Continued.

up to 4 inches in length, and the small oval-oblong berries are crowned by the persistent calyx. This species bears considerable resemblance to *Ribes laurifolium* Jancz. (Adapted from *Bulletin Mensuel de la Société Linnéenne Paris, new series, No. 9, p. 87, and Gardeners' Chronicle, 3d ser., vol. 71, p. 213.*)

56061. RIBES LAURIFOLIUM Jancz.

Plant. A very attractive flowering currant first discovered in Szechwan, western China, at an altitude of 7,000 feet, where it grows as an evergreen unarmed shrub up to 6 feet in height; not common. The rich-green oval leaves are coarsely toothed and up to 5 inches in length. The greenish yellow flowers are borne in pendent clusters over 2 inches long, appearing in February and March. (Adapted from *The Garden, vol. 79, p. 171.*)

56062. RIBES LONGERACEMOSUM Franch.

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

For previous introduction, see S. P. I. No. 40459.

56063. RIBES MAXIMOWICZII Batal.

Cuttings. A deciduous shrub 6 to 9 feet high, first found by the Russian traveler Potanin, in Kansu, in 1885, but introduced into England several years later from western China. The leaves, in threes or fives, are 2 to 5 inches wide, glossy green above and pale downy beneath. The flowers, borne in long slender clusters in May, are made conspicuous by the dull lurid-red calyxes. The fruits, which are thickly covered with stiff glandular bristles, are, according to E. H. Wilson, sometimes orange and sometimes red, possibly at different stages of development. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 59, p. 273.*)

For previous introduction, see S. P. I. No. 40410.

56064 to 56066. SACCHARUM OFFICINARUM L. Poaceae.**Sugar cane.**

From Fajardo, Porto Rico. Seeds presented by R. A. Veve, Experiment Station, Fajardo Sugar Co. Received December 28, 1922. Quoted notes by Mr. Veve.

"These three varieties are very good in our district, and their seed germinates very well. Although all three of them are susceptible to mosaic disease, they are more resistant than the native varieties *Cristalina* and *Rayada*, which are here considered as standards."

56064. D109.

For previous introduction, see S. P. I. No. 49262.

56065. D433.

For previous introduction, see S. P. I. No. 49264.

56066. F. C. 306. "This is a local variety, a seedling of D433."**56067. PANGIUM EDULE** Reinw. Flacourtiaceae.**Pangi.**

From Manila, Philippine Islands. Seeds presented by A. Hernandez, director, Bureau of Agriculture. Received December 13, 1922.

"Seeds of pangi (*Pangium edule*) obtained from the barrio of Panagan, municipality of Lagonoy, Camarines Sur. Pangi seeds yield about 50 per cent of pitjoeng or samaun oil having the following constants (see Bureau of Forestry, Manila, Philippine Islands, Bulletin No. 20, p. 159):

Specific gravity.....	0.937
Saponification value.....	178-183
Iodin value.....	89.94
Titer test of fatty acids.....	44.4"

—(Hernandez.)

"I have just eaten this fruit for the first time; it is quite similar to the *marang* (*Artocarpus odoratissima* Blanco) in flavor, being very sweet and rich. The flesh is rather scant and the seeds large, but some day we may discover a seedless one and then we shall have a real feast. The fruit is so large that one (seedless) would be enough for three to five people." (*P. J. Wester.*)

A Philippine tree which reaches a height of 25 meters (82 feet), with very large, smooth, pointed leaves and yellowish green flowers. The oval brown fruit is over 6 inches long and contains several seeds imbedded in a yellowish, edible pulp. The fresh seeds are poisonous, but steeping in water makes them edible. (Adapted from *Brown, Wild Food Plants of the Philippines*, p. 126.)

56068. DENDROCALAMUS SIKKIMENSIS Gamble. Poaceæ. **Bamboo.**

From Sibpur, near Calcutta, India. Seeds presented by C. C. Calder, curator, Royal Botanic Garden. Received December 11, 1922.

"This bamboo flowered profusely this year in the Darjiling District." (*Calder.*)

For previous introduction and description, see S. P. I. No. 55815.

56069 and 56070.

From Buitenzorg, Java. Seeds presented by Dr. P. J. S. Cramer, Director of the General Experiment Station. Received December 18, 1922.

56069. CITRUS MEDICA L. Rutaceæ.

Citron.

Seeds of a peculiar citron with papayalike fruits from Java.

56070. GARCINIA MANGOSTANA L. Clusiaceæ.

Mangosteen.

These seeds are introduced from Java in the hope of establishing the mangosteen in our tropical dependencies.

For previous introduction and description, see S. P. I. No. 55496.

56071. DIOSCOREA ALATA L. Dioscoreaceæ.

Greater yam.

From Fort Pierce, Fla. Tubers presented by C. S. Steele. Received December 28, 1922.

"This yam is a strain selected from the Hawaiian purple-skinned yam, S. P. I. No. 46768. The purple layer, just beneath the outer skin, was very thin and sharply defined in the selected tuber, and the flesh of the tuber was white and of good quality when cooked. Yams of the purple-skinned type vary considerably with respect to the thickness of the purple layer and also in quality, and it is still to be determined whether this selection will remain constant." (*R. A. Young.*)

56072 to 56074. PHASEOLUS spp. Fabaceæ.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received December 29, 1922. Quoted notes by Doctor Calvino.

56072. PHASEOLUS CALCARATUS Roxb.

Rice bean.

"*Frijol mambi* or *Diablito*. Seeds of this variety were originally sent from Oriente, where the plant grows spontaneously in the thickets. The seeds are small, about the size of a grain of rice, kidney shaped, and dark red. It is a pole bean of rapid growth and is very productive."

56073. PHASEOLUS LUNATUS L.

Lima bean.

"This is a good variety of pole Lima which I imported from Trujillo, Peru."

56074. PHASEOLUS VULGARIS L.

Common bean.

"*Frijol negro*. One of the cultivated varieties of Cuba."

56075 to 56079.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received December 30, 1922. Quoted notes by Doctor Calvino.

56075 and 56076. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

"The following Lima beans are cultivated in Cuba."

56075. Light-red beans. **56076.** Dark-red beans.

56077 to 56079. VIGNA spp. Fabaceæ.

56077. VIGNA CYLINDRICA (Stickm.) Skeels. Catjang.

"Frijol precioso."

56078 and 56079. VIGNA SESQUIPEDALIS (L.) Fruwirth.

Yard-Long bean.

56078. "*Habichuela china negra.*"

56079. "*Habichuela china variegata.*"

56080 to 56117.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 6, 1922. Quoted notes by Mr. Rock.

56080 to 56083. CASTANEA spp. Fagaceæ. Chestnut.

56080. CASTANEA sp.

"(No. 6682. September 29, 1922.) A tree 60 to 100 feet tall, with trunk 4 to 5 feet in diameter, and hard, tough dark-brown wood, found at an altitude of 8,200 feet, and very common, four and a half days' journey west of Talifu, beyond a village called Paitoupu and 40 li (12 miles) from Yungping, where it forms dense forests. The leaves are large, broadly ovate, coarsely serrate, glossy above and silvery beneath. The burs are borne in spikes, with thick, green, short spines in spiral ridges, similar to those of *Castanea armata*. The nuts are very small, something like those of the chinquapin, and very sweet and palatable. The natives cut the tree for firewood a foot above the ground; it ratoons very freely, sending forth shoots from the old stump. I have not seen any evidence of disease in any of the trees of this species, although I have examined many trees. The timber is excellent, being used for building purposes."

For an illustration of the trunk of this chestnut, see Plate IV.

56081. CASTANEA sp.

"(No. 6683. September 30, 1922.) A tree 50 to 60 feet high, with a straight trunk 1 to 2½ feet in diameter and ascending branches, found in yellow clay loam in forests 20 li (6 miles) from Paitoupu, four and a half days' journey west of Talifu, at an altitude of 8,200 feet. The dark-green leathery leaves are very handsome, and the numerous burs, larger than those of the following [S. P. I. No. 56082], are borne in lateral spikes. The nuts are very sweet and delicious. These trees are perfectly healthy. Trees of this species are also found on the western slopes of the Tsangshan Range, but their fruits are all attacked by worms."

56082. CASTANEA sp.

"(No. 6683a. September 30, 1922.) A tree of the same size as the preceding [S. P. I. No. 56081] and with leaves similar but a paler green, found in the mountains 20 li (6 miles) from Paitoupu near a hamlet called Shiaoshui. The burs are smaller, with the spines arranged differently, and shorter and sharper. The nuts are the same size."

56080 to 56117—Continued.

56083. *CASTANEA* sp.

"(No. 6686. September 28, 1922.) This is the same as No. 6682 [S. P. I. No. 56080], but was collected near Taipingpu, three days' journey west of Talifu. The seeds were gathered from young shoots, for the trees had all been cut down."

56084. *CATALPA DUCLOUXII* Dode. Bignoniaceae.

"(Nos. 3097, 3217.) A tree 80 feet tall, with a straight trunk 3 to 4 feet in diameter, found in the Likang Plain at an altitude of 8,800 feet: in large groves also south of Talifu on the Mengbau Ting Plain. The pinkish lilac flowers are borne in large full panicles and make the tree very ornamental. It is a very valuable timber tree, and the wood is not attacked by insects. Seeds of this tree are exported from Tengyueh to other parts of Yunnan, Tengyueh being the center of distribution. The Chinese name is *Chun nin shau*."

For previous introduction, see S. P. I. No. 55931.

56085. *CORNUS CAPITATA* Wall. Cornaceae. Bentham's cornel.

"(No. 6684. September 29, 1922.) A tree 30 feet or more in height with a trunk a foot or more in diameter, or at times only shrubby, found beyond Paitoupu, two days' journey west of Yangpi, at an altitude of 8,000 feet. The fruits, larger than a large strawberry and of the same shape and color, have sweet yellow flesh and are much relished; they are often sold in the markets."

56086. *CORYLUS* sp. Betulaceae. Filbert.

"(No. 6635. September 24, 1922.) A shrub 6 to 10 feet high, with large hairy leaves, found among mica boulders at the foot of the steep hills rising behind Kinngintui, a village not far from Yangpi, at an altitude of 6,000 feet. At this time of the year the weather here is hot. The fruits, of fairly large size, are sweet and of a flavor like that of hazelnuts. This shrub is worthy of cultivation for the nuts."

56087. *CRATAEGUS PINNATIFIDA* Bunge. Malaceae. Hawthorn.

"(No. 6685. September 27, 1922.) A tree 30 to 35 feet high, with straight ascending branches, found wild between Yangpi and Taipingpu, four days' journey west of Talifu. The large-seeded yellowish red fruits, the size of crab apples and ridged, are borne in large clusters at the ends of the branches; they are candied by the natives."

For previous introduction, see S. P. I. No. 55988.

56088 to 56090. *DIOSPYROS* spp. Diospyraceae Persimmon.56088. *DIOSPYROS LOTUS* L.

"(No. 6693. September 25, 1922.) A wild persimmon found near watercourses on the hills back of Kinngintui, 20 li (6 miles) east of Yangpi, at an altitude of 6,000 feet. The fruits are the size of a large green olive."

56089. *DIOSPYROS LOTUS* L.

"(No. 6705. October, 1922.) A spreading tree 50 feet high with a drooping crown, found wild on the Salwin watershed, western slope of the Salwin Valley above Homushu, at an altitude of 7,000 feet. The tree was loaded with the small yellowish green persimmons, less than an inch in diameter."

56090. *DIOSPYROS* sp.

"(October 3, 1922.) A tree 35 feet high with a large spreading crown, which grows half wild on the hillsides near Shayang, two days' journey east of Yungchang. The edible persimmons, the size of a tennis ball, are orange-yellow and are very sweet and delicious."

56091. *JUGLANS REGIA* L. Juglandaceae. Walnut.

"(No. 6694. September 27, 1922.) A very large tree with a huge crown, which is very numerous on the hills and slopes near Taipingpu.

56080 to 56117—Continued.

at an altitude of about 8,300 feet. The nuts are very thick shelled and difficult to break and are gathered by the natives for the sake of the oil. There are several varieties which vary in the shape of the nuts, some being oblong, some ovoid, and some globular; all are thick shelled."

56092 to 56099. *MALUS* spp. Malaceae.

Apple.

56092. *MALUS* sp.

"(No. 6687. September 28, 1922.) A large tree with a large crown of ascending branches, found beyond Taipingpu, three days' journey west of Talifu, at an altitude of 8,200 feet. The yellowish green fruits are 2 inches in diameter, fragrant but sour."

56093. *MALUS* sp.

"(No. 6688. September 27, 1922.) A wild apple tree from the Yangpi Mountains, two days' journey from Talifu, where it grows at an altitude of 7,800 feet. The fruits are bright red and yellow, with rather numerous seeds."

56094. *MALUS* sp.

"(No. 6690. September 27, 1922.) A tree 30 feet in height with a trunk 2 to 2½ feet in diameter and straight ascending branches, found wild in red clayey soil all over the ranges between Yangpi and Taipingpu, at an altitude of 8,000 feet. The oblong leaves are dark green above and pale beneath; the very numerous fruits, the size of small apples, are yellowish with a bright reddish tinge, with firm, very fragrant but sour flesh. The tree is exceedingly hardy and free from disease and occurs here where nothing else will grow except the hardy Yunnan pine (*Pinus sinensis*)."

56095. *MALUS* sp.

"(No. 6691. September, 1922.) A peculiar tree with long spreading, drooping branches like a willow, found only along watercourses between Yangpi and Taipingpu, at an altitude of 8,300 feet. The tree was loaded with small oblong fruits less than an inch long and half an inch in diameter, with dull carmine-red skin and very juicy sour flesh. I did not see this species elsewhere."

56096. *MALUS* sp.

"(No. 6696. September 30, 1922.) A fine hardy tree 15 to 20 feet high, which grows wild with *Castanea* sp., in the hills between Huanglienpu and Chutung. The yellowish red fruits are 2 inches in diameter."

56097. *MALUS* sp.

"(No. 6696. September, 1922.) Seeds of the preceding [S. P. I. No. 56096] collected beyond Shiashuichi. The flowers are red."

56098. *MALUS* sp.

"(No. 6698. October 4, 1922.) A tree 20 feet tall which grows wild in the mountains beyond Pingpo, on top of the western ridge of the Mekong Valley, at an altitude of 8,000 feet. The tree was loaded with thousands of dark-crimson, oblong, mealy fruits the size of wild cherries: in fact, the tree could be mistaken at a short distance for a cherry tree. It is a prolific bearer and grows in clay loam mixed with slate."

56099. *MALUS* sp.

"(No. 6713. October, 1922.) A wild apple tree 20 to 30 feet high, sent to me through the kindness of Rev. Mr. Fullerton, of the Szemao Mission: it grows in the mountains near Szemao at an altitude of 5,000 feet or more. The globose fruits are little more than an inch in diameter and are called *toi*."

56080 to 56117—Continued.

56100. (Undetermined.)

"(No. 6689. September 27, 1922.) A tree 30 feet in height, found in the forests 20 li (6 miles) from Paitoupu, on steep hillsides with *Gastanea* spp., at an altitude of 8,100 feet. It is exceedingly ornamental, with its shining dark-green leaves and great masses of papery crimson berries; it excels holly in every respect as a decorative plant."

56101 to 56111. *PYRUS* spp. Malaceæ.

Pear.

56101. *PYRUS* sp.

"(No. 6636. September 24, 1922.) A wild pear tree 15 feet high, which grows in well-drained soil among huge boulders on the steep hillsides back of the temple of Fu Kwe Ssu, back of the village of Kingintui, 20 li (6 miles) from Yangpi. The fruits, larger than any of the ordinary wild pears collected (except No. 6553 [S. P. I. No. 56003]), are more pear shaped, with yellowish brown skins and very juicy subacid flesh. This species is very hardy and perfectly free from disease. The region where it grows has a hot, dry spring, a rainy summer, a hot, humid autumn, and a cold winter season of two months."

56102. *PYRUS* sp.

"(No. 6703. October, 1922.) A wild pear tree 25 feet high which grows near Talishao at an altitude of 8,000 feet. The very numerous fruits, the size of crab apples, have yellowish brown skin, yellow flesh, and large seeds."

56103. *PYRUS* sp.

"(No. 6704. October, 1922.) A wild pear tree 30 feet high found growing with the preceding [S. P. I. No. 56102] near Talishao. The tree was loaded with the globular russet-brown fruits, an inch in diameter, with very juicy, sour flesh."

56104. *PYRUS* sp.

"(No. 6711. September, 1922.) A tree 20 to 25 feet high, with spreading whiplike branches, found wild in the mountains between Hochiang and Pingpo, above the Hsiakuan River. The tree was loaded with small oval russet fruits, half an inch in diameter, with sour yellow flesh."

56105 to 56110. Seeds of domesticated varieties.

56105. *PYRUS* sp.

"(Yungchang, October 5, 1922.)"

56106. *PYRUS* sp.

"(Yungchang, October 5, 1922.)"

56107. *PYRUS* sp.

"(October 16, 1922.)"

56108. *PYRUS* sp.

"(October 5, 1922.)"

56109. *PYRUS* sp.

"(Yangpi. September 26, 1922.)"

56110. *PYRUS* sp.

"(Yungchang. October 5, 1922.)"

56111. *PYRUS* sp.

"(October, 1922.) A tree 30 feet high, with ascending whiplike branches, found wild in the valley between Shiasuichi and Chutung, at an altitude of 6,500 feet. The tree was loaded with the small, ovoid, russet-yellow, very juicy fruits and was very ornamental."

56112. *QUERCUS* sp. Fagaceæ.

Oak.

"(No. 6712. September, 1922.) A shrubby oak 10 feet high, which forms dense bushes on the hills beyond Hsiakuan, one day's trip west of Talifu, at an altitude of 6,800 feet. The tree is a heavy bearer, but the acorns are not palatable."

56080 to 56117—Continued.

56113. *ROSA ROXBURGHII* Tratt. Rosaceæ. Rose.

“(No. 6583. September 23, 1922.) A low shrubby rose 2 to 4 feet high, distributed from Talifu to the Hsiakuan Plain, at an altitude of 6,800 feet. It is a very attractive rose, with its large, handsome bright-red buds and large, bright magenta-red flowers. The compressed fig-shaped fruits are an inch in diameter.”

56114. *RUBUS* sp. Rosaceæ.

“(No. 6706. October, 1922.) A spineless shrub 8 feet high, with ascending branches, found at an altitude of 8,000 feet on the top of the range separating the Salwin and Shweli watersheds. The leaves, palmately divided into three to five separate leaflets, are prominently ribbed and silvery beneath, and the solitary small fruits are yellowish red and watery. The shrub is very ornamental.”

56115. *THEA* sp. Theaceæ.

“(No. 6697. October 2, 1922.) A tree 40 to 50 feet tall, with a trunk over a foot in diameter, found growing in the temple grounds of Yung Kwe Ssu, between Yungping and Shayang, at an altitude of 8,000 feet. The flowers are said to be white and 4 inches across and the fruits as large as a man's fist.”

56116. *VIBURNUM* sp. Caprifoliaceæ.

“(No. 6699. October 4, 1922.) A beautiful shrub 5 to 8 feet in height, of spreading habit, found on the ridges beyond the valley of the Mekong, between Pingpo and Pangchiao, at an altitude of 8,000 feet, in a forest composed of *Pinus armandi* and *Thea* sp. The shrub was covered with clusters of small crimson berries which were almost transparent. They are somewhat acid and may be used for making jellies.”

56117. *DICHOTOMANTHES TRISTANIAECARPA* Kuntz. Amygdalaceæ.

“(No. 6702. October, 1922.) A spreading shrub 15 feet high, found west of Hoachiao at an altitude of 7,000 feet. It is very ornamental, with large clusters of berries which are red with a yellowish tinge.”

56118 to 56127.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 12, 1922. Quoted notes by Mr. Rock.

56118. *CASTANEA* sp. Fagaceæ. Chestnut.

“(Kancha. October 15, 1922.) A wild chestnut occurring in the mountains one day's trip north of Tengyueh.”

56119. *CASTANEA* sp. Fagaceæ. Chestnut.

“(No. 6683. September, 1922.) Collected at Paitoupu, about 200 feet lower down than the seeds sent previously under the same number [S. P. I. No. 56081], which see for description.”

56120. *GAULTHERIA* sp. Ericaceæ.

“(No. 6709. October 9, 1922.) A highly ornamental shrub, 10 to 15 feet tall, with long whiplike drooping branches reaching to the ground, found on the summit of the Salwin Divide at an altitude of 8,000 feet. The leaves are leathery and dark green, and the large white flowers are borne in great masses all along the branches. The fruits are dark purplish black.”

56121. *PRUNUS* sp. Amygdalaceæ. Plum.

“(No. 6700. October, 1922.) A tree 20 feet in height, with a spreading crown, which grows wild along brooks in the mountains between Shiao-shuichi and Chutung, at an altitude of 6,000 feet. The small globose, yellow, clingstone plums are little more than an inch in diameter, with firm, rather sour flesh.”

56118 to 56127—Continued.

56122 to 56125. *PYRUS* spp. Malaceæ.

Pear.

56122. *PYRUS* sp.

"(No. 6701. October, 1922.) A tree 25 feet high, found in clay soil on the mountains between Hoachiao and the temple of Yung Kwe Ssu. Shayang village, at an altitude of 6,000 to 7,000 feet. The fruits of this tree are larger than those previously found north of Talifu. The natives use this tree as a stock plant."

56123. *PYRUS* sp.

"(No. 6708. September, 1922.) A very hardy tree 25 to 30 feet high, growing in hard clay soil in the mountains near Yangpi at an altitude of 7,000 feet. The russet-yellow fruits are the size of small marbles."

56124. *PYRUS* sp.

"(Kiangpienkai. October, 1922.)"

Seeds of a domesticated variety.

56125. *PYRUS* sp.

"(October, 1922.) A wild pear tree 25 feet in height, closely related to the other wild pears of this region, found beyond Yangpi at an altitude of 8,000 feet. The russet fruits are about half an inch in diameter."

56126. *ROSA* sp. Rosaceæ.

Rose.

"(No. 6692. September 27, 1922.) A large rambling or climbing shrub with long stout branches, which grows in the pine forest back of Yangpi, two days' journey west of Talifu, at an altitude of 6,000 feet. The flowers are said to be large and whitish cream colored and the fruits deep red to orange."

56127. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 6695. September 27, 1922.) A very hardy tree 20 feet high, with a large, spreading crown, found growing wild in yellow clay soil on the hills back of Yangpi, in company with *Pinus sinensis*, at an altitude of 6,500 feet. The fruits, the size of small olives, are borne in large numbers; they are green with a slight reddish tinge, inedible, with almost no flesh, being mostly skin and stone. The seeds are large, angular, and brown."

56128 to 56141.

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 19, 1922. Quoted notes by Mr. Rock.

56128 and 56129. *CASTANEA* spp. Fagaceæ.

Chestnut.

56128. *CASTANEA* sp.

"(No. 6714. October 21, 1922.) A large tree 70 to 80 feet tall, found in white sandy micaceous soil on slopes in the mountains 30 li (9 miles) north of Manchi, at an altitude of 6,500 feet. The lanceolate leaves, entire or nearly so, are fawn colored beneath. The burs resemble those of *Castanea armata*, but are smaller; the black, shining nuts are quite small. The trees of this species appeared to be free from all disease."

56129. *CASTANEA* sp.

"(No. 6715. October 20, 1922.) A large tree, closely resembling *Castanea armata* except in foliage, found on tops of ridges before descending to the Manchi Valley and above Menglien, one and a half days' journey southeast of Tengyueh. The burs and nuts are as large as those of *C. armata*."

56128 to 56141—Continued.

56130. *CASTANOPSIS HYSTRIX* A. DC.

"(No. 6716. October, 1922.) Collected in the vicinity of Teng yueh."

56131. *CHAENOMELES* sp. Malaceæ.

Chinese quince.

"(November 1, 1922.) A wild quince collected on the Puerhfu Plain, near Puerhfu, and sent to me by Miss Clara Petersen, a missionary of Puerhfu."

56132. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 2872. Puerhfu. November 1, 1922.) A large tree 60 feet in height, with a huge spreading crown. According to Miss Clara Petersen, who sent me the seeds, the fruits are small and very sweet. This is also a fine shade tree."

56133. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 6717. October 23, 1922.) A wild persimmon tree 20 to 25 feet high, which grows in dense forests between Menglieh and Manchi, at an altitude of 6,000 feet. The very numerous oblong yellow fruits are the size of crab apples and sweet."

56134. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 6719. October, 1922.) A tree 35 feet high, with few ascending branches, found on the summit ridge on the road from Hsiangta to Manchi, four days' journey southeast of Tengyueh, at an altitude of 7,000 feet. The oblong, velvety, rich-yellow fruits are large for a wild species, being 2 inches in diameter, and the very sweet flesh incloses large seeds."

56135. *MALUS* sp. Malaceæ.

Apple.

"(No. 6721. October 30, 1922.) A much-branched tree 35 to 40 feet high, collected in the mountains of the Schweli Basin near Lungling, at an altitude of 6,700 feet. The foliage grows down to the ground, and the lanceolate leaves are dark green above and silvery white beneath. The somewhat ovoid greenish yellow fruits are 2½ inches in diameter, with very fragrant but very sour, firm flesh."

56136. *MALUS* sp. Malaceæ.

Apple.

"(November 1, 1922.) A small, sour, hard apple found wild in the mountains a half day's journey from Puerhfu, at an altitude of about 6,000 feet. These seeds were sent to me by Miss Clara Petersen, missionary, of Puerhfu."

56137 to 56141. *PYRUS* spp. Malaceæ.

Pear.

56137. *PYRUS* sp.

"(November 1, 1922.) A wild pear from the mountains near Puerhfu, where it grows at an altitude of about 6,000 feet. The fruits are globose, brown, and spotted, and of very sweet flavor."

56138. *PYRUS* sp.

"(November 1, 1922.) Collected half a day's journey from Puerhfu, in the mountains. The fruit is large, several inches in diameter, juicy, and contains only one or two seeds."

56139 to 56141. "The following wild pears were collected in the mountains near Puerhfu and sent by Miss Clara Petersen, November 1, 1922."

56139. *PYRUS* sp.

56140. *PYRUS* sp.

"A small brown juicy pear."

56141. *PYRUS* sp.

"A small round pear with brown skin and juicy flesh. The tree is large."

56142 to 56144. PYRUS spp. Malaceæ.**Pear.**

From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 27, 1922. Quoted notes by Mr. Rock.

56142. PYRUS sp.

"(No. 6718. October, 1922.) A wild pear tree 25 to 30 feet in height, with long drooping and ascending central branches, found beyond Menglieh, a day and a half south of Tengyueh. The leaves are oval, broadly heart-shaped, and the globose, yellowish red, spotted fruits, an inch or less in diameter, are closely related to *Pyrus pashia* of southern Yunnan."

56143. PYRUS sp.

"(No. 6720. October, 1922.) A wild pear tree 35 feet high, spreading in habit, with stout trunks and blackish brown bark, found in sandy soil at the summit ridge leading to Mengshi, four days from Tengyueh, at an altitude of 7,000 feet. The leaves, bronze colored to red, are oblong, acuminate at the apex and acute at the base, and the very numerous spherical, yellowish red, spotted fruits are an inch in diameter."

56144. PYRUS sp.

"(No. 6721. November 4, 1922.) A small wild pear tree 15 to 20 feet high, with rambling branches, found with No. 6718 [S. P. I. No. 56142] on the hills beyond Menglieh, at an altitude of 6,000 feet, growing in coarse quartz sand. The leaves are small and dark green, and the fruits, the size of small marbles, are dark yellowish red and spotted."

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Wagga No. 49, 55852.
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- Yam, *Dioscorea* sp., 55834.
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- Yang-tao, *Actinidia chinensis*, 55840.
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