

no 5

S. P. I. 10.

U. S. DEPARTMENT OF AGRICULTURE.
DIVISION OF BOTANY.

INVENTORY NO. 5

OF

FOREIGN SEEDS AND PLANTS

IMPORTED BY THE

DEPARTMENT OF AGRICULTURE AND FOR DISTRIBUTION THROUGH
THE SECTION OF SEED AND PLANT INTRODUCTION.

NUMBERS 1901-2700.

INVENTORY OF FOREIGN SEEDS AND PLANTS.

INTRODUCTORY STATEMENT.

The present inventory consists almost entirely of a continuation of the list of garden vegetables, fruits, forage plants, and ornamentals secured by Mr. Walter T. Swingle, Agricultural Explorer of this Department, in France, Italy, and Algeria. These represent a careful selection of the newer and more promising varieties and species recently introduced into cultivation, which seemed worthy of being tested in the United States. An extensive series of varieties of the European grape, which would come numerically in this inventory, is to be issued separately. Cuttings are not available for general distribution, having been imported in quantities sufficient only to permit tests which are being made in cooperation with the Division of Pomology at various points in the South Atlantic States, Louisiana, and Kansas. An importation of ten tons of seed rice, secured by Prof. S. A. Knapp from the island of Kiushu, Japan, appears under No. 1962, but the fruit trees and ornamentals obtained by him arrived much later, and an inventory of them will be published hereafter. There are also some varieties of interest, particularly for the subtropical parts of the country and the newer insular possessions, sent from the West Indies by the Hon. Barbour Lathrop and Mr. D. G. Fairchild, while on their way to South America.

It will, of course, be readily understood by all who examine these inventories that the values of the various importations are extremely unequal. Some may prove of technical interest merely, while others will have far-reaching commercial importance. For example, the Turkestan alfalfa distributed last year bids fair to extend materially the range of cultivation of this valuable crop, the recently imported sort having proved more resistant both to cold and to drought than the variety previously in cultivation in the West.

It is not to be expected that all the species or varieties secured by our agricultural explorers will prove to be entirely new to specialists or dealers. Many plants have been imported and tested heretofore without any permanent record as to results. We are intentionally securing small quantities of the seeds of many such species, either to permit tests by some improved methods of culture or for distribution to parts of the country where experiments have not been made. Furthermore, specialists in various crops often apply for imported seed of well-known plants, in order to ascertain by careful comparative tests the existence of differences in vigor or other qualities, some of which, though inconspicuous, are economically of great importance. It should

be remembered, for instance, that many plants cultivated only in an unimproved form in this country have been subjected in Europe to long and careful selection, by which improved strains have been developed. Thus, Mr. Swingle found that the American cottonwood has become one of the most important forest trees of France, where the selected varieties are always grown from cuttings.

Some applicants have sent in requests for long lists of seeds. While there is no desire to limit the number which properly equipped experimenters may receive, our correspondents are requested to bear in mind that the seeds and plants listed in these inventories are not a part of the Congressional seed distribution; they are imported for the State experiment stations and for such private experimenters as are known to be fully capable of growing them with the best possible results. As a rule they are not secured in amounts sufficient for general distribution, and many have already been distributed.

It is requested that in all cases our numbers be recorded by the experimenter for use in reporting the results and also for permanent reference. Our report blanks will bear numbers corresponding to those of the inventory, so that the reports will enable us to bring together for later transmission to our correspondents the results secured in all parts of the country.

O. F. COOK,

Special Agent in charge of Seed and Plant Introduction.

WASHINGTON, D. C., November 3, 1899.

INVENTORY.

1901. MUSA ROSACEA.

Banana.

From France. Received through Mr. W. T. Swingle, December, 1898. (2 packages.)

An ornamental banana, with medium-sized leaves, at first violet underneath, afterwards glaucous-green. The plants are from 3 to 12 feet high. It does not bear edible fruit. Introduced into Europe from Mauritius in 1805. As vigorous and hardy as *M. paradisiaca*; is called *M. discolor* by gardeners. Inflorescence straight, with beautiful rose-colored deciduous spathes; flowers orange-yellow.

1902. ASPARAGUS MEDEOLOIDES.

Asparagus.

From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)

An ornamental evergreen climber from the Cape, grown in cold house; 5 to 6 feet high. False leaves cordate ovate $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, $\frac{1}{2}$ to $\frac{3}{4}$ inch wide; flowers fragrant; should be tried in the open in Florida and California.

1903. PASSIFLORA SICYOIDES (?).

Passion flower.

From France. Received through Mr. W. T. Swingle, December, 1898. (2 packages.)

A very beautiful Mexican vine, with fine amethyst flowers produced in profusion; cold-house plant; should be tried in the South. (*P. acerifolia* Hort.)

The passion vines or granadillas are mostly perennial, ornamental climbers, having curiously formed flowers, often fragrant and very beautiful. About 120 species are known, of which some half dozen are commonly grown for ornament, either because of their flowers or to cover arbors, and some dozen bear edible fruits called granadillas. Our own *Passiflora incarnata*, which grows wild in all the southeastern States and ranges as far north as Virginia and Missouri, bears small oval fruits, which are called maypops, and are, when fully ripe, not bad eating. The best granadillas are *P. quadrangularis*, *P. edulis*, *P. macrocarpa*, and *P. laurifolia*. These fruits are much esteemed in the Tropics. They should be tried in all frost-free regions. Hybrids of the edible species should be produced if possible. (See Nos. 1978 and 2229.)

1904. PASSIFLORA ALATA.**Passion flower.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

An ornamental vine, native of Peru; has ovate cordate leaves; should be cut down to the root each year after flowering. Flowers deep crimson, having coronal rays variegated with purple, crimson, and white. Fruit edible; one of the so-called granadillas. May be grafted on *P. coerulea*.

1905. PASSIFLORA ALBA.**Passion flower.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

An ornamental Brazilian vine, bearing abundant pure white, somewhat malodorous flowers, 2 to 3 inches in diameter. A hothouse species; should succeed in south Florida, Hawaii, or Puerto Rico.

1906. PASSIFLORA EDULIS.**Granadilla.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

Native of Brazil, with odorous white flowers tinged with purple. It produces violet edible fruits the size of a small egg, called granadillas, more acid than No. 1909. It is a perennial vine of rapid growth, having deeply cut leaves. Suitable for the South, for California, and for the tropical possessions. Commonly cultivated in Australia; there known as passion fruit.

1907. PASSIFLORA FOETIDA.**Passion flower.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

A Brazilian ornamental climber, with white flowers having the coronal rays variegated with purple and blue.

1908. PASSIFLORA HERBERTIANA.**Passion flower.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

An ornamental vine from Australia.

1909. PASSIFLORA QUADRANGULARIS.**Granadilla.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

A perennial vine, native of Peru, with stems 30 to 60 feet long; very ornamental; flowers very odorous, 4 inches in diameter, with petals red inside, white without, coronal rays of white variegated with violet. Should be grown on a light soil and be well watered. Fruits (granadillas) size of a cocoanut; the pulp eaten with sugar or with sweetened white wine. It must be artificially pollinated, and may be grafted on *P. coerulea*. It is cultivated in many tropical countries, and in Jamaica grows up to 3,000 feet altitude. For Hawaii and Puerto Rico.

1910. PASSIFLORA.**Passion flower.**

From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)

An unidentified species from Costa Rica.

- 1911. PASSIFLORA SUBEROSA. Passion flower.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 A vine, native of Florida, having greenish flowers and purple fruits.
- 1912. PHYTOLACCA DIOICA. Bella sombra.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (2 pack-
 ages.)
 A tree, native of Japan, affording much shade, of very rapid growth, and half
 hardy. It is suitable for trial in the South. Called "bella sombra" or "belhambra."
- 1913. CAESALPINIA GILLIESII.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (2 pack-
 ages.)
 Native of Buenos Ayres; a leguminous shrub 3 to 6 feet high, bearing yellow
 flowers with beautiful tufts of violet stamens. It is propagated from both cuttings
 and seeds. Of value as an ornamental in the South.
- 1914. CAESALPINIA PULCHERRIMA.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 Native of India; a shrub 9 feet high; tender; bearing red flowers in beautiful
 terminal clusters. It is fit for trial in Florida and California.
- 1915. POINCIANA REGIA. Royal poinciana.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 A most beautiful leguminous tree from Madagascar; well known in tropical Florida;
 very sensitive to frost.
- 1916. PROTEA MELLIFERA.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 Variety "alba." (See No. 1917.)
- 1917. PROTEA MELLIFERA.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 Variety "rubra." A South African bush, useful both as an ornamental and as a
 bee plant. For the South.
- 1918. TRACHELOSPERMUM.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 An ornamental apocynaceous shrub received as "*Rhynchospermum japonicum*."
- 1919. CAMPOMANESIA AROMATICA.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 A myrtaceous tree, native of the West Indies. Ornamental. For trial in the South.
- 1920. PSIDIUM. Guava.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 pack-
 age.)
 Perhaps *Campomanesia quariroba*; received as "*Psidium guavirola*," a name we are
 unable to verify. A small myrtaceous fruit tree for the South.

- 1921. PSIDIUM.** **Guava.**
 From France. Received through Mr. W. T. Swingle, December, 1898, as "*Psidium sinense*." (2 packages.)
 A small fruit tree for the South.
- 1922. PSIDIUM GUAJAVA.** **Guava.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (3 packages.)
 A shrub or small tree cultivated in Florida for its fruits, which are largely used for making jellies and preserves; easily injured by frost.
- 1923. SACCHARUM OFFICINARUM.** **Sugar cane.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (2 packages.)
 Should be planted to obtain new varieties.
- 1924. VANILLA AROMATICA.** **Vanilla.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (1 package.)
 A climbing orchid, native of Mexico, now widely cultivated in the Tropics for the aromatic seed pods from which the well-known flavoring extract is derived. It is never grown commercially from seed, but from cuttings, and these seeds are for specimens and for germination trials.
- 1925. COFFEA ARABICA.** **Coffee.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (3 packages.)
 The so-called "maragogipe" variety, originated in Brazil from the ordinary Arabian coffee, but is of larger size and of more vigorous growth. It resembles also the Liberian coffee tree in flourishing at low elevations and in resisting the Hemileia.
- 1926. MANIHOT GLAZIOVII.** **Ceara rubber.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 The only rubber tree likely to succeed in Florida. Ceara rubber comes from a semi-arid district on the Brazilian coast. It grows very rapidly; is killed by frost. (See No. 1975.) Euphorbiaceous.
- 1927. ACANTHOPHOENIX CRINITA.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from the Seychelles; resembles *Areca* in habit. A beautiful species, with graceful pinnatisect leaves, whitish beneath. The petioles and stems are armed with long dark spines. It needs heat, humidity, and shade.
- 1928. DICTYOSPERMA ALBUM.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from Mauritius, 30 feet high, having pinnatisect leaves 4 to 8 feet long. The petioles are covered with a white tomentum. Requires a hot climate.
- 1929. DICTYOSPERMA RUBRUM.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from the Seychelles. The leaves and petioles are tinged with red when young.

- 1930. BACTRIS SETOSA.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from Brazil with pinnatisect leaves.
- 1931. CHAMAEROPS HUMILIS.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 Variety "*macrocarpa*." A form of the half-hardy dwarf fan palm of the Mediterranean regions. (See No. 1932.)
- 1932. CHAMAEROPS HUMILIS.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 Variety "*tomentosa*." Arborescent; leaves slightly tomentose. This is a form of the native dwarf palm of the Mediterranean region.
- 1933. COCOS BONNETI.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from South America; succeeds in the cold or temperate house. May prove half-hardy.
- 1934. COCOS CAMPESTRIS.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from Brazil.
- 1935. COCOS COMOSA.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from South America.
- 1936. COCOS CORONATA.** **Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm with rigid ascending leaves, suitable for greenhouses and conservatories. The leaves are arranged in a five-ranked spiral. For Florida and southern California.
- 1937. COCOS DATIL.** **Datil palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 A half-hardy palm from the Argentine Republic. The fruits are edible.
- 1938. COCOS YATAY.** **Sago palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 This is the South American sago palm. The kernels of the nuts are edible.
- 1939. CYCAS CIRCINALIS.** **Sago palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 Native of India; grows 15 to 18 ft. high; more tender than *C. revoluta*. Sago palm of East Indies. The commercial sago is manufactured from the heart of this tree.

- 1940. CYCAS NORMANBYANA. Cycad.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 A palm-like ornamental plant from Australia.
- 1941. HOWEA BELMOREANA. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 Native of Lord Howe's Island. It is a standard ornamental fan palm for house culture.
- 1942. HEDYSCEPE CANTERBURYANA. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 A fan palm, native of Australia; one of the hardiest species.
- 1943. HOWEA FORSTERIANA. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 A standard house palm; very beautiful. From Lord Howe's Island.
- 1944. LATANIA COMMERSONII. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 "*Latania borbonica erecta*." An ornamental fan palm from the Seychelles.
- 1945. LATANIA COMMERSONII. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898.
 Form called *Latania rubra*. An ornamental fan palm from the Seychelles.
- 1946. LIVISTONA ALTISSIMA. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental palm from the South Pacific.
- 1947. LIVISTONA JENKINSIANA. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental hardy palm from the Himalayas.
- 1948. PANDANUS MACROCARPUS. Screw pine.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 An ornamental tree from New Caledonia.
- 1949. PHOENIX CANARIENSIS. Palm.**
 From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)
 A fine ornamental, more hardy and more vigorous than the date palm. The fruit is edible, but very insipid and dry. This palm, said to be the most beautiful and most majestic of the half-hardy species, is of very rapid growth. The trunk is often 3 to 4 feet in diameter, and has a great number of large, gracefully curved leaves of a clear deep green color. If planted alone in a lawn it gives a most striking effect. This species is common in California, but is still insufficiently known in the Southern States. It is propagated only by seeds.

1950. PHOENIX RECLINATA.**Palm.**

From France. Received through Mr. W. T. Swingle, December, 1898, as *Phoenix senegalensis*. (5 packages.)

An ornamental half-hardy palm for outdoor cultivation in Florida and southern California. It has a slender stem, often inclined, and handsome brilliant green leaves, spiny at the bases. If grown in masses it produces a superb effect. It is propagated by seeds and by suckers.

1951. PHOENIX.**Palm.**

From France. Received through Mr. W. T. Swingle, December, 1898. (5 packages.)

Sent under name of "*Phoenix tomentosa*." An ornamental palm for subtropical regions and for house cultivation.

1952. THRINAX.**Palm.**

From France. Received through Mr. W. T. Swingle, December, 1898. (3 packages.)

Received under name of "*Thrinax altissima*."

1953. SECHIUM EDULE.**Chayotte.**

From France. Received through Mr. W. T. Swingle, December, 1898.

"Chouchoute," or "chayotte," of Algeria. The plant is tender and must be protected from exposure to severe cold. It is a climbing cucurbit from Mexico, but extensively grown in the West Indies and also in Algeria. The fruit weighs from 1 to 3 pounds, and is eaten like the eggplant. It contains but one seed, and should be planted whole. This plant is a valuable novelty, which should be planted all through the South. (See No. 1401, inventory No. 2.)

1954. VITIS COIGNETIAE.**Grape.**

From France. Received through Mr. W. T. Swingle, December, 1898.

"Precoce Caplat." A sort originated from seed of *Vitis coignetiae* from Japan, planted in 1885 by Mr. Caplat in Brittany. The vine is said to be the finest ornamental grape known, having leaves often of extraordinary size, some being 19 inches long and 15 inches wide. The grapes are black, about $\frac{2}{5}$ inch in diameter, and are said to produce a fair wine. It is extremely early and very hardy, and grows farther north than the ordinary European grape.

1955. VITIS PAGNUCCII.**Grape.**

From France. Received through Mr. W. T. Swingle, December, 1898.

Early and very productive; of Chinese origin. The leaves are deeply lobed or even palmately 3 to 5 foliate. It is the only true grape sometimes having compound leaves. The fruit is said to be acid, maturing in October in the province of Shen-si, where it is native.

1956. VITIS.**Grape.**

From France. Received through Mr. W. T. Swingle, December, 1898.

Of Chinese origin; very late; leaves silvery below; adapted to hot countries. Sent under the name of "*Vitis carrieri*."

1957. VITIS.**Grape.**

From France. Received through Mr. W. T. Swingle, December, 1898.

A new Chinese variety for the table, offered for the first time this year under the name "L'Alençonnaise." It is an entirely new strain of grapes. Originated by M. Caplat from seeds sent him by M. Romanet du Caillaud as *Vitis chensii* (Chinese "Ma nao pon tao"), from Shen-si. It is claimed to be an excellent table variety, having small bunches of large grapes, $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter. Resistance to *Phylloxera* unknown. (See No. 1954.)

1958. VITIS ROMANETI.**Grape.**

From France. Presented by M. Victor Caplat, of Damigny, France, through Mr. W. T. Swingle; received December, 1898.

A Chinese grape having curious red silky hairs ending in a gland scattered all over the canes, petioles, and leaves. The leaves are large and cordate. It is from Shen-si. The fruit is edible.

1959. VITIS.**Grape.**

From France. Presented by M. Victor Caplat, of Damigny, France. Received through Mr. W. T. Swingle, December, 1898, under the name "*Spinoritis davidi*."

It has spiny branches and heart-shaped leaves. A rapid-growing vine of some value for ornament.

1960. HEDYSARUM CORONARIUM.**Sulla.**

From Italy. Presented by Dammann & Co., San Giovanni a Teduccio, near Naples. (1 package.)

A perennial or biennial legume, native of southern Europe and northern Africa. It is quite extensively cultivated in Algiers, Tunis, Malta, and Sicily. Sulla withstands slight frosts, but dies when the ground is frozen. It resembles alfalfa in requiring well-drained, deep, and fertile soils, but is a slower grower and of shorter duration. Seed should be sown in autumn, at the rate of 15 to 20 pounds per acre. The plants grow 4 to 6 feet high, and are ready to cut for hay when in full bloom. The hay has about the same feeding value as that of beggar weed. Of possible value for forage in Florida and along the Gulf coast. Sulla is an excellent honey plant.

1961. CUCUMIS MELO.**Winter muskmelon.**

From Utah. Seeds of two specimens of the "Eden" variety presented by Mr. John F. Brown, Elgin, Utah. A winter variety. (See No. 2380.)

1962. ORYZA SATIVA.**Rice.**

From Japan. Secured by Prof. S. A. Knapp from the island of Kiushu. Received January, 1899.

In sending this importation Professor Knapp made the following brief report to the Secretary of Agriculture:

"In accordance with your instructions, I went to Japan in September last and commenced at once to investigate the rice product of that country, to secure the best variety for our purpose. After an inspection of the rice fields and methods of cultivation I spent several days at the Imperial College of Agriculture, examining their experiments in varieties and in fertilizing, and also their large collections of varieties from all portions of the Empire. I then consulted with the principal millers and exporters of rice at the treaty ports. By consensus of opinion it was decided to purchase rice in the island of Kiushu, as furnishing the purest in variety and best in quality. In making the selection the following points were observed: (1) Nutritive and milling qualities; (2) uniform size of kernel; (3) strength of straw."

The whole amount (10 tons) has been distributed in the South. Arrangements have been made to secure additional seed for next year, as the experiment seems to warrant a second distribution. (See Bul. 22, Division of Botany.)

1963. CORCHORUS CAPSULARIS.**Jute.**

Imported from Calcutta by Mr. Charles Richards Dodge, as special agent for fiber investigations. (200 packages.)

It is an annual shrub, 8 to 15 feet high, native of India, and largely grown there for the well-known and widely used jute fiber. It requires a rich, well-drained soil, with considerable moisture. Suitable for the rich bottom lands in Louisiana, Mississippi, and Texas. The seed should be sown broadcast, in March or April, at the rate of 12 to 15 pounds per acre, and harrowed in. The crop is ready to cut for fiber when the seed pods are formed, usually within about 4 months from the time of seeding. Jute has been successfully grown on rice and cotton lands from North Carolina to Texas. Yields of 11 tons per acre have been obtained, about three times the average yield in India. The imports of jute into the United States in 1898 amounted to over 112,000 tons, valued at \$2,500,000.

1964. CORCHORUS OLITORIUS. * Jute.

Imported from Calcutta by Mr. Charles Richards Dodge, as special agent for fiber investigations. (150 packages.)

An annual, native of tropical Australia and southern Asia. It is cultivated in India and supplies some of the jute fiber of commerce. It may be grown as a rotation crop with rice. The cultivation is similar to that of No. 1963.

1965. MELINIS MINUTIFLORA. Molasses grass.

From Brazil. Presented by Senhor I. Nery da Fonseca, of Pernambuco. (1 package.)

This is said to be the finest pasture grass in Brazil. Should be tried in Florida.

1966. IPOMOEA BATATAS. Sweet potato.

From Jamaica. Secured by Mr. D. G. Fairchild (No. 25) from the plantation of Mr. J. T. Palache, near Mandeville.

"A short turnip-shaped sweet potato, introduced very recently from Barbados by Mr. Palache and thought by him to be very promising—better than 'Jersey sweet' even, which is doubtful. Grown at 2,500 feet elevation." Set out rooted sprouts in ridges as soon as the ground is warm. Cultivate until the runners cover the space between the ridges.

1967. IPOMOEA BATATAS. Sweet potato.

From Jamaica. Secured by Mr. D. G. Fairchild (No. 27) from the plantation of Mr. J. T. Palache, near Mandeville.

"A Barbados variety said to produce more heavily and to be of better quality than the American varieties grown in Jamaica. Barbados sweet potatoes are famed for quality here." (See No. 1966.)

1968. IPOMOEA BATATAS. Sweet potato.

From Jamaica. Secured by Mr. D. G. Fairchild (No. 26) from the plantation of Mr. J. T. Palache, near Mandeville.

"A pink-skinned sweet potato, just introduced into Jamaica from Barbados, said to be better here than even 'Jersey sweet.' I judge that the roots are uniformly smaller. The Barbados sweet potatoes are noted in Jamaica." (See No. 1966.)

1969. BLIGHIA SAPIDA. Akee.

From Jamaica. Secured by Mr. D. G. Fairchild. (1 package.)

"Cooked as a vegetable with fish." A tree of the family *Sapindaceae*; about 30 feet high, originally from tropical Africa, now widely cultivated in the West Indies and South America. The fruit is fleshy, reddish yellow, 3-sided, about 3 inches long and 2 inches thick. When ripe it splits down the middle on each side, disclosing 3 shining black seeds borne on and partly surrounded by a white, spongy aril. This aril is the portion of the fruit which is eaten. It has a fine flavor and is highly esteemed. For Puerto Rico and Hawaii.

1970. ATTALEA COHUNE. Coquito palm.

From Jamaica. Secured by Mr. D. G. Fairchild (No. 23) from the Castleton Botanical Gardens.

"The *Coquito* or *palma de aceite*. Native in South Mexico and Guatemala. The leaves are over 30 feet long. It is one of the most beautiful palms in the Tropics."

1971. POSOQUERIA LONGIFLORA.

From Jamaica. Secured by Mr. D. G. Fairchild (No. 15) from the Castleton Botanical Gardens. (1 package.)

A beautiful ornamental tree; 25 to 30 feet high, covered with long, white, fragrant blossoms, followed by curious pods an inch in diameter. Foliage beautiful dark green. Belongs to the family *Rubiaceae*. Plant in rich soil and transplant. For subtropical regions.

1972. MICHELIA CHAMPACA.**Champac.**

From Jamaica. Secured by Mr. D. G. Fairchild (No. 24) from the Castleton Botanical Gardens. (3 packages.)

The "sampige" of the Hindoos. The perfume distilled from the flowers is a marketable article. The fragrant wood of this tropical magnoliaceous tree is used for cabinetwork. The odor of the flowers is said to be very powerful.

1973. IPOMOEA BONA-NOX.**Evening glory.**

From Jamaica. Secured by Mr. D. G. Fairchild (No. 22) at Port Antonio. (2 packages.)

An effective evening-blooming climber with very large white flowers and curious onion-shaped seed pods with papery persistent calyxes. Leaves 6 inches in diameter. Very vigorous; common about Port Antonio. Should be tried by planting first in greenhouse. This rapidly growing "moon vine" is now commonly used as an ornamental climber.

1974. AVERRHOA CARAMBOLA.**Carambola.**

From Jamaica. Secured by Mr. D. G. Fairchild at the Castleton Botanical Gardens. (1 package.)

This is the so-called carambola or caramba of the East Indies. The 5-parted acute-angled cucumber-shaped fruit is deliciously acid and refreshing, with a crispness quite characteristic. If introduced into American markets it would be sure to become popular as a table fruit. Seed taken from ripe flesh. A small tree from Ceylon, of the family *Oxalidaceae*; suitable for cultivation in Florida, Hawaii, and Puerto Rico.

1975. MANIHOT GLAZIOVII.**Ceara rubber.**

From Jamaica. Secured by Mr. D. G. Fairchild (No. 20) from the Castleton Botanical Gardens. (1 package.)

This furnishes the Ceara rubber of commerce. A tree in the gardens at Castleton was growing finely. The seeds require often twelve months to germinate, and those showing discoloration are the oldest and will germinate first. Should be kept continually moist in seed bed. (See No. 1926.) Experiments with this rapidly growing tree should be started in Puerto Rico and the Hawaiian Islands. It is a native of the semi-arid coastal districts of Brazil.

1976. IXORA MACROTHYRSA.**Ixora.**

From Jamaica. Secured by Mr. D. G. Fairchild at the Castleton Botanical Gardens. (1 package.)

A showy, red-flowered rubiaceaceous shrub from Malaga. Flowers in large numbers. Berries red and decorative. Suited admirably for the greenhouse.

1977. CYPHOMANDRA BETACEA.**Tree tomato.**

From Jamaica. Secured by Mr. D. G. Fairchild from the grounds of Mr. W. W. Wynn, at "Brokenhurst," Mandeville. (1 package.)

Grows into a tree 10 to 15 feet high, bearing rather showy red or yellowish-red fruits, which are very much relished by Europeans in Jamaica. It is a comparatively recent introduction in Jamaica, I am told. The flesh is harder and firmer than ordinary tomatoes, and sweetish. Eaten here, after peeling off the thick rind, with sugar and cream or salt and pepper, or as an apple would be. The plant is a rapid grower and can be propagated by seed or cuttings with readiness. Botanically it is a close relative of the tomato.

1978. PASSIFLORA MALIFORMIS.**Sweet cup.**

From Jamaica. Secured by Mr. D. G. Fairchild from the grounds of Mr. W. W. Wynn, "Brokenhurst," near Mandeville. (1 package.)

A vigorous tree bearing abundance of fruits the size of a small hen's egg, lemon-yellow when ripe, with a rind so hard that it requires cracking with a hammer. The numerous black seeds are surrounded by a refreshing grape-flavored flesh similar to the 'passion fruit' of Australia. A highly esteemed dessert fruit seen occasionally on tables in Jamaica. Undoubtedly introduced. (See No. 1903.)

1979. HYDRIASTELE WENDLANDIANA.**Palm.**

From Jamaica. Secured by Mr. D. G. Fairchild (No. 18) from the Castleton Botanical Gardens. (3 packages.)

Showy palm for gardens of southern California and Florida. Should be planted immediately on arrival.

1980. CAPSICUM ANNUM.**Bird pepper.**

From Jamaica. Secured by Mr. D. G. Fairchild on the grounds of Mr. W. W. Wynn, "Brokenhurst," near Mandeville. (2 packages.)

Thought quite likely to be the same as the Louisiana bird pepper, though possibly of a slightly different strain, resulting from long culture in the mountains of Jamaica, where it is grown at 2,200 feet altitude.

1981. CAPSICUM ANNUM.**Red pepper.**

From Jamaica. Secured by Mr. D. G. Fairchild in the mountains, where it is used in sauces.

1982. CAPSICUM ANNUM.**Red pepper.**

From Jamaica. Secured by Mr. D. G. Fairchild in the mountains. (3 packages.)

1983. CAPSICUM ANNUM.**Red pepper.**

From Jamaica. Secured by Mr. D. G. Fairchild in the mountains. (2 packages.)

1984. GARCINIA MORELLA.**Gamboge.**

From Jamaica. Secured by Mr. D. G. Fairchild from the Botanical Gardens at Castleton. (1 package.)

Furnishes the gamboge of commerce. Related to the mangosteen family, *Guttiferae*. The fruit is acid, rather refreshing, and could be improved by breeding and selection. There is one seed in each fruit. A tree from Ceylon for cultivation in Hawaii and Puerto Rico.

1985. STEVENSONIA GRANDIFOLIA.**Palm.**

From Jamaica. Secured by Mr. D. G. Fairchild from the Castleton Botanical Gardens. (3 packages.)

A grand palm from the Seychelles Islands, worthy of introduction into gardens in southern Florida, California, and other subtropical regions. Must be kept moist and must be planted as soon as it arrives.

1986. COPERNICIA CERIFERA.**Wax palm.**

From Jamaica. Secured by Mr. D. G. Fairchild at the Castleton Botanical Gardens. (2 packages.)

Said to furnish food and valuable wax to the natives. The most wonderful palm of Brazil as regards uses to which the natives put it. A small ornamental fan palm suited only to tropical and subtropical regions. The "Carnauba" palm.

1987. SOLANUM DREDGEL.**Natal thorn.**

From South Africa. Secured through Messrs. W. and C. Gowie. (20 packages.)

These seeds were received as the result of a request for *Solanum aculeastrum*, which has been recommended as a hedge plant suitable for dry regions.

Information accompanying the seed seems to throw doubt on the value of the plant.

"We inclose herewith a packet of 1½ ounces seeds of a species of *Solanum* which we believe is the species you require and which you designate *S. aculeastrum*. We submitted the fruits from which we obtained the seeds sent you to Professor MacOwan, Government botanist for Cape Colony, and he named the plant *Solanum dredgeannum*. He remarked further with regard to the plant that it is known as 'Natal thorn,' capable of hedging, but wanting in close growth, and rambling, also tender.

Flesh of berry poisonous like *S. sodomeum*. Almost neglected here, being much inferior to the *Aberia caffra* or kei apple, and even to *Lycium horridum*, the Cape box thorn. *S. dredgeanum* is very little better as a hedge plant than *Buddleia madagascariensis*, and, like it, will trail all over the shop and occupy much more space than it is worth."

1988. PYRUS SALICIFOLIA.

Pear.

From France. Secured by Mr. W. T. Swingle from the botanical garden at Dijon. (3 packages.)

This is a native of Siberia, having fruits resembling very small pears. It may possibly be of use as a hardy grafting stock or ornamental tree.

1989. PYRUS NEPALENSIS.

From France. Secured by Mr. W. T. Swingle from the botanical garden at Dijon. (3 packages.)

The tree is a native of Nepal in the Himalaya Mountains. The fruits are small red berries like those of *Crataegus* and *Sorbus*.

1990. COTONEASTER MICROPHYLLA.

Cotoneaster.

From France. Secured by Mr. W. T. Swingle from the botanical garden at Dijon. (1 package.)

A shrub, native of Nepal.

1991. CARICA.

Pawpaw.

From California. Presented to Mr. D. G. Fairchild by Dr. F. Francesci, director of the gardens of the Southern California Aclimatizing Association of Santa Barbara. Received under name of *Carica quercifolia*.

This species is a native of Paraguay and is said to contain more *papain* than any other species. It is very hardy, and endures light frost without injury. A tree with the base of the trunk swollen; leaves small but not oak-like as name would imply. The fruits are only 1 inch long.

1992. DIOSPYROS LOTUS (?).

From Asia Minor. Presented by Dr. M. P. Parmelee, of the American mission at Trebizond.

Dr. Parmelee states that there are early and late varieties of this small tree, seeds of both of which are included. At Trebizond the fruit bears the name "Hoormah." "Some of the date seeds were gathered in the summer (August) and I did not understand that they were not expected to ripen until December. It would seem that there are early and late varieties, the seed of which I should have kept separate. I regret that they are now mixed. The summer variety was superior in size and quality to the later ones, the larger fruit being about the size of the medlar. The smaller fruit is without seeds. The later fruit is all small, yellow in color before it is ripe, dark-brown or black and somewhat resembling raisins when ripe." This and the following (No. 1993) are doubtfully referred. Only a few pits of each were received and it was impossible to determine more accurately to what particular species each belongs.

1993. ZIZYPHUS (?).

From Asia Minor. Presented by Dr. M. P. Parmelee, of the American mission at Trebizond. This fruit is thought by Dr. Parmelee to be a sort of persimmon. It is borne on a small tree, and known as "Mooshmoolah."

Dr. Parmelee states in addition: "The mooshmoolah is a somewhat larger fruit than the hoormah (No. 1992), but inferior in quality to it. The seeds do not clear themselves from the pulp as do the seeds of the hoormah, and in spite of a good deal of effort to wash them out they are still covered with a sort of nap."

1994. ORYZA SATIVA.

Rice.

From Liberia. Presented by Mr. Henry O. Stewart, of Mount Coffee; a native variety called "Jahlee" in the Golah language. (1 package.)

This rice will flourish under a variety of conditions. The natives plant it because it is protected from the birds by a long beard on one of the glumes.

This and the following five numbers are either red or black rices and can probably not be planted to advantage in this country on account of the danger of intermixture with the commercial white rices through cross pollination. Some of them are of possible interest on account of the fact that they have been selected to secure extreme earliness of ripening to meet the demands of an improvident people.

1995. ORYZA SATIVA.**Rice.**

From Liberia. Presented by Mr. Henry O. Stewart, of Mount Coffee. (3 packages.)

A native variety called "Nahyah."

"This rice will do well on clay lowland, but it is liable to be blown down by the wind, sometimes before the rice is ripe. This is not an early rice, but it is of good quality and keeps well." (See No. 1994.)

1996. ORYZA SATIVA.**Rice.**

From Liberia. Presented by Mr. Henry O. Stewart, of Mount Coffee. (3 packages.)

A native variety called "Mahboh."

"This rice will do well in low clay land." An early variety, but not so early as "Pinne." (See No. 1994.)

1997. ORYZA SATIVA.**Rice.**

From Liberia. Presented by Mr. Henry O. Stewart, of Mount Coffee. (3 packages.)

A native variety called "Pinne."

"This is the rice that is planted first, in the last of March, to save the hungry people. This rice will turn black when it is ripe and will grow well on clay upland." (See No. 1994.)

1998. ORYZA SATIVA.**Rice.**

From Liberia. Presented by Mr. Henry O. Stewart, of Mount Coffee. (3 packages.)

A native variety called "Bongah."

"This rice grows best in swamp land where water stands." (See No. 1994.)

1999. ORYZA SATIVA.**Rice.**

From Liberia. Presented by Mr. Henry O. Stewart, of Mount Coffee. (1 package.)

A native variety called "Zopoh."

"It grows just about the same on any kind of land. This and "Bongah" rice are the best growing and tasting and keeping. The other varieties are planted early, but these are reserved for the main crop." (See No. 1994.)

2000. COFFEA STENOPHYLLA.**Coffee.**

From Sierra Leone. Presented by Mr. Elliott, of the Botanic Station.

This is a highland species of coffee native to Sierra Leone, where it is being somewhat extensively cultivated.

2001. PHYSALIS PUBESCENS.**Strawberry-tomato.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An edible winter ground cherry. Annual, grown in Southern France. Said to be inferior to *Physalis peruviana*.

"Native of South America. Perennial. A plant with a very branching, angular stem, from about 2½ to over 3 feet high. Leaves heart-shaped or oval, soft, hairy, and somewhat clammy; flowers solitary, small, yellowish, marked with a brown spot in the center; calyx bladder-shaped, very large, inclosing one juicy orange-yellow fruit about the size of a cherry; seeds small, lenticular, smooth, pale yellow. Their germinating power lasts for eight years. In the south of Europe the fruit is valued on account of its slightly acid taste. It is eaten raw." (*Vilmorin*.)

2002. PHYSALIS VIOLACEA.**Strawberry tomato.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Mexico tomato." Not very good to eat, but used in medicine. May be useful in hybridizing.

2003. ATRIPLEX HORTENSIS.**Orach.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Good Henry." This is an old garden vegetable; a perennial. "Stems 5 to 6½ feet high, angular, and furrowed; flowers small, leaves broad, arrow-shaped, slightly crimped, soft, and pliable. The seed is sown where the plants are to stand, in the open ground, usually in drills. When the seedlings have made three or four leaves they should be thinned out, after which they require no further attention, except occasional watering in very dry weather. The plants bear hot weather pretty well, but soon run to seed, on which account it is advisable to make successional sowings from month to month. The leaves are eaten boiled, like spinach." (*Vilmorin.*)

2004. SOLANUM MELONGENA.**Eggplant.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Very early violet De Barbentane." "This eggplant is one of the best. It comes from a region renowned for the production of vegetables, especially the finer varieties. Very productive, should be tried everywhere, especially in the regions where the summers are short and it is impossible to mature the ordinary varieties." (*Vilmorin.*)

2005. ARCTIUM LAPPA.**Japanese burdock.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Giant large-leaved." According to Vilmorin this merits the serious attention of the plant breeder. Biennial, 5 to 7 feet high; involucre smooth, without the hooked spines which characterize the ordinary burdock. It produces several fleshy roots 12 to 18 inches long within 4 months from the seed. The roots, when cooked, are said to taste like bur artichokes and asparagus. The seed should be sown in drills 8 to 12 inches apart, about the middle of June. The roots may be cooked like those of salsify or vegetable oyster.

2006. BASELLA RUBRA.**Basella.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"White basella." Highly recommended by M. Henry Vilmorin as a summer vegetable. The leaves and young shoots are cooked like spinach. It is a vine which serves beautifully to cover arbors and outbuildings. The flowers are very pretty.

2007. BASELLA CORDIFOLIA.**Heart-shaped basella.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

See No. 2006, to which this is closely related. Both vines are cultivated in India. The leaves are fleshy, and when cooked have a pear flavor.

2008. OCIMUM BASILICUM.**Sweet basil.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Large violet." A tender annual, native of India. The leaves, which have a clove flavor, are used for flavoring soups, sauces, etc. The plants are erect, much branched, and leafy. The seed may be sown in rows and the plants thinned to 15 or 18 inches apart, or in hotbeds, and transplanted when the ground is warm. The plants are cut off close to the ground when in bud, and after curing in a warm dry place the leaves are pressed into cakes. Treated in this way and kept dry the leaves retain their flavor several years.

2009. OCIMUM MINIMUM.**Dwarf basil.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf, compact, violet." A condiment; new variety, resembling No. 2008, but more dwarf and compact; the leaves are smaller.

2010. OCIMUM BASILICUM.**Sweet basil.**

From France. Received through Mr. W. T. Swingle, February 13, 1899. (See No. 2008.)

“Lettuce-leaved.” “A variety with broad, crimped, undulating leaves, from 2 to 4 inches long, and of a low-growing, thickset habit. The flowers, which are closely set in clusters, make their appearance rather later in this variety. The leaves of this Basil, which are much larger than those of any other kind, are also much fewer in number.” (*Vilmorin.*)

2011. OCIMUM GRATISSIMUM.**Tree basil.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Grown in hot countries. It is an annual with an upright stem, branching from the base and forming a pyramidal bush 20 to 25 inches high, and 12 to 16 inches through. Leaves oblong; flowers lilac. It requires a long season.

2012. BENINCASA CERIFERA.**Wax gourd.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Probably needs a hot climate; the fruits keep all winter. A cucumber-like vine with hairy, musk-scented leaves, and oblong, cylindrical, downy or waxy, fruits. The seeds are thickened at the margins. The unripe fruits are used everywhere in India in the preparation of curries. Cultivate like melons. Cook like summer squash.

2013. BETA VULGARIS.**Beet.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Red Cheltenham.” “This beautiful variety of salad beet, which originally came from England, has an elongated, netted, and slightly enlarged root. Flesh of an intense blood-red color. Contrary to the rule regarding color in leaves of garden beets, the distinctive character of this strain is that the leaves are grayish with rose-colored veins. The excellent qualities of this table beet give it first rank.” (*Vilmorin.*)

2014. BETA VULGARIS.**Beet.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Covent Garden red.” “A very handsome kitchen-garden variety, with a long slender root entirely buried in the soil, smoother and cleaner than the Castleman dary; leaves spreading, not very large, slightly crimped, of a deep black-red color; flesh deep red, compact, sugary.” (*Vilmorin.*)

2015. BETA VULGARIS.**Beet.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Dell’s dark crimson dwarf.” “This variety is distinguished by the dark-red color of its leaves, which are broadly crimped, and have a shiny luster. The leaves grow curving toward the ground. Doubly valuable for the delicate flavor of the root and the ornamental character of the leaves.” (*Vilmorin.*)

2016. BETA VULGARIS.**Beet.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Queen of the blacks.” “Foliage compact and well proportioned to the root. The root is conical in shape, both at the top and base, but longer and more tapering below. The color of the flesh is deep red, or almost black. The leaves themselves present coloring no less intense; they are relatively broad, and are never, at any time during their growth, plain green, which is extremely rare, even among varieties of beets that have their foliage more highly colored in autumn. Sometimes used for bordering groups of dark-foliaged flowering plants.” (*Vilmorin.*)

2017. BETA VULGARIS.**Beet.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Giant white half-sugar.” “Among the varieties of beets rejected by the sugar industry the Giant White is remarkable for its regular form, its great productive-

ness, good quality, and long keeping. Its growth is rapid and vigorous, its roots long and of oval shape, with a green collar just above the ground, the flesh firm and sweet. Owing to the fact that it is easily pulled, together with its many other good qualities, it makes a valuable food for cattle during the latter part of the winter." (*Vilmorin.*)

2018. BETA VULGARIS.

Beet.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Giant rose, half sugar." "The number of semisugar beets discarded by the sugar industry and used for forage is becoming greater. This new variety has been produced from the old grayish rose-colored beets of northern France. It is large, of long oval form, a regular, well-formed root, easily pulled, and producing a good yield; it is also noted for its good quality and excellent keeping. This variety, with the giant white semisugar, is to be recommended, as the reports from growers place it above all other forage beets." (*Vilmorin.*)

2019. CYNARA CARDUNCULUS.

Cardoon.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Ivory white." A new variety; should be carefully tried in the South. This is a perennial vegetable, much esteemed in Europe. The parts of the plant eaten are the blanched stalks of the inner leaves, which are cooked or used in salads. The cardoon requires rich soil. It grows to the height of 3 to 5 feet. A very showy plant when allowed to blossom.

2020. CYNARA CARDUNCULUS.

Cardoon.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Puisis." Cardoons are among the best of French vegetables, being almost equal to asparagus. (See No. 2019.)

2021. CYNARA CARDUNCULUS.

Cardoon.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"De Cours." Very spiny, but of best quality. (See No. 2019.)

2022. DAUCUS CAROTA.

Carrot.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Parisian red forcing." Earliest and shortest of carrots. "This variety has been selected from the short, red sorts as one especially adapted for forcing in frames. The root is always broader than long, very smooth and clean. The foliage is remarkably fine. This variety has been preferred for growing in the open air, and used exclusively for forcing under sash." (*Vilmorin.*)

2023. DAUCUS CAROTA.

Carrot.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Long blood-red." "Those who are seeking for carrots with intense coloration should not fail to adopt this new variety, which is without a rival in that respect. It has a long, slender root, with tender, sweet flesh, of a very deep orange red. Its comparatively scant foliage is easily distinguished by the violet tint of the petioles. This is a rather late variety, and is easily kept during the winter." (*Vilmorin.*)

2024. APIUM GRAVEOLENS.

Celeriac.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Improved Paris." A new variety of turnip-rooted celery, very much favored by the kitchen gardeners of Paris, where they produce it upon prepared soil. It attains a large size." (*Vilmorin.*)

2025. CICHORIUM INTYBUS.

Chicory.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Large-rooted Brussels," the "Witloof" of the Belgians. This delicious winter vegetable, little known in America, is much grown about Brussels and Paris. The

seed should be sown in June or early July in rows 6 to 12 inches apart, and the rows thinned to leave about 20 to 30 plants to the square yard. If replanted from a seed bed space the plants about 6 inches each way. In October the roots are dug—they are then 1 to 2 inches in diameter—the leaves are cut off close to the collar and the roots shortened to a length of 5 to 6 inches, all the lateral roots being trimmed off. These roots are then placed upright, close together, in trenches about 15 to 18 inches deep and 4 to 6 feet wide, in well-drained garden soil. Each root must be separated from the others by a layer of soil. A layer of rather dry soil about 8 inches deep is then placed over the roots, and the trench filled heaping full of stable manure in fermentation. The trench may be of any desired length, and only a part forced at any one time. In 12 to 20 days after the manure is placed over the roots it may be removed and placed over another portion of the trench, adding fresh manure if needed to maintain its heating qualities. The soil remains warm for a few days after the manure is removed if the trench be kept covered, and after 20 to 30 days from the commencement of the forcing process the crop is ready to gather. The blanched leaves have grown rapidly and formed a compact head 4 to 8 inches long and 1 to 2 inches in diameter—"the witloof." It is necessary to bury the roots deeply and have a considerable weight of soil and manure above or else the head is not compact. It is useless to attempt to grow other sorts of chicory in this manner. The "Witloof" makes a delicious salad and is also eaten cooked.

2026. BRASSICA OLERACEA.**Cabbage.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"De Fumel." "This cabbage has a very short stem, the outside leaves, which are few in number, are curled and lie upon the ground, are rather dark green, and are covered with blisters. The head, on the contrary, is of light color, very little curled and much flattened, and will keep but a very short time." (*Vilmorin.*) Grown in southern France. Try in the South.

2027. BRASSICA OLERACEA.**Cabbage.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Winter Vaugirard." "Stem short; outer leaves numerous, stiff, grayish-green and often shaped like the bowl of a spoon. Head round, depressed or flattened; firm and solid; color about the same as that of the outer leaves. This variety is one of the most hardy and is good for winter use. It resists the cold even when the head is not fully grown at the time of the first heavy frosts. The gardeners around Paris do not plant it early and do not sow it until the month of June when it is to pass the winter in the open ground." (*Vilmorin.*)

2028. BRASSICA OLERACEA.**Cabbage.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"St. John's very early Savoy." "This handsome variety might almost be described as the Ox-heart Savoy. The stem is extremely short. The leaves are pale green and considerably crimped. The head forms more quickly than that of any other Savoy cabbage. It does not, however, keep its shape long, but bursts and grows out of form if it is not cut in time." (*Vilmorin.*)

2029. BRASSICA OLERACEA.**Cabbage.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Savoy early Aubervilliers." The best Savoy cabbage for late summer.

2030. BRASSICA OLERACEA.**Cabbage.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Norwegian Savoy."

2031. BRASSICA OLERACEA ACEPHALA.**Tree kale.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Very tall, cow, or tree, kale." "A very large, vigorous-growing plant, presenting, when fully grown, the appearance, one would almost say, of a young tree. Its French name of '*Chou cavalier*' is said to have been given to it because its height is sometimes equal to that of a man on horseback. The stem is straight, stiff and

strong, but comparatively slender, as it seldom attains a diameter of $1\frac{1}{2}$ inches. In the first year of its growth it does not usually exceed 3 or 4 feet in height. The plant produces a great number of leaves, which are green, large, cut at the base, but oval rounded at the end, slightly crimped or puffed on the upper surface, and often over $2\frac{1}{2}$ feet long. They grow at some distance from one another, and after they have fallen or have been plucked, a scar is left where the stalk was parted from the stem. The variety is a hardy one, and will bear the cold of ordinary winters at Paris. It does not always run to flower in the spring of its second year, but often continues producing leaves and growing taller, in which case it does not flower until the spring of its third year (including the year in which it was sown), when it reached its greatest height. The leaves are usually pulled to feed cattle, the stems being allowed to remain in the ground until the next spring, when the tops which are about to run to flower are cut off and applied to the same uses as the leaves. The stems, having become hard and woody, can not be utilized in this way, but they are sometimes dried and made into walking sticks." (*Vilmorin.*)

2032. BRASSICA OLERACEA ACEPHALA. Kale.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Borecole, large-leaved, Jersey kale," rather tender. A forage plant. "This variety, which comes very near No. 2031, but is usually not so tall, is especially remarkable for the enormous size of its leaves, which often grow more than 3 feet long, and from 12 to 14 inches broad. The blade of the leaf is of an elongated-oval shape, with entire uncut margin and tolerably crimped surface. It is a very productive forage cabbage, succeeding best in rich soil in a temperate climate, as it is not perfectly hardy." (*Vilmorin.*)

2033. BRASSICA OLERACEA ACEPHALA. Kale.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Flanders." Extremely hardy, but not so productive as Chou cavalier (No. 2031). "A forage plant of large size, but somewhat smaller than the tree cabbage, from which it is also distinguished by the violet-red color of its leaves and stems. It bears frost extremely well, even better than the tree cabbage, on which account it is preferred to any other kind for field culture in the north of France. The plant is sometimes branched, in which respect it differs from the tree cabbage, the stem of which is most usually unbranched. The leaves of the Flanders kale also are smaller and narrower in proportion to their length. They are often undulated and, as it were, puckered at the edges, giving them some slight resemblance to the leaves of the borecoles." (*Vilmorin.*)

2034. BRASSICA OLERACEA ACEPHALA. Kale.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Thousand-headed or branching Borecole." Somewhat tender. "Another very large kind, distinguished from the tree cabbage by its stem being usually divided into a number of branches, each of which bears large leaves almost like those of the tree cabbage. Although it does not grow so tall as that variety it is generally considered more productive, but it is not so hardy and often suffers from the winters of middle and northern France. It originated in some part of the west of France, and is more suited to the climate of that region." (*Vilmorin.*)

2035. BRASSICA OLERACEA ACEPHALA. Kale.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Mille têtes." This variety is used for forage and for greens during winter in western France. "A very distinct, tender variety. The stems are more branching than those of No. 2034, forming a sort of tuft or little head. It is not more than 3 feet high, very dense and with many leaves, which are entire and largest at the base. Color a peculiar yellowish green. It is important that this variety should not be confused with the English variety called 'Thousand Headed Cabbage,' which is called 'Chou branchu du Poitou' in France. (*Vilmorin.*)

2036. BRASSICA OLERACEA ACEPHALA. Marrow kale.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"White marrow." A very important stock food. Its only drawback is in its being tender. "A large variety of forage cabbage with a very stout and thick unbranched

stem, which is swollen chiefly in the upper two-thirds of its length and filled with a sort of marrow or tender flesh, which forms excellent food for cattle. The leaves are very long and broad and constitute a considerable part of the crop. The stem grows 5 feet or more high, with a diameter of 3 to 4 inches in the thickest part. The marrow kale, like the thousand-headed cabbage, has the disadvantage of being sensitive to cold, and the crop must be gathered before severe cold sets in. At the end of summer and all through the autumn the leaves are cut and given to cattle. At the commencement of hard weather, when the leaves are all cut, the stems are taken up and stored in an outhouse or shed, where they will be free from frost, and in this way they will keep all through the winter." (*Vilmorin.*)

2037. BRASSICA OLERACEA ACEPHALA. Kale.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Red marrow." (See No. 2036.)

2038. BRASSICA OLERACEA. Cauliflower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Extra selected earliest Erfurt dwarf," northern grown. (See No. 2039.)

2039. BRASSICA OLERACEA. Cauliflower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Very early Erfurt." Very good; southern grown. "A very early, very distinct, and really valuable variety, but difficult to keep true to name. It is somewhat under middle height and has a rather short stem. Leaves oblong, entire, of rounded outline, scarcely undulated, and of a peculiar light grayish-green tint, which, added to their shape and rather erect position, gives the plant some resemblance to the sugar-loaf cabbage. The head, which is white, compact, and fine-grained, forms quickly and keeps firm for a long time. When exposed to the sun it soon acquires a violet tint." (*Vilmorin.*)

2040. BRASSICA OLERACEA. Cauliflower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Alleaume dwarf, very early." "An exceedingly dwarf and very early variety. The stem is so short that the head appears almost to rest on the ground, like that of the early dwarf Erfurt cauliflower. From this variety, however, it differs entirely in the appearance of the leaves, which are broad, undulated at the margin, and generally twisted. The head forms very quickly, but soon grows out of shape if it is not cut in time." (*Vilmorin.*)

2041. BRASSICA OLERACEA. Cauliflower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Imperial." Extra early sort grown about Paris. "This handsome variety very much resembles the dwarf Erfurt, but it is of a darker green color and larger in all its parts. It is an early kind, with a fine, white, broad, firm head, and remarkable for the regularity of its growth, and productiveness. When grown true to name it is certainly one of the best varieties of cauliflower." (*Vilmorin.*)

2042. BRASSICA OLERACEA. Cauliflower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Maltese." A sort deserving of being more widely known than at present, according to Vilmorin. "It is characterized by its comparatively short stem, leaves with little scallops on the edges, dark green or almost slate color, hardy. It is cultivated so as to produce during the late summer and the autumn. It thrives perfectly both in the gardens and in the open field, provided, however, the land is properly irrigated. The head is large and fine, and appears more white in contrast with the deep green of the foliage." (*Vilmorin.*)

2043. BRASSICA OLERACEA. Cauliflower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Chambourey mammoth." Half early.

2044. BRASSICA OLERACEA.**Cauliflower.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Geneva." Recommended for trial. A new sort.

2045. BRASSICA CAMPESTRIS.**Rutabaga.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Early white, strap-leaved." "Distinguished from the 'Early flat white' by its shorter oblong entire leaves, which are toothed on the margin, but not divided or lobed. The root is also thicker and more rounded in outline. An excellent kind for forcing." (*Vilmorin.*) New; recommended by Vilmorin.

2046. BRASSICA CAMPESTRIS.**Rutabaga.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Smooth, white, short-leaved." "A very distinct early variety, the root depressed, broader than long, smooth and regular. Leaves short, rather deep green. This variety is especially good for cooking. The flesh is white." (*Vilmorin.*) Useful for the table, replacing turnips in the winter.

2047. CLAYTONIA PERFOLIATA.**Claytonia.**

From France. Received through Mr. W. T. Swingle, February 13, 1889.

Said to be better than spinach. Does well in summer. A low annual with fleshy leaves. It is a native of the Pacific coast regions of North America, and has been long cultivated by European gardeners. It is related to the well-known "Spring Beauty" of the northern woods, differing in the cup-shaped leaves united by their bases around the stems. The seeds are sown in spring 2 feet apart. Fifty or sixty stems often arise from one root. The stems are 12 to 18 inches high.

2048. CUCUMIS SATIVUS.**Gherkin.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Early Russian." "A truly miniature cucumber with a slender stem 20 to 24 inches long, and small bright green leaves. Well adapted for frame culture, each plant producing from 6 to 8 short, egg-shaped, yellow, smooth fruits a little larger than a hen's egg. It ripens fully in less than 3 months. The flesh is not very thick and is slightly bitter, but its remarkable earliness compensates for these slight defects." (*Vilmorin.*) Extremely early. Mr. Swingle says he does not remember seeing this in America.

2049. CUCUMIS SATIVUS.**Gherkin.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Netted Russian." A curious brown or nearly black cucumber, new, Mr. Swingle thinks, to America. Resembling No. 2048, but the rind becomes netted when the fruit ripens; also larger and later.

2050. CUCUMIS SATIVUS.**Cucumber.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Long green, fine early Fournier." Recommended by Vilmorin. Grown in cold frames about Paris. "A valuable variety, very vigorous and productive, succeeding well when cultivated in the open. The fruits are long, with very few spines. The flesh is very thick, keeping firm and tender for a long time. This renders it one of the best for selling on the markets." (*Vilmorin.*)

2051. CUCUMIS SATIVUS.**Cucumber.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Long green, kitchen garden. Grown in cold frames. Recommended by Vilmorin. "Very vigorous and productive, yielding a large number of perfect fruits; flesh deep and tender. This cucumber is noted among gardeners for its excellence and as being the first to come on the market." (*Vilmorin.*)

2052. CUCUMIS SATIVUS.**Gherkin.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Meaux, green pickling.” “This variety of Gherkin is readily distinguished from Cucumber, especially by its fruits being almost twice the length, nearly cylindrical, of a beautiful bright green. Also without spines on the stem end for about one-third of its length. Vigorous and hardy, and can be grown in the open ground. Grows rapidly and yields well.” (*Vilmorin.*)

2053. CUCUMIS SATIVUS.**Cucumber.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Prolific Bourbonne.” “This is a true cucumber, fruit long and slender, flesh firm. When gathered while small it makes a pickle of a quality very seldom found. The surface is covered with spines which are very numerous but finer than those of the more common gherkins; these spines resemble short hairs. It is longer, more slender, and of a deeper color than 2052. The remarkable abundance of the fruits which continue through several weeks if gathered every day soon after their formation.” (*Vilmorin.*)

2054. CUCUMIS SATIVUS.**Gherkin.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Toulouse.” Recommended by Vilmorin. A sort for pickling.

2055. CORCHORUS OLITORIUS EDULIS.**Edible jute.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Useful in hot countries. The leaves are eaten like spinach, or in salads. “Annual, stem cylindrical, smooth, and more or less branched at the base, 20 inches high. Leaves alternate, lower ones rather broad afterward becoming longer, attenuated at the point and sharp-toothed; flowers yellow, axillary; capsules cylindrical, rather elongated, smooth; seeds very angular, pointed, green, and very small. Their power of germination will last about five years. This plant grows in a very warm climate. It is sown in the open ground during the month of May or better a little earlier in a hotbed. It is especially grown in tropical countries where the warmth of the atmosphere is sufficient to grow it in the open ground without any care. The more tender leaves are used as a salad.” (*Vilmorin.*)

2056. CUCURBITA MAXIMA.**Squash.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Prolific early marrow.” “A distinct and interesting variety, having the form of the Hubbard squash and the color of the marrow. The stem is a runner, but ordinarily does not exceed 7 or 8 feet in length and ceases to grow after having set three or four fruits which ripen before all other squashes. This, however, does not hinder its keeping in good condition until the early winter. It is not very large, rarely weighing more than 7 pounds. Good for planting in small gardens and where small squashes are desirable.” (*Vilmorin.*)

2057. CUCURBITA MAXIMA.**Squash.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Portugal.” Recommended by Vilmorin.

2058. RORIPA NASTURTIUM.**Water cress.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

“Improved broad-leaved.” A new variety. Preferred to ordinary cress, especially for garnitures.

2059. SPILANTHES OLERACEA.**Para cress.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Good for hot countries, where it replaces water cress. “Originally from the West Indies. Creeping, annual; leaves entire, oval; stem terminated by the flowers,

which are without petals and of a pure yellow; seeds very small. Sow during April, where they are to remain. The flowering begins within two months and continues the whole summer. The leaves are used in salads to which they give a piquant taste. They also have an exciting action upon the salivary glands." (*Vilmorin*.) For trial in Florida and Hawaii. Very pungent.

2060. SPILANTHES OLERACEA RUBRA. Brazilian cress.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Brown in color. Good for hot countries, where it replaces water cress. A variety of No. 2059.

2061. CUMINUM CYMINUM. Cumin.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Maltese." Seeds used in cooking, for confectionery, and in the manufacture of liqueurs. "An annual, native of upper Egypt. Low-growing, 4 to 6 inches high, branching from the base. The seeds have a hot taste and strongly aromatic flavor. The seed is sown in the open ground about the middle of May. The plants grow rapidly, and the seeds commence to ripen about the end of July. Cultivation, an occasional hoeing." (*Vilmorin*.)

2062. ALLIUM ASCALONICUM. Shallot.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Very much used in France. Keeps all the year. "Perennial. The shallot seldom produces seeds but has a profusion of leaves. Its bulbs, when planted in spring, speedily divide into a great number of cloves which remain attached to a common disk, and quickly grow as large as the original bulb. The cloves are planted very early in spring in rich, well-manured soil, not very deeply, about 4 inches apart. When the leaves commence to wither, about July, the tufts of plants are pulled up and left to dry for a few days, after which they are divided and the bulbs stored in a dry place. The bulbs, which keep for a whole year, are used for seasoning, and give a more delicate flavor than most onions. The leaves are also eaten, cut when they are green." (*Vilmorin*.)

2063. FOENICULUM DULCE. Fennel.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Florence or sweet fennel." Very good; should be grown in the South; eaten raw as well as cooked. "A very distinct, low-growing and thick-set annual, with a very short stem which has the lower joints very close together. Leaves large, very finely cut, light green; leaf-stalks very broad, whitish green, overlapping one another at the base of the stem, the whole forming a kind of enlargement or head varying in size from as large as a hen's egg to the size of one's fist, firm, white, and sweet inside. The seed is sown in rows 16 to 20 inches apart. The plants should be thinned to 5 or 6 inches apart, and the beds should be frequently watered. When the bulb is as large as an egg it should be hilled so that it is half covered. The plant is ready to cut for use in about 10 days after being hilled. It is usually eaten boiled. The flavor somewhat resembles that of celery, but is sweeter and more delicate." (*Vilmorin*.)

2064. VICIA FABA. Broad bean.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Perfection." The broad beans are largely grown as a table vegetable in England and on the Continent. The seeds are eaten both in the green state and when dry, boiled, or in soups.

2065. VICIA FABA. Broad bean.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Seville long-pod." Has very long pods. Is early, but is less prolific than some others. "Stem quadrangular, erect, 2 to 2½ feet high, not very stout, sometimes quite green and sometimes slightly tinged with red. The foliage is of a lighter shade of green than the other varieties, with more elongated leaflets. Flowers, 2 to 4 in each cluster; the standard is greenish white, longer than broad, and remains folded in the center even when the flower is full blown. This gives them the appearance of

being longer than those of other varieties. Pods something more than $\frac{1}{2}$ inch broad, 8 inches to 1 foot long, single or in pairs, soon becoming pendent. Each pod contains 4 to 8 seeds. This is an early variety, but not very hardy." (*Vilmorin.*)

2066. VICIA FABA.**Broad bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf fan or cluster." Used for forcing under glass. "A plant growing 14 to 16 inches high. Stems quadrangular, tinged with coppery or reddish brown, rather slender; leaves stiff and strong, ashy green, with rather small pointed leaflets; flowers small, the standard marked with purple at the base; pods erect, in twos or threes, each containing from 2 to 4 square-sided, thickish beans."

2067. MESEMBRYANTHEMUM CRYSTALLINUM.**Ice plant.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Prepared like spinach. Said to be very good; often grown for ornament. Prof. Peter MacOwan, of Cape Colony, South Africa, recommends the cultivation of this plant for forage in arid regions. He compares a field of it to a pond of water. Sheep and cattle eat it readily. The leaves are fleshy and succulent. It grows naturally in arid and semi-arid regions and will be an excellent plant for trial in the Southwest on the ranges.

2068. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Soisson's white runners." The "Soissons" take the place of our lima beans in France and are preferred by the French. Recommended by Vilmorin. "A plant with a slender green stem $6\frac{1}{2}$ feet or more high. Leaves pretty large, at wide intervals; leaflets moderately crimped, dark green; flowers white, becoming yellowish; pods green, broad, curved, becoming yellow when ripe; seeds seldom more than four in each pod, white, kidney-shaped, nearly 1 inch long, $\frac{1}{2}$ inch wide, and $\frac{1}{4}$ inch thick. They are late in ripening. The ripe beans are highly esteemed for their delicate flavor and the thinness of the skin. Hardy." (*Vilmorin.*)

2069. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Flageolet; King of the greens." Excellent for string beans. "Medium early, distinguished by its height and great vigor. This is a variety of great productiveness which does admirably for culture in the open field." (*Vilmorin.*)

2070. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Flageolet dwarf; Triumph of the frames." Recommended as a very early string bean.

2071. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Flageolet dwarf, early, mottled." Very good for forcing. Extremely early.

2072. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf, extra early Black Prince." Said to be the earliest variety known. "An excellent, very early, and very productive dwarf bean. In comparative tests it has proved 10 to 15 days ahead of the varieties heretofore considered early. Its dwarf habit, together with other excellent qualities, make it very desirable for forcing. It is hardy and is equally useful for cultivation in the open field and in the amateur's garden." (*Vilmorin.*)

2073. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Belgian early black kidney." Used only for string beans because of color. "A very dwarf early bean, chiefly used for forcing in frames. It is seldom more than 10

or 12 inches high and forms a small, close, compact tuft or clump. The leaves are medium, pointed, not much crimped, pale green in color. The pods are straight, green when young, later streaked with violet. Seeds small, about $\frac{1}{2}$ inch long, black, with a white hilum. Used only as a snap bean.

2074. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Shah of Persia." Said to be the best variety known for eating as green shelled beans, for succotash and like dishes. "Very tall for a dwarf bean, but supports itself well without the aid of a trellis. Pods very numerous, remarkably long, often 8 or more inches, cylindrical, and very straight. They will not fail to attract the attention of both dealer and buyer and yield a good profit to the grower. The foliage is very heavy and the beans are long and black." (*Vilmorin.*)

2075. PHASEOLUS LUNATUS.**Lima bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf Soissons, white flat." A sort of lima bean. "Variety truly dwarf, valuable, but only moderately productive. Plant stocky, low; foliage plentiful, uniform, of a deep green and glossy. The bunches of curved, irregular pods are sometimes more easily seen than the foliage. Flowers white." (*Vilmorin.*)

2076. PHASEOLUS LUNATUS.**Lima bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf green Soissons." A new variety recommended by Vilmorin. "This bean is strictly dwarf and a valuable variety, very productive, seeds large and of good quality. This adds to the list of dwarf beans a variety having a large green seed." (*Vilmorin.*)

2077. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf white butter." Edible-podded beans. "Very good variety, but a little delicate, branching low, somewhat drooping upon the ground, where the leaves become much more pale and smaller than those situated at the top of the stems. Flowers white. Pods nearly transparent or about the color of beeswax, about 4 inches long, containing 5 or 6 short oval beans of a white, creamy color, but sometimes lightly wrinkled. The dry beans are excellent." (*Vilmorin.*)

2078. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf Mont d'Or butter." "A very distinct kind, with pale-green stems tinged with red, smooth, light-green leaves, and blue flowers. Pods very numerous, straight, nearly 6 inches long, pale yellow, free from membrane, containing 5 or 6 egg-shaped violet seeds, spotted and marbled with brown. Early and prolific." (*Vilmorin.*)

2079. PHASEOLUS VULGARIS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf white unique." Edible podded beans.

2080. DOLICHOS SESQUIPEDALIS.**Asparagus bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dolique asperge." "Grown in the south of France and eaten like string beans. Try in the South. Stems climbing, 6 to 9 feet or over; leaves dark green, rather large, elongated, pointed; flowers large, greenish-yellow, with the standard bent back, borne either solitary or in pairs; pods pendent, cylindrical, very slender, remarkably long, light green; seeds few, from 7 to 10, kidney-shaped, reddish, with a black circle around the eye, about $\frac{1}{2}$ inch long. Cultivated like the tall kidney beans." (*Vilmorin.*)

2081. DOLICHOS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Tonquin," an edible-podded bean, recommended by Vilmorin. (See No. 2080.)

2082. DOLICHOS UNGUICULATUS.**Bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Black-eyed bird's-foot." Much grown in Italy, where there are many varieties. "An annual, 20 to 24 inches high, with dark-green, smooth leaves. Flowers large, from white to rose or lilac, with a darker spot at the base of the petals, in twos or threes; pods pale green, straight or curved, 6 to 10 inches long, nearly cylindrical; seeds rather few, kidney-shaped, wrinkled, white, with a black blotch at the eye. It withstands dry hot weather and grows on almost any soils. Edible-podded." (*Vilmorin.*)

2083. DOLICHOS LABLAB.**Lablab bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Stringless." Probably very important for warm climates to replace the common snap beans in summer. "A very productive and excellent sort for hot countries. Grown like pole beans or on espalier. Its large pods are eaten with the beans before they are full grown." (*Vilmorin.*)

2084 to 2090. LACTUCA SATIVA.**Lettuce.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

These varieties of lettuce were imported for the use of the Division of Vegetable Physiology and Pathology, and no seeds will be distributed until the extensive tests made by that division have been concluded. If any of these forms are worthy of further and more extensive trial, additional quantities of seed may be imported. The varieties are as follows:

- 2084. Brown Batavian.
- 2085. Broccoli Roscoff (very early).
- 2086. Madrilene.
- 2087. Maltese.
- 2088. Tremont Winter.
- 2089. Large winter yellow.
- 2090. Green winter Cos. (See No. 2281.)

2091. LAVANDULA ANGUSTIFOLIA.**Lavender.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Important in the perfumery industry. This is a hardy shrub, 2 to 4 feet high, with ascending angled branches, narrow gray leaves, and compact spikes of light-blue flowers. The essential oil, used in perfumery, is distilled from the flowers. Lavender thrives best where there is a mild, moist climate and a calcareous soil. It should be planted in autumn. From 35 to 50 pounds of oil may be obtained from an acre. The plants are check-rowed 8 to 10 feet apart.

2092. LAVANDULA SPICA.**Spike lavender.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Grows on lowlands. Perfume much less valuable than that of *L. angustifolia* (No. 2091); oil used for mixing artists' paints and in veterinary practice.

2093. LENS ESCULENTA.**Lentil.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Extra large yellow." Much grown in central France. (See No. 2094.)

2094. LENS ESCULENTA.**Lentil.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Puy green." Used both for green forage and for food. Grown in France. An annual legume, native to and widely cultivated in Europe for both food and forage. Lentils may be grown in the South as a winter soil cover and green manure crop. The seed should be sown in August or September, broadcast, at the rate of from 100 to 150 pounds per acre. The crop may be cut for hay when in full bloom, or it may be grown for seed. There are perhaps twenty varieties in Europe, differing

in the color and size of the seeds and in the adaptability of the plant to varying soils and condition. The feeding value of lentil forage is about equal to that of red clover. It should be tried wherever crimson clover succeeds.

2095. CUCUMIS MELO.**Winter muskmelon.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Olive d'hiver." "These melons are kept all the winter, and are very common in Europe. Have not seen them in America." (*W. T. Swingle.*)

2096. CUCUMIS MELO.**Cantaloupe.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Algerian." Highly recommended. "A rather dense-growing plant with numerous short branches. Leaves dark green, slightly cut, and very much folded at the edges, which gives them the appearance of being five-lobed and almost funnel-shaped. Fruit slightly elongated, sometimes spherical, bearing roundish warts or scabs, which, together with the bottoms of the furrows, are of a very dark-green, almost black color, contrasting strongly with the light silvery hue of the other parts of the ribs. The dark-green parts finally change to an orange color, but this is not fully developed until the fruit is overripe, so that it should be gathered before the change takes place. The length of the fruit varies from 6 to 10 inches and the diameter from 5 to 8 inches. The flesh is thick, juicy, perfumed, and always sweet. It ripens half late; only one or two fruits on each plant. One of the most hardy summer melons, perhaps surpassing all others in uniformly good quality." (*Vilmorin.*)

2097. CUCUMIS MELO.**Cantaloupe.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Early black rock." Early; easily cultivated. "Fruit nearly spherical, but slightly flattened at the ends, with ribs clearly but not deeply marked; skin usually smooth and without warts, very deep green, almost black, turning orange when ripe. The flesh is orange colored, thick, sweet, perfumed, of excellent quality. The melons are 5 to 6 inches long and 6 to 7 inches through. A plant may carry two melons for the general crop. One of the best and most easily grown of the early melons." (*Vilmorin.*)

2098. CUCUMIS MELO.**Cantaloupe.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Prescott fond blanc de Paris or Large Paris white Prescott." The most generally cultivated variety about Paris; said to be very good; attains a large size. "A vigorous grower. Fruit large, very much flattened at the ends; ribs broad, much wrinkled, covered with knobs and protuberances of all shapes, and irregularly variegated with dark and pale green on a whitish ground. The ribs are separated by very deep, narrow furrows. Flesh orange, very thick, exceedingly fine-flavored, juicy, and melting. The fruit is only 5 or 6 inches long, but is 6 to 12 inches thick. A plant is generally allowed to carry only one melon, or rarely, two." (*Vilmorin.*) Very good quality. "I saw small plants of 'Prescott fond blanc melon' yesterday. They were growing in hotbeds, afterwards to be transplanted to cold frames, two to a square yard, each plant being allowed to bear only one melon. These will ripen at some time in May, and may sell as high as \$6 each in Paris, and I am told that the average price to the market gardener for forced melons is about \$2.50. I think we should seriously consider this industry of melon forcing, since the amount of manual labor required is very small and Americans are very fond of good melons. I believe there is a special variety of the 'Prescott' for forcing. The melons are about 4 to 6 inches in diameter. The slices are said to be sold in the restaurants for from 40 to 60 cents each."

2099. CUCUMIS MELO.**Cantaloupe.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Prescott early frame." Very early; good for forcing. "Fruit spherical or slightly flattened at the ends, with the ribs marked, faintly warty, marbled with dark green on a pale green ground, and with the bottom of the furrows a uniform olive green. Flesh orange, thick, juicy, melting. Melons 4 to 6 inches in diameter. A plant should carry only one fruit for the early crop, and two for the general crop.

This variety is a remarkably early one, and its quality is almost invariably excellent. This and the early black rock melon are the best two kinds for forcing under frames." (*Vilmorin.*)

2100. CUCUMIS MELO.**Cantaloupe.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Vanriac." An improved variety of "Preseott fond blanc." "A splendid variety, almost round in shape, very regularly ribbed, with a rough silvery gray skin. The flesh is a deep, rich orange color, of exquisite texture, deliciously flavored, thick, sweet, and melting. It is a vigorous grower and very prolific." (*Vilmorin.*)

2101. CUCUMIS MELO.**Cantaloupe.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Sugar cantaloupe." One of the best for field culture. "Fruit nearly spherical or flattened at the ends, with ribs not very strongly marked, of a uniform silver-gray color. Flesh orange, very thick, sweet, juicy, and perfumed; skin remarkably thin. Fruit 5 or 6 inches in diameter." (*Vilmorin.*)

2102. MENTHA.**Japanese mint.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A new variety for trial in Michigan.

2103. SOLANUM NIGRUM.**Nightshade.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Isle of France." An improved variety, said to be eaten in hot countries like spinach. "Native of Europe. Annual. A well-known wild plant, generally regarded as a weed, growing most usually near dwelling houses and in cultivated ground. It has an erect branching stem from 1½ to about 2½ feet long, with simple, broad, oval leaves, often wavy at the edges. Flowers white, star-shaped, growing in small axillary clusters and succeeded by round berries, about the size of a pea, of a black or, rarely, amber-yellow color, and filled with a greenish pulp mixed with very small lenticular seeds of a pale yellow color. The kind which is cultivated in the Isle of France under the name of *Bède* does not differ botanically from the common kind, but is more vigorous growing and larger in all its parts. The seed is sown where the plants are to stand, in April, in beds or, preferably, in drills 12 to 14 inches apart. After being thinned out the plants require no further attention, and are quite proof against dry weather. The leaves, however, are more tender and more plentifully produced if the plants are occasionally well watered when they appear to need it." (*Vilmorin.*) The green berries are usually considered to be poisonous.

2104. BRASSICA CAMPESTRIS.**Chinese mustard.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Chinese curled." Eaten like spinach; good for warm countries. This sort may be used for garnishing. An oil is extracted from the seeds in China and India. This is *Sinapis pekinensis* of the gardeners.

2105. BRASSICA NAPUS.**Turnip.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Frenense." "Root entirely sunk in the ground, spindle-shaped, grayish white, wrinkled, with numerous rootlets, narrowing from the neck like a salsify root, 5 or 6 inches long, 1½ inches in diameter at the neck. Flesh white, dry, sugary, and very firm. Leaves small, short, very much divided, dark green, forming a rosette which lies flat on the ground. It succeeds best in rather poor, gravelly soils. It is the most highly esteemed of the dry-fleshed turnips."

2106. BRASSICA NAPUS.**Turnip.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Half-long white forcing." Useful for forcing under glass.

2107. BRASSICA NAPUS.**Turnip.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Long white Vestus, or Jersey." The principal variety grown by market gardeners in France. "Root white, nearly cylindrical, but swollen at the lower end, 5 or 6 inches long and 2 inches in diameter in the thickest part. Flesh white, very tender, and sugary." (*Vilmorin.*)

2108. BRASSICA NAPUS.**Turnip.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Red-top Viarmes." White, with red collar; good flavor; good for field culture late in season.

2109. BRASSICA NAPUS.**Turnip.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Long red Tankard." Used for feeding cattle. The root grows 12 to 14 inches long and 3 inches in diameter, and projects one-third its length above the soil. The upper portion is violet red.

2110. BRASSICA NAPUS.**Turnip.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Large white globe, purple top." Used for feeding cattle.

2111. NIGELLA DAMASCENA.**Fennel flower.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Yellow-seeded." The peppery seeds are used for seasoning; much grown in Egypt. An annual garden herb. "Plant upright, red tinted, and branching. Leaves grayish green, divided into numerous linear segments. Flowers terminal, pale blue. Sow in spring in a warm exposure. The seed matures during the month of August and is used for seasoning. Will grow in warm countries only." (*Vilmorin.*)

2112. ALLIUM CEPA.**Onion.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Yellow Trébons." A Spanish onion, which should be tried in the South. Mild flavor. "Bulb more or less elongated, tapering at both ends. The inner coverings are yellow while the outside ones are copper color. Foliage abundant and fine, of a deep green color. Flesh tender, sweet, and of an agreeable flavor." (*Vilmorin.*)

2113. ALLIUM CEPA.**Onion.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Rose Bonmegarde." Remarkably good keeper.

2114. ALLIUM CEPA.**Onion.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Round red Toulouse." Recommended by Vilmorin.

2115. ALLIUM CEPA.**Onion.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dark-red August." Sown in August and transplanted in October, it yields the following summer. Grown in southeastern France. Try in the South.

2116. ALLIUM CEPA.**Onion.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Egyptian Rocambole." "Top onion, producing sets on the tops of stems. The flesh is sweet but not well flavored. The onions themselves decay quickly, but the sets are easily kept over winter." (*Vilmorin.*)

2117. CRITHMUM MARITIMUM.**Sapphire.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Grows naturally along rocky seacoasts. The leaves are pickled and cooked in Scotland and Ireland. They are succulent and have a spicy flavor.

2118. BRASSICA CAMPESTRIS.**Chinese cabbage.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Petsai improved." Should be sown in autumn in the South for use during the winter. (See No. 2877.) This is the *Brassica chinensis* of gardeners. It is an annual, with the lower leaves oblong, entire, obtuse, glabrous; stem leaves lance-shaped, clasping. It has the habit of chard, which it somewhat resembles in appearance. The leaves are cooked and eaten like the ordinary cabbage. It is much grown about San Francisco by the Chinese.

2119. TARAXACUM DENS-LEONIS.**Dandelion.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Improved giant." Said to be very different from other varieties; leaves upright. Used for greens. The seed should be sown in March or April in beds, and thinned or transplanted to 15 or 16 inches apart. They commence to yield in autumn and supply cuttings of leaves all winter. The plants may be blanched and the leaves used in salads.

2120. PISUM SATIVUM.**Sugar peas.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Edible-podded." Very early; has large pods. The pods of this variety do not have the customary hard, tough, membranous lining of the ordinary sorts. They remain soft and tender, and may be eaten entire.

2121. PISUM SATIVUM.**Sugar peas.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Dwarf Debarbieux." Said to be a valuable bush variety of good quality. An edible-podded pea.

2122. PORTULACA OLERACEA.**Purslane.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Green." An improved variety of purslane for greens and salad. This is the wild plant developed and increased in size by continuous cultivation of selected large-leaved specimens. Its stems grow upright instead of sprawling on the ground.

2123. PORTULACA OLERACEA.**Purslane.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Golden." An improved variety of purslane for salads. Easily recognized by its yellowish leaves. It is eaten cooked like spinach.

2124. PORTULACA OLERACEA.**Purslane.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Large-leaved Golden." "This variety is easily distinguished by the size of the leaves, which are crowded on the stem and are at least twice as large as those of the green purslane or the ordinary golden. The growth is a little less rapid, but the yield is equally large, the plants being stocky and thick set." (*Vilmorin*.) Care should be taken in distributing all these purslanes to warn cultivators that they may become bad weeds. (See No. 2123.)

2125. CYPERUS ESCULENTUS.**Chufa.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Mr. Swingle thinks this should be tested as a nut food. According to L. H. Dewey it is "the worst weed in the truck gardens from New Jersey to Virginia." The

tubers produced by this sedge are much used by the Spaniards for "Chufa," an orgeat made by soaking 28 hours, mashing, then adding four times as much water and half as much sugar to the paste, which is then passed through a sieve and served as a sirup, or used for ices. Old tubers are used for chufa and not those just harvested.

2126. DELPHINIUM STAPHYSAGRIA. Stavesacre.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A large larkspur with racemes of blue-violet flowers, native of the Mediterranean region. The very poisonous seeds are used in making ointments for destroying vermin on man and beast, and the tincture is used for neuralgia and rheumatism.

2127. LYCOPERSICUM RACEMIGERUM. Currant tomato.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Has numerous racemes of round fruits of a bright, scarlet-red color.

2128. SOLANUM SEAFORTHIANUM. Solanum.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An annual, ornamental climber, with lilac or violet flowers, produced in great abundance during the whole summer. A plant of the highest merit for trellises and arbors, or for covering walls. Recommended for the South.

2129. NIGELLA AROMATICA. Fennel flower.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Black seeded. (See No. 2111.)

2130. LYCOPERSICUM ROSERIGERUM. Cherry tomato.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Tomate en chaplet." This and No. 2127 should be used in hybridizing to produce new races of currant tomatoes.

2131 to 2138. ORYZA SATIVA. Rice.

From Italy. Received through Mr. W. T. Swingle, February 13, 1899.

The Italian rices, especially those from Padua, command very good prices in the world's markets. They should be carefully tried in the South in comparison with the best American varieties. The varieties in the collection, all from Piedmont, Italy, are as follows:

2131. "Very early Bertone."

2132. "Francone."

2133. "Java."

2134. "Nostrano."

2135. "Novarese" or "d'Ostiglia."

2136. "Peruviano."

2137. "Pugliese."

2138. "Vilquarterio" or "Morozzi."

2139. CICER ARIETINUM. Garbanzo.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

This plant, long known in English botanical literature as chickpea, a corruption of the French "*Pois chiche*," has recently been advertised in this country under the misleading name "Idaho Pea." In all Spanish countries it is a common table vegetable known as "*garbanzo*." As this name is prevalent in California and the Southwest, as well as in Puerto Rico, it seems best to adopt it for general use. In British India the name "gram" is also applied to the same plant.

A valuable plant for warm countries, resistant to drought; sow in early spring; not only useful for cattle food, but very good eating peas, tasting much like white beans, and also making excellent soup. Should be soaked at least 12 hours before being cooked, or the pea will be hard in the center.

This plant is a branching annual, with many upright stems from the same root. The leaves resemble those of the vetch, having 7 pairs of small leaflets. These are oblong, soft-hairy all over, $\frac{1}{2}$ inch long or less, and sharply toothed on the margins. The flowers are borne singly in the axils of the leaves on short stalks about $\frac{1}{2}$ inch long. The pods are bladderly, inflated, from $\frac{1}{2}$ to $\frac{3}{4}$ inch long, and finely pubescent with glandular hairs. Each pod contains one, or very rarely two, large seeds, which are wrinkled and bear a fanciful resemblance to a ram's head, whence the Latin name *arietinum*. The seeds are a little larger than those of the common garden pea, to which they are quite similar.

The "Idaho" pea was cultivated at the Colorado Experiment Station in 1895 and 1896. Professor Cooke states that "it has demonstrated its ability to make a large growth with plenty of water and a fair growth with a very limited supply. It belongs to the pea family, and is grown in rows 30 inches apart, the plants 6 to 12 inches apart in the rows. Its growth indicates that it can be raised for about 1 cent per pound."

About 30 to 50 pounds of seed are used per acre, depending upon whether it is sown in drills or broadcast. In India the largest acreage is in the northwest provinces, where the soils are similar to those in the States west of the one hundredth meridian, and the climate is much like that of New Mexico and Arizona. All authorities agree that it is better suited to arid and semiarid regions than to humid ones, the crop apparently requiring a great many sunny days during its season of growth. Better results are secured in growing it with irrigation than without, although it makes a fair yield on comparatively dry soils.

The seed should be sown not earlier than May 15, or at the higher altitudes about the 1st of June, and, if some of the short-season varieties are procured, there will be less danger of their being caught by early frosts. It might prove of some value in parts of the Southern States as a winter crop and soil cover on lands which are unsuited to the vetches and crimson clover.

The average analyses of the seeds show that they contain 20.5 per cent crude protein, 3.9 per cent fat, and 59.4 per cent carbohydrates, having approximately the composition of the seeds of the field pea commonly grown in the Northern States.

Digestion experiments have not been made with them, but their fattening qualities in use show them to be fully as valuable as the seeds of many of the other legumes.

The leaves of the gram are viscid with a secretion which contains oxalic, acetic, and malic acids, the first of these predominating. In India the secretion is collected by means of cloths spread over the plant at night and wrung out in the morning when wet with dew. The solution thus obtained is used in the preparation of cooling drinks, and also finds sale as a vinegar. The forage is said to be actually poisonous to horses on account of the excess of oxalic acid in the leaves. Cattle eat it, but it often proves injurious to them, although to a less extent than to horses. However, this crop is not ordinarily grown as a forage crop, but for the seeds, and the seeds alone are used in India for feeding purposes.

Reports of this pea grown in the Rocky Mountain regions mentioned yields estimated at the rate of 90 bushels to the acre, but this is very unusual. The average crop in India is about 10 bushels to the acre, and the highest yields do not exceed 25 bushels, the latter only when grown on the best soils under the most favorable conditions.

2140-2150. LINUM USITATISSIMUM.

Flax.

From France and Russia. Received through Mr. W. T. Swingle, February 13, 1899. The following varieties of flax were sent:

2140. "Common French flax."

2141. "Large-seeded flax." A race of flax having particularly large seeds, grown as a winter flax for oil in Southern France, Sicily, and Algeria.

2142. "White-flowered." A spring flax, said not to degenerate in France, vigorous, easily grown, yields abundantly a fiber of ordinary quality esteemed for machine spinning. Seed is ripe when fiber is mature. A large variety, should be sown thinner than other sorts.

2143. "True Riga flax." The standard Russian fiber flax; seed from Russia.

2144. "French one-year Riga." Riga flax is said to be improved by being grown one season in France; it degenerates later.

2145. "Pskoff." A superior form of Riga flax. Seed grown in France.

2146. "Improved Russian Pskoff." A spring flax. A variety of Riga flax, but higher, having finer fiber and not degenerating in France, as does the Riga. Vilmorin recommends this as the best variety for France. Seed from Russia.

2147. "French-grown Royal." See No. 2148.
 2148. "Russian Improved Royal." A spring flax, like Riga flax, but maturing seed without noticeable deterioration of the fiber, which is fine and silky and is employed in Belgium for the finest fabrics. Rather late, white-flowered. Seed from Russia.
 2149. "Yellow-seeded flax." A North American variety, grown also in Ireland. Yields more fiber and seed than No. 2140, and produces a paler oil.
 2150. "Winter flax." "This variety is the best for seed, but its fiber is of inferior quality. It is rather tender in the north of France. It may be sown in spring also." (*Vilmorin.*)

2151. PINUS PINEA FRAGILIS. Stone pine.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Thin-shelled piñons are produced by this variety.

2152. SYMPHYTUM ASPERRIMUM. Prickly comfrey.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A coarse, rank-growing, perennial herb, with purple flowers in nodding, one-sided clusters, and large, rough leaves. It is a native of the Caucasus. It has been extensively tried in this country. Although it will produce a great bulk of forage on rich or swampy soils its cultivation is not recommended. Prickly comfrey does not compare with the clovers, alfalfa, or cowpeas in feeding value, and where the latter can be grown it is not advisable to plant it.

It is propagated from the roots. These are set out in rows $1\frac{1}{2}$ to 2 feet apart, the plants 16 to 20 inches apart in the row. At first of slow growth, prickly comfrey will in the course of two years yield from 3 to 6 tons of cured forage per acre. It has been recommended for waste, swampy lands in Florida.

2153. CYTISUS PROLIFERUS ALBUS. Tagasaste.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A shrubby, perennial legume with silvery gray leaves. It is a native of the Canary Islands, and has been recommended as a forage plant for hot and dry regions. It has proved successful in Algeria and South Australia. The seeds should be soaked 24 hours in warm water to aid germination. They are then planted rather thickly in a seed bed, where they should remain a year to get well rooted. The 1-year-old trees are transplanted to the field where they are to remain, being set in rows 6 to 8 feet apart, and are cultivated until they are 2 or 3 feet high. At the end of 3 years cattle or sheep may be turned into the field, and the tagasaste will require no further treatment except to be topped 5 or 6 feet from the ground to prevent it growing too tall. The leaves and twigs are nutritious. Cattle and sheep are said to fatten rapidly upon it. When once firmly established tagasaste will withstand any amount of drought, and for that reason might be profitably introduced into the arid Southwest.

2154. TRIGONELLA FOENUM-GRÆCUM. Fenugreek.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An annual legume, highly esteemed in Algeria as forage for fattening cattle. It has a rank, characteristic odor, which prevents its use for milch cows because of the odor and flavor given to the milk. Under irrigation fenugreek grows 2 to 3 feet high. The seeds are used in condition powders. The seed is sown in autumn or early spring at the rate of 15 to 20 pounds per acre, and the crop is ready to cut when the flowers appear. For trial in the Southwest.

2155. LATHYRUS SATIVUS. Bitter vetch.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A native of middle and southern Europe, which is adapted to cultivation in warm climates. The fodder is superior to that of vetches, but the yield is less. In India it is grown as a winter crop, often on heavy, clayey soils which will grow no other legume. Great caution must be used in feeding the seeds of this plant, as they are said to contain an alkaloid which is poisonous to domestic animals and to man. It is much cultivated in the Mediterranean regions.

2156. GLYCINE HISPIDA.**Soy bean.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Yellow Etampes." The soy bean requires about the same soils and climatic conditions as indian corn. It should be planted in late spring or early summer, after the ground is warm. In general the early varieties are best to grow for seed and the late ones for forage. Seed is sown broadcast or in drills at the rate of from 2 to 4 pecks per acre. The crop grows rapidly and does not require much cultivation except to keep down weeds. One hundred pounds of soy bean hay contain 88.7 pounds of dry matter. Of the 51 pounds digestible there are 10.8 pounds of crude protein. The ripe soy bean seeds contain 34 per cent of protein, 17 of fat, and 33.8 of carbohydrates. In 100 pounds of seeds there are 66.8 pounds of digestible food.

2157. SPERGULA MAXIMA.**Giant spurry.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Giant spurry." An annual forage plant producing a low, tangled mass of succulent stems with numerous narrow leaves. It is an excellent catch crop in short seasons. It has been recommended for sowing over the ranges in southern California, and as a first crop on the pine barrens of Michigan. Twenty to 30 pounds of seed is enough to sow per acre, as the seed is very small. It is considered fine feed for cattle and sheep, though the amount produced is not very large.

2158. SECALE CEREALE.**Rye.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"De Mars ordinaire." Three months' rye. A very distinct variety. The earliest of the spring sorts. Grain small.

2159. ROBINIA PSEUDACACIA.**Locust.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

2160. PYRUS ARIA.**Beam tree.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Known also as "Whitebeam." A small, deciduous tree, a native of Europe, bearing red fruits, edible when very ripe. "As an ornamental tree the whitebeam has some valuable properties. It is of moderate size, and of a definite shape; and in summer, when clothed with leaves, it forms a compact green mass, till it is ruffled by the wind, when it suddenly assumes a mealy whiteness. When the tree is covered with fruit it is exceedingly ornamental." (*Loudon.*)

2161. PYRUS ARIA LATIFOLIA.**Beam tree.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Allouchier de Fontainebleau." A variety of the beam tree with thick, rounded leaves, white beneath, and brick-red fruits.

2162. PYRUS TORMINALIS.**Wild service tree.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Of possible value for plant breeders. A tree 40 to 50 feet high, native of northern Europe and western Asia. It has simple, lobed leaves, and bears small fruits, sometimes eaten when in a state of incipient decay like medlars. "As an ornamental tree its large green buds strongly recommend it in winter time, as do its fine large-lobed leaves in summer and its large and numerous clusters of rich brown fruit in autumn." (*Loudon.*)

2163. AMELANCHIER VULGARIS.**Amelanchier.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A shrub or small tree, native of southern Europe. The fruits are edible.

2164. CAPPARIS SPINOSA.**Caper.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The pickled flower buds are known as capers. The plant is a shrubby, trailing perennial, with handsome flowers. It is extremely drought resistant and withstands some frost. A profitable industry might be developed in sheltered valleys in southern New Mexico, Arizona, and California, where the conditions as to soil and climate approach those of the Mediterranean countries, where capers are grown commercially. The shrubs commence to bear in five years from seed or in two years from suckers. About 2,000 plants are set per acre. Full-grown bushes may be 6 feet high and bear 12 to 15 pounds of capers, which are worth, when pickled, from 10 to 15 cents per pound wholesale in France. The principal obstacle to the successful culture of capers in the Southwest is the high price of labor, it being necessary to pick the buds by hand. It has been suggested as a suitable shrub for planting on deforested semiarid mountain slopes.

2165. LONICERA CAPRIFOLIUM.**Honeysuckle.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An ornamental, hardy vine, with sweet, glutinous berries, which might perhaps be improved by selection or crossing. The upper leaves are cup-shaped, being united around the stem.

2166. ZANTHOXYLUM AMERICANUM.**Prickly ash.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small tree, native in northeastern United States. The bark is used in medicine.

2167. CORNUS MAS.**Cornelian cherry.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small tree, 10 to 20 feet high, with edible fruits suitable for jellies and preserves; hardy. The wood is hard, flexible, tough, and exceedingly durable, and is much used in Germany for the handles of forks, hoes, and other agricultural implements.

2168. COTONEASTER INTEGERRIMA.**Cotoneaster.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An ornamental shrub with bright-red berries; from Europe.

2169. ARALIA MANDSCHURICA.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A low shrub, native of northern China, valuable for ornamental landscape work; hardy.

2170. CRATAEGUS OXYACANTHA.**White thorn.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The hawthorn is to be found on dry soils in Europe, northern Africa, and western Asia. It varies greatly with soil and climate. The flowers are generally white and fragrant, but vary in color, some being tinged with red, or, in cultivated varieties, a full pink or crimson. The fruit is edible. Most of the varieties blossom in the month of May.

2171. CRATAEGUS AZAROLUS.**Azarole.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A deciduous tree, 20 to 30 feet high, a native of the Mediterranean regions. It bears small fruits, ripening early in autumn, which are much prized in southern France, both for eating fresh because of their pleasant acidity, and for making preserves and jellies. For preserving they are picked before completely ripe. They appear in the Marseilles markets early in September and remain until into October. The improved varieties (see Nos. 2547 and 2548) are propagated by grafting on hawthorn, pear, or more rarely on seedling azaroles.

2172. JUNIPERUS OXYCEDRUS. Juniper.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

2173. ILEX INTEGRA. Holly.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A hardy Japanese ornamental shrub.

2174. LAGERSTROEMIA INDICA. Crape myrtle.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Mixed varieties. A shrub 6 to 8 feet high, with beautiful pink flowers. It is hardy as far north as St. Louis, Mo. Very ornamental. Originally from China.

2175. LARIX SIBIRICA. Larch.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A straighter and more rapidly growing species than the European larch. It also leaves out earlier and loses its leaves sooner in autumn. "Siberian larch."

2176. CELTIS AUSTRALIS. Nettle tree.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A hardy European shade tree, growing from 25 to 40 feet high. The small fruits, resembling withered cherries, are edible after frost. Grown in southern France for whip and tool handles.

2177. VACCINIUM MYRTILLUS. Whortleberry.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A low, erect shrub, with angular branches and deciduous, bright-green leaves. The globular, pink, waxy flowers are followed by blue-black berries. These are much used in Europe for preserves and for coloring wine.

2178. VACCINIUM VITIS-IDAEA. Cowberry.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A low evergreen plant, with short, creeping stems and bright-red edible berries. These are often sold in England as cranberries. It grows in cold woods and bogs.

2179. RHAMNUS FRANGULA. Alder buckthorn.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An European hardy tree or shrub. The wood is largely used for charcoal for the manufacture of gunpowder. A cathartic drug and a yellow dye are extracted from the bark.

2180. RHAMNUS INFECTORIA. Yellow berry.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small tree or shrub, native from Persia to Asia Minor. The unripe fruits form the Persian berries, or yellow berries of commerce. A yellow dye extracted from them is largely used in printing calicoes and cotton goods.

2181. RHAMNUS ALPINA. Buckthorn.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Alpine buckthorn." "Forests of the Alps. A shrub 10 feet high, remarkably beautiful, erect, much branched. Leaves alternate, oval, crenulate, glabrous, and wrinkled, of a brilliant deep-green color." (*Nouveau Jardinier*.)

2182. PALIURUS ACULEATUS.**Christ's thorn.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A half-hardy, thorny, deciduous rhannaceous shrub or low tree, 15 to 30 feet high, bearing curious buckler-shaped fruits. "On both shores of the Mediterranean it grows to about the same height as the common hawthorn, on rocky sterile places. In many parts of Italy hedges are formed of this plant." (*Loudon.*)

2183. PHOTINIA GLABRA.**Chinese hawthorn.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small tree with shining evergreen leaves and beautiful clusters of flowers appearing in spring. From China and Japan; closely related to the loquat or Japanese medlar.

2184. DIOSPYROS LOTUS.**Date plum.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The best stocks for grafting Japanese persimmons. The roots are horizontal instead of vertical as in *Diospyros virginica*, thus facilitating the transplanting of the young trees.

2185. PISTACIA TEREBINTHUS.**Terebint**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small deciduous tree native to southwestern Asia. The fragrant Cyprian or Chios turpentine exudes from wounds in the bark. This resin is utilized in the manufacture of a chewing gum used by Turkish ladies.

2186. PLATANUS ORIENTALIS.**Plane tree.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

This is one of the best of the deciduous shade trees for city use, because of its beauty, longevity, and resistance to smoke, gas, etc. The trees often reach 90 or 100 feet in height. Hardy in St. Louis, Mo., and Washington, D. C.

2187. ABIES CEPHALONICA.**Fir.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A Grecian fir growing 40 to 60 feet high, much resembling the silver fir. "It is a fine ornamental species of rather rapid growth and of beautiful and regular habit. It sometimes suffers from spring frosts because of its precocious growth." (*Bon Jardinier.*)

2188. ABIES PINSAPO BABORIENSIS.**Fir.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A hardy new variety from the mountains of North Africa.

2189. RHUS SUCCEDANEA.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small ornamental tree or shrub, furnishing "Japan wax."

2190. THUYA ORIENTALIS.**Arbor vitae.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Chinese arbor vitae." For hedges and arbors.

2191. LIGUSTRUM LUCIDUM.**Privet.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A Japanese hedge plant or ornamental shrub with leathery evergreen leaves, larger than those of the European privet.

2192. VIBURNUM TINUS. Laurestine.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

An ornamental shrub; originally from Corsica, where it forms dense woods. The leaves are evergreen. The pretty pink flowers appear in winter, and are followed by dark blue berries. Very ornamental. For the South.

2193. XANTHOCERAS SORBIFOLIA.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A low-growing, deciduous tree from the mountains of northern China. For landscape gardening. Hardy. It has leaves like the mountain ash and terminal racemes of large white flowers with a yellow eye, changing to red brown.

2194. ZIZYPHUS SATIVA. Jujube.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small tree, native of Asia Minor, with edible fruits of a beautiful red color and of the size of a large olive. The pulp, which surrounds the single seed, is yellowish white, is sweet, and has a vinous flavor. It is mostly dried and used in making sirups, pastes, tablettes, etc., used as a pectoral. The tree, belonging to the family khaianaceæ, is of rather slow growth and somewhat tender. It requires much light and heat, but resists drought. It should be tried in California and Arizona. There are several varieties propagated by suckers. (See No. 2554.)

2195. STACHYS SIEBOLDI. Stachys.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Chinese artichoke." The most important of the new vegetables introduced by Paillieux from China. I find them very good and think they will find favor in America for much the same uses as new potatoes.

This is a perennial herb with simple or branched four-sided stems, 12 to 16 inches high. The leaves are opposite, lance-shaped, cordate at the base, crinkled, and rough; and the flowers are borne in whorls of 4 to 6 on the upper part of the stems. The tubers are borne on the roots in the same manner as potatoes. They resemble a string of coarse beads closely crowded together and flattened at their ends. When prepared according to French methods the tubers are cooked from 12 to 15 minutes. If boiled for a longer time they soften and become watery. They are served with sauces like broad beans, and are said to possess a delicious and delicate flavor. They may be fried or cooked in a variety of ways, or may be used in salads, alone or with other vegetables. They also make fine pickles with onions, peppers, and gherkins.

The plant is hardy, resisting severe cold. It is propagated from the tubers. These are set out in rows in a rich, loamy clay soil very early in spring, about potato-planting time. They are covered to the depth of 6 or 8 inches in hills 16 inches apart. The weeds are kept down during the summer, but the ground must not be stirred after the 1st of October, so as not to disturb the new tubers which are forming about that time. They will be ready to dig in November, and should be stored in dry soil at a uniform temperature and protected from the air to prevent discoloration. In France yields of 5 or 6 tons of Stachys tubers per acre are often obtained. The Stachys is a lover of moist, cool situations and does not thrive where exposed to great heat.

According to Professor Johnson, as quoted in Garden and Forest (10, p. 70), the tubers contain "eight times as much nitrogen as a potato of the same weight and a large quantity of a carbohydrate called galactin, which is more digestible than starch, being allied to dextrin, and therefore more easily converted into sugar. For this reason the tubers of this plant would be especially useful for invalids and persons of delicate digestion, since they bear the same relation to the substance of the potato that peptonized foods do to ordinary meats.

2196. TRAPA NATANS. Water chestnut.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Should be tried in swamps. An annual aquatic floating on the surface of ponds. It produces large nuts with an edible kernel. Native to middle and southern Europe.

2197. AGARICUS CAMPESTRIS. Mushroom spawn.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

2198. DIOSCOREA BATATAS.**Yam.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The great objection to this plant is the difficulty of harvesting the roots, which are quite long and largest in diameter at the lower end. For trial in the South. Cultivate like sweet potatoes.

2199. DIOSCOREA BATATAS.**Yam.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

Bulbills. These are produced at the bases of the leaves and in two years produce large yams. (See No. 2198.)

2200. OXALIS CRENATA.**Oca.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The white variety, said to have been derived from the yellow by selection, but scarcely equal to it in vigor, though considered more desirable by some on account of being less acid.

The oca of western South America, which is there much appreciated, but so far not liked in Europe. Try in the South.

“Perennial, but cultivated as an annual. Stem fleshy, reddish, prostrate, bearing very numerous leaves, composed of three roundish-triangular thickish leaflets; flowers axillary, with five yellow petals striped with purple at the base; tubers swollen, elongated ovoid, marked with hollows and protuberances (like some kinds of potatoes, especially the Vitelotte variety), and narrowed at the end which joins the stem; skin very smooth, and of a yellowish white or red color.

“*Culture.*—The oca plant is easily propagated from the tubers, which are planted in May, in light rich soil, in rows which should not be less than 3 feet apart, on account of the spreading growth of the stems of the plant. As it continues to grow for a long time and is very sensitive to cold, it is better, if possible, to start the tubers in a hotbed in March and plant them out in May, at which time they will be pretty forward. As the stems lengthen they should be covered with light soil or compost in order to promote the formation of new tubers, taking care to leave 6 or 8 inches of the end of the stem uncovered. The tubers do not commence to swell until rather late in the season, and are not gathered until the ends of the stems have been killed by frosty weather.

“*Uses.*—The tubers are highly esteemed in Peru and Bolivia, where they are used in great quantities. When they have been recently gathered they have a very acid and therefore not very agreeable taste. The people of South America get rid of this acidity by putting them into woolen bags and exposing them to the action of the sun, the effect of which is that in a few days they become floury and sweet. If they are kept thus exposed for several weeks, they dry up, become wrinkled, and acquire a flavor which somewhat resembles that of dried figs. In this condition they are known by the name ‘*Cauí*.’ In addition to the tubers the leaves and young shoots may be eaten as salad or as sorrel.” (*Vilmorin.*)

2201. OXALIS CRENATA.**Oca.**

Yellow variety.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

(See No. 2200.)

2202. OXALIS CRENATA.**Oca.**

Red variety.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

(See No. 2200.)

2203. PRUNUS PADUS.**Bird cherry.**

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small hardy deciduous tree. The fruit is small and of little value. A native of northern Asia.

2204. PRUNUS LUSITANICA. Laurel cherry.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A small tree from Spain and the Canary Islands. Said to be one of the best hardy evergreens for landscape gardening.

2205. CASTANEA SATIVA. Spanish chestnut.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The European chestnut is larger than the American. The better varieties are propagated by grafting or budding.

2206. QUERCUS CERRIS. Bitter oak.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A quick-growing hardy European oak. The wood is hard, takes a good polish, and is very strong and durable.

2207. LAURUS NOBILIS. Laurel.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

The fragrant leaves of this small tree are used in the manufacture of condiments and for packing figs. A native of Asia Minor.

2208. PERSEA INDICA.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

A laurel-like tree, native in the Canary Islands.

2209. CORYLUS AVELLANA MAXIMA. Filbert.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"De Provence." This and the following two numbers were secured merely for samples.

2210. CORYLUS AVELLANA MAXIMA. Filbert.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"De Sicile."

2211. CORYLUS AVELLANA MAXIMA. Filbert.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"De Piedmont."

2212. CORYLUS COLURNA. Hazelnut.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"A pyramidal tree, 40 to 60 feet high, with large shiny leaves, velvety beneath. It has small flattened fruits inclosed in large involucre, divided into long and contorted segments." (*Bon Jardinier.*) This large tree is grown in Europe for ornament; it should also be tried as a stock for filberts.

2213. JUGLANS REGIA. English walnut.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

2214. JUGLANS REGIA. Walnut.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Praeparturiens."

2215. JUGLANS REGIA. Walnut.

From France. Received through Mr. W. T. Swingle, February 13, 1899.

"Tardif de la Saint-Jean."

- 2216. CHAMAEROPS HUMILIS. Palm.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 (See No. 1932.)
- 2217. CHAMAEROPS HUMILIS ARGENTEA. Palm.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 (See No. 1932.)
- 2218. DIPLOTHEMIUM CAMPESTRE. Palm.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 A stemless Brazilian ornamental palm, with pinnate leaves, silvery beneath.
- 2219. DIPLOTHEMIUM MARITIMUM. Palm.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 A stemless Brazilian ornamental palm.
- 2220. PHOENIX. Palm.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 Listed as *P. paradenia*, an ornamental palm.
- 2221. PHOENIX DACTYLIFERA. Date.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 "Tozeur" dates from Nefta, Tunis; these are good dates, but seem to be inferior to the "Deglet noor" from Biskra, Algeria. The seed is certainly larger. (*W. T. Swingle.*)
- 2222. PHOENIX DACTYLIFERA. Date.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
- 2223. PHOENIX DACTYLIFERA. Date.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 "Deglet noor." Possibly more select than No. 2222. The seed of these dates is very small, which is a good character.
- 2224. PHOENIX DACTYLIFERA. Date.**
 From France. Received through Mr. W. T. Swingle, February 13, 1899.
 These dates were of exceptionally good quality when I tested them, but were sold without any indication of origin.
- 2225. CITRUS LIMETTA. Lime.**
 From Botanic Gardens, Trinidad. Received through Messrs. Lathrop and Fairchild (No. 75), 1899.
 "Trinidadine" Lime, a chance seedling in the Trinidad Botanic Gardens, characterized by the unusually large size. Largest fruits seen $8\frac{3}{8}$ by $9\frac{1}{8}$ inches in circumference. Mr. Hart, the director, says they grow twice that size. The tree a vigorous grower and good producer. For Florida and California.
- 2226. COFFEA STENOPHYLLA. Coffee.**
 From Trinidad. Received through Messrs. Lathrop and Fairchild (No. 76), 1899.
 A free-growing species producing an abundance of small, deep-purple berries. Beans small and roundish, smaller than Arabian coffee. Flavor of very high order.

2227. ATRIPLEX SEMIBACCATUM.**Australian saltbush.**

From California. Received through Messrs. Lathrop and Fairchild, 1899.

The plant is a native of Australia, now very successfully grown in California as a forage and fodder plant for alkali soils. (*D. G. Fairchild.*) A much-branched perennial, which forms a thick mat over the ground to the depth of a foot. The branches extend from 6 to 8 or 10 feet, so that one plant will often cover an area of 20 feet in diameter. The leaves are about an inch long, broadest at the apex, and coarsely toothed along the margin. They are fleshy and somewhat mealy on the outside. The pulpy, flattened fruits are tinged with red at maturity, but dry out as soon as they fall from the plant. They are produced in enormous numbers and ripen continuously for 3 or 4 months, or in situations where growth is perennial throughout the year. At the California Experiment Station it was determined that the seeds germinate better when sown directly on the surface without any covering. When they were harrowed in to the depth of 2 or 3 inches most of them either rotted before germination or the young seedlings were unable to reach the surface. The plant may be propagated by cuttings as well as from seed, and this method is to be preferred wherever the land contains much alkali. The seeds will germinate in the presence of an amount of soda salts which would entirely prevent the growth of cereals. This is especially true in the case of Glauber's salt, though there is, of course, a limit to the amount of alkali the plant will tolerate, as in the case of wheat or alfalfa. This saltbush is perennial in California, Arizona, and New Mexico, but must be treated as an annual wherever the winters are at all severe. In South Dakota plants from seed sown in May had just commenced to blossom at the time of the first hard frost in autumn.

2228. GARDENIA JASMINOIDES.**Cape jasmine.**

From France. Received through Mr. W. T. Swingle, 1899.

An ornamental shrub from China. Much grown in the South. It bears numerous large white very fragrant flowers.

2229. PASSIFLORA COCCINEA.**Passion flower.**

From France. Received through Mr. W. T. Swingle, 1899.

An ornamental vine from South America with fruits which are eaten both raw and cooked. The flowers are scarlet with orange rays. (See No. 1903.)

2230. TUBER MELANOSPERMUM.**Truffle.**

From France. Received through Mr. W. T. Swingle, 1899.

Mr. Swingle writes as follows from Paris, under date of January 29, 1899, on the subject of trufficulture:

"The annual production of truffles in France amounts to over 2,165 tons, worth at wholesale nearly \$4,000,000. Trufficulture is practiced principally in Vaucluse and Dordogne, and to a smaller extent in many departments of southwestern central France. The results have been especially striking on the slopes of Mount Ventoux, in Vaucluse, particularly in the communes of Flassan and Bédouin. During the last 30 years trufficulture has led to the reforestation of large bodies of formerly waste lands. The rental of truffle-farming lands rose at Flassan from 2,700 francs to 8,510 francs in about 20 years. In Bédouin the rise was still more marked, being 11,090 francs in 1877, 23,350 francs in 1882, and 38,485 francs in 1887. During the period from 1862 to 1886, 4,500 acres of barren lands were reforested for the purpose of growing truffles.

"Oaks or hazelnuts are the trees most commonly used in preparing land for the growth of truffles. The oaks usually preferred are *Quercus pubescens*, *Q. pedunculata*, and *Q. ilex*. In Perigord it is the custom to select acorns from trees already bearing truffles. These are sown in nursery rows, and are finally transplanted to the place where they are to grow. The taproot is cut at the time of transplanting, in order that the spreading root system may be induced, as it is extremely desirable that the main roots of the oak shall be near the surface. Hazelnuts yield truffles sooner than oaks. They are adapted to cretaceous soils rather than oölitic. The black mountain oak (*Q. pubescens*) is best for jurassic soils. It is planted in mixed plantations with *Q. pedunculata*. For chalky, cretaceous, or sandy marl soils the evergreen oak (*Q. ilex*) is best. After the forest plantations are established the soil must be artificially infected with spores of the truffles. The most approved method is to make a compost of 25 pounds of truffles with 250 pounds of peat. At the time of sowing 1 pound of this compost is mixed with 2 pounds of earth, and sown broadcast under the trees,

at the extremities of the root systems. Other methods are used, but this gives uniformly good results.

“For the finest truffle, the Perigord (*Tuber melanospermum*), a mild climate is necessary. Its habitat is practically limited to the vine region of France, but it does not thrive as far north or as far south as the grape. Truffles are killed by severe cold, and are injured by excessive heat in summer. They are known to have been destroyed to the depth of 8 to 12 inches by a temperature of 2° F. Continual rains may injure them. They are said to do best where heavy rains in July or August are followed by a dry autumn. The soil must be calcareous. In fact, the soil is usually so decidedly calcareous that chestnuts will not thrive. The soil need not be rich. In fact, some claim that they do best on poor soils on mountain slopes. Good drainage is essential. But it is probable that they can be produced in a great variety of soils, provided these two conditions (lime and drainage) are fulfilled. The best truffles are said to be produced on jurassic lime soils, and especially on those rich in phosphates. I feel sure that trufficulture would pay in the United States could suitable soils and climates be found. They should be experimented with on lime soils in the cotton belt, and also in calcareous regions in California and Oregon. It is first necessary to introduce the oaks and hazelnuts, on the roots of which this plant is parasitic. The ground can be infected with the truffle spores when the forests have reached a sufficient stage of development. Truffles sell for \$2 to \$4 per pound in the Paris market, and are consumed in immense quantities. When fresh they possess a very delicate flavor, and are much in demand by epicures.”

2231. CYPERUS ESCULENTUS.

Chufa.

From France. Received through Mr. Walter T. Swingle, 1899.

A sedge which bears great quantities of small edible tubers on its roots. It is cultivated as pasturage for hogs in European countries. (See No. 2125.)

2232 to 2281. LACTUCA SATIVA.

Lettuce.

(See No. 2084.)

From England:

- 2232. Fulham.
- 2233. Paris white extra selected.
- 2234. St. Albany all heart (No. 3).
- 2235. Cabbage varieties.
- 2236. Tender and true (No. 4).
- 2237. Stanstead Park (No. 5).
- 2238. Buttercup (No. 7).
- 2239. White Chavigny (No. 8).

From Lyons, France:

- 2240. Gotte.
- 2241. Mignonette.
- 2242. Palatine (Le Rousse).
- 2243. German curled.
- 2244. Green Cos forcing.
- 2245. Pierre Benite.
- 2246. Tom Thumb.
- 2247. Red cordon.

From England:

- 2248. Perfect Gem.
- 2249. Golden Queen.
- 2250. Early Paris market.
- 2251. Commodore Nutt.
- 2252. Lonthois.
- 2253. Superb white.
- 2254. Paris green.

From France:

- 2255. Tom Thumb.
- 2256. de Milly.
- 2257. White tennis ball.
- 2258. Crisped small early.

From Erfurt, Germany:

- 2259. Bruine geel.
- 2260. Dreinbrunner.
- 2261. Emperor forcing.
- 2262. Princess head yellow.
- 2263. Wheeler's Tom Thumb.
- 2264. Stonehead yellow.

From Erfurt, Germany—Continued.

- 2265. Eggs.
- 2266. Rolfs favorite.
- 2267. Bruine geel.
- 2268. Emperor.
- 2269. Wheeler's Tom Thumb.
- 2270. Jewel.
- 2271. Stonehead early white.
- 2272. Stonehead early green.
- 2273. Stonehead early golden yellow.
- 2274. Roquette.
- 2275. Bruine geel.
- 2276. Kaiser Treib.
- 2277. Rudolf's Liebling.
- 2278. Steinkopf.
- 2279. Verbessertes Treib.
- 2280. Wheeler's Tom Thumb.
- 2281. Kaiser Wilhelm II.

2282. COLOCASIA ANTIQUORUM ESCULENTUM.

Taro.

From Kingston, Jamaica. Received through Messrs. Lathrop and Fairchild (No. 28), 1899.

"The Colocasia is called *Coco* in Jamaica and is prized by Europeans and natives as a vegetable. It is the same as the Taro of Hawaii."

2283 to 2374.

Saccharine sorghums.

(Printed separately in Inventory No. 3.)

2375. VICIA FABA.

Broad bean.

From France. Received through Mr. W. T. Swingle, March, 1899.

Variety, "Windsor."

"*Culture.*—Beans are usually sown where they are to remain about the end of February or the beginning of March. They like a rich, slightly humid, and well-manured soil, but can be grown in any kind of ground.

"Beans may also be sown in a frame in January and planted out about a month afterwards. It is also not impossible, in the climate of Paris, to grow beans after the winter mode of culture which is universally practiced all through the south of Europe. According to this mode, a sowing is made at the end of October or the beginning of November in a position with a south aspect and well-drained soil, and the young plants are sheltered during the winter by placing frames over them. Instead of frames we have sometimes seen hoops of casks stuck into the ground across the beds, so as to form an arched support for straw mats, which were spread over them in very frosty weather. This mode of culture is particularly well suited for dwarf or half-dwarf varieties. The plants which have been pushed on in this way are in full bearing three weeks or a month earlier than those which were not sown until spring.

"The Broad Windsor, which forms the principal crop, is generally sown in March.

"*Uses.*—The seeds or beans, both in the green state and when dry, are eaten boiled. In the south of France the pods are sometimes boiled and eaten when young. Broad beans are not thought so much of in private gardens as kidney beans, but by the poorer classes they are much grown. Generally they are not considered a remunerative crop, inasmuch as they do not continue long in bearing. The green-seeded varieties are usually preferred to the white ones, because they retain their green appearance when cooked, while the white ones become dark brown. Beans are often gathered for table before they have attained half their size; but this is not advisable, as they sometimes taste bitter when so small. The best flavored beans are those that are full grown, but young." (*Vilmorin.*)

2376. CICER ARIETINUM.

Garbanzo.

From France. Received through Mr. W. T. Swingle, March, 1899.

(See No. 2139.)

2377. PHASEOLUS VULGARIS.

Bean.

From France. Received through Mr. W. T. Swingle, March, 1899.

Large common field bean.

2378. BETA VULGARIS.**Sugar beet.**

From France. Imported by the Division of Chemistry from Vilmorin-Andrieux & Co., Paris, France. Received February, 1899.

"Vilmorin's Improved White."

2379. BETA VULGARIS.**Sugar beet.**

From Germany. Imported by the Division of Chemistry from Adolf Strandes, of Zehringen, near Cöthen, Germany. Received February, 1899.

This variety is to be known as "Zehringen."

2380. CUCUMIS MELO.**Winter muskmelon.**

Grown in Utah. Presented by Mr. John F. Brown, of Elgin, Grand County, Utah, who developed the variety and who makes the following statement concerning it:

"Variety 'Eden,' a winter muskmelon. This melon is supposed to have originated in Japan. Some 10 years ago a few seeds were sent to Mr. W. C. Wheeler, of this township, by whom, he does not remember. This seed was divided with me and planted, but the crop failed to mature on the vines and was cast aside as worthless. A few of the melons were concealed by accident under some shocks of corn, and when these were husked in December the melons were found. They had turned yellow and were of fine quality and flavor. Experiments from that time have developed the present perfect 'Eden' melon. This melon does well on any soil that will raise ordinary melons. Plant and cultivate same as other melons. Use no more water than is absolutely necessary, as too much water takes from the quality of the melon, but adds to its size. The most perfect all-round melon will weigh about 9 pounds. Gather at the time of the first frost, keeping only mature melons. The fruits should be cut from the vine, leaving about 3 inches of vine on melon. Store in frost-proof and perfectly dry building above ground, place melons with flat end up, not piling on top of one another. The temperature should be kept just above frost point, but the melons can be forced to ripen, as with other fruits, by putting in a warm place. A hollow seed cavity shows forced growth by using too much water. These melons have been used in the eating houses along the R. G. W. Ry. and in the hotels and restaurants of Salt Lake, Denver, and Colorado Springs, and have always sold at \$3 per dozen and up, delivered at the express office here. Parties in different parts of the United States have tried to raise this melon from seed sent from here, but they failed to mature a crop, as they had no directions to go by, this being the first time that the results of my experience have been made public. I used the last of the 1898 crop February 20, 1899."

2381 to 2541. VITIS VINIFERA.**Grapes.**

The numbers between 2381 and 2541 were applied to a series of varieties of the European grape imported in cooperation with the Division of Pomology in order to permit a thorough and systematic test of the possibility of producing in the South Atlantic States the table grapes now imported from Europe. Such tests are now being conducted by the Division of Pomology at various points in the South, particularly in North Carolina and Florida. No cuttings are now available for distribution, but provision will probably be made later for the distribution of any varieties which may prove worthy of public attention. A full list of all the varieties imported will also be published as a special inventory.

2542. PRUNUS AMYGDALUS.**Almond.**

From Marseilles, France. Received through Mr. Walter T. Swingle, February, 1899.

"Princess." Large and sweet, with a thin shell.

2543. PRUNUS AMYGDALUS.**Almond.**

From Marseilles, France. Received through Mr. Walter T. Swingle, February, 1899.

Very large and sweet; shell moderately hard.

- 2544. PRUNUS AMYGDALUS. Almond.**
 From Marseilles, France. Received through Mr. Walter T. Swingle, February, 1899.
 Very large and sweet; shell hard.
- 2545. PRUNUS AMYGDALUS. Almond.**
 From Marseilles, France. Received through Mr. Walter T. Swingle, February, 1899.
 "Little Pistache."
- 2546. PRUNUS AMYGDALUS. Almond.**
 From Marseilles, France. Received through Mr. Walter T. Swingle, February, 1899.
 "Large Sultan."
- 2547. CRATAEGUS AZAROLUS. Azarole.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Large-fruited, red." An improved grafted variety, said to be of Neapolitan origin. The sour fruits make good preserves. (See No. 2171.)
- 2548. CRATAEGUS AZAROLUS. Azarole.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Large-fruited, white." An improved grafted variety. (See No. 2547.)
- 2549. SORBUS DOMESTICA. Sorb apple.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Ordinary red-fruited." A tree 15 to 40 feet high, grown along roadsides in France. The small fruits are good to eat when very ripe and soft like medlars, and are also used for making a kind of cider. The best sorts are grafted. In the vicinity of Naples, Italy, the fruits, there called "sorbi," are much prized, especially for alternating with figs and other laxative fruits.
- 2550. SORBUS DOMESTICA. Sorb apple.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Large-fruited, gray." (See No. 2549.)
- 2551. PUNICA GRANATUM. Pomegranate.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Common sweet." A shrub for cultivation in the South as a hedge plant and for the fruits, which are as large as an apple and contain numerous small seeds, each surrounded by deliciously flavored pulp. The rind is bitter and astringent. It may be propagated from seeds or cuttings. This and the succeeding two are exceptionally fine improved French varieties.
- 2552. PUNICA GRANATUM. Pomegranate.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Very large-fruited, red." Very beautiful and of very good quality. (See No. 2551.)
- 2553. PUNICA GRANATUM. Pomegranate.**
 From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Very large-fruited, violet." Of very good quality. (See No. 2551.)

2554. ZIZYPHUS SATIVA.**Jujube.**

From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Variety with large fruits." An improved sort, propagated by suckers. (See No. 2194.)

2555. PYRUS GERMANICA.**Medlar.**

From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 "Variety with large fruits." A hardy European tree with edible fruits.

2556. CAPPARIS SPINOSA.**Caper.**

From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.
 Cuttings of the cultivated form. (See No. 2164.)

2557. FICUS CARICA.**Caprfig.**

From Marseilles, France. Received through Mr. W. T. Swingle, February, 1899.

2558 to 2604. VITIS VINIFERA.**Grape.**

These grapes, imported from France through Mr. W. T. Swingle, have been turned over to the Division of Pomology. They are not for general distribution. (See also Nos. 2381 to 2511.)

2605. ASPARAGUS OFFICINALIS.**Asparagus.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.

"Hatif Louis L'Herault." An early sort. This and the following are improved French varieties.

The field methods of cultivation of asparagus at Argenteuil are as follows: The plants are set in rows about 2 yards apart. A hole 18 inches in diameter is dug, deepest at its edges, leaving a little mound of solid earth in the center. The little plant is placed with its roots spread out over this central mound at the bottom of the hole, and the earth is filled in, leaving the crown about 2 or 3 inches below the general level of the ground. Each spring earth is heaped up about the plants, and finally mounds are made 20 inches wide and 8 to 12 inches high above the level of the soil. In autumn the canes are cut off 8 inches above the mound, and the mound is leveled to the general surface of the ground, to be again built up the following spring. In the fourth year one or two shoots can be pulled, but the first good yield is not attained until the fifth year. During the picking season the mounds are examined every day, and as soon as the tip of a shoot forces its way through the soil the earth is loosened around it. It is then grasped and broken off at the base by a twisting motion. The bearing season continues for 6 weeks on old plants, as many as 15 or 20 shoots being produced from one root. The canes are allowed to grow all summer. Asparagus shoots grown in this way are often 10 to 15 inches long, and 1 to 2 inches diameter. They sell in the Paris markets during April and May at from 15 to 80 cents per pound. The plants are well manured every alternate spring with well-rotted stable manure or night soil.

The best varieties of asparagus are, in the order of merit, (1) Early Louis L'Herault; (2) Late rose; (3) Medium Louis L'Herault; (4) Late violet.

In forcing asparagus, seedlings are cultivated during the first year much after the manner of onions, and are transplanted when 1 year old at intervals of 20 inches in each direction. Two years after transplanting, if the plants have been properly fertilized and cultivated, they are ready for forcing. They are dug with a very broad-shared plow, shaken free from earth, and brought to the greenhouses from time to time during the winter as required. Of course the tops have to be cut off in autumn to facilitate digging the roots. These asparagus plants consist of a tuft of stout roots about one-fourth inch in diameter, spread out horizontally about a central crown, which shows a number of buds ready to sprout. These plants are now forced as follows: In case a greenhouse is used, they are arranged directly on the floor of low benches having bottom heat, without any earth whatever between them and the bench. The plant is taken in hand, the roots brought to a parallel bundle, and the whole placed in upright position tightly pressed against the other plants. Instead of being 20 inches apart, as in the field, the plants are now scarcely more than 4 inches. When the entire bench is full fine earth is sifted over the tops of the plants until they are covered to the depth of half an inch. They are then watered

and are ready for forcing. In case a hotbed is used, a layer of sifted earth 1 inch deep is placed on top of the manure to prevent the roots from coming in contact with it. Within 10 days shoots of marketable size may be harvested, and thereafter shoots may be gathered every day, since they often grow 2 to 5 inches in a day. They are very easily broken off, since the crown of the root is practically exposed. The roots continue to produce for 6 weeks or 2 months; they are then exhausted and are thrown away. M. Compoint, one of the leading growers, fertilizes his asparagus fields almost exclusively with garbage collected in Paris. He has a contract with the city of Paris to collect garbage in a certain quarter, and applies it directly to his fields. A high percentage of phosphoric acid is very desirable, and a fertilizer containing too large a proportion of nitrogen does not produce plants suitable for forcing. This culture is of immense extent, and in the season M. Compoint employs as many as 30 hands to pack the asparagus, which he ships principally to England and Russia. He also forces blanched asparagus, which is done by leaving the mature plants in position in the garden, digging trenches between the rows, and filling them with fresh manure. The plants are then covered with a layer of earth 8 inches deep inclosed in cold frames. These blanched asparagus shoots are stouter than the green asparagus described above, and of course sell at much higher prices. In general this culture is very much like that of Argenteuil, except that the plants are forced into growth out of season.

2606. ASPARAGUS OFFICINALIS.**Asparagus.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.
 "Medium Louis L'Herault." A medium sort. (See No. 2605.)

2607. ASPARAGUS OFFICINALIS.**Asparagus.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.
 "Late violet." A late variety. (See No. 2605.)

2608. ASPARAGUS OFFICINALIS.**Asparagus.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.
 "Late rose." (See No. 2605.)

2609. ASPARAGUS OFFICINALIS.**Asparagus.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.
 "Verte dite aux petits pois." A very tender and delicately flavored variety. (See No. 2605.)

2610. ASPARAGUS OFFICINALIS.**Asparagus.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.
 "White rose." (See No. 2605.)

2611. FIGUS CARICA.**Fig.**

From Argenteuil, France. Received through Mr. W. T. Swingle, February, 1899.

"Blanc d'Argenteuil." The following methods of growing figs are in use by the best growers at Argenteuil. Figs are trained horizontally, the trunks close to the ground, the top pointing toward the south. In winter the canes are buried under 6 inches of soil. They are covered in October and are dug up again in March. Care is taken to remove all the leaves before covering them. Pruning consists in cutting off all the branches which have borne fruit, leaving only new wood for the next year's crop. This is usually done immediately after the crop has been harvested, in August. As the stems get old they are cut away and replaced by new shoots. The variety chiefly grown is "Blanc d'Argenteuil." Two others are also recommended. Rooted layers, called "Marcottes," may be obtained in any amount from nurserymen at a cost of from 30 to 60 cents per dozen, or cheaper in larger amounts. Fig culture can be carried on in America south of the latitude of Washington, D. C. The fresh figs sell for from 4 to 5 cents each, wholesale, in the Paris markets. They are wrapped in paper and packed in mandarin cases.

The best varieties of figs are, in the order of merit: (1) Blanc d'Argenteuil, (2) Barbillonne, (3) Dauphine d'Argenteuil, (4) Dorée.

- 2612. FIGUS CARICA.** **Fig.**
 From Argenteuil, France. Received through Mr. Walter T. Swingle, February, 1899.
 "Barbillonne." (See No. 2611.)
- 2613. FIGUS CARICA.** **Fig.**
 From Argenteuil, France. Received through Mr. Walter T. Swingle, February, 1899.
 "Dauphine d'Argenteuil." (See No. 2611.)
- 2614. FIGUS CARICA.** **Fig.**
 From Argenteuil, France. Received through Mr. Walter T. Swingle, February, 1899.
 "Dorcé." (See No. 2611.)
- 2615 to 2652. VITIS VINIFERA.** **Grapes.**
 These table grapes, imported from France through Mr. Walter T. Swingle, are not for general distribution. They are being tested by the Division of Pomology. (See also No. 2381.)
- 2653. POPULUS DELTOIDES.** **Cottonwood.**
 From Ussy, France. Received through Mr. Walter T. Swingle.
 "Canada poplar." This is the most important forest tree grown in France. Although originally from America, there are many improved strains which might well be again transplanted to the Western prairies. This and the following are improved selected strains which are propagated only by cuttings.
- 2654. POPULUS DELTOIDES.** **Cottonwood.**
 From Ussy, France. Received through Mr. Walter T. Swingle, 1899.
 "Peuplier regeneré." A valuable improved cottonwood for the prairie States. (See No. 2653.)
- 2655. ACER MONSPESSULANUM.** **Maple.**
 From Ussy, France. Received through Mr. Walter T. Swingle, 1899.
 "Erable de Montpellier." A south European shade tree, nearly evergreen in mild climates. The tree is much branched, and becomes very large without attaining a very great height.
- 2656. CORYLUS AVELLANA.** **Filbert.**
 From Ussy, France. Received through Mr. Walter T. Swingle, 1899.
 "Noisetier des bois." Mr. Felix Gillet, of Nevada City, Cal., one of the most successful filbert growers of that State, writes as follows concerning the cultivation of this nut:
 "The most rational way of propagating filberts is by layering. Filberts do not come true to name from seed. In nine cases out of ten filberts produced from seed are of an inferior quality. After the layers are made the plant should be cut back every fall in order to induce the throwing out of new shoots to make layers the ensuing fall, and so on every year. A good many of the plants grown from layers bear the same year they are planted, while seedlings do not bear in less than 5 years. The secret of success in their cultivation is to train the plants as low-standard trees branching at 18 to 30 inches. Set out the trees in rows far apart, with something else in the space between the rows. The trees must be irrigated, for filberts require a constantly moist soil to do well."
- 2657. ARBUTUS UNEDO.** **Strawberry tree.**
 From Ussy, France. Received through Mr. Walter T. Swingle, 1899.
 "Arbousier des Pyrenées." A small, half-hardy tree. Its fruits look something like strawberries. They are said to have a narcotic effect when eaten in large quantities. The fruits do not ripen until the second year, and the plant, covered at the

same time with fruits and flowers, has a very ornamental effect. It flowers in October and November.

2658. CORNUS MAS.

Cornelian cherry.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Cornouiller à gros fruits." A European deciduous shrub or small tree with edible berries. This is an improved variety, propagated by grafting. See No. 2167.

2659. CORNUS TARTARICA.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Cornouiller à bois de Corail." This Siberian dogwood is a small tree. "It has shoots of a fine orange red, covered with a delicate bloom. It makes a splendid appearance in the winter season." (*Loudon.*)

2660. EUONYMUS EUROPAEUS.

Spindle tree.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Fusain à petites feuilles." The flowers, fruits, and leaves are poisonous. The wood is light, strong, compact, and easily worked; much used for shoe pegs, tooth-picks, etc. The tree is very ornamental. Hardy.

2661. HIPPOPHAIË RHAMNOIDES.

Sea buckthorn.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Argousier." An excellent sand binder for the dunes along the seacoast. It is a native of the coasts of northern Europe.

2662. PRUNUS LUSITANICA.

Laurel cherry.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Laurier Portugal." (See No. 2204.)

2663. LAURUS NOBILIS.

Laurel.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Laurier à feuilles rondes." The laurel or bay trees, used in German beer gardens, are grown from cuttings. They are placed in larger pots every 5 years, and pruned to shape, either spherical or pyramidal, in late summer, either August or September. Trees 10 to 15 years old, from 5 to 20 feet high, sell for from \$2 to \$20 each, according to size. Large numbers are shipped to market and purchased by proprietors of German resorts.

2664. LIGUSTRUM OVALIFOLIUM.

Japanese privet.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Troène d'Italie." An evergreen shrub used for hedges. Will grow from cuttings, and in alkaline or saline soils.

2665. QUERCUS SUBER.

Cork oak.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Chêne liege." The cork oak is a native of southern Europe, where it grows on sandy land near the sea. It should be tried along the coast in the Southern States and in California. The trees commence to bear in about 20 years and yield about 10 pounds of cork every 6 or 7 years thereafter.

2666. RIBES ALPINUM.

Alpine currant.

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

A sterile variety of the Alpine currant, a low spreading bush.

2667. ROSMARINUS OFFICINALIS.**Rosemary.**

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

A shrub native of southern Europe and north Africa. An essential oil used in perfumery is distilled from the leaves. It is readily propagated from seed or cuttings. This is famed in Europe as a bee plant and is eaten greedily by sheep. It grows on arid calcareous hills, and should be widely distributed in the warmer portions of this country.

2668. SAMBUCUS PYRAMIDATA.**Elder.**

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Sureau pyramidal." An ornamental European shrub.

2669. SORBUS DOMESTICA.**Sorb-apple.**

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

"Cornier." (See No. 2549.)

2670. ELAEAGNUS MULTIFLORA.**Goumi.**

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

A Japanese hardy evergreen bush bearing almost continuously an immense number of edible fruits. In Europe these are used in making preserves. The bush may be propagated from cuttings. The flowers are fragrant. It is quite ornamental, and is recommended for game preserves as food for birds.

2671-2677. PYRUS MALUS.**Apple.**

From Ussy, France. Received through Mr. Walter T. Swingle, 1899.

A collection of French cider apples.

One of the most important cultures in Europe for introduction into America is that of the cider apples. It is very much more important in France than the culture of table apples. No less than 10,000,000 barrels of cider are produced annually. Of late the production of cider has become an exceedingly important industry in some parts of Germany, and I am perfectly certain that it has a great future in America. Professor Goethe, of the Pomological School at Geisenheim, states that the displacement of beer by cider is a great triumph for pomology in two ways: First, because cider, which can be produced by the small farmer, drives out beer, which only those with large capital can hope to brew; second, that cider drinking does not interfere with fruit eating, while beer drinking is universally considered to do so in Germany, and in consequence one almost never sees people eating fruit after beer in a German restaurant. Only those who drink wine or cider eat fruit liberally.

There are hundreds of varieties of cider apples in cultivation. Almost every village in Normandy has its own special sorts. The cider-apple trees are grafted twice. In the first place, any one of a half dozen vigorous growing sorts is grafted at the surface of the ground on the root of a seedling apple. Then the special variety of cider apple is grafted at 6 feet from the ground upon this vigorous stock. This is the almost universal practice in the culture of cider apples, and is claimed to add greatly to the vigor of the trees, besides insuring a straight and strong stem, growing high enough to prevent cattle from browsing on the branches.

The cider apple is seldom planted in orchards, but the trees are generally set out in pastures, as it is held that their growth does not interfere with that of grasses in meadows, nor with the cultivation of small crops. It is because of the fact that they are grown in meadows that they are grafted 6 feet or more from the ground.

It should be noted that in France the cultivation of cider apples is complicated by the fact that at least three varieties of a totally different character must ripen at the same time. According to Baltet, there are practically three seasons of ripening—early, medium, and late. At each season there must be at least three varieties—one acid, one sweet, and one bitter. For example, for those ripening in the second season, "Camoise," "Rouge-Bruyere," and "Amèr-doux" may be grown. Cider made from acid sorts is said to be poor, and to turn brown on exposure; that from sweet sorts is pale and keeps poorly; that made from the bitter sorts is small in quantity and too thick. In general, the acid sorts are used to give quantity, the sweet to give quality, and the bitter to give keeping qualities.

The following varieties are comprised in this collection:

2671. "Amère de Bertecourt." A cider apple of the third season, having erect branches. Tree healthy, very prolific, and hardy. Fruit is bitter, rich in sugar and tannin, ripening in December. Juice has density of 1.078, containing 217 grams of sugar and 3.5 grams of tannin.
2672. "Barberie." "A very vigorous tree, very high, very fertile. Fruit bitter-sweet, rich in sugar, tannin, and mucilage, elements necessary for the production of a good cider; of excellent quality, ripening second season, during second half of November." (*Baltet.*) Juice has density of 1.080 and contains 5 grams of tannin per liter.
2673. "Bramtot." A variety grown from seed by M. Legrand. The tree is vigorous, of upright growth, hardy, and very prolific. The fruit is sweet, slightly bitter, and produces first-rate cider; it ripens late in December (third season). Juice, density 1.077, sugar 170, tannin 2.87 per liter. "The Bramtot is one of the choice sorts, the diffusion of which can not be too strongly counseled." (*Truelle.*)
2674. "Blanc Mollet." A very old variety, much grown in France. The tree is round-topped, vigorous, and prolific; it flowers early and often suffers from spring frosts in consequence. Fruit ripens early (end of September), bitter-sweet, perfumed. Juice has density of 1.060 and contains 228 grams of sugar and 3 grams of tannin per liter. It makes good cider, but is principally used to freshen old ciders of the previous year.
2675. "Frequin rouge." A vigorous tree, of great productiveness. "Fruit bitter, containing the elements necessary for a rich, savory, and healthy cider; of excellent quality. Maturing during the first half of November (second season)." (*Baltet.*) Juice having density of 1.080 to 1.087 and containing 177 grams of sugar and 2 of tannin per liter.
2676. "Grise Dieppoise." A variety of much merit, originated from seed by M. Dieppoise; much grown in Normandy. A vigorous, prolific tree, of pyramidal shape. Fruit very sweet, very good, very late, usually not ripening until after being picked. Juice has density of 1.094, containing 201 grams of sugar and 2.25 of tannin per liter; remarkable for its richness in cane sugar. It should be mixed with juice of lower density if used for making apple brandy.
2677. "Martin Fessard." A very vigorous sort, of great productiveness; hardy. Fruit bitter, very rich in tannin, making a cider which keeps two years. Juice bitter, but agreeable; density, 1.075 to 1.082.

2678. PYRUS COMMUNIS.

Pear.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Professor Bazin." A new variety, tree vigorous, very prolific, fruit large, ripen-late (December), green or pale melon yellow. Flesh juicy, aromatic, very good flavored.

2679. PRUNUS PERSICA.

Nectarine.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Lily Baltet." Very prolific. Fruit large, highly colored, very good, ripening at end of July. A new variety, said to be one of the best of the early nectarines.

2680. PYRUS COMMUNIS.

Pear.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Eva Baltet." This is a large pear, about the size of the Kiefer, but with the coloring of the California Bartlett. It is of first-rate quality.

2681. PRUNUS DOMESTICA.

Plum.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Reine Claude Sagot." A large greenish yellow plum of very good quality, ripening midseason.

2682. PRUNUS CERASUS.

Cherry.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Jaune d'Ollans." Very prolific; fruit yellow, sweet, producing by distillation a kirsch of the very best quality.

2683. PRUNUS DOMESTICA.**Plum.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Reine claud tardive de Chambourey." A late form of Reine Claude ripens in September in east central France.

2684. CRATAEGUS.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

Two species of Crataegus were comprised in this shipment. They received the following numbers in the Division of Pomology:

"Splendens" (17075). A spineless hawthorn, having pretty carmine fruits which are very striking in winter.

"Azarole de Carriere" (17076). An ornamental form of the azarole (see No. 2211), having rose-colored flowers and red fruits the size of a cherry.

2685. CORNUS MAS.**Cornelian cherry.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Cornouiller à gros fruit rouge." Cornel with large red fruits; an improved variety propagated by grafting. (See Nos. 2167, 2658, and 2686.)

2686. CORNUS MAS.**Cornelian cherry.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Cornouiller à fruit jaune." A small tree, with pleasant acid fruits, used for preserves. This is a yellow-fruited variety which has smaller fruits than No. 2685.

2687. RUBUS IDAEUS.**Raspberry.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

In this shipment were included seven varieties of ever-bearing raspberries. These should prove of much value for small home gardens. Raspberries of the ordinary varieties should be planted for the early crop, since the ever-bearing sorts do not commence to produce fruit until late summer, though they continue to bear until frost. The varieties received the following numbers in the Division of Pomology:

"Belle de Fontenay" (17077). Fruit rather large, almost round, dark purple.

"Merveille rouge" (17098). Fruit carmine red.

"Perpetuelle de Billard" (17079). Fruits rather large, round, deep red. Fruit clusters long. Plants multiply rapidly.

*"Surpasse Falstoff" (17080). Fruit large, conical, red, of good flavor. Fruit clusters abundant. Probably the best ever-bearing sort.

"Surpasse Merveille" (17081). Fruit medium-sized, round, cream-yellow, of fairly good flavor.

"Surprise d'automne" (17082). Fruit rather large, oval, sulphur-yellow.

"4-Saisons" (17083). Fruit yellow.

2688. PYRUS COMMUNIS.**Pear.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

Cider pears are used much as are cider apples in France (see No. 2671), and often preferred for planting along roads because of their more upright growth. Three varieties were included in this shipment, which received numbers in the Division of Pomology as follows:

"Carisi" (17066). An upright grower, often used for stems in double-worked standard trees. Fruit medium-sized, ripening late in autumn; very good for pear cider. Density of juice 1.060, sugar 149, tannin 3 grams per liter.

"De Navet" (17067). A tall vigorous tree, used for planting along roadsides. Fruits small, rich in sugar; good for manufacture of alcohol, yielding 13 to 14 per cent; ripening about the middle of October. Density of juice 1.090, sugar 221, tannin 2 grams per liter. Makes pear cider of first quality if mixed with juice of "de Souris."

"De Souris" (17068). "A vigorous tree with vertical branches, for planting along roadsides; very prolific. Fruits small, excellent for pear cider, maturing about end of October. The juice, rich in tannin (3½ grams in 1 kilo), may be mixed with that of other sorts sweeter or aromatic, such as 'de Navet,' 'de Croixmare,' 'de Cerciaux,' 'Masuret,' 'Sabot,' etc. The juice is amber-colored and perfumed, and has a density of 1.075." (*Ballet.*) Some authorities give the tannin content of the juice as high as 10.7 grams per liter, and sugar 142 grams.

2689. PYRUS MALUS.**Apple.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Gros Locard." A large winter apple of excellent keeping qualities, good for the table as well as for cider. Extensively grown in Pays d'Othe, Department of Aube, east central France.

2690. PYRUS MALUS.**Apple.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"D'Avrolles" or "Pommate d'Avrolles." A cider apple suited to slightly clayey soils. Produces cider of good quality, which keeps well. It is grown also in Pays d'Athe and is always grafted there on a high stem. (See No. 2671.)

2691. PYRUS BACCATA.**Apple.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

Hardy Siberian crab apples, many forms, very ornamental, some edible. Should be tested in the Northwest as an ornamental, for stocks, and used in hybridizing. This shipment was found to contain representatives of ten varieties, which received separate numbers in the Division of Pomology as follows: Cerise (17089), Ampla (17090), Atropurpurea (17091), Coerulescens (17092), Fastigiata (17093), Flava (17094), Flavescens (17095), Intermedia (17096), Kaido (17097), Serotina (17098).

2692. SORBUS AUCUPARIA.**Mountain ash.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Sorbier majestueux." A grafted variety of vigorous growth.

2693. TILIA TOMENTOSA.**Silver linden.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Argente remarquable." An ornamental tree from southern Europe. A grafted variety of great vigor and unusual beauty for street planting.

2694. QUERCUS CERRIS.**Bitter oak.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Chêne hybride d'Autriche." An evergreen species remaining bright green even in cold climates. (See No. 2206.)

2695. SALIX PURPUREA.**Osier.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Osier rouge." This is the osier willow of northern Europe, used for basket work. It requires a deep moist soil, matures in 3 years, and may be cut annually for 8 or 10 years without replanting. An acre yields from 6 to 8 tons of canes, worth \$10 or more per ton. These willows are grown in France along roadsides, and especially along the railway, the right of way being farmed out to large contractors for that purpose. The two principal varieties are Osier Gravanche and Osier Luisette de Bordeaux, the first named being a long strong-growing sort; the latter fine and solid. Several other species, such as *Salix lutea* and *S. coerulca*, are also grown on a small scale.

2696. SALIX ALBA.**Osier.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Osier jaune." (See No. 2695.)

2697. PYRUS MALUS.**Apple.**

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

"Cider apple." (See No. 2671.)

This shipment includes three varieties, numbered as follows in the Division of Pomology:

"Rouge de Trèves" (17086). A vigorous upright grower, much used for planting along roadsides in eastern France and southwestern Germany. A late variety,

ripening from the middle of November to January, and claimed to be exceedingly fruitful even in bad years. It is a bitter-sweet apple of medium size. The juice has a density of 1.085, and contains 212 grams of sugar and 1.5 of tannin to the liter. It makes good cider without admixture.

“Médaille d’Or” (17087). A variety recently obtained by M. Godard, and said to be one of the best cider apples in France. It flowers late enough to escape all frosts and ripens in the second season, or during October and November, in northern France. It is extremely fruitful, and has bitter fruit of medium size, which contains both sugar and tannin in sufficient amount to make good cider. Density of juice 1.082, sugar 255, tannin 5 grams per liter. Useful also for apple brandy.

“Pomme à tannin” (17088). A late variety, containing nearly 1 per cent of tannin in the juice, more than in any other cider apple. Useful only for mixing with other sorts to improve keeping qualities of cider.

2698. FRAXINUS.

Ash.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

“Frêne crepu nain d’un vert sombre.” An ornamental ash with very dark green curled leaves, propagated by grafting.

2699. ULMUS.

Elm.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

“Orme vegeta.” An ornamental elm of extremely rapid growth, for street planting.

2700. POPULUS DELTOIDES?

Cottonwood.

From Troyes, France. Received through Mr. Walter T. Swingle, 1899.

“Peuplier de Virginie amélioré.” An improved variety of the American cottonwood, propagated by cuttings from the male trees. (See No. 2653.)

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