



PLANT IMMIGRANTS.

No. 189.

JANUARY, 1922.

GENERA REPRESENTED IN THIS NUMBER.

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Foreign Seed and Plant Introduction.

EXPLANATORY NOTE

This circular is made up principally of notes received from agricultural explorers, foreign collaborators, and correspondents, concerning the more important plants which have been received recently by the Office of Foreign Seed and Plant Introduction. It also contains reports on the behavior in the United States of plants which have been introduced in previous years.

Descriptions appearing in *Plant Immigrants* are revised and published later in the *Inventory of Seeds and Plants Imported*,--the permanent record of plant introductions made by this Office.

Plant Immigrants should be considered an ANNOUNCEMENT OF THE ARRIVAL OF PLANT MATERIAL. With the exception of seeds received in quantity, all material must be propagated before it is available for experimenters who desire to test it. This requires one to four years, depending upon the plant and the quantity of propagating material imported.

The Annual Catalogue of New Plant Introductions, issued in the autumn, describes briefly the plants which are ready for distribution. Applications for seeds or plants listed in *Plant Immigrants* may be sent at any time, however, and will be filed in the order of their receipt. When material is ready for distribution, these requests will first be given attention; if their number is sufficient to exhaust the available supply of a given species, it will not be included in the Annual Catalogue.

One of the objects of the Office of Foreign Seed and Plant Introduction is to secure experimental quantities of new or rare foreign seeds or plants for plant breeders and experimenters, and every effort will be made to fill specific requests.

DAVID FAIRCHILD,
Agricultural Explorer in Charge,
Office of Foreign Seed and Plant Introduction.

Issued April 1, 1922.

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Bellota miersii (Lauraceae), 54627. From Santiago, Chile. Plants presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 673. Santa Ines, Chile.) 'Belloto.' Señor Izquierdo describes this species as follows: 'A large Chilean tree whose wood is highly prized for the manufacture of household utensils because of the great diameter which the trunk attains. It has attractive foliage and fruits, the latter when ripe being used for feeding hogs. A good tree for parks, because of the excellent shade which it gives.' For trial in the Southwest and on the Pacific Coast." (Popenoe.)

Citrus sinensis (Rutaceae), 54651. Sweet orange. From Santiago, Chile. Plants and cuttings presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 656. Cascada del Salto, near Santiago de Chile.) 'Capuchin' orange. This appears to me to be a dwarf form of the common sweet orange. Its origin is unknown; Señor Izquierdo tells me that it was grown formerly in the monastery of the Capuchin monks, which fact accounts for its common name of 'Capuchin' orange. In recent years it has been propagated by Señor Izquierdo and disseminated on a small scale throughout the citrus-growing regions of Chile.

"The tree is much smaller than that of the common sweet orange, but is not otherwise distinguishable from the latter so far as I have been able to ascertain. The fruits, which are borne in great profusion, are from $1\frac{1}{2}$ to 2 inches in diameter, round, deep orange, with a rather thin skin and orange-colored flesh containing an abundance of juice. The flavor is much like that of the Washington Navel orange, and the seeds are very few. The ripening season in Chile coincides with that of the Washington Navel. The fruits are too acid for Chileans, who commonly prefer a very sweet orange, but they will, I believe, be found very acceptable to the North American palate. Because of its dwarf character and its decorative value when in fruit, I believe the variety worthy of cultivation in dooryards and perhaps as a house plant." (Popenoe.)

Coelococcus amicarum (Phoenicaceae), 54515. From Hilo, Hawaii. Seed presented by Matthias Newell. "The 'Applenut' or 'Ivory nut' tree is 30 to 50 feet high and is found in the islands of the Pacific. The beautiful brownish scaly fruits are 3 inches in diameter and are used chiefly in the manufacture of the very large

buttons used on ladies' coats. Much larger buttons can be made from this nut than from the South American 'Ivory nut' (*Phytelephas macrocarpa*), and the buttons are also more expensive because there are fewer trees of *Coelococcus*." (C.B. Doyle.)

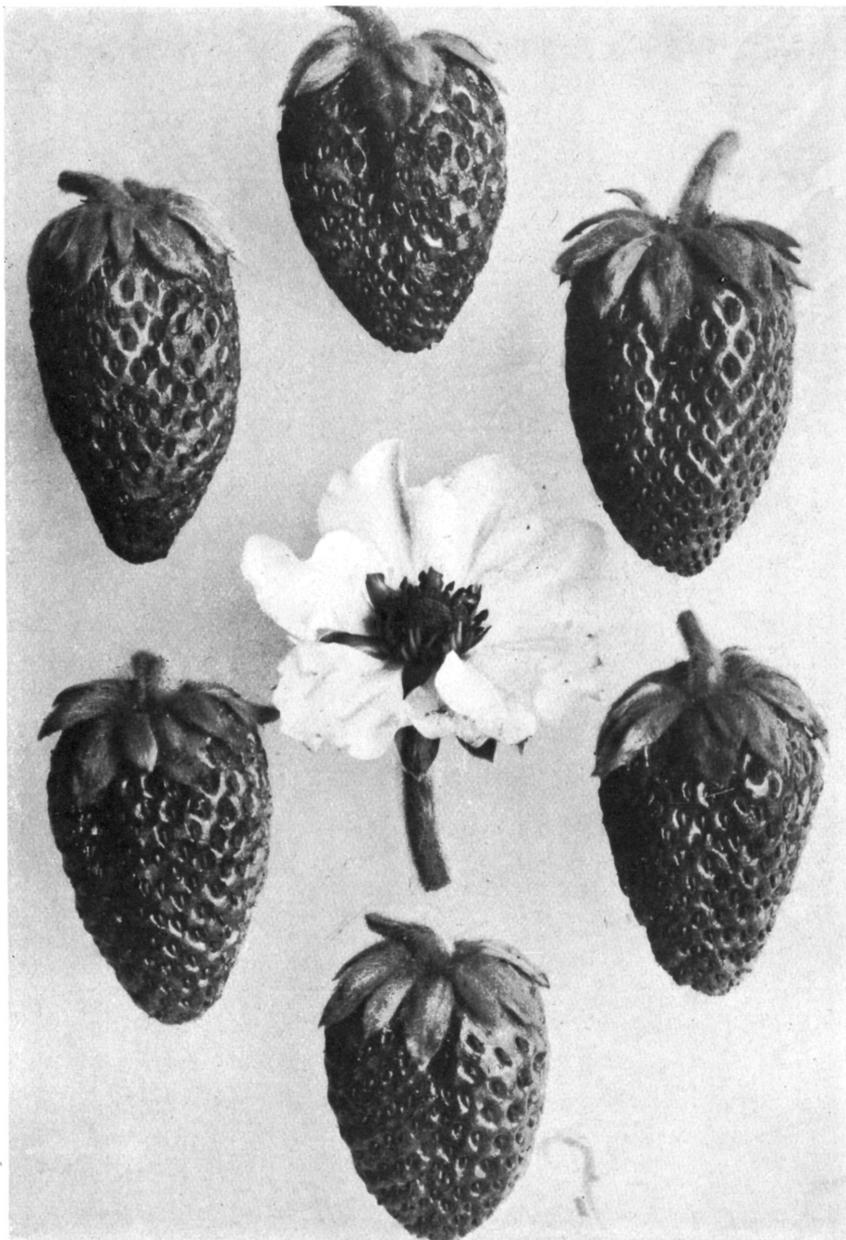
Crinodendron patagua (Elaeocarpaceae), 54628. **Patagua.** From Santiago, Chile. Plants presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 672. Santa Ines, Chile.) 'Patagua.' A Chilean tree which grows well in swampy regions. It has small, bell-shaped, white, fragrant flowers, which give it value as an ornamental. The wood is used for cabinetmaking and the bark for tanning. Introduced at the request of Dr. F.V. Coville, of this Bureau." (Popenoe.)

Cryptocarya rubra (Lauraceae), 54629. From Santiago, Chile. Plants presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 667. Santa Ines, Chile.) 'Peumo.' One of the handsomest of the native Chilean ornamental trees. It is rather small and erect, and in character of foliage somewhat suggests the live oak of southern California. In autumn it bears a profusion of red fruits, the size of olives, which greatly add to its decorative value. The fruits have a thin layer of pulp surrounding a large seed, and are eaten when cooked. They are not, however, of much value. The species is one which should be tried in our Southwest." (Popenoe.)

Dioscorea japonica (Dioscoreaceae), 54499. **Japanese yam.** From Hereford, England. Bulbils presented by Dr. H.E. Durham. "'Japanese round yam.' This yam seems, so far as one can see from a single season's trial, to be the most promising variety I have yet tested. It grows more freely and regularly than the round 'Upeh.' The rate of growth, both being in a cool house, was about double that of the 'Chappellier.'" (Durham.)

Fragaria chiloensis (Rosaceae), 54630 and 54631. **Chilean strawberry.** From Santiago, Chile. Plants presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer.

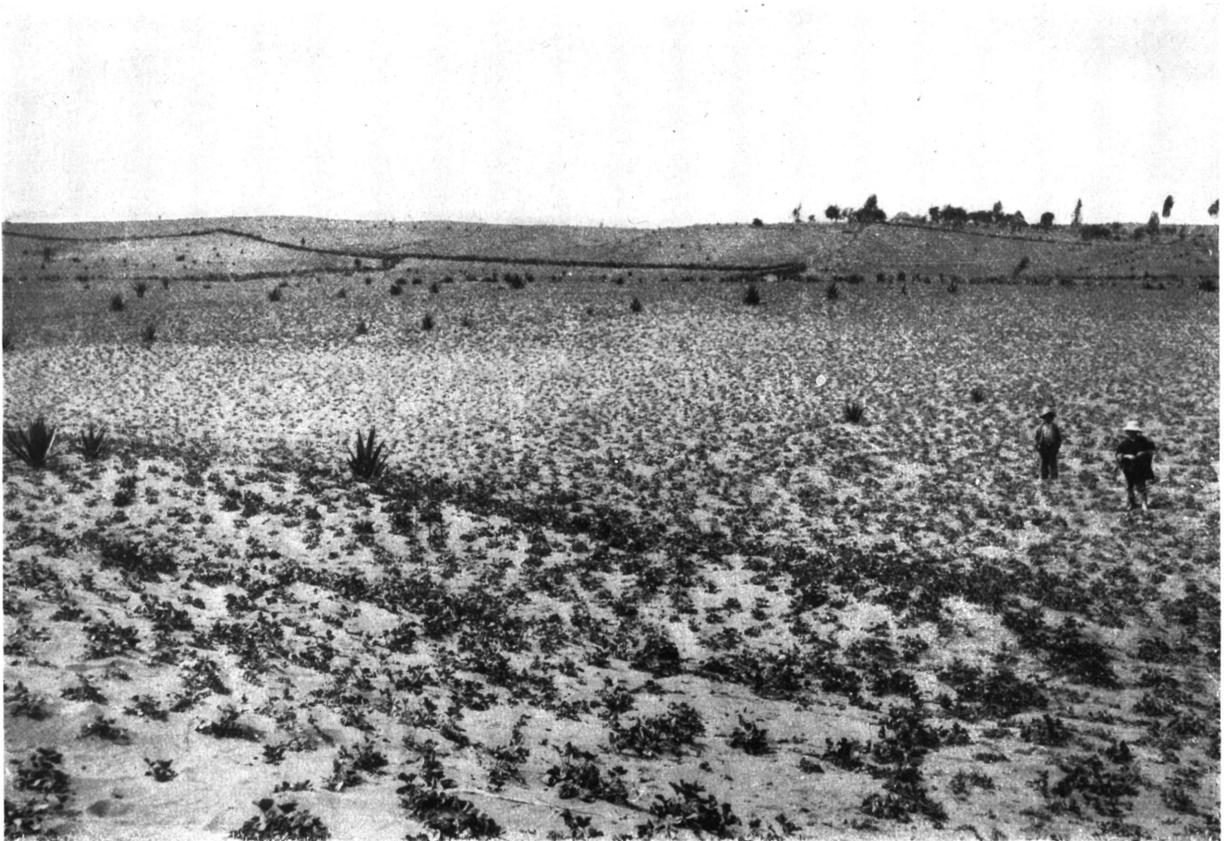
54630. "(No. 653. Santa Ines, Chile.) 'Frutilla roja,' or red-fruited Chilean strawberry. This is a selected strain of the common Chilean strawberry, said to produce fruits of large size and good quality. It



FRUITS OF THE AMBATO STRAWBERRY, NATURAL SIZE.

(*Fragaria chiloensis* (L.) Duchesne, S. P. I. No. 52576.)

This remarkable berry, a variety of *Fragaria chiloensis*, can be picked every day in the year in the region of Guachi, near Ambato, Ecuador, where it is cultivated commercially. The plants are much more downy than those grown in the United States; the fruits are light red in color and of very firm texture, adapting them for shipping long distances. The flavor is sweet and aromatic, the quality very good. (Photographed, natural size, by Wilson Popenoe, near Ambato, Ecuador, January, 1921; P18324FS.)



A FIELD OF CHILEAN STRAWBERRIES IN THE HIGHLANDS OF ECUADOR.

(*Fragaria chiloensis* (L.) Duchesne, S. P. I. No. 52576.)

The Chilean strawberry, which has been used by plant breeders in the production of the horticultural varieties grown in Europe and the United States, is extensively cultivated in western South America, and excellent varieties have been developed. The one grown near Ambato, Ecuador, at elevations of 9,000 to 10,000 feet is of particular interest, for although the plantations are on sandy ground, as may be seen in the picture, and are never irrigated, they fruit throughout the entire year. The berries are of good size, pleasant flavor, and are remarkable for their excellent shipping qualities. The variety is worthy of careful trial in the southwestern United States. (Photographed by Wilson Popenoe, near Ambato, Ecuador, January, 1921; P18322FS.)

will be of interest to strawberry breeders in the United States, and in addition it is worthy of trial in our southwestern states. While the fruit of *Fragaria chiloensis* is inferior in flavor to that of our best cultivated strawberries, it is remarkable for its excellent shipping and keeping qualities; and it seems that varieties might be produced by selection which would merit cultivation on a commercial scale.

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

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

54631. "(No. 654. Santa Ines, Chile.) 'Frutilla blanca de Chile,' or white Chilean strawberry. This strawberry differs from S.P.I. No. 54630 in the color of its fruits, which are of a much lighter shade of red than those of the latter. It does not seem to be nearly so well known or so extensively grown in Chile as the common red variety, but it is recommended by Señor Izquierdo as a large handsome fruit, highly flavored. It will be of interest to our strawberry breeders." (Popenoe.)

Garcinia spp. (Clusiaceae), 54656 and 54657. From Tourane, Anam, French Indo-China. Seeds presented by Mr. F.A. McClure, Instructor, Canton Christian College. Quoted notes by Mr. McClure.

54656. "Seeds of a fruit secured from a tree grown in a thicket surrounding a Chinese ancestral hall about four kilometers ($2\frac{3}{4}$ mi.) southeast of Hue, Anam. The Chinese name is 'Shaan Chuk': local name 'Maang Tuk.'

"The tree from which the seeds were taken is about 10 meters (33 ft.) in height and 25 centimeters (10 in.) in diameter, breast high. The soil in which it is growing is rich, brown, sandy loam, and rather moist.

"The light yellow fruit is from 3 to 5 centimeters (1 to 2 in.) in diameter, slightly oval with a slight prominence at the stem end. It has a pleasant odor, and the flavor is delicate - similar to that of the mangosteen which we sometimes get on the Canton market."

54657. "The tree from which this fruit was secured was about 8 meters (26 ft.) in height and 20 centimeters (8 in.) in diameter, breast high. It was growing in the edge of a thicket on a mountain side near Hue, about 50 meters (164 ft.) above sea level. The fruit evidently is closely related to S.P.I. No. 54656. It is, however, more plump, and flatter in shape, lighter yellow, and distinctly inferior in flavor and quality. The fruit is found commonly for sale in the streets of Hue. Local name: 'Tai T'oi.'"

Laurelia sempervirens (Monimiaceae), 54633. From Santiago, Chile. Plants presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 675. Santa Ines, Chile.) 'Laurel de Chile.' A handsome tree of southern Chile with dark green, aromatic foliage. The wood, which is durable and never injured by boring insects, is much used for flooring. For trial on the Pacific Coast where it may be of value as an ornamental plant." (Popenoe.)

Lithraea caustica (Anacardiaceae), 54634. From Santiago, Chile. Plants presented by Señor don Salvador Izquierdo, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 674. Santa Ines, Chile.) 'Litre.' A native Chilean tree which resists drought and produces hard wood, employed in the manufacture of carts and wagons. Its leaves are ovate or obovate, thick and leathery in texture. The flowers, borne in axillary or terminal panicles, are followed by small, white fruits. The sap is caustic and said to be poisonous. For trial in the Southwest and on the Pacific Coast." (Popenoe.)

Lucuma obovata (Sapotaceae), 54653. From Santiago, Chile. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer. "(No. 652a.) This is a little-known fruit cultivated in various parts of Ecuador, Peru, and as far south as Santiago, Chile. It is not highly esteemed in Ecuador, but is popular in central Chile, where the fruits seem to be of better quality, than in the former country. The tree reaches 40 feet in height and when well grown it has a round, dense crown of very attractive appearance. The leaves, which are clustered towards the ends of the branchlets, are obovate, oval or elliptic, subacute at the base and rounded at the apex; commonly 5 to 10 inches long; deep green, with entire margins. The small flowers are produced in great abundance along the branches; they are three-fourths of an inch long, the corolla tubular, deeply 5-toothed and pale green. The fruit is round to elliptic, sometimes with a sharp apex, and commonly 3 to 4 inches long. The surface is deep brownish green, heavily marked or overspread with russet. The skin is very thin and easily broken. The flesh is deep yellow, dry and mealy, and very sweet, resembling in flavor that of the sapote and the 'ti-es' or egg fruit of southern Florida. The seeds are one or two in number, broadly oval, about $1\frac{3}{4}$ inches long, dark brown and glossy, especially on the flattened whitish ventral surface.

"The 'lucma,' as this fruit is called in Chile, may perhaps be too tender for cultivation in any except the warmest parts of California. It should succeed in southern Florida." (Popenoe.)

Malus sylvestris (Malaceae), 54635 to 54638, 54648 and 54649. **Apple.** From Chile. Plants obtained through Mr. Wilson Popenoe, Agricultural Explorer. Quoted notes by Mr. Popenoe.

54635. Plants presented by Señor don Salvador Izquierdo. "(No. 657. Santa Ines, Chile.) 'Huidobro' apple. Also known as 'Araucana' and 'Araucana Huidobro.'

"The best known aphid-resistant apple cultivated in Chile. It is of local origin, and is planted extensively in several parts of the country. The yellow, rather small, and somewhat mealy fruits are not of excellent quality, but nevertheless they are fairly popular in the markets of such large cities as Santiago and Valparaiso."

For further description see S. P. I. No. 54300, Plant Immigrants, No. 187, November, 1921, p. 1699.

54636. Plants presented by Señor don Salvador Izquierdo. "(No.658. Santa Ines, Chile.) 'Bella Rosa' apple. Described as a medium-sized fruit of firm texture and sweet flavor, recommended for cultivation on a commercial scale."

54637. Plants presented by Señor don Salvador Izquierdo. "(No.659. Santa Ines, Chile.) 'Chestnut' apple. Described as a medium-sized fruit for fall and winter use."

54638. Plants presented by Señor don Salvador Izquierdo. "(No.600. Santa Ines, Chile.) 'Reina Cristina' apple. This variety is considered by Señor Izquierdo the best aphid-resistant apple in Chile. It is said to be a fruit of much better quality than 'Huidobro,' and worthy of cultivation on a large scale."

54648. Plants presented by Instituto Agrícola Bunster, Angol, Chile. "(No.647. Criadero 'El Verjel,' Angol, Chile.) 'Verjel' apple. This variety originated at the Criadero 'El Verjel,' of which the Instituto Agrícola Bunster is the successor. It is remarkable because of its lateness in flowering, and for this reason is considered valuable. Early-flowering varieties run the risk, in southern Chile, of having the crop destroyed by late frosts, or being injured by the excessive and cold rains which occur.

"'Verjel' is described as a medium-sized, sweet apple. Messrs. Crouse and Reed, of the Instituto Bunster, tell me that it is rather inferior in quality, and not likely to meet with favor in the United States. It is introduced mainly for trial as a stock plant; very possibly its tardiness in commencing vegetative activity in the spring might be transmitted, in some measure at least, to other varieties grafted upon it. The tree is said to be notably productive here in southern Chile.

"The plants sent under this number are on seedling apple roots."

54649. Plants presented by Instituto Agrícola Bunster, Angol, Chile. "(No. 648. Criadero 'El Verjel,' Angol, Chile.) 'Puchacay tempranera' (early puchacay). Elbert Reed, of the Instituto Bunster, tells me that this apple ripens at the same season as 'Duchess of Oldenburg,' and that it is, for a summer apple, of very fair quality. Salvador Izquierdo considers it to be synonymous with the European variety 'Calville Rouge d'Ete.' It is widely and favorably known in Chile, and is introduced into the United States with the idea that it may be a variety of Chilean origin, slightly

distinct from the last named sort (with which, I take it, North American pomologists are already familiar).

"'Puchacay tempranera' is described as a large, handsome fruit, with aromatic, sweetly acidulous flesh of excellent quality. It ripens in southern Chile in January and February.

"The plants sent under this number are on seedling apple roots."

Severinia buxifolia (Rutaceae), 54658. From Tourane, Anam, French Indo-China. Seeds presented by Mr. F. A. McClure, Instructor, Canton Christian College. "Seeds from sand waste near Tourane, Anam. Secured October 2, 1921. Chinese name 'Tsau Peng Lak,' known also as 'Saan Kat' and 'Kau Kwat Lak.' There was a great deal of variation among the plants observed, some being tall (3 to 4 ft.) with long thorns and large leaves, and others being short (1 ft.), with short, very sharp thorns, and small leaves. I collected seeds from the larger and less thorny plants, for these seemed more promising as stocks for citrous fruits." (McClure.)

A handsome much-branched, spiny shrub which withstands unusually large amounts of salt in the soil. It may be of use as a stock for citrous fruits in regions having alkali soil or salty irrigation water. The boxlike leaves are shiny above and the small, dark red, berrylike fruits, an inch in diameter, become nearly black as they ripen. The plant is readily propagated from cuttings and is suitable for hedges. Native to southern China, Taiwan, Anam, and Tonkin. (Adapted from Journal of the Washington Academy of Sciences, vol. 6, p. 651.)

Vitis vinifera (Vitaceae), 54652. Grape. From Chile. Cuttings presented by Prof. John W. Gilmore, through Mr. Wilson Popenoe, Agricultural Explorer. "(No. 677.) These cuttings were obtained by Prof. Gilmore in the Elqui Valley, some distance north of Santiago. This is the grape which furnishes the Huasco raisin, well known throughout Chile. I have examined some of these raisins, and find them lighter in color than the muscatel raisins of California, with very few and small seeds, and with a mild, very pleasant flavor, somewhat less rich than that of the California product. The method of drying which is practised in the Elqui Valley is a curious one: the grapes are taken from the vine to a small house or shed, where they are suspended from the rafters; the sun never touches them during the drying process." (Popenoe.)

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