

HISTORY OF THE AVOCADO AND ITS VARIETIES IN CALIFORNIA WITH A CHECK LIST OF ALL NAMED VARIETIES

Ira J. Condit

College of Agriculture, Berkeley, California

The first reference to the introduction of avocado trees into California which we have been able to find is in the Report of the Visiting Committee of the California State Agricultural Society for 1856. The committee visited the place of Dr. Thomas J. White near San Gabriel on September 4, and reported as follows: "Dr. White has imported from Nicaragua a variety of choice tropical fruits including the sapota, the Aguacate or Butter Fruit, and the Mango." With what success these plants were cultivated has not been learned.

The early history of the avocado in California is so well described by Dr. F. Franceschi that I wish to quote the following paragraphs from his pen:

"Just like the aboved named Mexican fruit trees, also the Ahuacate was first planted at Santa Barbara, but many years later, that is in 1871, when three plants were brought from Mexico by the late Judge R. B. Ord, who brought also the first Cherimoyas. One of these trees died in infancy; the other two were very large and thrifty when I came to Santa Barbara twenty years ago. Both have unfortunately disappeared, the tallest and finest ,bearing fruits of good quality, dying probably on account of the ground being too shallow and dry at the place called "Las Palmas," in the upper part of Montecito; the other, which was branched low and much spreading, with very small and poor fruits, located on De La Vina Street, in Santa Barbara, was cut down some fourteen years ago to make room for a new building.

"In 1892, when I lived in Los Angeles, there was only one good sized Ahuacate in all that neighborhood, and precisely at the Jacob Miller place, where stands now beautiful Hollywood. This had been brought from Guatemala, towards 1880 I believe, together with many other rare and interesting trees, and is still extant and thriving. Seedlings from this tree are among the most promising of those which attract the attention of Ahuacate growers in California.

"At Los Angeles the first person to give an efficient impulse to the growing of Ahuacates, as well as other kinds of tropical or semi-tropical fruits in the early nineties, was Mr. J. C. Harvey, a Canadian by birth, and during some years agent of the Standard Oil Company in Southern California. It was Mr. Harvey who raised the very remarkable Ahuacate trees now to be seen at Mrs. Buddington's place on College Street, and in Elysian Park, together with a numberless host of choice and beautiful plants scattered all over the country.

"The first orchard of Ahuacates ever planted in California was started by the late Kinton

Stevens, along Palm Avenue in Montecito. Mr. Stevens was an Englishman full of energy and enterprise, who had also been the first in California to issue a catalogue of tropical and semi-tropical plants. His orchard was set out in 1895 and comprised about 120 trees, all Mexican seedlings, which in a few years grew to considerable size. Most unfortunately Mr. Stevens died in 1897, and then a series of dry years came on when water was very scarce in Montecito, and a great acreage of lemons were grubbed out, as absolutely unprofitable and alas! the pioneer Ahuacate orchard of California had to share their unlucky fate.

"The "White" Ahuacate, to be seen on West Arrellaga Street, Santa Barbara, which has proved to be such a prolific bearer, was raised by me from Mexican seed in 1895. A few grafted plants and a large number of seedling's from this tree were distributed under the name of "Santa Barbara Early."

"It was also about 1895 that I obtained from Chile a few seeds of "Paltita", as a very hardy form or variety is called there, with small fruits, but of good quality. Most of the plants I raised went abroad, and in this country I know only of one large specimen, on the Nordhoff place at Redlands, which has proved to be much hardier than any other."

Judging from this account by Dr. Franceschi it appears that the older trees planted in Santa Barbara have passed out of existence and that the White tree which he raised in 1895 is the oldest in that city. The tree on the Jacob Miller place, Hollywood, to which reference is made, is probably the Miller, but the year 1886 is now commonly accepted as the date when the tree was planted. This seems to make the Miller tree the oldest by several years of any avocado tree in California. The Chappelow tree was planted in 1893, and the White in 1895.

In 1897 Dr. Franceschi wrote that the last two years had seen a considerable increase in the plantings, several hundred trees having been set out chiefly at Santa Barbara, Los Angeles, and San Diego. Fruits were not exactly marketed but many more people, residents and tourists had opportunity of tasting the delicious fruit.

Mr. C. P. Taft of Orange planted the first avocado seed on his place about 1899 from a specimen obtained on the market. The resulting tree proved a poor bearer of almost worthless fruit. The next year another seed obtained in the same way was planted and later the seedling bore excellent fruits. In 1902-3 more seeds were planted; these were partly from Los Angeles trees but most were from Mexican fruit sent to private parties in Los Angeles. From the seeds planted during the four years, he had in 1912 thirty trees over eight years old in addition to over three hundred younger trees. Twenty-four of the thirty trees had borne fruit and only one or two seemed likely to prove unprofitable. Eight were of the thin-skinned type while the others were of the thick-skinned.

In the spring- of 1908, Mr. E. S. Thacher planted his first avocado trees at Nordhoff. Most of them were bought from the Exotic Nurseries of Santa Barbara but some were obtained from Mr. Taft and Mr. Camfield of Orange. The same spring he bought some seed from the American Fruit and Produce Company of Mexico City and it was from this lot of seed that 'trees were sold to W. G. Davison of La Habra in 1910. All of the first seeds planted by Mr. Thacher were of the Mexican thin-skinned type.

The trees planted by Mr. Davison grew thriftily in the location selected at "Orchard Dale"

near Whittier and La Habra, a region that had always been practically frostless until the winter of 1912-13 when they were severely frosted. Mrs. Davison did not care to replace the trees that were most damaged and sold the entire lot to D. K. Glower who moved them to his nursery in Monrovia. Mr. Glower budded ten thousand seedling avocado trees as early as 1909. In 1910 Mr. Glower published what was probably the first descriptive nursery pamphlet of budded trees in California.

Mr. F. O. Popenoe of the West India Gardens, Altadena, began propagating the avocado a number of years ago and, realizing the need of good varieties, imported budwood from Mexico in 1911 and 1912.

The first lot of buds was sent by J. M. Goulding now living at Paso Robles. Afterwards Mr. C. B. Schmidt was sent down to collect budwood, and more trees were propagated from the buds he secured than from the others. Later, budwood was secured from parties in Mexico, namely Roberto Johnson of Jalisco and P. S. Furnival of Guadalajara. Twenty-seven varieties in all were successfully established here from these introductions.

Mr. W. A. Spinks of Duarte began planting avocado trees about 1907 and produced budded trees in 1908. He has tested out a large number of seedlings as well as budded trees of California and imported varieties. The fruiting habits of such varieties as the Buddington, Murrieta, Colorado, Ferry, Harman, Ganter, Chappelow, and others were ascertained by Mr. Spinks by budding them into larger seedlings.

Mr. Sexton of Goleta planted out a few avocado trees several years ago and has since gathered together a large number of varieties for testing under similar conditions. In 1916 he had about ninety-two distinct varieties representing types from Mexico, Guatemala, Florida, and Hawaii as well as from California. Seventeen have already fruited.

I have been unable to ascertain where and when the first budded avocado trees were produced in this state, but Dr. Franceschi probably deserves this credit.

The number of varieties of distinctively California origin which I have listed is fifty-four; those of foreign origin number eighty-six, a total of named varieties of one hundred and forty.

California seedlings are fruiting and varieties are being obtained elsewhere in such numbers every season that the list is likely to be considerably lengthened. Many local seedlings are undoubtedly as good and some are much better than several of the varieties already named. It is unwise to give names to seedlings which appear here and there until they prove themselves superior to established varieties of the same type. This superiority may manifest itself in productiveness, hardiness, or resistance of the tree to soil conditions or disease, or quality and flavor of the fruit.

While some may think it best to omit from the list and forget the names of certain varieties previously described, it is true that many trees under these names have been planted along the coast and throughout the interior valleys of the state where they may prove to have qualities which show them worthy of further propagation, especially as home fruits. It will be at least several years before they can be eliminated from the variety list in untested localities.

The names of varieties follow in alphabetical order, the abbreviations after each being Guat. for Guatemalan type; Mex. for Mexican; and W. I. for West Indian.

Alto. (Guat.)

Introduced as budwood in 1911 by the West India Gardens under No. 28 from Atlixco, Puebla, Mexico. Described by K. A. Ryerson in Pomona College Journal of Economic Botany for Feb. 1913.

Ameca. (Guat.)

Introduced as budwood in 1912 by the West India Gardens under the name Furnival No. 1, from Ameca Valley, Jalisco, Mexico. Described under the latter name by Ryerson in the Pomona College Journal for Feb. 1913.

Atlixco. (Guat.)

Introduced as budwood in 1911 by the West India, Gardens under number 29 from Atlixco, Puebla, Mexico. First described by K. A. Ryerson in the Pomona College Journal of Economic Botany for February, 1913.

Azusa. (Mex.)

Original tree at Azusa in the dooryard of Mrs. Henry Roberts. Budded trees bearing in 1916. Described by F. O. Popenoe in these Proceedings for Oct. 23, 1915.

Baldwin. (W. I.)

A Florida variety described by P. H. Rolfs in 1905 under S. P. I. No. 12933¹ and included in the descriptions by F. W. Popenoe in the Pomona Journal for February, 1911. Named for Mr. Baldwin of Miami, Florida, who owns the original tree.

Hartley. (Guat.)

Original tree growing on place now owned by Bartley Bros., Santa Ana, R. D., the same place on which the original Northrop tree stands and adjoining the place on which the Sharpless and Monroe varieties originated. The tree was planted about 1907 by J. H. Northrop now of Indio, who formerly owned the place.

The tree bore thirty-six fruits in 1916 and specimens were exhibited at the Association meeting in Los Angeles in April. Since the description of the fruit has not appeared previously in these Proceedings, it is here given: fruit very large, 6 inches long, 4% inches in diameter and 32 ounces in weight. Color, deep green; surface, dull, rather rough; skin, thick, granular. Flesh, creamy, thick, buttery, of excellent flavor and very slight fiber. Seed, tight in cavity, roundish, tapering toward the apex, 2% inches each way, with two seed coats adhering to the seed. Season at Santa Ana, May 15 to July 1.

Bartlett. (W. I.)

A Cuban variety described under S. P. I. No. 40978.

Beauty. (Guat.)

Original tree on place of C. P. Taft of Orange; seed planted by him in 1902; the latest of all Mr. Taft's varieties to mature, coming from June to October. First described by F. O. Popenoe in

¹ *S. P. I. refers to the Seed and Plant Introduction, U. S. Department of Agriculture, Washington. D. C.

these Proceedings for October 23, 1915.

Blackman. (W. I.)

A Florida variety described by P. J. Wester and included by F. W. Popenoe in the descriptions in Pomona Journal for February, 1911.

Blake. (Mex.)

Original tree growing at 889 South Fair Oaks Ave., Pasadena; planted about 1903; first described by F. W. Popenoe in Pomona Journal for February, 1911. Budded trees now bearing in many localities, some in the San Joaquin Valley; reported to have matured three distinct crops at Goleta in 1914-15. No longer being propagated in any quantity. Fruit very susceptible to decay organisms while still on tree.

Blakeman. (Guat.)

Variety originated from the seeds of avocado brought by John Murrieta or received by him from his brother near Atlixco, Mexico. He gave some seeds to Mr. Habersham, then residing at the head of La Brea Street in Hollywood, who planted them in 1904. The place is now owned by E. W. Dickey. In 1913 the production was a few fruits; in 1914, from 25 to 50 fruits; in 1915, about 250; and in 1916, good crop. The variety was first described by Ryerson in the Journal of Agriculture for November, 1913, under the name of Dickey No. 2. It has also been known as Habersham.

Brodia. (Guat.)

Original tree on place of C. P. Taft of Orange; seed planted by him about 1902. When first tasted the flavor of the fruit had a fancied resemblance to that of an onion, hence the name Brodia, a native wild flower, sometimes but incorrectly known as wild onion. Tree severely frosted in 1912-13. Fruits produced at Orange in 1916 on large top-worked seedling. First described by F. O. Popenoe in these Proceedings for October 23, 1915.

Buddington. (Guat.)

Original tree on place of Mrs. Buddington, 776 New Depot Street, Los Angeles. No description of fruit published.

Butler. (W. I.)

A summer ripening variety being extensively propagated by U. S. D. A. at Miami, Florida, under S. P. I. No. 26690. A tree is fruiting this season at Mr. Spink's place, Duarte, under this S. P. I. number.

Canto. (Guat.)

Introduced as budwood in 1911 from Atlixco, Puebla, Mexico by West India Gardens under No. 25. Described by Ryerson in the Pomona Journal for February, 1913.

Canyada.

Introduced as budwood in 1911 from Canyada, Queretaro, Mexico, under No. 9. First described by Ryerson in the Pomona Journal for February, 1913. One fruit set on a budded tree at Altadena in 1916.

Cardinal. (W. I.)

A Florida variety described by P. J. Wester; foliage exceptionally handsome, being crimson when young, hence the variety name. Introduced into California and being tested out in some localities.

Carton. (Mex.)

Original tree owned by P. E. Carton, San Fernando; seed planted in May, 1907, from an extra large, green fruit sent from Guadalajara, Mexico. The tree is said to have borne the third year from seed 67 fruits; fourth year, 780; fifth year, 227; sixth year, 460; and seventh year, 1000 fruits or more. Several budded trees bearing at San Fernando, 1916. Variety first described by Ryerson in the Journal of Agriculture for November, 1913.

Challenge. (Guat.)

Original tree owned by J. H. Walker, 1547 Las Palmas Ave., Hollywood; said to have been planted about 1897. Tree began bearing at seven or eight years of age and following crops averaged from 800 to 1500 fruits. It failed almost completely one season several years before the freeze of 1912-13 and also the one immediately after. In 1914-15 there were approximately 2500 fruits on the tree but in 1916 only six fruits were produced, seeming to indicate the habit of bearing in alternate years which is common with many other kinds of fruit trees, due no doubt to over production. Mr. Walker actually sold 1540 fruits from the tree in 1915 for \$756.36. There were also a good many fruits used in the family of which no account was made and 200 were picked to lighten the branches.

During the cold spell of January, 1913, the tree was subjected to two nights of frost, the first with a temperature of 24 and the second of 18°; the tips of the branches were frozen and in exposed places some of the older wood was killed, but the fruit escaped. The worst feature was the failure of the tree to set fruit that spring for the following season. The variety was first described by F. O. Popenoe in these Proceedings for October 23, 1915. Budded trees fruiting in 1916.

Champion. (Guat.)

Original tree on the place of C. P. Taft of Orange; seed planted by him in 1902. Budwood was sent to Florida in 1916 for trial. First described by F. O. Popenoe in these Proceedings for October 23, 1915.

Chappelow. (Mex.)

Original tree owned by Wm. Chappelow, Monrovia. The seed from which the Chappelow avocado was grown was sent by the U. S. D. A. in the summer of 1893. They had been received from Mr. F. Foex then of Eddy, N. Mexico, who had obtained them from fruits found on trees near Monterey, Mexico, where they had been subjected to a temperature of about 22° F. during several consecutive nights when in blossom during the preceding winter.

The seedling was grown in a pot and not planted out until the following spring. The winter of that year (1894) was very cold and the small tree was frosted down to the ground and came up again the next spring. The tree began bearing the fourth and fifth years from planting and has been bearing every year since except the year of the heavy freeze of January, 1913. Buds of the tree were sent to Professor Rolfs of Miami, Florida, in 1902. He top-worked it in seedlings and two years later obtained fruit. Professor Rolfs named the variety after Mr. Chappelow, by which name it has been known since. The tree is now 23 years old and is the largest in California, possibly in the United States. The tree itself has never been injured by frost since it was one year old, but several years the crop of fruit has been lessened by an extra cold snap in blooming time. The tree has always borne a crop with the exception of 1913 when the thermometer went down to 10° and all the fruit and bloom were killed. It bloomed again later on, but only a small number of fruits set. The record of the number of fruits since 1902 is as follows: 1902, 310; 1903, 380; 1904, 605; 1905, 575; 1906, 235; 1907, 465; 1908, 1209; 1909, 260; 1910, 285; 1911, 1025; 1912, 350; 1913, 20; 1914, 3215; 1915, 1723. Seedlings of the Chappelow have borne fruit remarkably like that of the parent tree, due either to its isolation

which prevents cross-pollination with other varieties or to the pure strain of seed from which it came. Budded trees have been bearing for several years in various parts of Southern California. Some trees are known to produce small, elongated, seedless fruits in addition to normal specimens.

The variety was named and described by P. H. Rolfs under S. P. I. No. 12934 in 1905. A description, history and colored reproduction of the fruit is given in the U. S. D. A. Yearbook for 1906, pp. 363, 364. An outline drawing was published in 1904 in Bulletin 61, Bureau of Plant Industry, by P. H. Rolfs.

Chili. (Guat.)

Imported as budwood from an altitude of 6000 feet in Chili in June, 1911, by D. E. Glower of Monrovia through Dr. W. E. Aughenbaugh. Described by K. A. Ryerson in Pomona Journal of February, 1913.

Christmas Red. (W. I.)

Described in John B. Beach's Florida Catalogue as a seedling from the Trapp which produces a fruit more oval in form than the parent and mahogany red.

Colima. (Guat.)

Introduced as budwood in 1912 by the West India Gardens from near Colima, Mexico, as Johnston No. 5. Fruit not yet accurately described.

Colon. (Guat.)

Introduced as budwood in 1911 by West India Gardens, from Atlixco, Mexico, under No. 24. First described by F. O. Popenoe in these Proceedings for Oct. 23, 1915.

Colorado. (Guat.)

Original tree planted on College Street, Los Angeles, about 1901 by J. Murrieta, the seed coming from Atlixco, Mexico. In May 1914 the tree was transplanted by E. L. Doheny to his home grounds, Beverly Hills near Los Angeles, and is fruiting in 1916. Buds of the Colorado placed in large seedlings have produced fruit at Duarte. Variety first described by Ryerson in the Journal of Agriculture for November 1913. Quite commonly known as Purple Murrieta.

Cyrus.

A Florida variety described by P. J. Wester in 1910 probably under S. P. I. No. 26699.

Dickey. (Guat.)

Original tree on place of E. W. Dickey, head of La Brea Ave., Hollywood. Seed from Atlixco, Mexico, planted about 1904. First crop about 300 fruits. Budded trees very difficult to grow and very few thriving; several fruiting, however, at Yorba Linda in 1916, also at San Fernando. Buds sent to Florida fruited during the winter of 1915-16. Variety described by Ryerson in Journal of Agriculture for November 1913.

Dickey A. (Guat.)

Original tree on place of E. W. Dickey, Hollywood; planted about 1904. Described by Ryerson in the Journal of Agriculture, November 1913, under the provisional name of Dickey A.

Davis Nos. 4, 6, 7.

Analyses of these three varieties are given in the Hawaii Station Report for 1914, p. 66.

Dickinson. (Guat.)

Original tree growing at 679 West 35th Street, Los Angeles. Mrs. M. J. Dickinson, 630 West 35th Street, planted the seed and owned the tree up to 1912. According to Mrs. Dickinson, a grocer of the neighborhood went to Honduras and when he came back brought two avocado seeds with him. She planted these about 1899. One seedling was killed by the frost, while the other was planted near the house and grew thriftily, being more sheltered. It bore a few fruits in 1909, 1910, and 1911, 50 or so each year, while in 1912 the fruit on the tree sold for \$150.00, at \$.25 each. In 1912-13 it was more or less frosted and did not bear much fruit until 1916, when 450 fruits matured. Another report says that the seed came from the city of Guatemala. The variety was first described by Ryerson in the Journal of Agriculture, November 1913.

Don Carlos.

A Cuban variety described in 1916 under S. P. I. No. 40979.

Eskbank.

A Hawaiian variety especially recommended for planting in the Islands.

Estelle. (W. I.)

A Florida variety described in nursery catalogs.

Family. (W. I.)

A Florida variety described and figured by a colored plate in the Yearbook for 1910, p. 431. First described in 1905 by P. H. Rolfs under S. P. I. No. 12935.

Farnsworth.

A Hawaiian variety especially recommended for planting in the Islands.

Ferry. (Guat.)

Original tree growing on place of Dr. F. C. Ferry, Hollywood Blvd. and Serrano Ave., Hollywood. Tree was planted in 1898 as a seedling from the Sturtevant Nursery. The first fruits were produced about 1910; there were none on the tree in 1914, but in 1915 the tree bore 12 to 15 dozen and in 1916 a total of 23 dozen which sold at \$4.50 a dozen. No fruits have set in 1916. The tree was damaged by fire in 1907, one side of the trunk still showing the effects. Buds placed in a large seedling have produced fruit at Mr. Spink's place. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Fowler. (Mex.)

Original tree growing on place of Mrs. E. M. Fowler, 363 Grove Street, Pasadena. Seed was planted in 1902 and is said to have been obtained from the garden of Charles M. Cook of Honolulu. One account states that it is a seedling of the Blake. Budded trees fruiting in several localities this season, some in the San Joaquin Valley. The variety was described by F. W. Popenoe in the Pomona Journal for February, 1911. Nearly 1000 fruits were produced on the original tree in 1915.

Fuerte. (Guat.)

Introduced as budwood in 1911 from Atlixco, Puebla, Mexico, under No. 15. Budded trees are bearing- this year for the first time at Yorba Linda and Altadena. Described by Ryerson in Pomona Journal for February 1913 as No. 15.

Fulford.

A Florida variety, budded trees of which are growing in the propagating house of Plant Introduction Gardens, Chico, under S. P. I. No. 6709.

Ganter. (Mex.)

Original tree growing on the place of H. A. Woodworth, Hideout Heights, Whittier. The seedling tree was purchased with several other trees from a nurseryman of Whittier, I. H. Cammack, by A. R. Rideout who planted it in the spring or summer of 1905. The seedling was about 3 feet in height and at least one-half of the bark sun-burned so that it took a long time for this to heal over. At the same time about a dozen other trees were planted but the Ganter proved to be the only one worthy of mention. Just as the tree came into bearing the place was sold to A. M. Ganter, after whom the variety was named. A little later Mr. Woodworth bought the property and some trees have been disseminated under the name Woodworth. Budded trees are bearing in many localities. Small seedless fruits are sometimes produced in addition to normal specimens. Described by F. W. Popenoe in the Pomona Journal for February, 1911.

Gordo. (Guat.)

Imported as budwood in 1911 by West India Gardens from Atlixco, Puebla, Mexico, under No. 14. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Gottfried.

A Florida variety described in 1906 under S. P. I. No. 19094.

Grande. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Puebla, Mexico, under No. 39. Described by Ryerson as No. 39 in Pomona Journal for February 1913. Fruiting at Upland and Riverside in 1916.

Grant. (W. I.)

A variety collected from Bahama Islands, British West Indies by P. J. Wester in 1906 and described under S. P. I. No. 18731.

Guadalupe. (W. I.)

A Cuban variety described in 1916 under S. P. I. No. 40980.

Guatemala.

A variety introduced by U. S. D. A. and which fruited in Florida for the first time in April, 1914.

Harman. (Mex.)

Original tree on place of E. N. Harman, Sherman, Foothill Boulevard. It is said to be one of six trees brought to California from South America and planted by Mrs. Charles Horn on her ranch at Sherman in 1899. Mr. Harman acquired the place in 1905 just as the tree was beginning to bear. Since that time the crop has averaged about 1500 fruits. Budded trees are bearing in many localities and trees have been widely disseminated in California. First described by F. W. Popenoe in the Pomona Journal for February 1911.

Hathaway. (Mex.)

Original tree on place of B. Hathaway, 1659 Miller Ave., Hollywood. The tree was grown from a seedling obtained from Mrs. Miller in 1904. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Hollenbeck. (Mex.)

Original tree growing at the Hollenbeck home in Los Angeles. Budded trees listed in nursery catalogs in 1915. Described in these Proceedings for October 23, 1915.

Horn. (Mex.)

Original tree growing on place of Ed Harman at Sherman until about two years ago, when it was removed. Budded trees advertised in nursery catalogs in 1914; propagated in small way only.

Hulumanu.

Recommended for planting in Hawaii in 1915.

Ideal. (Guat.)

Imported as budwood from Mexico by D. E. Glower of Monrovia. Described by Ryerson in Pomona Journal for February 1913.

Ingersol. (Mex.)

Described in the California Cultivator for October 28, 1916 as follows: The tree stands eight feet high and has a spread of about 12 feet. "It bore this year 180 fruits of an average size of three and a half inches long and two and a quarter inches in diameter and an average weight of five and a half ounces. It is a thin-skinned variety of deep purple color. The flesh, is of excellent quality. The tree blooms in March and the fruit ripens in August, September and October."

Inezholt.

A Hawaiian variety imported in the spring of 1914 by Joseph Sexton of Goleta, under No. 1907, or Holt's No. 1. Especially recommended in 1915 for planting in the Islands.

Jersey Cream.

A Hawaiian variety imported in 1914 by Mr. Sexton of Goleta as No. 1911.

Johnston. (Guat.) ?

Introduced as budwood in 1912 by the West India Gardens from near Colima, Mexico, under Johnston No. 6. Fruit not yet described.

Johnstone. (W. I.)

A variety described by P. J. Wester in 1906 under S. P. I. No. 18729. Budwood originally from Bahamas.

Kailua.

Recommended in 1915 for planting in Hawaii.

Knight. (Guat.)

Introduced under No. 27 as budwood in 1914 by E. E. Knight, Yorba Linda from Antigua, Guatemala. Fruit round, 4 inches diameter, 1½ pounds weight; surface, slightly rough; skin, a hard shell, woody; green in color. Flesh, firm, yellow, free from fiber, rich nutty flavor; seed medium size, tight in cavity. Bloom first of June; season, following November until last of March in Guatemala. Description by Mr. Knight.

Knowles. (Mex.)

Original tree on place of W. A. Knowles, Santa Barbara; planted in 1898 and at eight years of age produced about 1000 fruits. Annual crop from 150 to 1200 fruits. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Lambert. (Guat.)

Original tree on place of C. F. Wagner, corner Fairfax and Fountain streets, Hollywood. The seed was obtained from a fruit sold on the Los Angeles market and planted in 1907. In 1915 it

bore three fruits and in 1916 four fruits. The variety was given Mrs. Wagner's maiden name. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Landon.

A Florida variety included in descriptions made by F. W. Popenoe in the Pomona Journal for February, 1911.

Largo.

A variety described in 1906 by P. J. Wester under S. P. I. No. 18730; originally from Bahama Islands.

Linda. (Guat.)

Introduced as budwood from Guatemala in 1914 by E. E. Knight of Yorba Linda as Knight's No. 39. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Los Angeles. (Mex.)

A variety originated on the place of W. A. Spinks, Duarte, in 1914-1915. The tree is a strong grower; the fruit is purplish-black, bottle-necked, glossy; skin thin; seed fairly large; flesh of good texture and little fiber; quality very good. Season late.

Luisa.

A Cuban variety described in 1916 under S. P. I. No. 40912 and being ' tested out in Florida.

Lycett.

Especially recommended in 1915 for planting in Hawaii.

Lyman.

Recommended in 1915 for planting in Hawaii.

Lyon. (Guat.)

Original tree on place of Miss A. M. Lyon, 7276 Sunset Boulevard, Hollywood. The seed was from a fruit purchased on the Los Angeles market and planted in 1908. The original tree is not very large having been cut heavily for budwood and also somewhat injured by the freeze of 1912-13. Budded trees have proved to be very precocious, literally blossoming and bearing themselves almost to death, unless prevented by thinning the fruit.

Lyon. (Guat.)

Two varieties have been described under the name of Lyon. This one was described by P. J. Wester in the Philippine Agricultural Review for February 1914. The original tree grew from seed imported in 1903 by L. Lyon, the horticulturist of the Philippine Station at that time.

Macdonald.

Especially recommended in 1915 for planting in Hawaii.

Magoon.

Introduced as budwood in 1914 from Hawaii by Joseph Sexton of Goleta, under No. 3203. Especially recommended in 1915 for planting in Hawaii.

Makaha I and II.

Analyses of these two varieties are given in the Hawaiian Station Report for 1914, p. 66.

Matamoras.

A hardy variety secured from across the river in Mexico near Brownsville, Texas. A budded tree is growing in the propagating house of the Plant Introduction Gardens, Chico.

Mattern. (Mex.)

Original tree growing in Los Angeles, fruiting in 1912. Short description by F. O. Popenoe in these Proceedings for October 23, 1915.

Merced.

A Cuban variety described in 1916 under S. P. I. No. 40981 and introduced into Florida for trial.

Merito. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Puebla, Mexico, under No. 18. Budded trees set fruit in Altadena in 1916. Described by K. A. Ryerson in Pomona Journal for February 1913.

Meserve. (Guat.)

Original tree growing on place of Ralf Goddard, corner Cherry and Hill Streets, Signal Hill, Long Beach. Said to have been grown from a seed obtained from Honolulu about 1901 by Mrs. Meserve, who formerly owned the place. Described by Ryerson in the Journal of Agriculture for November 1913.

Miles. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Puebla, Mexico, under No. 35. Briefly described by F. O. Popenoe in these Proceedings for October 23, 1915.

Miller. (Guat.)

Original tree on place of Jacob Miller, head of Miller Avenue, Hollywood. Seedling tree said to have been brought from Guatemala by John Grelck, an uncle of Mrs. Miller, and planted in 1886 on a neighboring place, from which it was transplanted about 1910. The tree blooms profusely and sets an immense crop of fruits which, however, keep dropping until very few mature. Described by F. W. Popenoe in the Pomona Journal for February 1911.

Mitchell.

Originated in Porto Rico and introduced into Florida in 1906 for trial. Described under S. P. I. No. 18120.

Moanalua.

A chance seedling about 25 years of age growing on the estate of S. M. Damon, Moanalua, Hawaii. A bud on Mr. Spinks' place at Duarte has developed into a tree but has proved very tender, the young foliage and twigs being spotted and blackened by cool nights; some fruit is maturing this season. Described by J. E. Higgins in the Hawaii Station Report for 1910.

Modesto. (Guat.)

Introduced as budwood in 1912 from Atlixco, Puebla, Mexico, by the West India Gardens. Briefly described in these Proceedings for October 23, 1915.

Monrovia. (Mex.)

Original tree on part of the Bradbury Estate, Duarte, formerly called the Winston ranch, but now owned by Miss Louisa Bradbury, who has named it the "Valadenia." Parent tree quite large, from 20 to 25 years old, bearing a very large oval leaf; very few propagated. Budded tree fruiting at Thos. H. Shedden's place, Monrovia, 1916. Described by F. W. Popenoe in these

Proceedings for October 23, 1915.

Monroe. (Guat.)

Original tree on place of B. H. Sharpless, Santa Ana, R. D. Tree was planted in 1905 and bore two fruits in 1914, five in 1915, and sixty in 1916. It was named for Mrs. Sharpless, whose maiden name was Monroe. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Montezuma. (Guat.)

Introduced as budwood in 1911 by the West India Gardens from Atlixco, Puebla, Mexico, under No. 33. Described and figured by Ryerson in the Pomona Journal for February 1913.

Murrieta. (Guat.)

Original tree growing at 765 College Street, Los Angeles. Planted about 1910 by John Murrieta; seed secured from Atlixco, Mexico. Buds placed in large seedling trees have fruited at Mr. Spinks' place near Duarte. Budded trees fruiting at Mr. Shedden's place, Monrovia, 1916. Very few trees have been grown on account of difficulty of propagation. Sometimes known as Murrieta Green. Original tree said to have died recently. Described by Ryerson in Journal of Agriculture, for November 1913.

Murrieta Two Pound or Two Pound Murrieta. (Guat.)

Original tree said to be on the old Murrieta Place, 765 College Street, Los Angeles. Propagated and distributed by the Pioneer Nursery in 1915 and 1916. Fruit not yet described.

Northrop. (Mex.)

Original tree on place of W. R. Bartley, Santa Ana, R. D. It was planted by J. H. Northrop, now of Indio, the seedling having been secured from C. P. Taft about 1900. The place was owned for many years by Mr. Eells and some budded trees have been disseminated under the name "Eells." In 1914 the tree produced 1,800 fruits, and in 1915 about 1,000 fruits, bringing \$2.50 a dozen on the Los Angeles and San Francisco markets. The tree produces a heavy crop in the fall and lighter crop in the spring. Described by Ryerson in the Journal of Agriculture for November 1913.

Nutmeg. (Guat.)

Original tree in orchard at Hawaii Experiment Station, Honolulu; seedling planted in March 1908, and tree came into bearing in December 1911. Described by C. J. Hunn in Hawaii Station Report for 1912, p. 38. Budded trees are growing in California at Goleta and Pasadena.

Obispo. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Puebla, Mexico, under No. 41. Described by Ryerson as No. 41 in the Pomona Journal for February 1913.

Oro. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Mexico, under No. 32. Described as No. 32, by Ryerson in the Pomona Journal for February 1913.

Pico. (Mex.)

Original tree on place of Jacob Miller, Hollywood; moved recently to Doheny place. Very few trees propagated. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Perfecto. (Guat.)

Introduced as budwood in 1911 from Atlixco by the West India Gardens under Nos. 19 and 22. One fruit matured on a three-year-old bud at Altadena in 1916. Described and figured by Ryerson as No. 19 in the Pomona Journal for February 1913.

Plata. (Mex.)

Introduced as budwood in 1911 by the West India Gardens from Santa Maria del Rio, San Luis Potosi, Mexico, under No. 2. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Pollock. (W. I.)

Original tree on grounds of S. H. Pollock, Miami, Florida, and planted about 1896 or 1897. Budded trees were disseminated under the variety name as early as 1901 by a Florida nursery; described in 1905 under S. P. I. No. 12936. It is fully described and a colored plate of the fruit given in the Yearbook for 1912, p. 272. Budded trees fruiting at W. A. Spink's place, 1916.

Pomona. (Mex.)

Original tree on grounds of Mrs. Anna Skinner, 533 West Ninth Street, Pomona. A hardy variety distributed a few years ago but no longer being propagated. Fruit small, purplish-black. A three-year-old budded tree is thriving near Sacramento and this year produced twelve fruits.

Popocatepetl. (Guat)

Introduced as budwood in 1912 by West India Gardens from Atlixco, Mexico. Described by Ryerson in the Pomona Journal for February 1913.

Presidente. (Guat.)

Original tree growing at 765 College Street, Los Angeles. Seed planted by John Murrieta about 1901. Described by Ryerson as El Presidente in the Journal of Agriculture for November 1913.

Preston.

A variety described in Hawaii Bulletin No. 25 as No. 157 and which G. P. Wilder calls Preston.

Puebla. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Puebla, Mexico, under No. 13. Budded trees are maturing fruit at several localities this season. Described by Ryerson in the Pomona Journal for February 1913.

Quality.

A Florida variety described by P. J. Wester and included in the descriptions given by F. W. Popenoe in the Pomona Journal for February 1911. Several budded trees growing in California.

Queen. (Guat.)

Introduced under Knight's No. 28, as budwood in 1914 by E. E. Knight of Yorba Linda from an elevation of 5,200 feet in Guatemala. Described by F. W. Popenoe in these Proceedings for October 23, 1915.

Queretaro. (Mex.)

Introduced as budwood in 1911 by the West India Gardens from Canyada, Queretaro, Mexico, under No. 11. Described by Ryerson in Pomona Journal for February 1913. Budded trees fruiting this season at Yorba Linda, Monrovia, Nordhoff and Tustin.

Rader.

Listed in the 1915 catalog of Griffing Bros., Jacksonville, Florida.

Rainey. (Mex.)

Original tree on place of Mr. Rainey, Santa Barbara Street, Santa Barbara; said to be a seedling of the White. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Redondo. (Guat.)

Introduced as budwood in 1911 from Atlixco by the West India Gardens under No. 16. Budded trees fruiting at Yorba Linda this season. Described and figured by Ryerson in the Pomona Journal for February 1913.

Rey. (Guat.)

Introduced as budwood in 1914 by E. E. Knight of Yorba Linda from an elevation of 5,200 feet in Guatemala. Original tree low and round in outline; 25 feet high with a trunk about 14 inches in diameter; yield in Guatemala 500 fruits; season October to April; probable age of tree, 20 years. Fruit, average weight one pound; color, green; surface, rough; rind, thick; fiber, none; quality, very nutty; size of seed, medium; tight in the cavity. Description furnished by Mr. Knight. The name Rey was suggested by the owner of the original tree who said it was king of all varieties he knew.

Rhod. (Guat.)

Original tree on place of C. P. Taft, Orange. Seed planted in 1902; tree bearing its first fruit at five years of age and it is said to have brought in more actual money returns than the original Taft tree. In 1915 it produced 500 fruits, and in 1916 1,200 fruits. Budded trees fruiting at Orange and Goleta, 1916. First described by Ryerson in the Journal of Agriculture, November 1913.

Rico.

A Florida variety. Described in 1905 under S. P. I. No. 13731.

Rita. (Guat.)

Original tree on place of C. P. Taft, Orange. Seed planted in 1902; described by Ryerson in the Journal of Agriculture for November 1913.

Rodolph. (Mex.)

Original tree on place of Mr. R. D. Fish, 231 Jasmine Avenue, Monrovia. Said to be a seedling of the Chappelow; planted about 1906 or 1907. It began to fruit when only four or five years old, bearing a large crop for such a small tree. In recent years it has been an irregular bearer. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Royal. (Guat.)

Original tree on place of J. H. Walker, 1547 Las Palmas Avenue, Hollywood. Tree planted about 1897 and began bearing in the seventh or eighth year. It had in round numbers 300, 400 and 500 fruits in 1910, 1911, and 1912, respectively. In 1914 the tree produced nearly 1,000 fruits. Described by Ryerson in the Journal of Agriculture, November 1913.

San Sebastian. (Mex.)

Introduced as budwood in 1911 from San Sebastian, Queretaro, Mexico, by West India Gardens under No. 7. Proved to be hardy in 1912 and 1913, being untouched in exposed position by temperature of 16 degrees. Described by Ryerson in the Pomona Journal for February 1913.

Senor. (Guat.)

Original tree on place of C. P. Taft, Orange. Seed planted in 1901. Described by Ryerson in Journal of Agriculture for November 1913.

Schmidt. (Guat.)

Introduced as budwood in 1911 by West India Gardens from Atlixco, Mexico, under No. 40. The Schmidt ripened fruit in Florida during the winter of 1915 and 1916. Described by Ryerson as No. 40 in the Pomona Journal for February 1913.

Sharpless. (Guat.)

Original tree on place of B. H. Sharpless, Santa Ana, R. D. No. 1, adjoining the place on which the Northrop tree is growing. Mr. T. Gackley is said to have bought the tree as a seedling in 1901 from C. P. Taft. It fruited first at nine years of age. In 1912 the crop was two fruits; in 1913, 20; in 1914, 75; in 1915, 250; in 1916, several hundred. Two-year-old buds in large seedling trees are setting heavily this season. Described by Ryerson in the Journal of Agriculture, November 1913.

Sinaloa. (Guat.)

Introduced as budwood in 1911 by the West India Gardens from Atlixco, Mexico. The Sinaloa ripened fruit in Florida during the winter of 1915-16. Budded trees at Yuba City, California, have proved hardy. Fruiting on three-year buds on old seedling at E. W. Dickey's place, Hollywood. The variety described by F. W. Popenoe in the Pomona Journal for February, 1911, is no longer in existence, the name being transferred to this variety. Described by Ryerson in the Pomona Journal for February 1913.

Skinner. (Mex.)

Advertised in nursery catalogs of 1914. Listed but not described in these Proceedings for October 23, 1915. Very few trees propagated.

Smith. (Mex.)

Original tree on the place of C. R. Smith. 1308 North Main Street, Santa Ana. Said to be a budded tree of a Mexican Seedling, planted in 1906. It bore its first crop at seven years of age, producing 783 fruits at that time. The fruit is small, weighing from three to five ounces, but very rich in flavor and practically free from fiber. During 1914 it produced over 1,000 fruits.

Solano. (Guat.)

Original tree on the Solano Estate, Hollywood. The origin of the seed not definitely known but said to have been planted by Mr. Murrieta. According to J. E. Higgins, the Solano is a Hawaiian seedling. First crop produced in 1912. In 1913 about 150 fruits and in 1915 about 325 fruits were produced, while in 1916 only two matured. The Solano ripened fruit in Florida during the winter of 1915-16. Buds of the Solano on large seedling trees matured fruit in 1916 on Mr. Spinks' place at Duarte; fruit also maturing elsewhere for 1917. Described by Ryerson in the Journal of Agriculture for November 1913.

Spinks. (Guat.)

This variety originated as a promising seedling in a nursery row on W. A. Spinks' place at Duarte. A bud was taken from the seedling, placed in an older tree and produced 19 fruits in 1915. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Sterling.

A Florida variety described by Wester under one of the S. P. I. Numbers 26689 to 26730. Description included in those given by F. W. Popenoe in the Pomona Journal for February 1911.

St. Petersburg.

A Florida variety described in 1907 under S. P. I. No. 26699. A budded tree is growing in the propagation house of the Plant Introduction Gardens at Chico.

Surprise. (Guat.)

Original tree on place of C. F. Wagner, Hollywood, California. Seed planted from a fruit shipped from Mexico in the fall of 1908. The tree produced one fruit in 1915 and in 1916, 81 fruits were gathered. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Taft. (Guat.)

Original tree on place of C. P. Taft, Orange. Seed planted in 1900. The tree bore 6 fruits at nine years of age. It then skipped a year and produced a good crop during the next three years. In 1912 it produced 120 fruits; in 1913, 120; in 1914, 120; in 1915, 300; in 1916, 700. Budded trees are bearing this season in different places in Southern California as well as in the San Joaquin Valley, although buds placed in large seedlings have borne fruit at Mr. Taft's place the last two years. Described by Ryerson in the Journal of Agriculture for November 1913.

Taft Hardy. (Mex.)

A variety propagated by some nurseryman and quite widely distributed a few years ago, but is no longer being propagated. Budded trees are bearing in different localities.

Taylor. (Guat.)

A Florida variety described in 1916 under S. P. I. No. 26710. The original tree is a seedling either of the Challenge or Royal, seeds of which were sent to Washington and planted at Miami in 1908.

Topa Topa. (Mex.)

Original tree on place of E. S. Thacher, Nordhoff. The tree is one of 122 seedlings which were planted in orchard form in March, 1909, the seed having probably been planted in 1907. In 1911 the tree bore several fruits and has produced crops every year since. In January, 1913 the tree stood a temperature of about 20 degrees, carrying all its leaves uninjured and part of its bloom, maturing some fruit the following season. In 1914 the tree had about 200 fruits, but on account of the greater number they averaged considerably smaller in size. In 1916 the tree set an excessive crop, many dropped when smaller than eggs and of the rest a considerable share ripened at the stem end first, many dropping off. Several hundred marketable fruits, however, matured. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Trapp. (W. I.)

Originated as one of a lot of seedlings planted about 1894 by S. C. Trapp in his garden at Coconut Grove, Florida. Described in 1915 under S. P. I. No. 12937 and in the same year more fully described and figured in colored plate in the Yearbook. Considered by Florida growers and shippers to be the best variety for commercial planting in that state. Budded trees have been growing in California for several years but have made poor growth. A tree at Mr. Spinks' place, Duarte, is carrying fruit in 1916.

Two Pound Green. (Guat.)

Introduced as budwood from an elevation of 6000 feet in Atlixco, Mexico by D. E. Glower of Monrovia through G. Fuentes. Described by Ryerson in the Pomona Journal for February 1913.

Ultimate. (Guat.)

Original tree on place of C. P. Taft, Orange. Seed planted in 1902 and according to Mr. Taft

dropped its fruit badly during the early years of fruiting. Placed by Mr. Taft next to the Taft variety both in quality and hardness. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Val de Flor. (Mex.)

Introduced as budwood in 1912 by E. G. Hart of Los Angeles from the State of Oaxaca, Mexico. Budded trees fruiting this season show two types of fruit, one oblong and one bottle-necked. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Veranero.

A variety obtained by U. S. D. A. from Caracas, Venezuela under S. P. I. No. 35121, March 1913. It is called Veranero on account of the crop coming at the end of the dry season while the high time for the other varieties growing about Caracas is August. Said by Pittier to grow at some elevation and should do well in Southern California where the rain is somewhat scarce.

Verde. (Guat.)

Introduced as budwood in 1911 by the West India Gardens from Atlixco, Mexico, under No. 17. Described by Ryerson in the Pomona Journal for February 1913, as the California Trapp.

Volcan. (Guat.)

Introduced as budwood in 1912 by the West India Gardens from Atlixco, Mexico. Described by Ryerson in the Pomona Journal for February 1913, under the name "Itzia".

Wagner. (Guat.)

Original tree on place of C. F. Wagner, Fairfax and Fountain Aves., Hollywood. The Wagner is said to be a seedling from the Royal and was planted in the spring of 1907, bearing its first fruit the fifth year, all dropping but three. The crop in 1914 was 36 fruits; in 1915, 442 and in 1916, 186 fruits. Budded trees have been bearing during the last two years; some four year old trees are carrying fruit in the San Joaquin Valley in 1916. Described by F. O. Popenoe in these Proceedings for October 23, 1915.

Walker. (Guat.)

Original tree, on place of J. H. Walker, 1547 Las Palmas Ave., Hollywood. It was planted in 1897 or 1898 and began bearing at six years of age, since which time it has produced every year except in 1914. The crop for the past few years has been from 1800 to 3000 fruits. In 1915 it produced about 3,500 fruits but fewer than in 1916, has probably brought in more actual cash to the owner than any fruit tree in California. Budded trees have been bearing for several years in various parts of Southern California. Described by F. W. Popenoe in the Pomona Journal for February, 1911. Sometimes known as "Walker Prolific".

Wester. (W. I.)

A Florida variety described under S. P. I. No. 19297.

White. (Mex.)

Original tree on the place of Mrs. G. A. White, 24 W. Arellaga Street, Santa Barbara. The tree was a seedling purchased from Dr. Franceschi in the fall of 1897, although Dr. Franceschi himself said that he raised the tree from a Mexican seed in 1895. The tree matured several fruits at 3 years of age and has borne every year since. During the last few years the approximate number of fruits would be around 400. Budded trees have been bearing for several years and in some cases have matured three and even four crops in one season. Described by F. W. Popenoe in the Pomona Journal for February 1911.

Wilson. (W. I.)

A Cuban variety introduced for trial in Southern Florida and described in 1916 under S. P. I. No. 40982.

ILLUSTRATIONS OF INTERESTING AVOCADO FRUITS

The following illustrations of avocado fruits are from photographs supplied by Prof. I. J. Condit, of the Department of Citriculture, College of Agriculture, Berkeley, California, and by Prof. H. J. Webber, Director of the Citrus Experiment Station, Riverside, California..

The varieties reproduced are taken without reference to their comparative value and are used for the purpose of furnishing growers a means of familiarizing themselves with the characters of the various varieties. In comparing the illustrations carefully note in each case whether the photograph is natural size or reduced. Some fruits owing to their large size have been somewhat reduced.— (Editor's note).

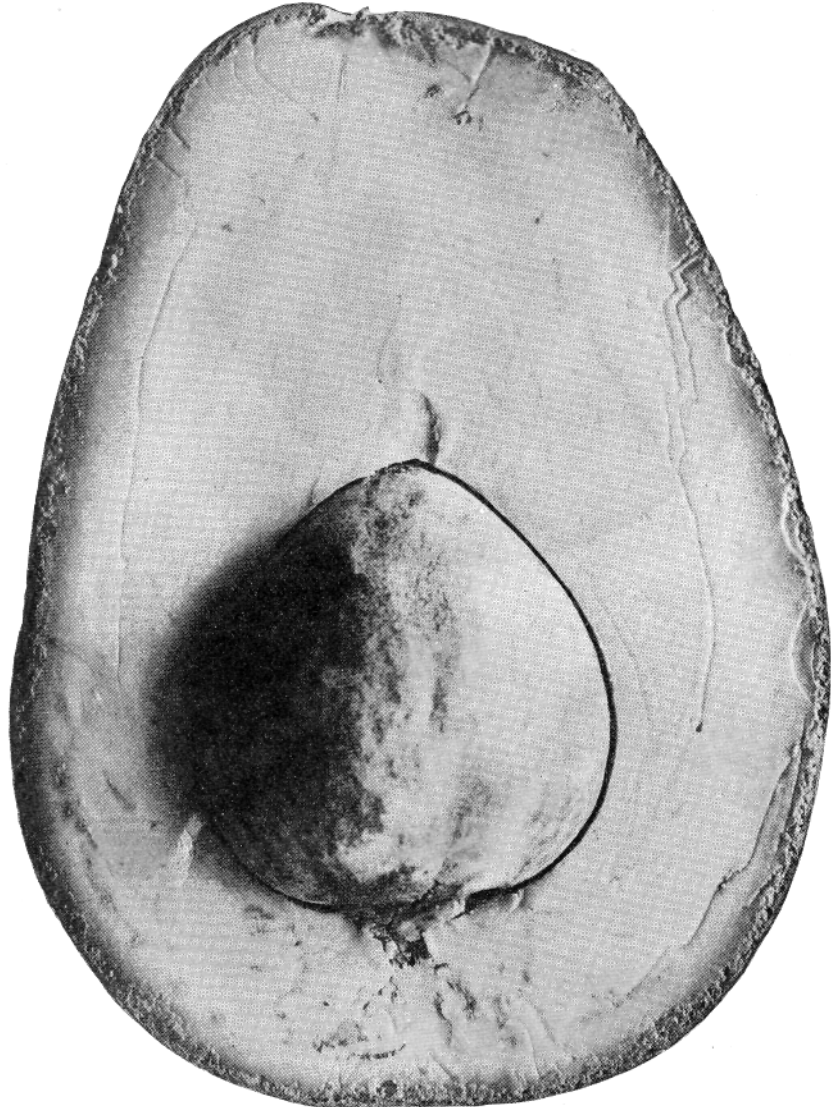


Figure 12.—Bartley (natural size). This is one of the largest avocados so far produced in California, the fruits averaging about 32 oz. in weight. (Photo by the Division of Citriculture, Berkeley) I. J. Condit.

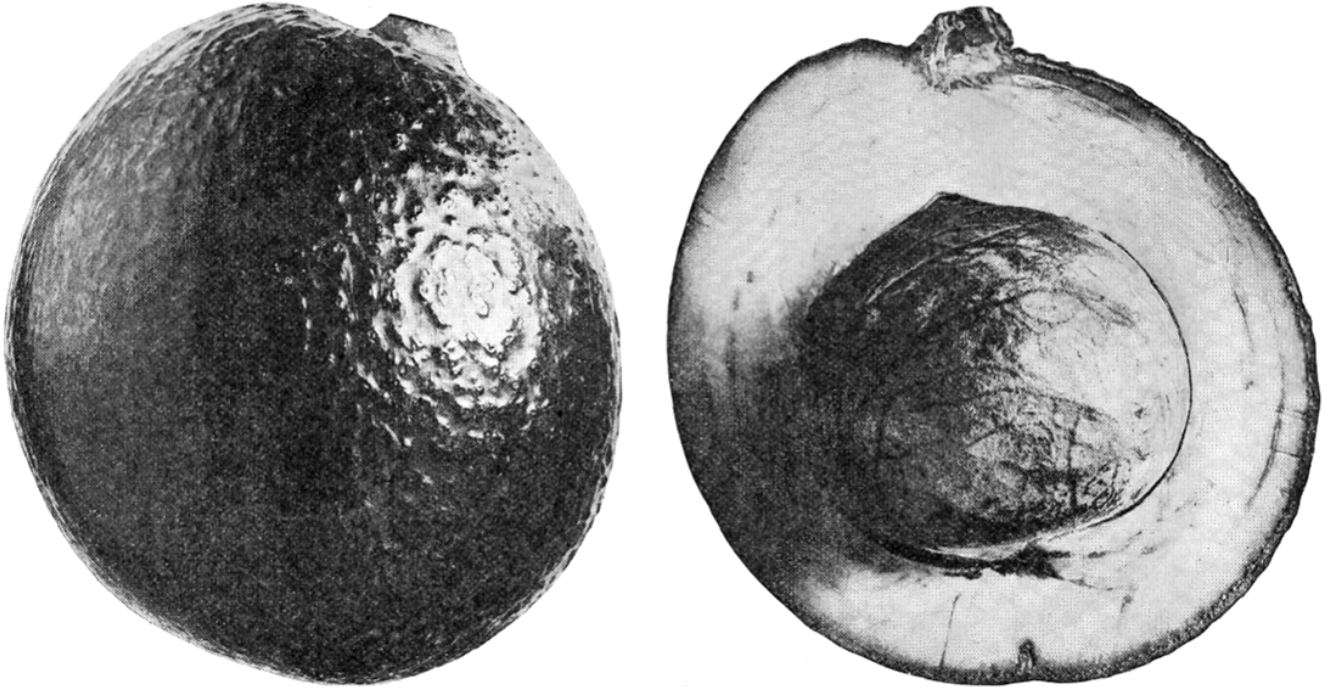


Figure 13.—Challenge (natural size). The fruit is of good size, shape and color; budded trees are now coming into bearing. (Photo by Division of Citriculture) I. J. Condit.



Figure 14.—Dickinson (natural size). These fruits were picked from the original tree Sept. 27 and placed in cold storage two days later at 37 degrees F. One month later they were taken from storage and exhibited at San Diego Oct. 30 and 31. Two weeks later they were sent to Berkeley, arriving in good condition. (Photo by Division of Citriculture, Berkeley) I. J. Condit.

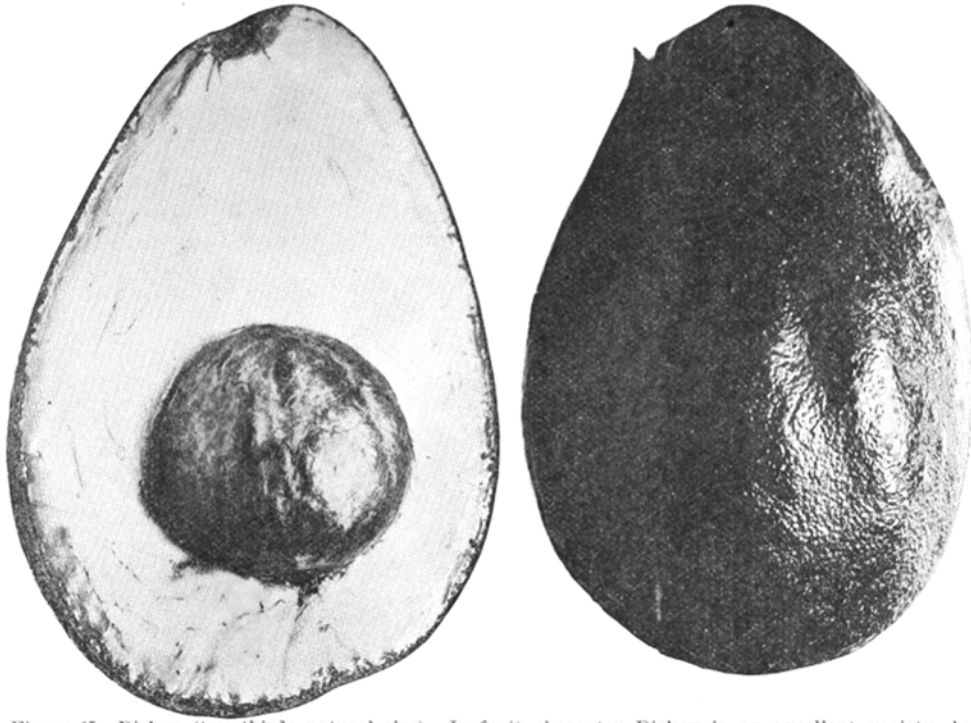


Figure 15.—Dickey (two-thirds natural size). In fruit character Dickey is an excellent variety, but like some other sorts, budded trees seldom thrive and only a few are growing out of many hundred propagated. (Photo by Division of Citriculture, Berkeley) I. J. Condit.

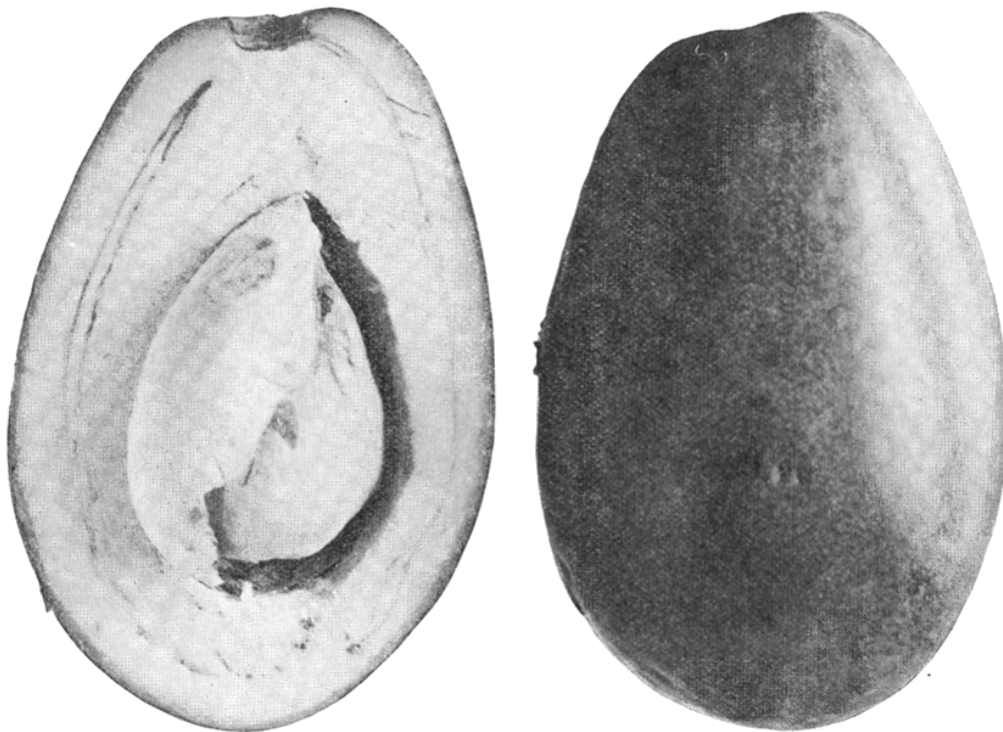


Figure 16.—Ganter (natural size). These fruits were produced on budded trees and are somewhat larger than those from the original tree. The Ganter is a thin-skinned variety, green in color and is rather prone to rot at the end and to show cracks and scars. (Photo by Division of Citriculture) I. J. Condit.



Figure 17.—Northrop (natural size). The original tree of the Northrop variety bears a large fall crop and a smaller spring crop. The fruits are of excellent flavor and quality and have very little fiber. (Photo by Division of Citriculture, Berkeley.) I. J. Condit.

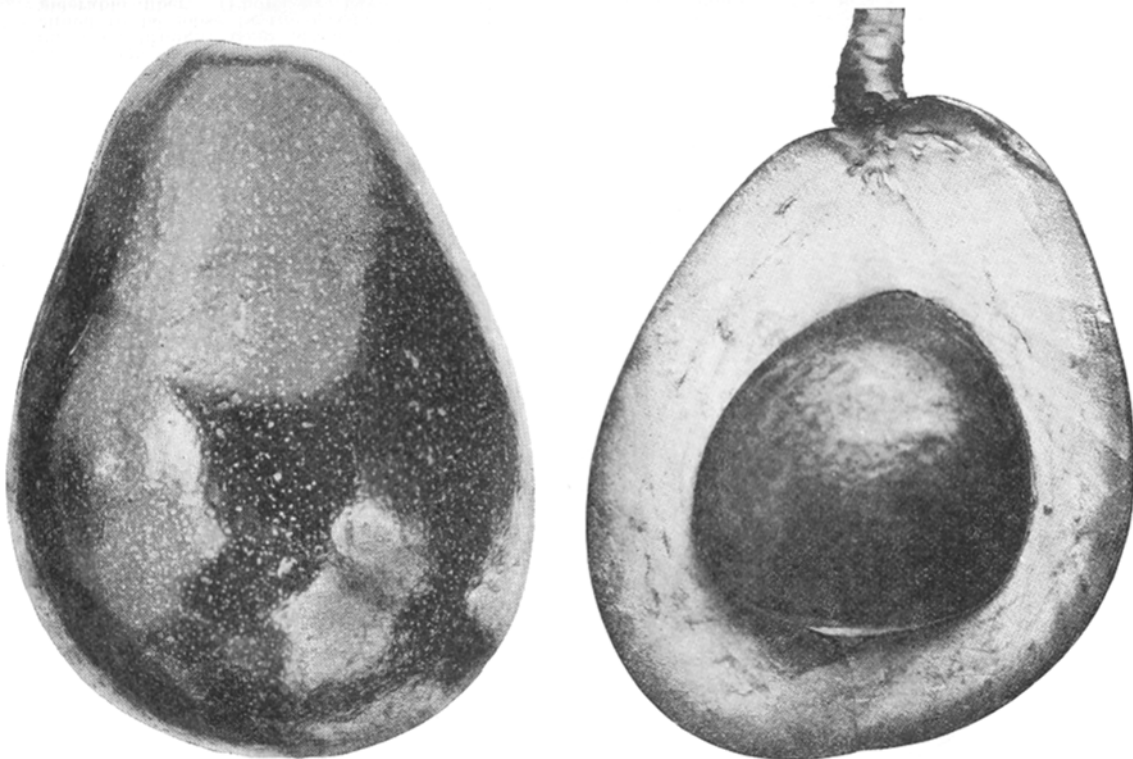


Figure 18.—Puebla (natural size). The Puebla budwood was brought in from Mexico in 1911 and trees fruited in California first in 1916. The skin is more leathery than granular. The surface is glossy and purplish-red at maturity. Average weight 8 to 10 oz. Season middle of December to March. (Photo by Division of Citriculture). I. J. Condit.

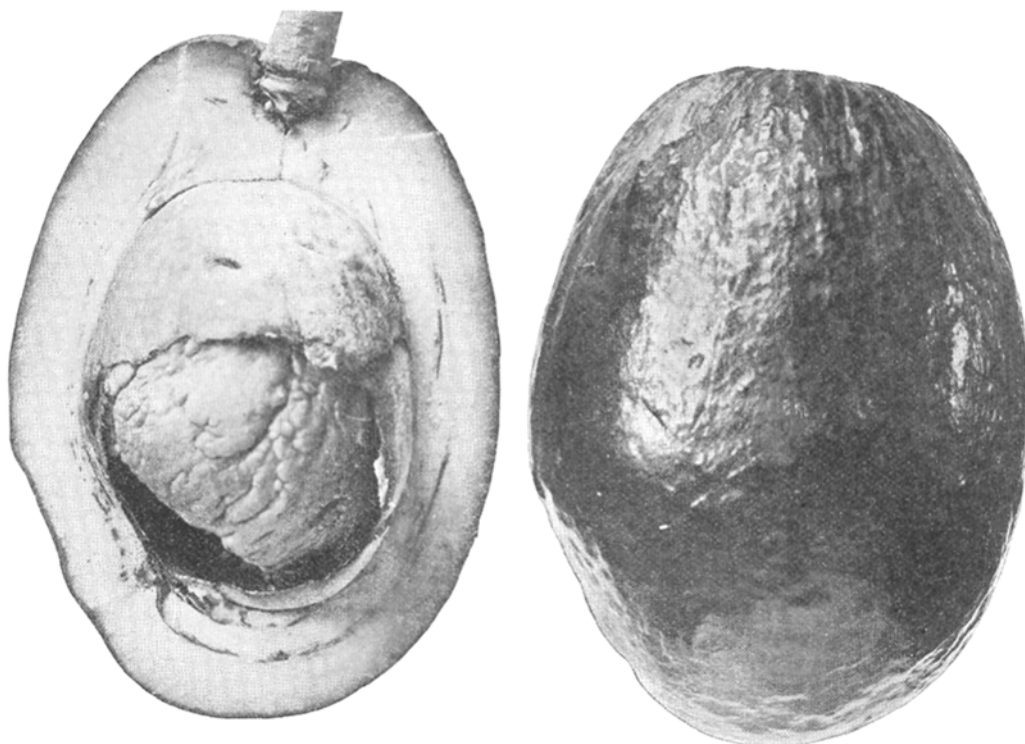


Figure 19.—Queretaro (natural size). This variety first fruited in California in 1916, the bud wood having been brought from Mexico in 1911. The fruit is disappointing as the seed is large and inclined to be loose in the cavity. The seed coats are thick and separating and the flesh has considerable fiber. (Photo by Division of Citriculture) I. J. Condit.

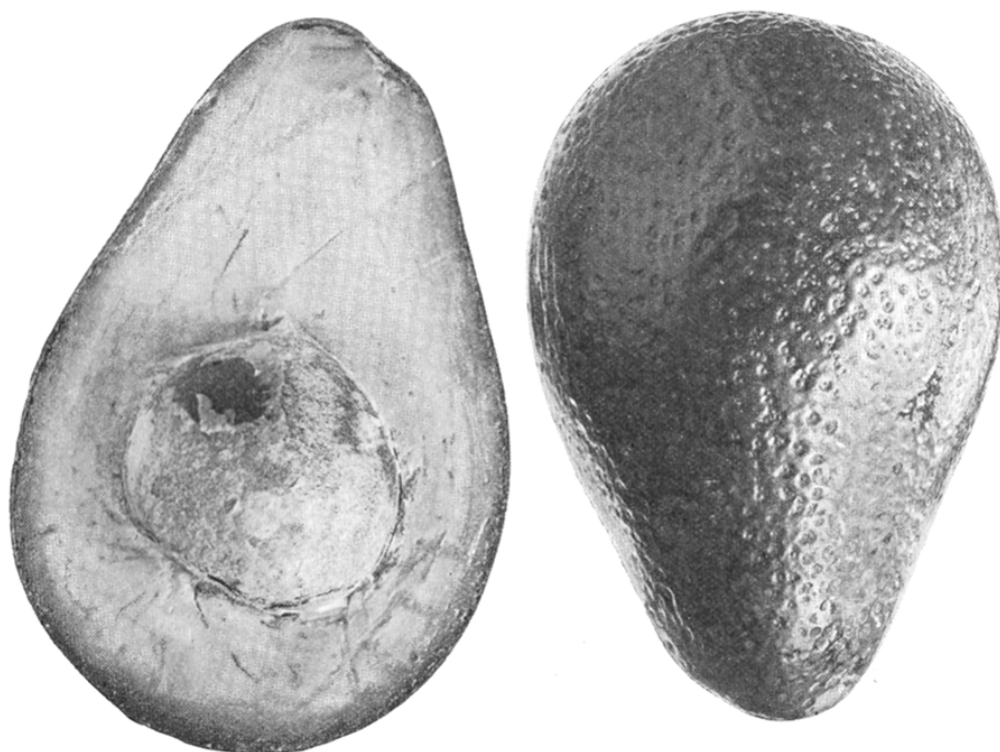


Figure 20—Sharpless (three-quarters natural size). Among the varieties that ripen late in the fall the Sharpless ranks high. The season in 1916 was considerably later than in previous years, some fruits hanging on the tree through January. (Photo by Division of Citriculture, Berkeley) I. J. Condit.

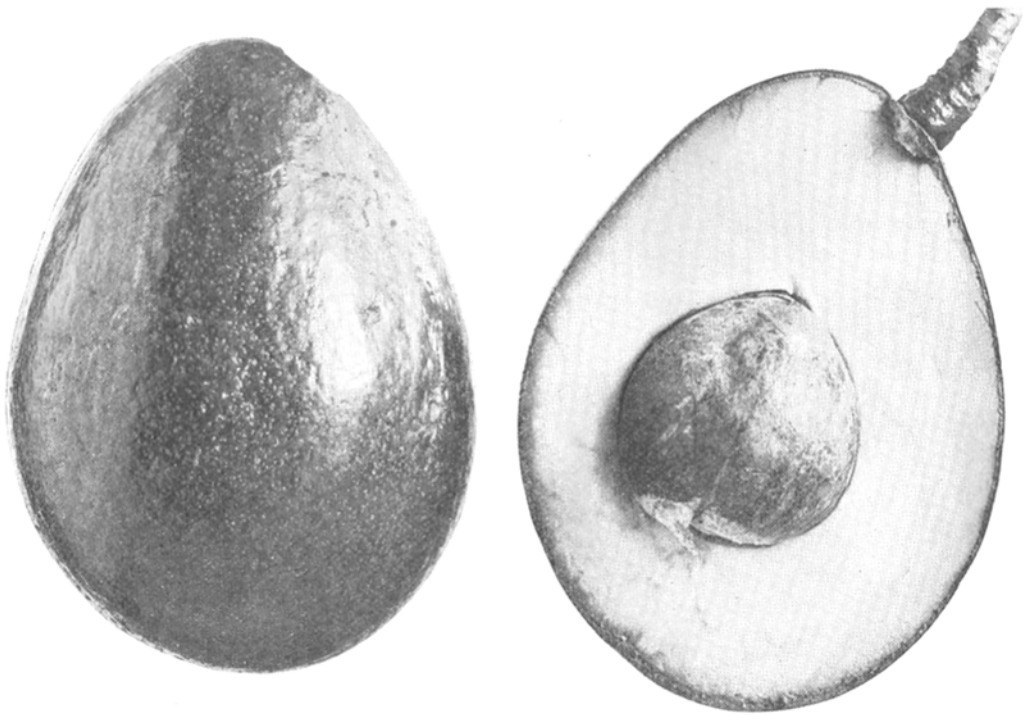


Figure 21.—Solano (about three-quarters natural size). The Solano has a very small seed and a large proportion of flesh. Analyses have shown a low percentage of fat. (Photo by Division of Citriculture) I. J. Condit.



Figure 22.—Taft (natural size). As a commercial variety the Taft has taken its place in the front rank. Its season is from May to October. (Photo by Division of Citriculture) I. J. Condit.

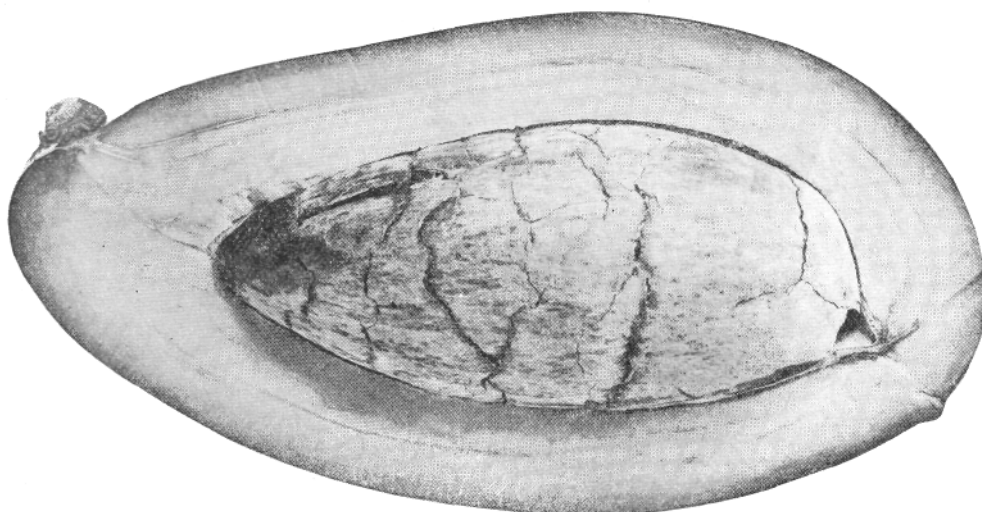


Figure 23.—Topa Topa (natural size). The Topa Topa is a beautiful fruit of the Mexican type with a glossy surface and deep purplish-black color. (Photo by Division of Citriculture I. J. Condit.)



Figure 24.—Wagner (natural size). This is a very prolific and precocious variety. If fruits of some varieties are left on the trees too long the seed may sprout in the cavity as shown in the cross section of this variety. (Photo by Division of Citriculture) I. J. Condit.



Figure 25.—Carton (natural size). A medium late, medium sized Mexican type. Note the fiber showing in cross section, particularly at base of seed. (Photo by Citrus Experiment Station) H. J. Webber.

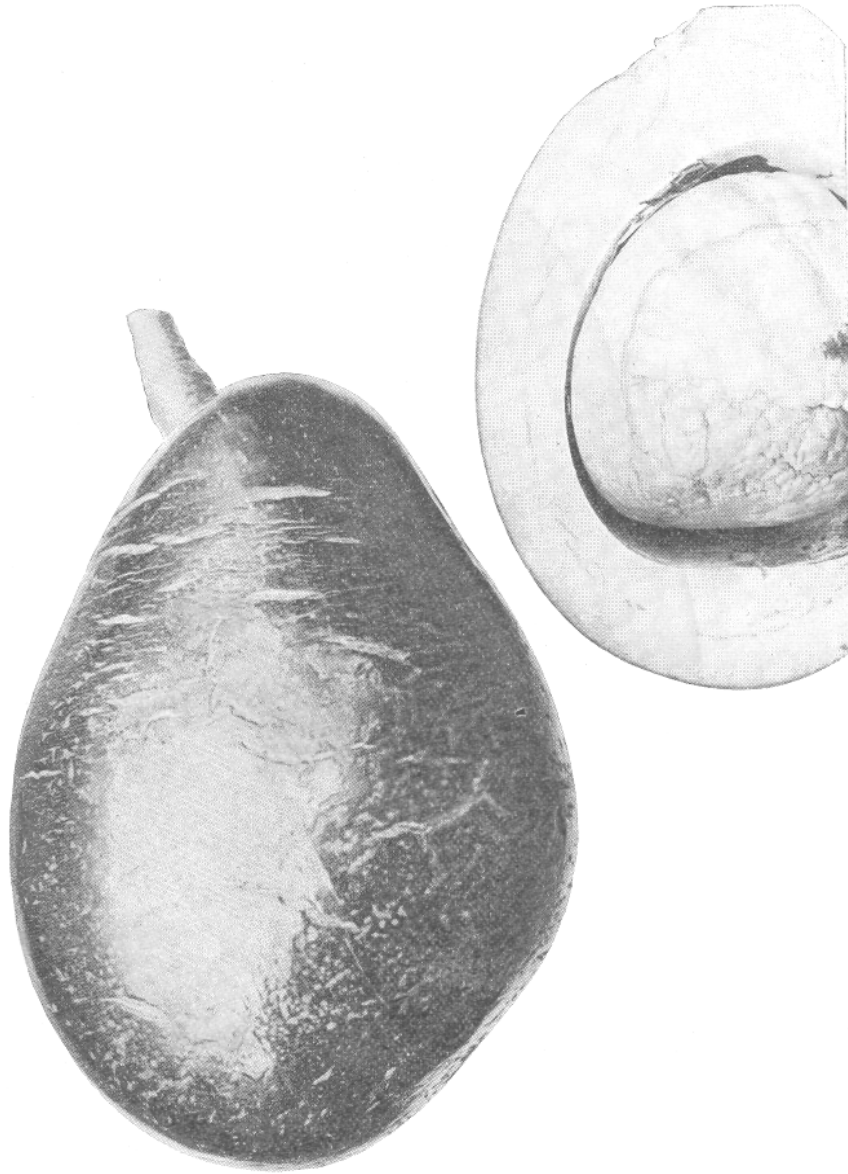


Figure 26.—Harman (natural size). This fruit is a Mexican type that has shown a marked tendency to become disfigured by the cracking of the skin, this seeming to be a varietal characteristic. It is also rather prone to rot at the end. Seed large and loose in cavity. H. J. Webber.

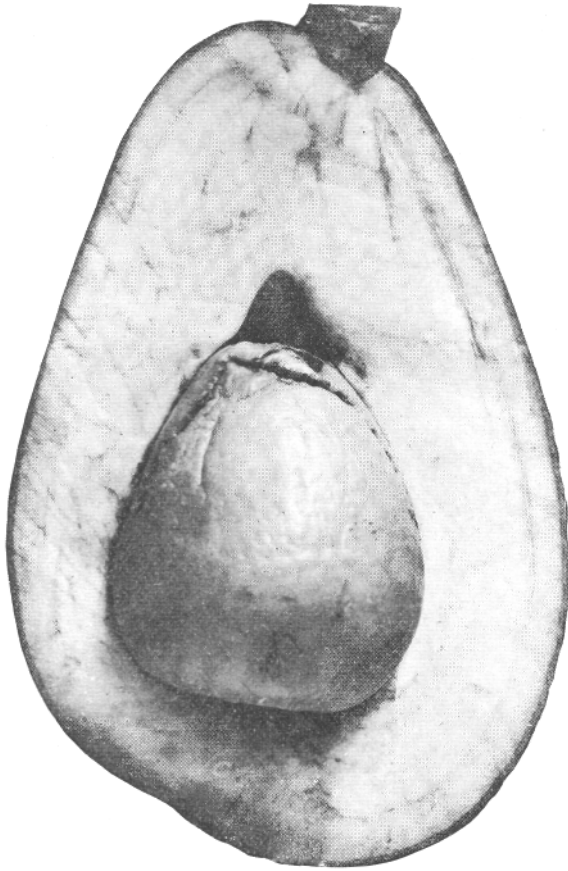


Figure 27 a.—Fuerte (natural size). A mid-winter variety maturing normally between January 15 and April 1. Average weight 10 to 14 ounces. (Photo by Citrus Experiment Station) H. J. Webber.

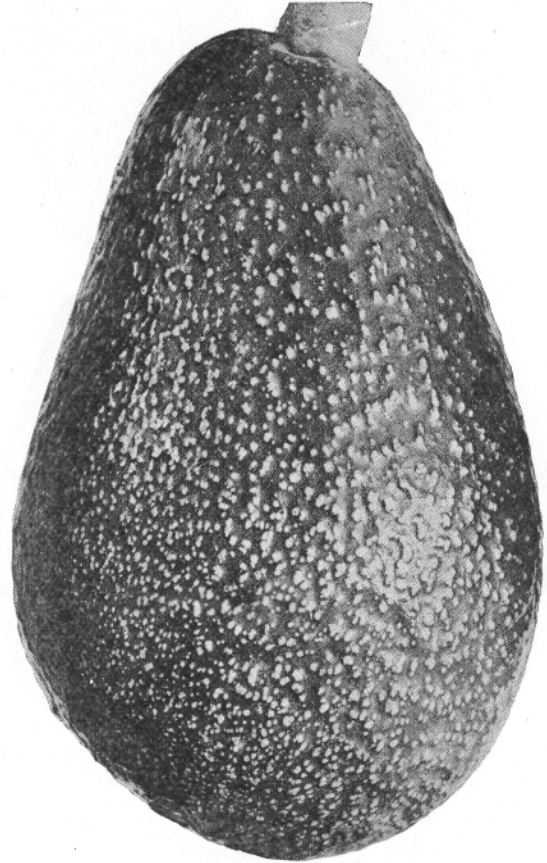


Figure 27 b.—Fuerte (natural size). A mid-winter variety maturing normally between January 15 and April 1. Average weight 10 to 14 ounces. (Photo by Citrus Experiment Station) H. J. Webber.

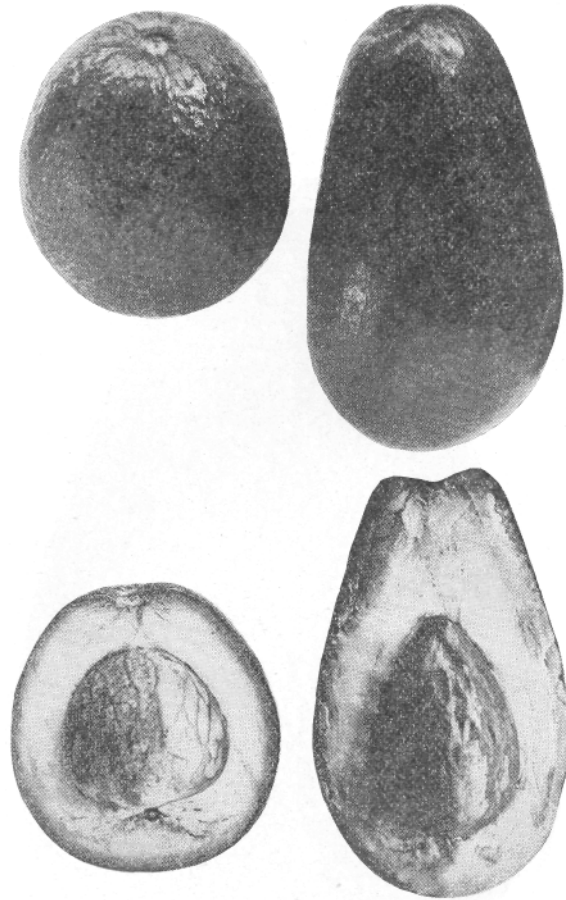


Figure 28.—Bud variation in Fuerte avocado (one-half natural size). On right normal Fuerte fruit, on left round fruited tree of the Fuerte on the ranch of Mr. J. T. Whedon, at Yorba Linda, Cal. The tendency of this variety to produce two types of fruit is said to be the cause for the naming of two varieties, Fuerte and Redondo, when they were imported from Mexico. The Redondo is now known to be the round fruited bud variation of the Fuerte. (Photo by Citrus Experiment Station) H. J. Webber.



Figure 29.—Lyon (natural size). This is one of the thick hard-shelled varieties that is attracting considerable comment. Season of ripening April to June. A prolific and precocious variety beginning to ripen fruit two years from the bud. Tree a tall upright grower. (Photo by Citrus Experiment Station) H. J. Webber.

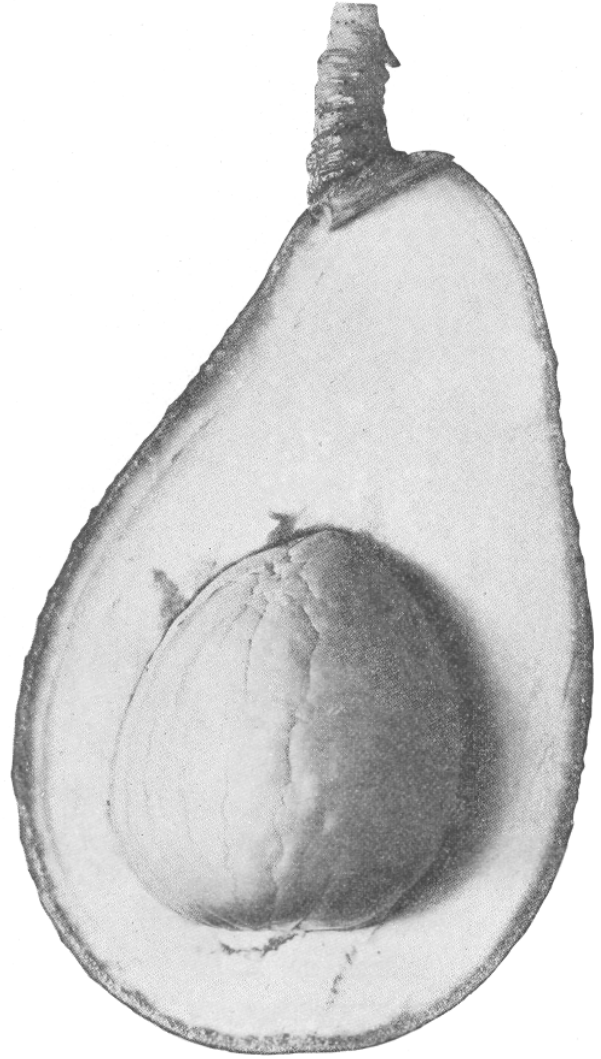


Figure 30.—Lyon (natural size). Cross section of fruit showing comparative size of seed and pulp. Note thickness of skin. (Photo by Citrus Experiment Station) H. J. Webber.