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The Development of the Avocado Industry

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Within the past twelve months interest in growing the avocado has increased many fold. The feeling has now become general among well-informed orchardists and nurserymen that this fruit is destined to play an important part in the economic horticulture of Southern California; and many wise growers already foresee great promise for this new industry. The adaptability of the avocado to out climatic conditions has become convincingly apparent, and belief is growing into conviction that it is to rival the orange as a semi-tropic product. As a future food product it is unquestionably an important factor to be reckoned with. Economists who have the ability to grasp matters horticultural are figuring the avocado into the future food supply of the country at large as a competitor of meat, and are estimating its possibilities for replacing animal products with a wholesome and delicious vegetable food. As eminent and practical a horticulturist as Mr. Parker Earle, formerly president of the American Pomological society, is convinced of an immense future for the avocado. In a recent letter to the editor of the Pacific Garden, Mr. Earle says: "We cannot help wondering, as we look ahead for a hundred years, how people will live—what they will eat—when there are four hundred millions to be fed out of the land that now supports one hundred millions. With this great density of population, will there be room for producing much animal food in that time? Will it not become a necessity of existence to utilize all of the land in a way that will yield the greatest tonnage of human food? "An acre of land can produce, let us say, one quarter of a ton of beef, or other animal food, per year. It can produce one ton, or possibly two tons, of food in wheat, or corn, or rice. It can produce five, ten, or possibly twenty tons of an incomplete food ration in the form of apples, or grapes, or bananas. And there may be from one to two tons or more of very rich food in the form of nuts— notably pecans—from one acre of land. But with avocados there would seem to be a possible yield of food of very high nutritive value in tonnage equal to apples with their low nutritive value." Mr. Earle goes on to state that if men can pro- duce many tons of food of best value from an acre of land in trees that can only yield a fraction of a ton in the form of animal food, it is pretty certain that they are going to plant trees. The crowding of men together in dense population will compel this. "In primitive conditions men turned to animals for food. It was a state of savagery. We are outgrowing it. Very soon there will be no room for animals that are grown to be eaten. It is compulsory. It is nature’s way. We must get our food in greatest quantities from a minimum area of land. And we must have food containing the same elements that animals have been giving us. Among these substitutes does not the avocado offer itself as one of large possible importance?"

The one answer that can be made to Mr. Earle's inquiry is—it does.

Progress in Florida

Along both the lines of propagation and commercial planting Florida has so far been in the lead of California. The proximity of Cuba, where the avocado, or aguacate as it is called in all Spanish speaking countries, is commonly grown, and the fact that seedlings had been planted quite freely along the east coast in the earlier days, must have led horticulturists there to see the possibilities of this fruit, and have acted as a stimulus to the development of the industry. When, in 1901, it was successfully demonstrated that the avocado could be propagated by budding, considerable attention was at once directed to this fruit as a commercial possibility, and since then the progress of the industry has been steady.

Figure 58. Young avocado trees growing in nursery rows at Altadena, California, one year old and ready for budding.

One of the most important of the earlier commercial plantations, and in fact the first plantation of any extent, was that of Mr. S. B. Bliss of Miami. His orchard consists of twenty acres of the Trapp variety, planted six years ago, and now in bearing. The first crop of marketable fruit was produced last year, and though a heavy yield could not be expected from trees so young, the returns were satisfactory. Mr. Bliss is an experienced and careful grower, and has given intelligent consideration to the avocado as a commercial proposition both in Florida and in Southern California, and has great confidence in its extensive development. Having had many years experience in both localities Mr. Bliss is well qualified to speak on the subject.

More recent than Mr. Bliss' plantation, considerably larger acreages of the avocado have been planted on the east coast, and planting is going on as rapidly as the budded trees can be supplied. As a considerable quantity of the fruit is now produced each year

and shipped to northern markets, the Florida growers have learned a number of things regarding packing and shipping which will be of value to Californians.

Figure 59. A two year old head of the Trapp variety, top worked on an old seedling tree, at Sherman, California.

Mr. Joseph L. Hickson, of Miami, who grows the avocado extensively, writes under date of July 5, 1911, as follows: "We have never been able to supply our demands except for the varieties that mature in mid season (last half of August and first half of September). We are therefore growing and propagating more early and late varieties, Family and Trapp, respectively.

"We have customers who place season orders with us for all the fruit we have at $6 per case, f. o. b. Miami, which price we are very well satisfied with.

"We pack according to size, sometimes only 18 fruits to the case, but usually 36, 45 or 48. Our fruit went to all the eastern markets and to Chicago and Cincinnati.

"The propagation of the avocado is done exclusively by budding now, with a success equal to 95 per cent.

"This section of the state is extending its planting very considerably. Personally we believe there is more money to be made on the finer varieties of avocado and mango than there is with either oranges or grapefruit. The avocado does not require nearly so much care and attention, and so far is practically free from all insect pests, nor does it require the amount of fertilizer that a citrus tree does.

"The budded trees come into bearing the second or third year from the bud and in heavy bearing the fourth year. The budded trees show a tendency to be dwarfed."

From Mr. E. N. Reasoner, of the Royal Palm Nurseries, Oneco, I have the following under date of June 30, 1911: "The avocado is being planted extensively by numerous people in both small and large lots; one man has 100 acres practically all to the Trapp variety, in fact the planting is more of this variety than of all others combined. There is a fine grove of 40 acres of Trapp, and two others of nearly 100 acres each, mixed avocados and mangos, of which the avocados are nearly all Trapp. The next important variety is Pollock.

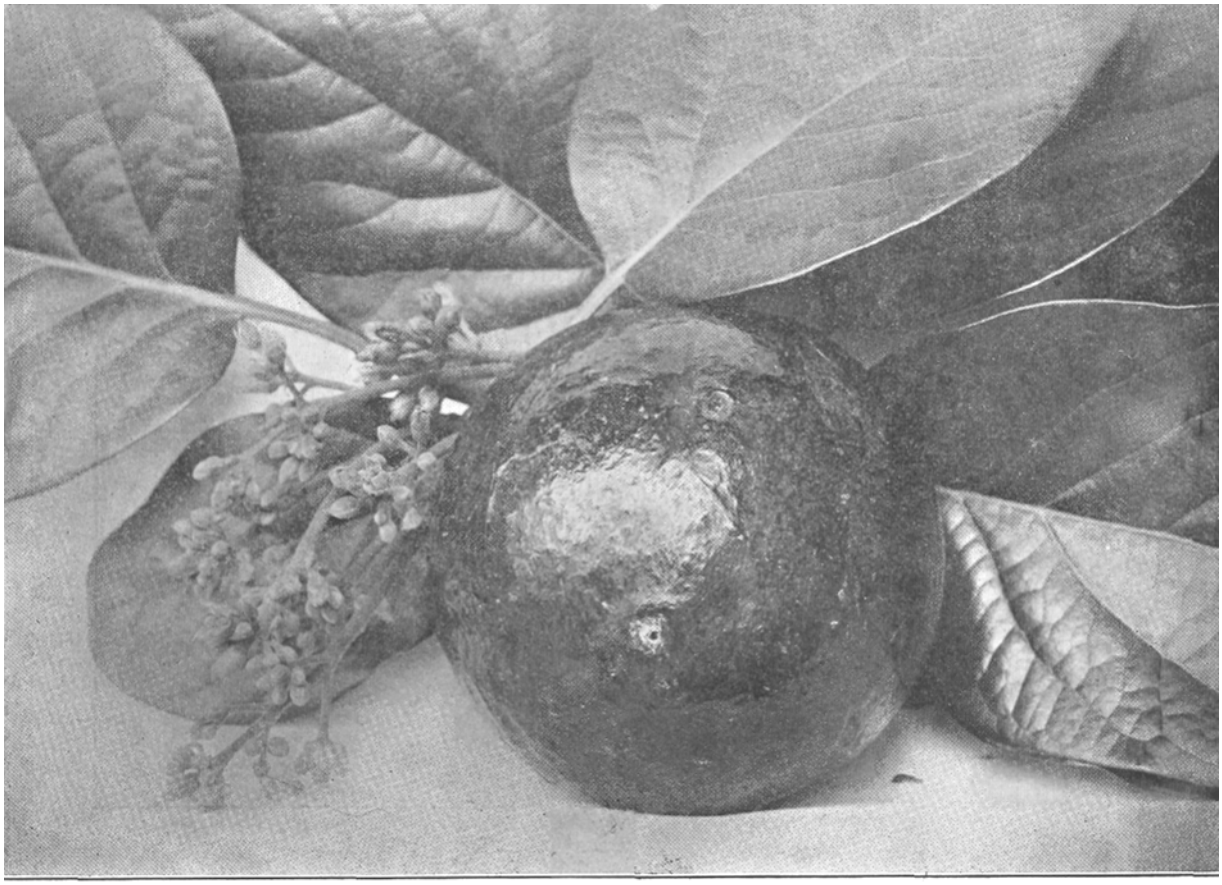

Figure 60. A fine type from Cuernavaca, Mexico. A thick skinned, purple, winter bearer.

"Budding is very successful, and a large percentage take. The buds are usually put in in spring, on trees of the preceding year's growth.

"Trees are being set about 18 or 20 feet apart. The trees are looking well and interest is high. The trees of sufficient age have a large crop of fruit this season."

Mr. John B. Beach, of West Palm Beach, who propagates the avocado quite extensively, writes as follows under date of July 1, 1911: "After November first there is always a good demand in New York for avocados, with ever increasing prices as the season advances, and often they sell well in October. Owing to its lateness we prefer the Trapp for general market planting, though there are many other varieties which are

being tested, but have not been cultivated long enough to be well known.

"Budding is most successful in late autumn and winter, from November 1 to April 1. Fifty to ninety per cent of the buds will 'take,' but more or less loss will occur after that from eyes dropping off, and from fungus attacking young sprouts. This trouble may not be so bad with you. Very likely the beginning of your dry season will be the best time for budding on this account. Our rainy season is in summer, and then we suffer most from fungus.

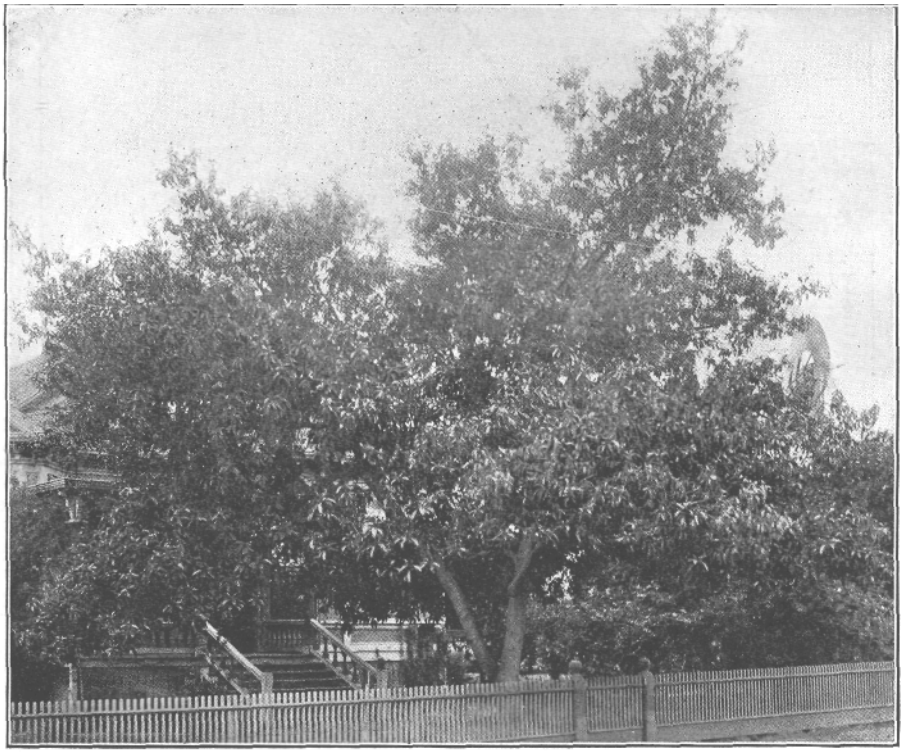

Figure 61. One of the first avocados planted in California, being one of three trees brought from Mexico and planted at Santa Barbara by the late Judge Ord in 1870. (Photo from Dr. Franceschi).

"Budding is most simple. Use well developed eyes on young wood, the bigger the shoot the better provided it is of last growth, otherwise you will have trouble with buds failing to start, and eyes dropping. We start the seeds in six inch pots, budding and removing at the same time into 6x6x12-inch shingle boxes, at five to seven months from the seed. Allow six months in these boxes for the buds to grow, then plant out."

California Plantings

The production of varieties suitable for commercial purposes here has so far been dependent upon chance seedlings, no systematic attempt to breed superior varieties having been made. The variation always exhibited by seedlings has resulted in the existence of numerous forms and types, a few superior to the average, but by far the greatest number inferior to or no better than the average. Realizing, however, the possibility of obtaining choice varieties by chance in this way, and varieties which would be especially well adapted to this climate, several experimental plantings have been made.

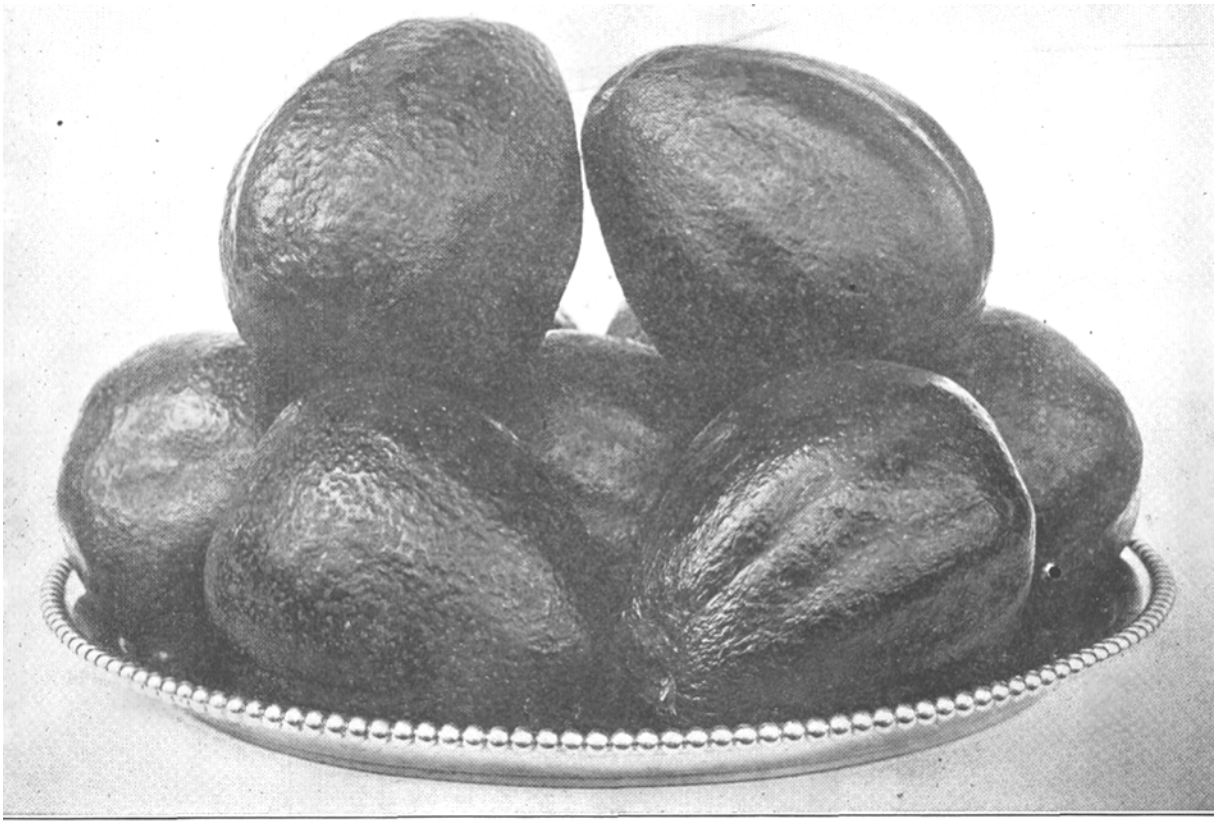

Figure 62. A thick skinned summer bearing type from Guadalajara, weighing about 14 ounces each.

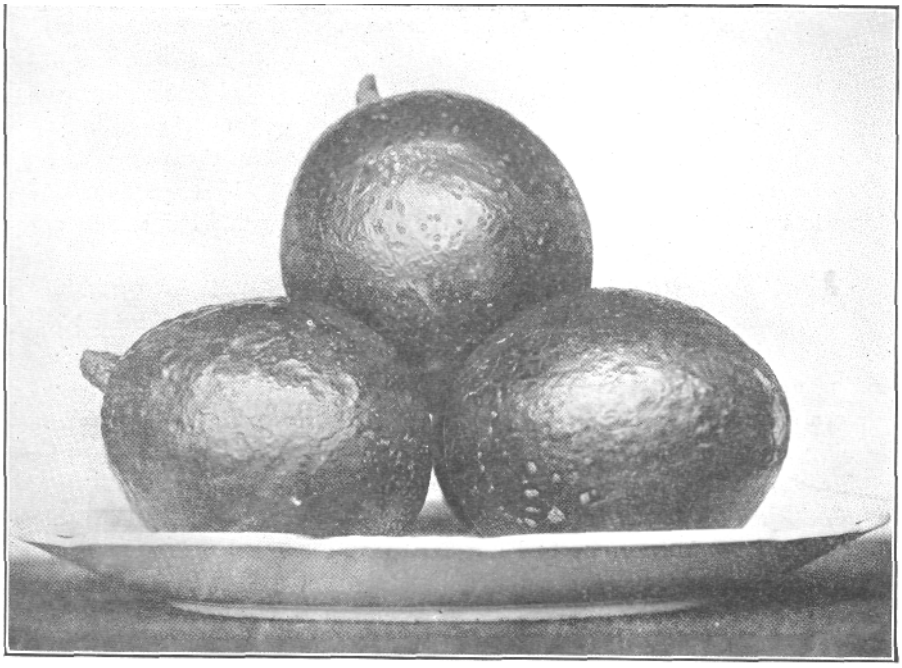

Figure 63. A desirable type grown in Mexico at an altitude of 6000 feet. A winter bearing, very thick skinned fruit of fine quality. It is now being propagated in California.

One of the largest of these is that of Mr. William A. Spinks, of Monrovia, who has obtained selected seeds from every available source and set out 150 seed- ling trees in orchard form. (See also the reference made below to his orchard planting of budded trees). Mr. Spinks' location is one of the most favorable in Southern California, and with this number of selected seedlings the possibility of obtaining something choice is certainly good.

Mr. Joseph Sexton, of Goleta, near Santa Barbara, has planted 140 seedlings, 100 of which were grown from selected Hawaiian seed and the balance from selected seeds from Mexico, Costa Rica, Guatemala, and Porto Rico. In addition to this plantation of his own, Mr. Sexton is planting for other parties in his vicinity over 600 Hawaiian seedlings, of his own raising, all of which will be allowed to grow as seedlings until they have had time to fruit. This extensive plantation of Hawaiian seedlings will form an admirable test of this type of avocado, and as the climate of Santa Barbara is notably mild, the possibilities of success are good.

These plantations have only recently been made and will require some time before the results will be known. Older than either of the foregoing is that of Mr. C. P. Taft, the well known horticulturist at Orange, whose work along various lines of experimental horticulture has been of great value to the state. Mr. Taft began planting avocados in a very small way seven or eight years ago. His orchard now consists of several acres of seedlings, many of which are producing fruit. So far Mr. Taft feels that he has not produced the ideal avocado, and is continuing his experimental work by selection of his most desirable seedlings rather than by securing buds from other countries.

Mr. E. S. Thacher of Nordhoff, another of the well informed and experienced horticulturists of Southern California, has been interested in the avocado for several years and now has a plantation of 120 seedlings just coming into bearing. Among those which are fruiting this year Mr. Thacher has one tree that at the time this is written, and before the fruits have matured, bears promise of being especially worthy of propagation.

Because of the impossibility of obtaining budded trees in sufficient quantity for orchard plantings, almost no plantations of budded trees have been made in Southern California up to the present time. Several parties, however, have made plantations of seedlings with the intention of budding the young trees to some desirable variety, and in this way saving considerable time. Probably the largest of these plantations is that of Mr. W. G. Davison, at La Habra. Mr. Davison has twenty acres set to Mexican seedlings and is now budding them to choice Mexican varieties.

Mr. William A. Spinks of Monrovia has a plantation of about 600 budded trees of various varieties, which is more in the way of an experimental planting, perhaps, than a commercial orchard. A few other plantings of seedlings have been made, with the intention of budding the trees as soon as it is possible to obtain budwood of choice varieties, but the majority of parties interested in the commercial production of avocados are waiting until they can obtain budded trees with which to make their plantings. Another year will see the work of planting orchards well under way, as the growing of budded stock is being given adequate attention. Among those engaged in this branch of the industry, the West India Gardens, a tropical nursery company at Altadena, has many thousand young Mexican seedlings in the field which are being worked to the

choicest Mexican varieties. This company sent its own representative to Mexico to locate the trees bearing the most desirable fruits. The trees selected were marked, and budwood from them is now being sent up. As in the selection of this stock all points of desirability were considered, a choice lot of budded trees will be the result—a result which by the process of growing seedlings at home and selecting there from, it would have taken many years to bring about.

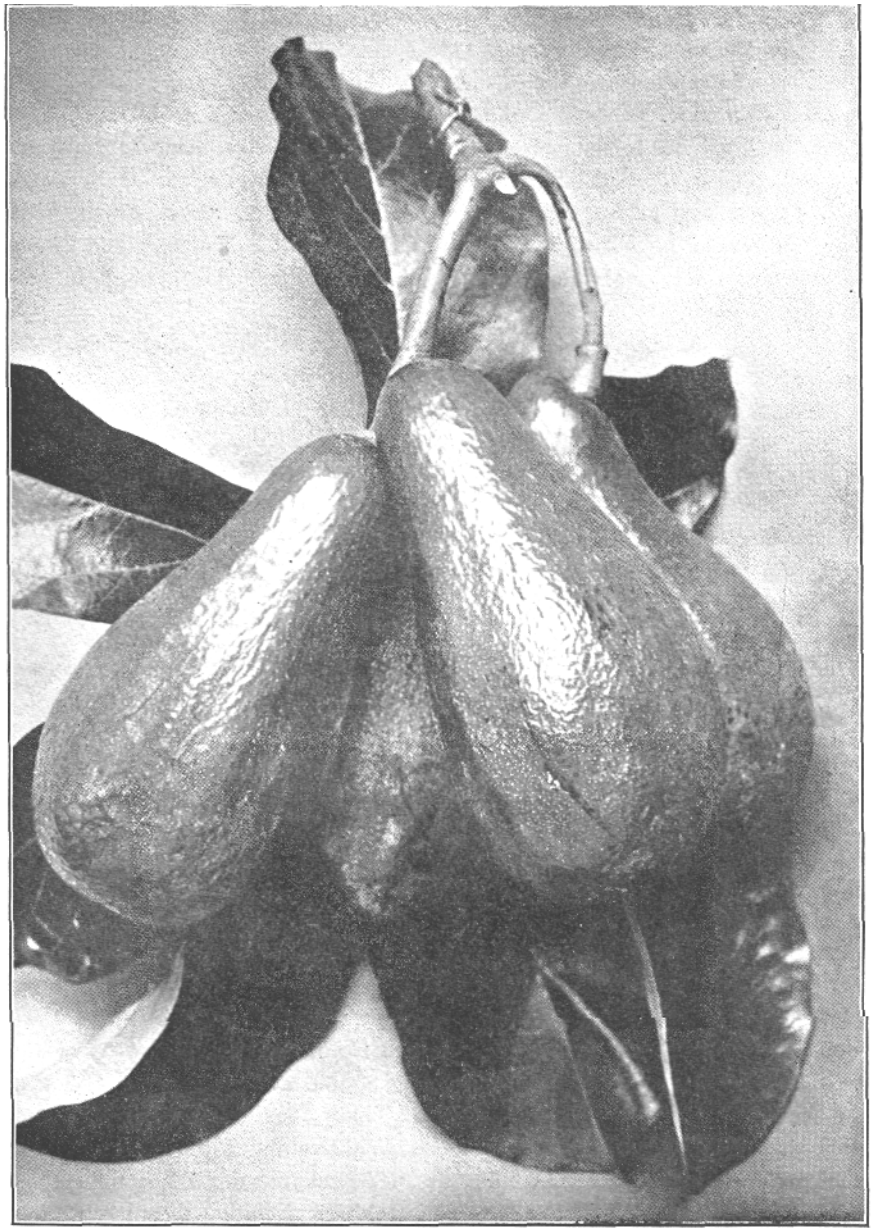

Figure 64. A cluster of Hawaiian avocados, showing the typical Hawaiian fruit. Each of these fruits weighs from 15-24 ozs.

Co-Operation of the Department of Agriculture

Realizing the possibilities of the avocado as a commercial proposition in Southern

California, the United States Department of Agriculture has become interested in the development of the industry, and has recently sent out a large shipment of budded trees for trial. This shipment consisted of four sets of about eighty trees each, all budded, which were propagated at the Subtropical Laboratory of the Department at Miami, Florida. These four sets have been planted by co-operators in San Bernardino, Pasadena, Whittier and Altadena, so as to test them out under different climatic conditions. The set includes all of the standard Florida varieties, Trapp, Pollock, Mitchell, Baldwin, Family, Wester, Blackman and Peacock; one variety from the Bahamas called Largo, and unnamed varieties from Mexico, Guatemala, Cuba, California, Canary Islands, Florida and Hawaii. It is expected that when these trees come into bearing several choice varieties will be obtained, and it will also give an opportunity to thoroughly test out the Florida varieties under the different climatic conditions obtaining in Southern California.

The Commercial Avocado

At the present moment the question of greatest importance to prospective avocado growers is "What are the best varieties for commercial purposes?"

We have as yet no standard varieties, and it will be well, therefore, before the industry becomes established, to consider the characteristics required in an avocado for commercial purposes, and to obtain only those that come nearest to the ideal in every respect. It would be dangerous, to say the least, to rush into such an extensive industry as this promises to become, without having thoroughly considered this question and having obtained the very best to be had for our plantings. Eventually the better varieties would come to the front anyway, and loss of time and disappointment will be avoided by giving careful thought to this matter in the beginning.

1. SEASON

It is the hope of those interested in the development of the avocado industry in California that it will be possible to obtain for this climate a set of varieties that will provide fruit of good quality continuously throughout the twelve months of the year. And it seems as though this desire is to be realized in the near future, for already we have mature fruit from September to June inclusive, which leaves only a small gap to be filled in. But these varieties we already have do not come up to our requirements in most respects, so that they are only of value to demonstrate what can be done in the way of extending the season. It will be a notable thing to have avocados in the market every month of the year, and will tend to greatly increase the consumption of the fruit. And when the avocado comes to be known and valued as a food product, there will be a steady demand for it throughout the twelve months of the year. At present, however, there is the greatest demand during the winter months, when other fruits are scarce. The Florida growers have almost ceased to plant anything but winter bearing varieties, not because there is no demand for the fruit in summer, but because at that season many small avocados are thrown on the markets of the east from the West Indies, and this fruit sells at such a low price that it is not profitable to compete with it. However, the greatest demand has always been during the winter months, when the markets of the country are not filled with other fruits, and it will doubtless be advisable for California planters to follow the precedent of the Florida growers to a great extent and plant mainly

of winter and early spring bearing sorts.

2. HARDINESS

While there are doubtless limited areas in Southern California where avocados from the West Indies and Hawaii will thrive, our limited experience leads to the belief that for general culture in California we must have hardier varieties than those localities ordinarily produce. Avocados from the Mexican highlands have proved to be hardy almost anywhere in Southern California, and suited to as large an area as the orange. There are many locations in Mexico where avocados are produced in quantity, where fully as low temperatures are experienced as are ever felt here. Indeed, it is stated by G. N. Collins, a well known authority, that he found in one locality in Mexico avocados growing and thriving where snow fell every winter. If these hardier varieties were all small or inferior, we would of course prefer to take the chances with the more tender but superior ones, but there are many fine Mexican and Central American varieties which possess the requisite of hardiness in a very satisfactory degree.

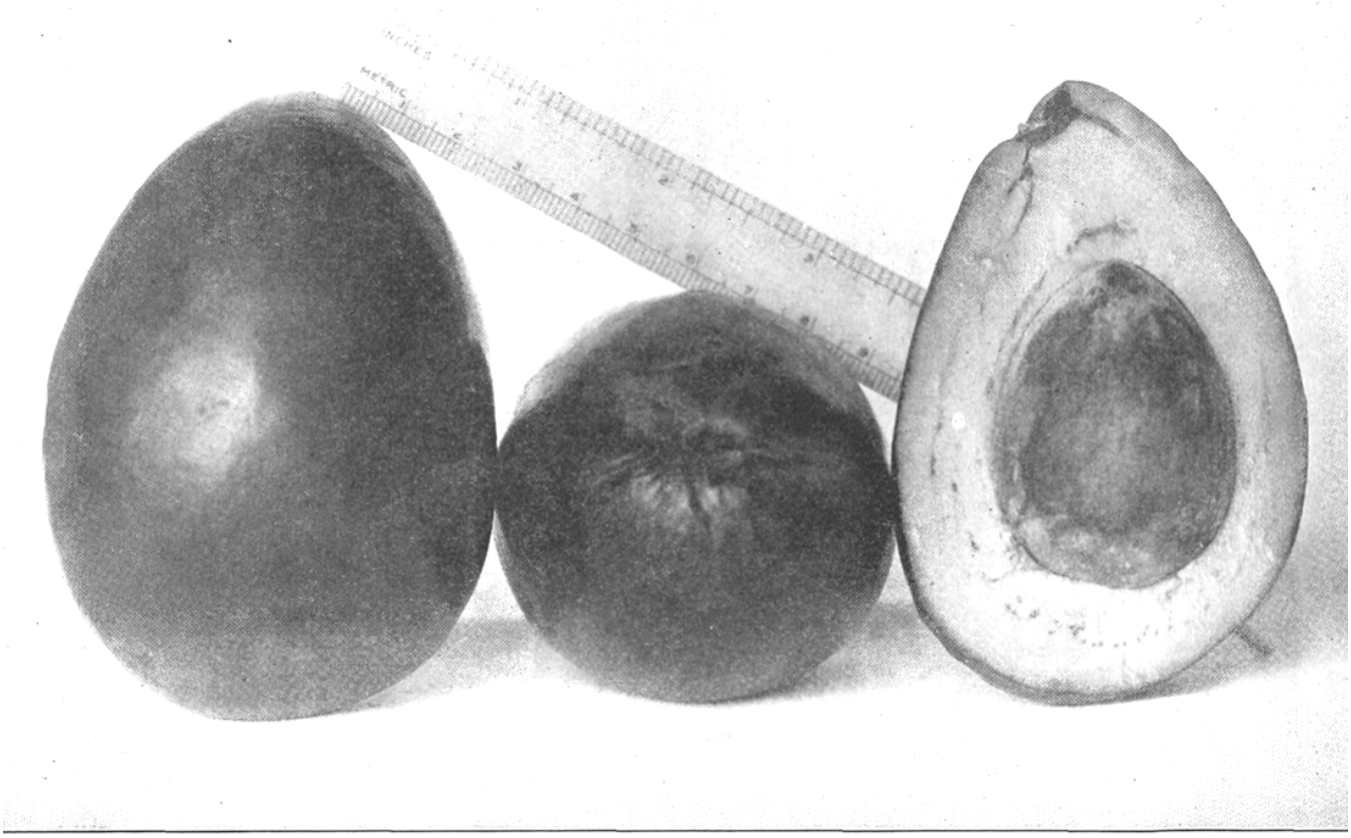

Figure 65. The common Mexican type of summer bearing, thin skinned, purple avocado.

3. YIELD

Through propagation by budding a great difficulty experienced with the seedlings has been done away with, namely, the liability of the tree to bear sparsely or not at all. The orchardist does not, of course, want to plant a tree on which he cannot depend for a good crop. While the smaller types of avocados are almost invariably prolific bearers, the larger varieties when grown from seed are inclined to considerable variation in this respect. Through budding the prolific varieties may be propagated and all danger from

this source done away with. The avocado is ordinarily a good bearer. It is not unusual for mature trees of the larger varieties to produce a crop of five hundred to one thousand fruits each season, and the small purple varieties are sometimes extraordinarily prolific, a single tree bearing as high as four thousand fruits in one season, in some instances. To make a variety profitable commercially it must, of course, be a fairly prolific bearer, and it should be ascertained to a certainty that this is the case before planting a tree.

4. SIZE

A mistaken idea which is held by many prospective avocado growers is that the larger the fruit the better. The experience of the Florida growers has proven conclusively that this is not the case when it comes to a question of marketing the fruit. A two or three-pound avocado is certainly a regal fruit, but will not prove half so profitable commercially as a smaller and consequently more prolific variety. From fifteen to twenty ounces would seem to be the most desirable size.

5. FORM

It has been found very desirable for shipping to have fruits of oval or round form. The necked varieties necessitate considerable more care in packing, and are much more liable to injury in transit. For local consumption, however, a pear shaped or "bottle-necked" fruit is as good as any other form.

6. UNIFORMITY

To facilitate packing, the product should be uniform in size as well as in form, and this also improves the appearance of the fruit as it lies in market.

7. COLOR

The attractiveness of a fruit is affected considerably by its color. Locally the purple varieties have sold somewhat more readily than the green ones, and in Florida the dark crimson ones seem to be favored. But when the people are thoroughly familiar with the avocado the color will probably make little difference, unless some particular color or shade is found to denote a particularly good fruit.

8. SKIN

A skin sufficiently thick and tough to stand shipment to great distances is a prime essential. This is found in many of the Mexican varieties, and is particularly prominent in the Guatemalan type. Some varieties have a skin so thick and tough that it could almost be called a shell, while many of the Mexican varieties have a skin so thin and papery that the fruit when fully ripe will scarcely bear handling; A good tough skin will cut down the loss of fruit in transit to the minimum.

9. FLAVOR

As with all other fruits, there is considerable difference in the flavor and quality of avocados. This is, of course, a point which must be given first consideration, as a fruit of inferior quality would be undesirable in the extreme, even though it possessed all the other essential characteristics. Those containing the highest percentage of oil are naturally the most desirable from an economic stand- point, and having the highest

percentage of fat they are ordinarily the finest flavored. Sometimes there will be found fibres or "strings," (fibro-vascular bundles) extending through the flesh from base to apex, and this is a very objectionable feature. It is, fortunately, rarely met with in the larger varieties.

10. SEED

The seed should be tight in the cavity. It has been found that in shipping loose seeded fruits, the seed in transit pounds the walls of its cavity and causes considerable injury to the flesh. This is a difficulty seldom met with in Mexican varieties, but often encountered in Florida. In size the seed should, of course, be as small as possible. In time a seedless variety will no doubt be developed, as has been done with the orange and other fruits.