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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Copy

Honduras - January 3, 1926.

Dr. A. D. Shamel,
Riverside, Calif.

Dear Shamel:

I have your letter of December 17th, and the same mail brought one from Dr. Galloway in which he said that he had talked with Dr. Taylor regarding your coming here in April, and he intimated that Dr. Taylor was agreeable to the plan, and that he had written you to see if it met your approval. Dr. Galloway said that they would expect you to come on the same terms as those which applied to your Hawaiian work, i.e., the United Fruit Company assume your salary and expenses for the period of the trip. This will be satisfactory to the company, I am sure.

I may have to go down to Panama about the end of the March, but will plan to be back here not later than April 10th, so that if you leave California shortly after the first of April you will get here just about the time I return. I may not have to go to Panama this spring, or I may go a bit earlier; in any event; I think we can safely count on your finding everything in readiness for you here, if you do not leave Riverside until April 1st. As I have written father, I think likely I will arrange to meet you in Guatemala, and take you up to Antigua for a few days, after which we will come over to Tela. The manager of the Guatemala division of the United Fruit Co. is a very keen minded and intelligent agriculturist and I know he will want us to stop a day with him, so he can go over the whole plan of bud selection with you. And you must see Antigua, in order to get a look at the avocados, They will be pretty well gone by the middle of April, but I think there will still be enough fruit on the trees for us to see all we want of them.

Mr. Goodell and Mr. Thomas are very keen about your coming. I am not raising any false hopes in their minds, but am making it clear that you feel something of interest may come from the work. They have had so many disappointments in connection with the fight against Panama disease that they are past the stage where they think there is a magic pass word or some simple, efficient remedy for the thing. When you get here, we will spend a lot of time of the farms and look into the matter fully; then you can outline some experiments, perhaps along several lines. Selection for resistance to Fusarium cubense, the Panama disease, would be the most important thing. Carleton started a project of this sort in Panama several years ago but nothing seems to have come of it. This can not be taken as final, however, and I think we will have to start another one here. When you get on the ground several other possibilities are sure to crop up, also, and we will take them as they come. By the way, if you could send me 3 or 4 copies of that last hawaiian report on sugar cane and pineapple work, I would use them to advantage, to acquaint some of the officers of the company with the general nature of your work.

Very cordially,

(Signed - Wilson Popenoe)

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

ADS/mmc

DIVISION OF
FRUIT AND VEGETABLE CROPS AND DISEASES

P.O.Box 586,
RIVERSIDE, CALIFORNIA

17 Oct.1938.

Dr. Wilson Popenoe,
c/o United Fruit Company,
Guatemala City, Guatemala.

Dear Wilson:

I have forgotten as to whether or not I sent you a snapshot showing you and Alejandro LeBlanc standing beside the parent Fuerte avocado tree in the LeBlanc garden at Atlixco on April 17,1938. I am also enclosing a picture of an old avocado tree (corriente) in the Tochimilco district. This tree is said to be more than one hundred years old and is still producing an abundance of the small, dark, large seeded fruits. It was interesting to me because of its survival for a long time and the trunk shows evidence of the "wear and tear" of time. This is one of hundreds of trees of similar age in that district and I found about an equal number in the Huilango district a little below Tochimilco on the San Baltazar river. Those two districts, together with the one near Uruapan, are of interest and I think would repay further exploration by someone familiar with avocados in California and Mexico.

Someone has remarked that inasmuch as we have many seedling Mexican and Guatemalan avocado trees growing in Southern California that we have the "germ-plasm" of those two regions and that further explorations there are unnecessary. Be that as it may, our older seedling trees are quite limited, in fact none of them approach the ages of some of the trees I saw in Mexico. However, the present idea seems to be to grow the seedlings here rather than to explore the districts in Mexico or Guatemala for variations that might be of use for testing in Southern California. I think that the expense of such explorations would be infinitely less than that incurred for a systematic study of the seedling trees native to Mexico and Guatemala. It looks as though if any such explorations are to be made in the very near future they will have to be carried on as a private enterprise.

We saw in the state of Nayarit, near the seacoast, extensive forests of Cohune, Attlea cohune, where the nuts were being collected in a very primitive way for their oil content. I remember that we saw somewhat similar forests of these palms when I was with you in Honduras and Guatemala. Are the Mexican palms of the same species as the Guatemalan or Honduranian ones? Khankhoje of the Southern Pacific of Mexico told me that he classified the ones that we saw in Nayarit as Orbignya cohune. If you can throw any light on this I will be greatly obliged to you.

With best regards, I am

Very truly yours,

Archie

A.D.Shamel, Principal Physiologist.

Am keeping the pictures here. A.D.S.

Enc.

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

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DIVISION OF
FRUIT AND VEGETABLE CROPS AND DISEASES

P.O. Box 586,
RIVERSIDE, CALIFORNIA

5 Nov. 1938.

Dr. Wilson Popenoe,
c/o United Fruit Company,
Guatemala City, Guatemala.

Dear Wilson:

Your very fine letter of October 20, received and I hasten to reply because I feel so strongly the ideas that you express in your letter. It seems to me that any other point of view must arise from lack of experience with horticultural varieties and their use to produce the crops that people are making their living on in this day and generation. I have no objection whatever to research work of any kind no matter whether it seems to have apparent practical value or not because I think that all unprejudiced and capable research work is of value. However, I do object strongly to substituting that type of research work for the more important consideration, at least more important to this generation, of other lines that we know are of tremendous value and importance to our people and our industries. More over as a result of the outstanding contributions of the type of research work that we believe in so strongly, the theoretical side has built up recently a strong bid for supremacy even to the extent of handicapping the kind of practical research work that has been of so much value in the past and will be equally more valuable in the future if it is not side-tracked for the work of the theoretical boys. I am particularly glad to learn that you have the same point of view as I have and for that reason I welcome your letter with great pleasure.

From the little glimpses that I have had of Mexican plant life I have been gradually coming to the conclusion that the flora of that country could well be studied from the practical point of view and the promising plants tested in the districts of the United States to which they are likely best adapted. Of course most of them I think would be of special interest to the people of the southwest and out of a search of Mexican trees, shrubs and flowers, additional varieties could be introduced which would be of great value to us. For example I would like to spend about a year studying some of the fruit and ornamental trees, shrubs and flowers in Mexico, that have appealed to me to be of particular interest and possible value to the United States. In addition I also have the point of view that such a systematic search would likely prove to be beneficial to Mexico through the selection of valuable varieties and improved strains that could be cultivated in Mexico to the great advantage of the people of our neighbor to the south. I feel that in this type of work we should look not only to the contributions for our own use but also to those which may be of value to the country in which these varieties are native. It seems to me that point might well be stressed rather strongly in an undertaking of this sort.

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From what I have sensed my impression is that such an undertaking can only be carried on through private initiative and so far as I am personally concerned, if nothing happens I would like to take part in it during vacation times at my own expense or at least not at Government expense. I am wondering whether or not there may be some organization, privately financed, that would be of interest in such a study. If so, I would like to get in touch with them. I wish that you could head-up such a survey and that I might have the privilege of participating in it to a small extent. I really believe that I have through our experience here developed some judgment along the lines of the commercial possibilities for some of the plants, both fruit and ornamental ones, that could be introduced into the southwest for testing. Perhaps I over-estimate my experience along that line but I do believe that I could contribute something under favorable conditions that would be worth while. I think that in such an undertaking at least two and possibly three men would make up an ideal partyof exploration and study and my suggestion would be you, a representative of the Mexican Department of Agriculture, such as Juan A. Gonzalez who spent three weeks with me in the Atlixco area last spring, and if possible myself. We could doubtless make arrangements with several institutions in Southern California and Arizona to propagate and test any selections which were considered to be valuable and without much question the Mexican Department of Agriculture could be induced to undertake a similar test of the selected forms at a suitable location in Mexico.

Now that I have gotten these thoughts off my chest will say that I sincerely hope that it will be possible for us to spend some time together on an undertaking along the line proposed or in some other way before it is too late. Time passes so rapidly that before we know it it becomes impossible for us to carry out our plans. It seems to me that time passes more quickly in the tropical and subtropical regions than elsewhere. As for example, my past thirty years here now seem to have been a very short time indeed. Of course there are certain exceptions like Dr. L.H.Bailey, who carries on his exploration studies now even more vigorously than at any time in his history. Every time I see him I marvel at his capacity for sustained effort, his optimistic and continued good health and vigor. Not many of us can ever hope to equal or even approach his record in that respect.

We are going to the California USC game today at Los Angeles and expect it to be the outstanding one for this section, although we may be disappointed in that hope. I have attended several football games this fall and found it to be as exciting and interesting as ever.

We are getting our new, and what we believe to be improved, strains of citrus and deciduous fruits under test in cooperation with growers and I hope that we can carry out those plans so as to get definite data of value later.

With best regards, I am

Very truly yours,

Archie

A.D.Shamel,
Principal Physiologist.

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Carnegie Mellon University, Pittsburgh, PA

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF PLANT INDUSTRY

DIVISION OF
FRUIT AND VEGETABLE CROPS AND DISEASES

U. S. Horticultural
Field Laboratory,
Room 201 Federal Building,
RIVERSIDE, CALIFORNIA

March 23, 1940

Dr. Wilson Popenoe,
c/o United Fruit Company,
Guatemala City, Guatemala.

Dear Wilson:

Mr. and Mrs. DeWitt Hutchings and daughter Isabella, the Mission Inn family, left this morning on a two months air tour, which will take them to Mexico, Central America, down the west coast of South America to Santiago, Chile, across the Andes to Buenos Aires and then up the east coast to Rio de Janeiro, the Canal Zone and returning home by way of Guatemala City and Mexico City. They expect to have about a week in Chile, a week or ten days in Argentine, a week in Rio de Janeiro. They expect to spend about a week in Guatemala and finally they may spend another week at Mexico City. Their schedule provides that they spend only about a day at Mexico City and Guatemala City while enroute south, but on their return trip, they expect to reach Guatemala City May 17. Their schedule calls for them to leave Guatemala City May 20 but DeWitt told me yesterday that they would probably spend at least a week in Guatemala as neither of them has ever been to that country.

I gave them my remaining card to Maria that you sent me some two years ago. Those cards have been very helpful in that I have given them to several of our friends who have visited your interesting home in Antigua. The Hutchings will be particularly interested in Antigua for several reasons, particularly the ancient houses, including yours, churches and other public and private buildings. You are well aware of course, of their interest in such things and Mrs. Hutchings told me that she was particularly anxious to see Guatemala and especially Antigua. I don't know whether or not you expect to be in that vicinity when they arrive there on their return trip, but if you are, I am sure that you would enjoy meeting them again. In any event, it would be quite helpful to them to have a memorandum left with someone at Antigua, perhaps Maria, if you are not there at that time, indicating the places of most interest from the historical and scenic points of view.

I haven't heard anything lately about the proposed Avocado trip to Guatemala next fall, but whether the Avocado group goes or not, I am thinking of making the trip with my wife as a vacation. Would it be practical for us to travel from Los Angeles to Guatemala by boat, perhaps visiting the Panama Canal enroute, then after about a week or ten days in Guatemala, flying to Mexico City, where I would like to

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have a few days, if possible and then flying from Mexico City to Los Angeles. I think my wife would like the boat trip and I am sure that I would, one way, even though it takes considerable time. I will have about sixty days accrued leave coming next fall, and I might as well take it. I did not take any leave last year, because in the development of our work I didn't feel that I could leave here without neglecting the work somewhat. However, next fall I think I can arrange it so that my wife and I both can make a vacation trip and I am strongly attracted to Guatemala because of your presence there. The best time for me to get away will probably be during the months of September and October or for at least a part of that period. Of course, things are so unsettled in the world that such travel may prove to be impracticable then, but so far as I know now, I believe that it is possible that we can make the trip. If the Avocado group from southern California carries out their original suggestion, we would arrange to be with them at least for some of the time in Guatemala.

We have had the warmest and pleasantest winter weather since I can remember. The Navel orange crop is about half harvested and marketed. The prices are low, notwithstanding the Florida frost, and the growers do not expect to make much money this year from their Navel crop. The Valencia orange crop has much better prospects, particularly if it is hot in the east next summer. The lemon growers are doing very well with their crop. The Mission Inn has done very well during the past year and has had a very good winter trade. With the opening of the San Francisco Exposition again, the Inn will probably be benefitted largely by travel through southern California to the Exposition, as was the case last year.

With best regards, I remain,

Very truly yours,

Archie

A. D. Shamel,
Principal Physiologist

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
HORTICULTURAL CROPS AND DISEASES

U. S. Horticultural
Field Laboratory,
Room 201 Federal Bldg.,
P.O.Box 1066 RIVERSIDE, CALIF.

Oct. 26, 1940

Mr. Wilson Popenoe,
c/o United Fruit Company,
Guatemala City, Guatemala.

Dear Wilson:

As soon as I received your letter of October 5 from La Lima, Honduras, I wrote to Carl Newman relative to Raymond Wyant. Carl has just replied that he does not know Wyant and has been unable to get in touch with him thus far. He says he has one more man to question, and if he learns anything from him, he will let us know immediately. Do you want me to make any further inquiries?

I am very glad to hear from you again, as we have been wondering as to your health and your whereabouts. Several of your friends have inquired recently about you, and they will be glad to know that your health is good and something as to your present location and work.

We have been plugging along here all summer. I had another little operation and have not been able to recover my normal spirits since. However, with cooler weather coming on I think that I will be able to get back in shape within a reasonable time.

We had a rather cool summer, which was followed by a very warm October, the official temperatures for several days being over 100 degrees Farenheit. The Valencia orange harvest is about over, only a few cars remaining to be shipped, and Navel orange picking in Tulare County will begin during early November. The desert grapefruit harvest has started, most of the fruit being shipped to coast markets, as the eastern markets are now being supplied from Texas and Florida grapefruit orchards.

We will be very glad to hear further from you at your leisure. I am very sorry that we were unable to make a trip to Guatemala this fall as we had planned. I am looking forward to that pleasure some time in the future when conditions are more favorable.

With best personal regards, I remain,

Very truly yours,

Archie

A. D. Shamel,
Principal Physiologist

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
U. S. Horticultural Field Laboratory
Post Office Bldg. (P. O. Box 1066)
Riverside, California
HORTICULTURAL CROPS AND DISEASES
RIVERSIDE, CALIF.

November 19, 1941

Mr. Wilson Popenoe
c/o United Fruit Company
Guatemala City, Guatemala

Dear Wilson:

The observations on avocado varieties by M. B. Rounds October 31, 1941 may be of interest to you, and I am enclosing a copy of Mr. Rounds' talk on this subject before the Avocado Institute at La Habra.

With best personal regards, I remain,

Very truly yours,

Archie

A. D. Shamel
Principal Physiologist

Enclosure

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COPY

Observations on the Avocado Variety Situation

by M. B. Rounds

University of California Citrus Experiment Station,
Riverside, California

(Talk given at the Avocado Institute, La Habra, California,
October 31, 1941.)

The need for a search among the many avocado seedlings for individual trees which might be propagated as commercial varieties was recognized at an early date by those interested in the avocado. During the early history of the California Avocado Association, now the California Avocado Society, a variety committee was appointed. This committee has never ceased to be the most active one in the organization.

Many avocado varieties of high quality have been studied. A variety found favor if it had a high oil content, if it had good flavor, if it ripened uniformly, did not have too large a seed, was reasonably free of fiber, and if the fruit presented a good appearance, regardless of color. Each year, new seedlings have been studied and many owners of individual trees have sung the praises of their own pet selections.

The Fuerte was recognized for its quality, its adaptability to packing and to shipping long distances, and for its marketability. It was found that in many localities the tree could produce a good crop, especially if weather conditions were favorable at blooming and setting time. Planting of avocados was stimulated and the Fuerte was the variety usually planted. Production of fruit of this variety increased by leaps and bounds; and as this small-to-medium-sized, green, pear-shaped fruit became the California variety on the market, the demand for this type of avocado increased. Advertisements depicting the Fuerte variety have helped to indicate that a good avocado is a Fuerte; thus, the market demands a Fuerte-like fruit. It is necessary to give heed to what the consumers of the country will buy.

In this period of development of the avocado industry, when a commercial enterprise is the goal of avocado growers, profitable production must be the keynote, even though some sacrifice is made as to oil content, size of seed, and other qualifications of an ideal avocado. Our major effort is to make the business pay. We must strive for quantity of production. However, the interest in new varieties should not be allowed to wane. Owners of individual trees should be stimulated to offer new fruits for study. Of the sixty-seven varieties registered by the California Avocado Society, few will become candidates for commercial rating. Some may become satisfactory for family orchards.

A number of thin-skinned varieties appear favorable as producers of good-flavored fruit. These may not make good shipping varieties, but can be planted in cold locations for local sales. All phases of the avocado variety study are important, but emphasis must be placed on commercial varieties which show indications of supplying the needs of a growing industry which is gradually expanding and increasing the sales and consumption of the avocado.

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Each variety should be expected to have its climatic adaptability. A number of promising varieties are already planted in commercial orchards in all the avocado-growing districts of the state. Future activity will largely be to locate these plantings and to study the performance of these varieties. Additional promising varieties, which have not reached the commercial propagation stage, are being studied.

In 1938, plans were made by the variety committee, with certain cooperators, to propagate some of the new seedlings in the several southern counties. Arrangements were also made with the Division of Subtropical Horticulture to conduct trials on the campus at Westwood. A list of fourteen seedlings made up the first trials. While all of these were introduced at Westwood, certain of the varieties were not placed on trial in the other locations. A number of later discoveries have been introduced into the planting at Westwood. Following is a list of the original fourteen varieties: Coit, Clifton, Edranol, Hass, Hazzard, Hellen, Henry's Select, Juan, MacArthur, Macpherson, Middleton, Mundo, Pierce, Ryan.

For some time there has been a great deal of interest in what are called "special strains" of the Fuerte, discovered as individual trees which in their locations are especially good producers and consistent bearers. The Cole strain was probably the first to be propagated and distributed throughout southern California. Later, others were discovered and propagated, such as the Carr, Bevan, Burgess, McDonald, Williams and Hudson. The Cole strain has been quite productive at Camarillo, but most of the Fuerte-strain trees are still quite young, and it remains to be seen what their performance will be when removed to a new environment.

Many other strains are being tested under varying climatic conditions: as a matter of fact, nearly all growers who are keeping records of their trees have found one or more productive trees which appear to be outstanding. When propagating for additional planting, evidence appears to be strongly in favor of budding or topworking from a selected tree in one's own orchard, or from a nearby orchard in the same locality. Perhaps buds or budded trees from an outside district having the same climatic conditions will prove satisfactory. It is improbable that a Fuerte strain from a high and consistent-yielding mother tree will always perform in the same manner when removed to a markedly different climate. However, various strains have been widely distributed and will be watched as they come into bearing.

What is the situation regarding production of the most important commercial varieties? The nine varieties which supplied 96.3 per cent of the fruit to Calavo growers in 1940 were Fuerte, Puebla, Nabal, Itzamna, Dickinson, Anaheim, Spinks, Queen, and Challenge. Others which have been quite popular at times are Taft, Dutton, Lyon, Benik, and Carlsbad.

The Puebla has lost favor because of poor quality and lack of productiveness in some years, and is being generally topworked.

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The Nabal is erratic in production in most districts, bearing such a heavy crop one year that the tree is weakened and dies, when growing under adverse conditions. At best, it is an alternate-bearing variety. It has proved more satisfactory along the San Diego County coast than elsewhere and is looked upon with favor by many growers in that district.

The Itzamna, planted quite heavily along the coast in San Diego County, is now being replaced. The tree is quite susceptible to frost and the fruit is not of the best quality.

The Dickinson is still produced in quite large volume along the coast, especially in Ventura and Santa Barbara counties. It is not being planted to any extent. One factor not in its favor is its hard shell and the inability to determine when it is ready for consumption.

The Anaheim is called the "money-maker" by many growers who seldom miss getting a good crop. However, it is a weak tree and very susceptible to frost. The fruit is frequently too large and marketability is not always good. While it is not being extensively planted, some growers are topworking other less profitable varieties to the Anaheim.

The Spinks is not being planted, mainly because it is an unsatisfactory shipping fruit. It is large with a large seed and the flesh darkens around the seed.

While the Queen is a fruit of good eating qualities, it is very large, unattractive, an alternate bearer, and susceptible to frost. It is not being planted.

The Challenge is not very popular because of its size, thick skin, color, large seed, and poor quality.

The Taft is now not planted, mainly because of its shy bearing habit and its tendency to rust spots on the skin when grown away from the coast.

The Dutton is not a desirable fruit. It is large and its marketability is poor. The variety is not being planted.

The Lyon is a consistent bearer of high-quality fruit but is a weak tree, susceptible to frost and wind, and is therefore not a very satisfactory tree for commercial planting. The fruit is a little too large.

The Benik, while a good fruit, is not an attractive one, is tender to frost, and is not a reliable bearer.

The Carlsbad plantings are being extended somewhat along the San Diego County coast, mostly, however, as topworked trees. In general, there is little increase in the planting of this variety. The fruit is dark in color, though of a good quality, and sometimes quite large.

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Some of the newer varieties which are being planted in sufficient numbers to study from a commercial standpoint are Edranol, Hass, MacArthur, Henry's Select, Ryan, Hellen, and Coit.

The Edranol, which is being planted in Santa Barbara County and to a certain extent in other locations, appears to be adapted to coastal conditions. The skin of the fruit from coastal plantings has a better texture than that of fruit from more inland districts, although the trees planted in the transitional areas are quite vigorous and precocious. For a fruit of the Guatamalan type, it is quite resistant to frost. It is a spring and early summer fruit with comparatively long maturity season, and it has the general appearance of the Fuerte. Along the Santa Barbara coast the season may last until late fall.

The Ryan, originating near Whittier, is considered to be a hybrid. It is about the size of the Fuerte, but with a larger seed, and it matures in the Whittier district from July to September. It is about as resistant to frost as the Fuerte. The standing of this fruit as a commercial variety is dependent upon its production performance, which has not yet been established.

The Hass, another late spring and summer fruit, has been propagated for several years. One characteristic quite definitely established is its early-bearing habit. It is a vigorous grower but is somewhat susceptible to frost injury. It is high in oil, has a good flavor, and keeps well. Young, top-worked trees are bearing satisfactorily at La Habra Heights and Whittier. Some information on this variety from other districts of southern California should be available within the next year or two.

The Henry's Select has been propagated and distributed throughout California. Within a short period, knowledge as to its performance should be available. The tree is vigorous, attractive, and frost-resistant. The peak of production at Escondido is in October. It is a dark fruit similar to the Puebla in appearance with good keeping qualities and good flavor.

The MacArthur, while not proving satisfactory at Monrovia, where it originated, has done very well in Santa Barbara County, where it has been a satisfactory bearer. It is quite resistant to cold for a Guatemalan variety, and has a good flavor. The season is from August to November at Santa Barbara.

The Hellen has proved a satisfactory fruit at Santa Monica, where it originated. It is a Guatemalan, a green fruit about the size of the Fuerte; the flavor is good, the tree is a vigorous grower, and it appears to be a consistent producer at Santa Monica. Trees of the Hellen variety have been quite generally distributed during the last two years, especially in coastal areas.

The Coit has not been generally planted. However, enough trees of this variety have been distributed that we shall be able to form some idea of its success, especially in more coastal districts. It is a light green fruit a little larger than the Fuerte, of good flavor, maturing in late spring and early summer at Vista. It is a hybrid and should stand some frost.

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Of those varieties which have been officially registered by the Society, several stand out as commercial possibilities. These are:

Clifton, a green thin-skinned fruit maturing in October and November;

Coit, already mentioned;

Hellen, also previously discussed;

Irving, a green fruit maturing during the Fuerte season at Carlsbad;

Juan, a green fall fruit, a little large but with a fine flavor;

Macpherson, a fruit which, if it proves to be a satisfactory bearer in most districts, has considerable promise. It is a fuerte-like fruit maturing during the Furete season and is now being propagated commercially;

Middleton, a thin-skinned variety which matures in the fall, usually during October at Pomona. This variety has been propagated for several years. In some districts, if left on the tree too long, it cracks transversely;

Nowels, an early Fuerte-like fruit which has promise and is being tried in several locations. Its maturity season begins in October or November;

Zutano, a green November-December fruit propagated by W. L. Truitt at Fallbrook. The tree produces very well at Fallbrook and the fruit, which is about the size of the Fuerte, has a good flavor.

Mexican or thin-skinned varieties, Guatemalan varieties, and hybrids (using the term for those varieties which we think are natural crosses between thin-skinned and Guatemalan varieties) all have a place in our future studies of the variety problem.

While we may not be able to develop the avocado industry with two varieties, as has been done in California with the orange industry, a minimum number of commercial avocado varieties is desirable. We are learning that varieties are adapted to certain restricted environmental influences. This will make it necessary to limit some varieties to a few districts in which they will grow and produce fruit most satisfactorily. Thus, more varieties will be necessary than if a few were adapted to varying sets of climatic influences.

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Carnegie Mellon University, Pittsburgh, PA

Before closing I cannot resist saying something about sunblotch, which is such a menace to our orchards. This subject should be talked about whenever possible so that we may always keep the danger of the disease before us when selecting buds or when topworking trees. Be sunblotch conscious. Keep a lookout for it when selecting buds, especially if the tree has been topworked. It would be safer never to take buds from a top-worked tree.

Before budding seedlings, carefully scrutinize each one in the nursery row. Among several hundred seedlings, it is possible that we may find an occasional infected tree.

If we all pull together, furnishing information freely regarding the varieties being studied, contributing to the knowledge of the performance of those varieties which are being tried on a commercial scale, we shall be able to make recommendations for plantings in each of the avocado-growing districts at an earlier date than if we lack that cooperation.

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