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About the Institute
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.

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE

June 22, 1959

Dr. Wilson Popenoe
Antigua, Guatemala

Dear Wilson:

I enclose an abstract of the latest reference on banana taxonomy. The item by Cheeseman was appended to a 1948 paper by Dodds and Simmonds, and his conclusions are included in the present paper.

Having you at the same pension made the stay in San José more pleasant for the Wolfe family. I am glad to report that we are all back to normalcy now. Hugh seems to be in excellent fettle.

With best regards to Helen and yourself,

Sincerely,

Herbert

H. S. WOLFE
Professor

HSW:MHG

Encl.

Simmonds, N.W. and Shepherd, K.

The taxonomy and origins of cultivated bananas.
Journal of the Linnaean Society of London 55: 302-312, 1955

Musa acuminata Colla and M. balbisiana Colla are the two species which have given origin to all cultivated banana varieties. Edible diploid and triploid forms of M. acuminata are known (but not of M. balbisiana) and edible diploid and triploid hybrids of the two species.

M. acuminata is primarily Malayan, but ranges from Burma eastward to Indonesia and perhaps Australia. M. balbisiana is primarily Indian, ranging from Ceylon eastward to New Guinea. The edible bananas of India are all hybrids, however. Parthenocarpy and sterility occurred in M. acuminata, chiefly in Malaya, giving edible diploids which were selected and cultivated. Some of these must have been introduced to India and crossing there with wild M. balbisiana produced seedless diploid hybrids.

Triploidy resulted from haploid sperms uniting with diploid eggs, failure of reduction division being a well established phenomenon in M. acuminata but not in M. balbisiana. Known triploids are AAA, AAB, or ABB, but no BBB forms are known. (A = M. acum., B = M. balb.) Tetraploidy follows easily the pollination of triploids by diploids or triploids. The tetraploids seem very vigorous and their scarcity under natural conditions is a great mystery.

M. paradisiaca L. was based on the common West Indian plantain.
M. sapientum L. was based on the Silk Fig banana.
Both of these are triploid hybrids of the AAB formula.
M. cavendeshi (M. nana) seems to be a pure AAA triploid, and so does the Gros Michel variety and all other Cavendish forms.
Distinctions between banana and plantain are varietal only; not specific.

Antigua, Guatemala, 14 July 1959

Prof Herbert S Wolfe
University of Florida
Gainesville.

Dear Herb:

Many thanks for your letter of 22 June which I found here on our return from Mexico day before yesterday. The banana data are just what I needed. Incidentally, while in Mexico I met Dr Simmonds, formerly of the Imperial College of Tropical Agriculture (he was on his way home and is going to work at the John Innes Hort Inst in England; another good man lost of tropical America) and he told me his banana book will be out in a month or two; it covers these botanical matters as well as culture. I look foward to having it before I have to finish my chapter on bananas for that book I am trying to write.

We had a good session in Mexico. I gave five lectures and some field demonstrations: we took a field trip to Querétaro and Rio Verde and Irapuato. About 25 young men present, from 10 countries. I used your notes for most tropical fruits, adding one syllabus on bananas. Your notes had been revised by Carlos Aponte of Puerto Rico, who was present, and impressed me as one of the promising young Latin Americans in our field of tropical horticulture. Ernest Casseres did a wonderful job of handling details - just as good as Bob Hunter in Costa Rica, than which there is no than whicher.

Bob Allison writes that I simply must attend the meeting of the Fla Soil and Crop Science Society at Gainesville about the first of November. I might yield to his entreaties. Maybe Hugh will still be there! He sure doesnt seem in any hurry to leave Gainesville.

Papers here full of comment on action of the Minister of Agr, who plans to cancel the agreement with US regarding Point Four technical assistance. I dont think it is final as yet, though it sounds so. I have got Claude Hope interested in making San José the Camellia City. We will need some advice regarding varieties for this part of the world. Back in 1939 Helen and I brought about 25 from New Orleans, of which only about 3 have done well here. Claude writes that the only common one at San José, up to now, is a double white (which we have here); we also have Chandleri elegans doing well in Guatemala.

Mighty pleasant to be settling down at home, and I hope it will last for a while. I am getting too old for many of those field jobs. So much easier to sit here in the old house and write about how much better we did things fifty years ago. But Costa Rica was a pleasant interlude, because (first of all) of the good visit I had with yourself and family. Best regards to all of you.

Sincerely,

Wilson Popenoe

Antigua, Guatemala, 16 July 1959

Professor Herbert S Wolfe
College of Agriculture,
Gainesville, Fla.

Dear Herb:

I have run up against a problem, in connection with the preparation of this manual of tropical fruit culture in Spanish. In fact I ran up against the problem when I was lecturing in Mexico City a week or so ago. It is this:

In connection with tropical fruits we have to talk about nucellar buds, especially in connection with Citrus and Mangos. Pretty hard to make clear to non-technical people. I dont have many books here to consult - what I am looking for is a picture, perhaps more or less diagrammatic - which will show how those nucellar plants dont come from the ovule butfrom surrounding tissues of the nucellus. Do you know of any such picture, and if not, is there someone there who could draw a ~~could~~ picture which would give readers the right idea? Seems to me, if such a thing does not exist in print, it should have been done before this. You are quite familiar with this subject and I hope you will be able to help me.

Bob Allison writes that I simply must come to Gainesville about the end of December for the meeting of the Fla Soil and Crop Science Soc. Maybe I will do it, if the Conference on the Caribbean this year will also treat of some subjects of interest to me. You know, it is never very hard to talk me into coming to Gainesville.

Ever yours,

Wilson Popenoe

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE

July 23, 1959

Dr. Wilson Popenoe
Antigua, Guatemala

Dear Wilson:

I returned yesterday from a few days absence (driving my women folk to Michigan and flying back) to find two letters from you. May the good work increase!

First, I am interested to learn that Simmonds has a book on bananas about to come forth. I shall look for it, since Fawcett's book is pretty out of date now.

Has word reached you of the premature death of Bruce Ledin? He had a defective heart which finally played out. A grand fellow and a real loss to tropical horticulture.

Carlos Aponte I had only a nodding acquaintance with at San José. He is an extension man working with fruits, and possibly would have been better to nominate for vice-chairman next year than Berrios; but I knew the latter from previous meetings and knew nothing about Aponte. I am glad to have your appraisal of him.

You raise an interesting point about illustrations showing the origin of nucellar embryos. Webber and Batchelor has a plate with two figures (from Osawa and Strasburger) showing nucellar embryos, but they are not very easy to grasp. I have made some sketches, based on other figures I have been able to locate in botanical texts, which may give you something to go on. I have started with the ovule when it consisted only of nucellus and integuments, and carried it along to well started embryos. The last sketch may be all you want.

It is not easy to make camellia recommendations for Costa Rica, for lack of basic data on varietal behavior. The following ten varieties are recommended for southern central Florida (the farthest south area for camellia culture in the U.S.A.): Mathotiana, Alba Plena, Debutante, Elegans (Chandler), Herme, Prof. C. S. Sargent, Pink Perfection, Gloire de Nantes, Rose Dawn, and Adolphe Audusson. Alba Plena is probably the double white which you and Claude Hope have, and of course Elegans (Chandler) is what you have as Chandleria elegans. Luis Cruz had a few thriving camellia bushes, but I saw them only at night and

Presumably these varieties have lower chilling requirements than most.

without flowers, so I do not know the varieties. I hope Claude goes ahead with this project.

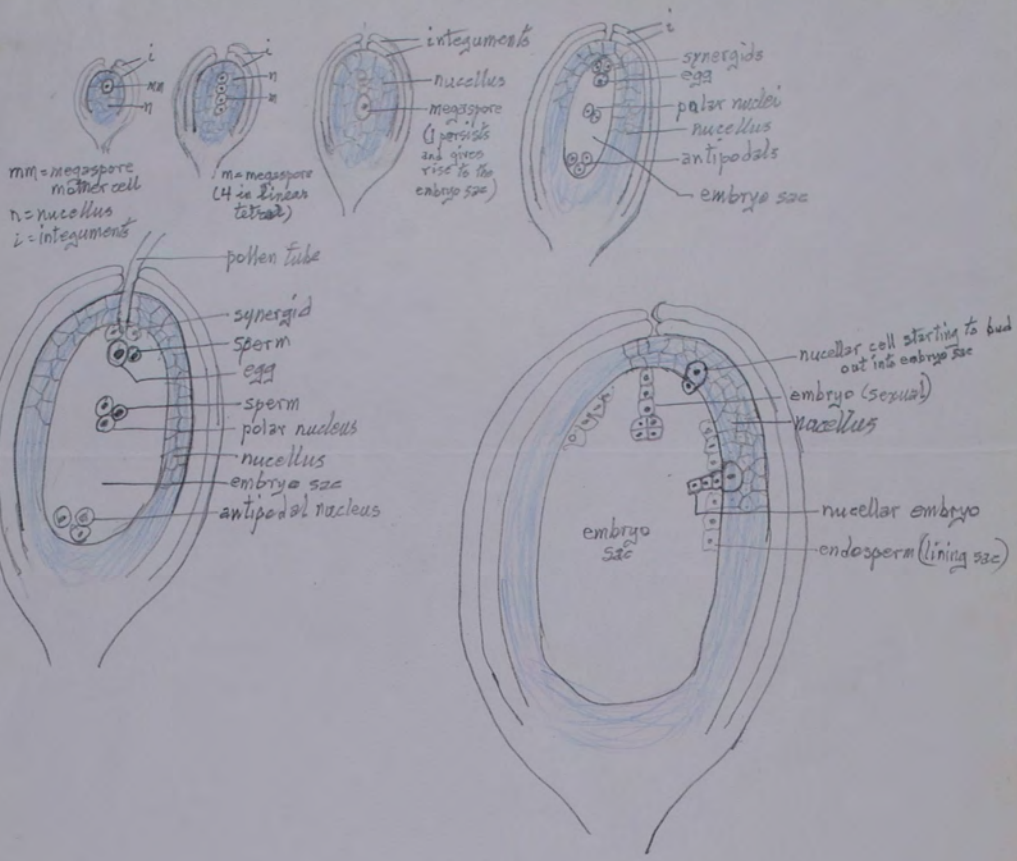
It will be fine to see you if you come in December - or any other time.

Sincerely,

Herb

H. S. WOLFE
Professor

HSW:MHG



UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

March 25, 1961

Dear Wilson:

This afternoon I happened to see Wayne Deitz and learned the sad news of Helen's sudden death. We regret deeply that we cannot look forward to seeing her if we get to Antigua next year, but we feel far more deeply the loss to you of her gracious home-making and wonderful companionship. I treasure greatly my memories of her hospitality when I visited you at Zanorano, and I know how magnificently she complemented you in creating a satisfying life for the two of you. But we are simply incapable of comprehending fully the greatness of your loss in these years of partial retirement when you had more time for each other than ever before. We can only assure you of our very deep and sincere sympathy and of our prayers for your comfort.

Ever sincerely,

Mary and Herbert Wolfe

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

June 25, 1963

Dear Wilson:

I am back in harness again, after running free in the pasture for a couple of months, and have a dozen students in Major Tropical Fruits for this half trimester. It was pleasant to find your reprint on deciduous fruits in Central America awaiting my return to the office. There is more useful information in this than in the large volume produced in the Cerro.

Did I ever write you about my visit to Almuñecar? The Fonda Mediterranea turned out to be a horribly run-down dump, but Luis Zarzuela was well worth enduring it for. It was nearer a half hour's walk to Rancho California than 10 minutes, but we had attractive scenery en route. And he showed me every tree on the place, I am sure. Loquats were dying shipped, and he had fine large ones. I obtained a couple of Hass avocados, but even better, Luis gave me a couple of cherimoyas. We ate one for lunch, my first tasting of this fruit, and Mary was as enthusiastic as I. Luis & his wife urged us strongly to stay and have dinner that night with them, but I already had reservations at the Parador in Granada.

On the way to Almuñecar from Malaga, I was surprised by the number of cherimoya trees I saw in many places. Somehow I had thought of them as rather a specialty of Rancho

California. Oh! To be in Andalusia in October when the crop of cherimoyas comes in!

We enjoyed our month in Spain very much, and could have spent another month pleasantly if other parts of Europe had not beckoned. We were aware that prices of lodging and food were low in Spain by American standards, but it was something of a shock to find prices in Italy about three times those of Spain — for comparable hotel rooms. Food was not much different. Of course prices did not decrease any as we went north from Italy.

In Spain, Italy, Switzerland, and Germany, I had no trouble in making myself understood. But in Denmark and Norway, I couldn't speak a word of the language, and in Oslo especially, we several times encountered waitresses who knew no English and menus in Norwegian only. Once or twice we had real surprises when the food came — usually not very pleasant surprises. This happened only once in Spain. It was a chilly day in Segovia and thinking a hot bean soup would cheer the inner man, we ordered gazpacho. What a let down!

I am fortunate to be back in time for the mango season. First, I asked Carl Campbell to send us some specimens for chase use, and he was generous in quantity. Then several former students began remembering me. I have had a bushel of mangos to eat if we can surround them all. I hope you didn't leave Zamboanga until the mango season was well begun.

Your frequent visits to my office are greatly missed, so I hope you plan to come back next winter. But probably you will go to Spain again, and I cannot wonder now.

Sincerely
Herbert

UNIVERSITY OF FLORIDA
GAINESVILLE, 32603

COLLEGE OF AGRICULTURE DEPARTMENT OF FRUIT CROPS

June 22, 1964

Dear Wilson:

I appreciate your sending me a copy of your letter to Dr. Johannesen about the antiquity of grafting in India. You rightly raise the question of what the Sanskrit word translated "grafting" actually meant to the Sukra writer, and we are agreed, I think, that there is no good evidence that any other type than approach grafting was surely known.

As to reversion of monoembryony to polyembryony, you may be familiar with the study made by Claud Horn in Puerto Rico in 1943. He found anywhere from 0% for Pekori up to 30% for Bennett Alphonse of polyembryonic seeds in what we always call monoembryonic varieties. Curiously, he reported only 1½% of Pico seeds polyemb., whereas I would have expected a very high figure. I do not think there is so much a reversion, which is unthinkable in the absence of genetic changes, as a variable degree of monoembryony to start with. Of course, seedlings of monoembryonic varieties may have pollen from any source, and even if self pollinated they might increase the polyembryonic character with the re-shuffling of their genes.

I have had a couple of farewell dinners, at one of which I was pleased to see Hugh present. Actually, I have duties which will keep me here thru July, supervising a doctoral thesis, but my replacement will want my office vacated by July 1 and I am desperately throwing away bulletins and books for which I have no space at home. I'll admit that some of them should have been discarded many years ago!

Bert was here very briefly a week or so ago, and said you had held up well under the rigors of testing all of the mango varieties. Hope you have a pleasant summer and come back here again in the fall.

Cordially

Herb [Wolfe]

Antigua, Guatemala, 17 Sept 1959

Prof. Herbert S Wolfe,
Univ of Florida, Gainesville.

Dear Herb:

Many thanks for your letter of 21 July, which should have been answered sooner, but I had a man here from Venezuela and then Hugh and then a man from the Research Dept of UFCo. I hear from Boston that the Simmonds book on bananas will soon be out; that Jesse Hobson, head of the Research Dept has seen the MS, and thinks it is a great contribution. I sure was impressed by Simmonds when I met him briefly at Mexico City.

Yes, I heard of Bruce Ledin's untimely death. It is one of those things which comes like a bolt out of the blue. So untimely, and as you say, we have lost a very valuable worker in the field of tropical fruits - a field which is almost barren. So few men are interested.

Thanks for the sketches of nucellar embryo formation. I think I can Dorothy Allen to make me a good drawing, perhaps somewhat diagrammatic, for use in my book. I cant think of any better way to make this point clear to the layman that a good diagrammatic illustration. I tried to explain it to the boys at Mexico City but I doubt that they understood what I was talking about.

About the camellias: I am going to stay with this, but here in our garden with its decomposed rubble from the walls which fell in back in 1773, the situation is not simple. Surprisingly several varieties have done quite well, and unfortunately tho I hope not surprisingly we have lost the names of all of them but Chandler (Elegans). We had Alba Plena for a while but it has gone out; also Pink Perfection. If I get up to Gainesville at the end of November for Bob Allison's soil meeting, I think I will pick up and bring abck about a dozen varieties which you and Dr Hume recommend, and maybe put them near here, somewhere, where the pH is below our figure of 7.5. I doubt that they have more than 3 or 4 varieties in San José. Coban up in northern Guatemala has alwwys grown camellias and very successfully, but as far as I can recall, only a few varieties. We expect to go up there within the next couple of weeks and I am going to check up. That is a limestone area but I'll bet the pH isnt 7.5. Hugh probably knows because he has worked up there quite a bit. It is only 4400 feet against our 5100, and the 3600 of San José. If the chilling requirement is a major factor as you seem to indicate, we will have to be careful at San José, but I have seen a few varieties there, doing so well and for so many years, that I am hopeful. This is one of the things you and I will discuss if I get up there at the end of November.

Ever yours,

Wilson Popenoe

ESCUELA AGRICOLA PANAMERICANA

APARTADO 93

TEGUCIGALPA, HONDURAS
CENTRO AMERICA

Antigua, Guatemala, 17 Feb 1965

Dear Herb:

Anent the subject of a revision of my Manual, as brought up in your last letter:

We dont want a revision of the Manual; we want something covering field more completely, and with less details, especially regarding a whole batch of fruits which 50 years have shown be practically useless from the hort cultural standpoint, e.g., a lot of the Eugenias and some of the Sapotaceae. Pero vamos al grano; here is what I believe would be very much worth while, that is to say, practical, and not too expensive, for I have already told Bill Haines I dont want to go in for a book which is going to retail much above six dollars.

Call it "Tropical American Fruit Culture" or something like that. Some such title will permit us to include the temperate zone fruits, so far as concerns their cultivation in tropical America. Start off with a chapter on Citrus, for the small grower - nothing about packing houses or processing plants. Just varieties, propagation and culture. Then a chapter on bananas, along the same lines. Idem pineapples. Then avocafos and mangos, with a few of their relatives very briefly. The Annonas, not too lengthy. The papaya. The lychee. The myrtaceous fruits, those which are really worth eating. Sapotaceae idem. The Kaki, a good subject. Then a chapter on temperate zone fruits in the tropics, where the loquat cal be included as well. Then a final and long chapter on miscellaneous fruits, where we can throw in everything from the mangosteen on down - as in my Manual only more so. I mean brief mention of more fruits, including the olive.

ESCUELA AGRICOLA PANAMERICANA

APARTADO 93

TEGUCIGALPA, HONDURAS
CENTRO AMERICA

It would be my idea that the book should not run to more than 400-450 pages. After it comes out in English it should most certainly be put into Spanish. Turrialba would be tickled to death to do this, but of course the Florida Press should do it if they care to handle the job.

I think right now, with the establishment of the Center for Tropical Agriculture at Gainesville, is the ideal time to get out this book. Limitations of time and physical energy, not to mention complete lack of secretarial help, make it impossible for me to do the job, and if you want to make it a collaboration as suggested in your letter, I believe we should get at it. I will of course be happy to share the profits 50-50, if there are any profits. It seems to me this is an ideal job for you, now that you have no teaching obligations.

You may want tomtalk this over with Bill Hainws or at least think it over. I will probably be in Gainesville around the middle of March at which time we could make definite plans.

Ever yours,

UNIVERSITY OF FLORIDA
GAINESVILLE, 32603

COLLEGE OF AGRICULTURE

DEPARTMENT OF FRUIT CROPS

Feb. 27, 1965

Dear Wilson:

Your proposal for an entirely new book, rather than an updating of the old "Manual" sounds very interesting. I agree heartily that it should sell somewhere near six dollars, rather than at ten to twelve as so many books now do. You have evidently given considerable thought to the matter, since you have so clearly outlined the proposed contents, and again I find myself quite in agreement as to the relative space deserved by various fruits and on the importance of making the text so interesting that the reader hates to stop reading.

I will see Bill Haines this coming week, but am sure he will approve warmly. It looks now as if Mary and I might spend the period from about March 22 to April 3 in Mexico with her sister and husband from Michigan. They have long wanted to visit there and would feel easier with even my small command of the language along with them. And Mary and I need little urging to make another visit there. I am hoping that you will be here several days before the 22nd, so that we can talk and plan with leisure. Unfortunately I accepted too easily an

invitation to address the 10th anniversary meeting of the Rare Fruit Council in Miami on March 12, and I will be kept busy the next two weeks trying to think of something to say. I am used to talking to garden clubs, for whom I can make an acceptable speech on a wide variety of horticultural topics with a minimum of effort; but this is another color of horse.

I am hopeful that my old department will continue to give me secretarial service, and I think that between us we can produce a worthwhile book. When I heard that Menninger was bringing out a book on tropical fruits, I didn't see how I could compete, but while he is well up on the literature, he doesn't have the firsthand experience that we have had — especially you. So I think we can still give competition and perhaps appeal more to a less dilettante group of readers. The possibility of a Spanish edition adds a new dimension.

I look forward, therefore, to working with you on this project with much enthusiasm, and will hope to see you in a couple of weeks or so.

Cordially

Herb

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

June 11, 1965

Dear Wilson:

A little over a month ago I wrote, suggesting that you return me the partial manuscript which I had given you of the chapter on Citrus Fruits. Then I would send you the carbon copy of the whole chapter for criticism. Either my letter failed to reach you or you have been too busy with your various other projects to have time for reply.

My operation on May 10 went satisfactorily, and I have been convalescing about as well as could be expected. I have not had much ambition, and have found it easier to compel myself to walk 2 miles daily than to write 2 or 3 hours a day. But I have managed to finish the chapter on pineapples and hope to get at something else soon. Since February I have had much discomfort from migraine headaches which make creative writing difficult and which the medicos have not found any way to alleviate.

Ernesto must have been bogged down in his work, for we have not yet received information about housing or programs at Jamaica, and "time's a-wasting." Three weeks from tomorrow we will start for Miami.

All thru late April and May we wished addedly for rain, which refused to come. Had a whopping big water bill for May. Now for a week the rain has been reluctant to stop. Some folks are hard to please!

We were pleased to have a flying visit from Mary Ellen three weeks ago today. She came down to be a bridesmaid for a chum and was able to get a lot packed into a weekend. Among other projects for the summer she has been asked by her Catalan professor to translate a book he has written into English. The only hitch is the translating subsidy which he is hopeful of obtaining but cannot yet assure her of.

We hope that your health has been maintained by Maria and Horlick's malted milk in good condition, and that you have been able to make some progress toward the solution of the problems of the Colegio Nacional de Agricultura.

Enclosed is the piña manuscript. Don't be afraid of hurting my feelings by criticism.

Mary joins in warm good wishes.

Sincerely

Herb

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

July 1, 1965

Dear Wilson:

On the eve of leaving for Jamaica, I am sending you the chapters I have worked up on lychees and ~~carambola~~ sapodilla. Do not hesitate to improve them. I am leaving the annona manuscript to be typed while I am abroad, and will send it on also in mid-July when I return.

On the 15th we are heading for Michigan, to be gone until mid-September at least. I don't know how much I can get done there, as I am flying to Detroit and picking up a car there, and thus am limited in the amount of reference works I can take. Perhaps I can send a few books by mail, but there is nothing I can do about library investigations.

I hope you are well and just too busy with grandchildren and visitors to get much work done. We have been living very quietly, but will have a big change of pace next week.

Ed Menninger wrote me a nice letter recently, offering any pictures he had for our use. He seemed to think we were just up-dating the Manual, and so I explained our very different objective. That may make him think the field is more open for a "general interest" book on tropical fruits than he had supposed. Whether that is good or bad, I don't know, but it

seemed only fair to tell him what we were doing.

Mary joins in warm regards.

Sincerely

Herb

P.S.

I am trying sending the ms. by 3rd class air mail, to see how it works.

[Herbert S. Wolfe]

UNIVERSITY OF FLORIDA
GAINESVILLE

Box 12025

COLLEGE OF AGRICULTURE

DEPARTMENT OF FRUIT CROPS

July 16, 1965

Dear Wilson:

Enclosed is the last chapter which I worked on before going to Jamaica. We are off for Michigan tomorrow and I don't know how much I can accomplish there, with no library facilities. If I get anything written I will have it typed back here and send it on to you. My address until mid-September (probably) will simply be

Beulah, Mich.

Prices of rooms and meals were awfully high in Kingston, but we had some good meetings and fairly interesting field trips. We were spoiled last year in Venezuela by the many fine complimentary meals. The plan for editor and editorial committee went thru with no opposition, as Bob may have told you. I hope I can really be of some help to him, even tho so far away.

With Chico accepting the chairmanship for the meeting next year, we are sure it will be well arranged.

Cordially

Herb

Antigua, Guatemala, 19 August 1965

Dear Herbert:

Now that I have reduced my house guests to one, and you are about due back in Gainesville, I will try to get down to business. I have your first draft of several chapters on hand, but will begin with the revised draft on Citrus, since it will be the first chapter in the book. In accordance with your request, I will not send back the revised draft but will hold it here with other material as it accumulates, in case your house burns down. Where necessary, I will refer to page and paragraph on the revised draft; some of my comments will not fit just that way.

First of all, I think we should use the long-accepted botanical names as well as what you consider the correct ones - and you have done this in the revised version. In reading works other than ours, most of our customers are going to be confused if they do not see the botanical names which they have been used to seeing.

I still wonder if we should not devote a paragraph to each variety, starting with the varietal name in caps, and elaborating somewhat on the descriptions. My idea would be to make elaboration useful by including more about the behavior and importance of the varieties in Latin America. For example:

NAVEL. Commonly known as Washington Navel, because it first attained importance in the United States, through trees planted in California which came ~~xxxxxx~~ from Bahia, Brazil through the U.S. Department of Agriculture at Washington. It would really be more appropriate to term the variety Bahia navel (as has been done at times, thus honoring its place of origin. (Note: This will please

our Brazilian customers!). When produced under proper climatic considered by many the world's best orange for eating out of hand (as opposed to use in the form of juice and concentrates). In tropical America, it often commends a much higher price in the market than any other orange, even when grown in climates where it does not attain high quality. This is probably due to its seedless character. (Then go on with your description). I would go into more detail regarding climatic adaptation: While often grown in the tropics at low elevations it does not attain best quality below elevations of about 1000 meters, At 1500 growth is very slow and the flavor is somewhat acid for those who prefer sweet fruits - which is true of most people in the tropics. (It seems to me that protruding navels are more common in the tropics than in California, which may be due in part of the fact that they have practices bud selections, and it might be well to mention that this should invariably be done in the tropics, and describe the process briefly).

Normal. Cant we find a better word? I suppose you dont think we could call the other group "Mediterranean", do you? Arent all the other commercial varieties of Mediterra ean origin or descent?

VALENCIA. While I agree that Valencia is at its best below 1000 meters (I note you are using the metric system and I guess you are right). But I think it well to add that many oranges, seedlings, much like Valencia in character are grown in Central America up to 1500 meters. The oranges of Rabinal in Guatemala are famous, but nothing more than Mediterranean seedlings grown at 3400 feet, a dry climate with cool nights at times. Here in the Antigua region at 4500 they are considered fine; also in Honduras at Guinope and Valle de Angeles, both important producing centers. I have the feeling that all oranges attain highest quality at 750 to 1000 or 1200 meters. I believe this holds for northern South America also.

I dont believe local seedlings often, if ever, put on the market down here under the name Valencia. More commonly a geographical name; Rabinal oranges are always sold i Guatemala as Rabinal, and I dont recall ever hearing vendors say "this orange is a Valencia". Other than these suggestions, I like the description and I think it will make a parabraoh.

Since the two great oranges are Navel and Valencia, I would be satisfied to see Pineapple, Jaffa and Hamlin left as you have written them, and as for Temple, I would leave it for a separate paragraph but I would say it commands a premium price in Floridabecause it is scarcely known, as yet, in tropical America. We might recommend it for wider cultivation but it has not done very well at Zamorano.

Page 3. Lines 2 and 3. The names pummelo and shaddock are never used in tropical America so far as I can recall. It is usually toronja in Spanish and sometimes grapefruit. I would use grapefruit here. When the book is translated into Spanish, as I am sure it will be within a year or two after publication, toronja will probably be used, with mention of grapefruit as the commercial name in English. This page on nucellar seedlings is extremely important and valuable, and I like it.

Page 4. I think I would use rootstocks rather than stocks. And I am glad you have added "grafting" to make it "bud grafting". We will have occasion later in the book to use "veneer grafting", side grafting, crown grafting and so on, so with bud grafting we are off to a good start.

I think the handling of the rootstock business is excellent and will be very helpful. I think you might add that the vast majority of in Central America, the West Indies (?) and northern South America are on sour orange, and in may be said that this, up

to now, is the most important rootstock in the world. Isnt that true?

Page 5, first p. I believe we might well emphasize that foot rot or gummosis is probably the worst enemy of orange orchards in tropical America, except they are planted on sandy or sandy loam soils in a relatively dry climate.

2nd paragraph. I have rarely seen trifoliate orange used down here as a rootstock and this might be mentioned, especially because it does not seem to be suitable for the tropics - you dont use it in south Florida. Some mistakes have been made down here when it was used without knowing what it is.

Last paragraph. I have never felt quite sure that it is best to cut back right to the bud, as soon as the buds have taken. I would be inclined to play safe by saying it is the practice in Fla to cut back just above the bud, in the tropics the rootstocks are lopped to 4 or 6 inches above the bud, and cut back close when the buds have made a few inches (I suppose cms!) of growth. What do you think? I will leave this to you. (I notice here we are using inches. Gosh, I hate to have to switch over to centimeters in such matters as caliper of budded trees, etc. What do you think? Metric for altitudes and distances, inches for small measurements, or what? This is a problem. Figure it out.)

Page 6. You mention that oranges should have low heads. How I have hammered on this down here! I would like to mention that it is a common mistake in the tropics to head trees far too high,(and I hope you can put in the book a good foto of a Florida orange grove, close up, showing how trees are and should be headed).

On the whole you have covered this point admirably, and it is a mighty important one - one trunk is a rare thing down here as I am sure you have observed.

Page 7. First p. Shall we give number of trees per acre or per hectare. This is a problem. Few Latin Americans think in acres. More think in hectares. Still more in manzanas, which I do not think we can use, because not everywhere do Latin Americans use this measurement. Maybe we can handle the matter by putting a conversion table at the end of the book - acres to manzanas to hectares, and other measurements. What do you say?

It seems to me grafted citrus trees do not grow as large down here as in Florida, especially at elevations above 2000 feet or so. But I think we had best stick to 24 x 24 feet as the minimum spacing, to be on the safe side.

On this page we come up against the fertilizer problem, on which I dont think I have made myself quite clear. My point is, that cost of transportation down here makes it anti-ecpnomical to use a formula such as 4-7-3-2; though the proportions are right. I believe I have told you that Fertica is now put in- out a 20-12-8-2 formula. I dont question your proportions in general - though we know of course that they will differ from soil to soil, and I agree with you fully that we must not say "fertilize with any good formula or anything like that". So I leave it to you to suggest formulas such as you have in your letter of June 18, but I think we should point out that these are percentages of each element. Incidentally, there has been much propaganda down here in favor of 14-14-14. I dont know just why. One of our problems is that the fertilizer manufacturers have to think of coffee growers and cane growers and corn growers as well as citrus growers. This all makes a difference,

We will need to point out that the amounts to be applied, and you have specified quite a few, must be geared (as the gringos like to say) to the strength of the fertilizers. No?

Page 9. I note that most of the fertilizer comment is out of order, as you say that other analyses can be used in proportion to give the same actual nitrogen amount. But this is left to the end of the discussion. It might well go in earlier, perhaps, with more explanation regarding the necessity of adjusting the quantities for each application. And how about mentioning that the grower should learn all he can as fast as he can about what his soil needs, for he should not spend too much money on unnecessary elements or larger quanities of an element than he needs. For example, they have been recommending 16-20-0 down here and a great deal of it has been and is being used. Most tecnicos seem to think that 20 or phosphorous is fine for the first application or two, but need not be kept up continuously - only once in a while.

Page 9a. I think the discussion of minor elements is fine. (This goes on to p. 11). The more intelligent growers down here are being told so much about minor element deficiencies these days (we never heard them mentioned 25 years ago) that theybwill appreciate gratly this discussion.

P.12. Fungous diseases. Would it not be well to say "foot rot or gummosis?" I wish we could go into more detail about the major disease, especially sysmptoms which can be recognized by the average grower. I am constantly getting caught by a grower asking me what is that disease? I am not sifficiently familiar with the symptoms myself to recognize half the diseases. I do not know whether it is possible for you to make it possible for the average grower to do so.

P.13. I believe it would be well to add the scientific names after "purple scale" and others. Some growers may want to look them up in European or Latin American literature where our names are not used,- that is the common names. I am glad you have not gone into

detail regarding the modern chemicals, insecticides and fungicides. There is no end. Few of them have been in use ten years, few of them will be in use ten years in the future. If we try to recommend a lot of these new things our book will be obsolete ten years from now, if not sooner. I think we should stick to the basic, long-used things such as the oil emulsions, copper, sulfur and the like. They are, in the first place, all that the average grower down here is going to be able to get locally and he is not going to import. I think Malathion is a safe bet, however.

P. 16; 2nd paragraph. Re cover crops, I doubt that we should recommend bur clover, bur clover and certainly not sweet clover because I dont think they have been successful down here. I would stick to such things as cowpeas, velvet beans, crotalarias, Thunbergia javanica, varios Indigoferas, Dolichos lablab and a few others. We do not need the cool season crops on our list.

P.22. I note that the shaddock or pummelo which you mentioned earlier, is differentiated from the grapefruit. I do not think we are clear about this down here. There are numerous trees which are probably shaddocks, and which have practically no value. Do we need to mention the shaddock or pummelo? I think the grapefruit discussion is adequate, because of the scanty importance of this fruit down here which I dont suppose is likely to increase greatly.

P.23. I believe it would be well to mention that the common lime is called limon throughout the Spanish-speaking countries. (On next page I note you have done this. Perdóname)! Re the Kumquats, Mortensen told me that Meiwa is the only one you can eat out of hand, with any pleasure. I dont know - I have never seen it.

AND NOW, FINALLY, to end this long commentary: I think the Citrus chapter is simply tops. It seems to me fundamentally sound, and just about as long as it should be, if qe are going to keep the book within the bounds qe have set. I will work next week on some of the other material you have sent, and mail back to you my comments. I will send everything air mail from the airport because we get much better service there; and I think it would be wise if you would buy a 11 cent Aerogramme every time you get a batch of comments from me, just so I will know nothing has been lost. I will keep copies here of everything I send, for safety's sake. I assume you are doing the same at your end. I note from one of your letters that you do not expect to be back in Gainesville until about the middle of Sept. I hope by that time to have comments awaiting you, on everything you have sent me to date.

To keep the book uniform in style, and not make it look as though the different chapters have been written by different men, I think I will rough-draft the chapters I write (mainly bananas, avocados and mangos I believe) and let you work them into uniform style. You will want to make some addenda, emmenanda et corrigenda anyway. anyway (maybe my Latin is rusty). One thing I want to do, as I have said before, is to get as much tropical American background as possible into the book, so that it will not look like a textbook written solely for use in schools (though you and I both hope that this will be one of its major outlets, as I am sure will be the case) but will also look like a manual for cultivators - the smaller ones, not the big fellows. Which brings up the matter of title, which you might be thinking over: We talked of "Fruit Culture in Tropical America" or something like that. I am thinking of "Fruit Growing in Tropical America", like your Vegetable Growing in Florida".

or even "Fruits for Tropical America" because, to keep down the size, we are not going too strongly on the historical and cultural sides.

You are carrying the heaviest part of the load, because (1) you write easily and well, (2) you have more time for the job than I have, unfortunately, and (3) I have no assistance at all, on the typing and copying end. I hope you do not mind. And I believe we can and should try to finish the job by Christmas.

Incidentally, Lee Adams offered to give us a fine painting of one fruit, as a frontispiece. If Bill Haines can take it. Maybe I would have to chip in a few dollars for a color plate, which I would do if necessary. I am strong for having the Haden mango as a frontispiece because it such a handsome thing (or can be) and because it is attracting so much attention in tropical America today. I have a lot of photographs and drawings, which are good. You can scare up two or three on Citrus (orange culture) unless we have to hold down to one, which I think should be a fine Florida grove, close up, as I have mentioned in my comments.

I am going to have a lot of material on the temperate zone fruits, because I think it has become a popular subject down here and will be very useful. And a brief chapter on propagation, involving particularly methods of grafting which have been practiced here in the tropics.

I plan to use paragraphs for each variety of the mango and the avocado. And perhaps some of the temperate zone fruits though I doubt it will be necessary, because we have less information than we have on such things as Navel and Valencia oranges.

My warmest regards to both of you.

Ever yours,

Antigua, 17 Sept 1965

Dear Herb:

Knowing that you and Mary have your hands pretty full these days (wedding!) I have waited to answer yours of 25 August. I hope this will be held until you get beak to Gainesville. As soon as I know you are there, I will commence sending back material of yours with me comments. I am going to have a hard time to get down to work in October, what with a lady coming from California to paint wayside flowers (a book in mind) and the New York Botanical Gdn tour. But I am working up material on bananas, avocado and mango. When these are ready, with what you have already sent, the back of the job will be broken, since you wont let me wax dithyrhambic about the durian, the umkokolo, et id genus omne.

You right about this winter and summer ripening business. I think we will just have to use the seasonal periods to which we are accustomed in the northern hemisphere andllet the chips fall where they may. But I would like to use "autumn" instead of "fall"; I think it may avoid some confusion on the par of our Spanish-speaking reagers. As for the seasons here in Central America, I think you know that the dry season is summer (verano) and the rainy season is winter (invierno. More or less November to April, inclusive, then May to October inclusive. I guess we cant beat the game. Let the readers figure it out for themselves.

In some of the equatorial regions they use this classification as we do in Central America, but in Peru (coastal) where it never rains we are stuck!

I am glad you agree about English measurements. We cant well use both. But when the book is tranlated we must see that the translator does not

take us too literally. When we say the best altitude for the navel orange in Central America is 3000 to 4500 feet, we must see that he does not say 1115 to 1473 meters, or something like that. I have seen it done!

The classifaction of oranges has me whipped. Neither you nor I can go along with Dr Hume differentiation between "Spanish oranged" and Mediterranean oranges". And the "Blood oranges" down here can not be differentiated because they do not get bloody - at least I have never seen one. You and Louis Ziegler go in for three groups, Normal (or commpn), Navel, and blood oranges. Of course the navel oranges represent an old group of mutations (or so I assume). Where this group breaks down a bit is in Brazil. Shamel, Dorsett and I found at Rio that Laranja selecta, which we would have to call a normal orange, throws, with great frequency, navel sports. We saw them an almost every tree. A budsport of selecta almost certainly gave rise to the Bahia navel of horticulture. In other words, there is not a very hard and fast line between common or normal oranges and the navels.

You know that systematic hobby is almost a passion of mine, and today I seem to be almost alone in hanging onto this subject. I suppose we will have to go along with your grouping, but we sure will have to make it clear that our tropical friends must expect to see blood in their blood oranges. Incidentally, I do agree with Dr Hume that the blood oranes are just about the finest flavored oranges known today - if we can judge by ones I have eaten down here.

A feature of the Bahia navel which is very important is its earliness. I believe you have made the point in your text. The home owner down here, and of course the commercial grower also, needs both the Bahia navel and Valencia, at least, to have a succession of crops. How would it be to put a short note in the text somewhat like this:

Early oranges, mid-season oranges, and late oranges? I think it might help the grower to realise the importance of season. And it is quite customary in the States, especially among nurserymen, to list varieties on this so-called arbitrary or artificial basis.

About lopping vs. cutting right back the stocks when buds have "taken". I have no doubt your Florida experience has shown the desirability of cutting back hard. But since this method is rarely practiced in tropical America, and there is just the bare possibility that it is not so well adapted to all regions, I would like to see it elaborated a bit. I wonder if it is not possible that where nurseries do not receive the highly intelligent care they get in Florida - for example, if the nursery is not kept moist enough when the buds are breaking into growth, Juan Garcia might kill his trees if he cut them right back to the bud at the start? I have a hunch there may be something in this idea.

I suspect we cannot do very much about the disease business without going beyond the limitations of our space - just as you point out. The grower needs a good practical bulletin - I believe the University has issued one - with plenty of pictures. I think the Exp Station will not send its bulletins to people outside the USA - maybe outside of Florida - free of charge, and it hard for the grower down here to get your bulletins. If you can possibly include a few notes which may help him to know what is killing his trees it will help, but I realise this is going to be difficult.

I am inclined to let the title stand for the moment. I have felt you are quite right in using "in Tropical America" instead of "Tropical American" simply because we are going to include the temperate zone fruits. And they are becoming more important each year and our chapter on this subject is going to be popular, I believe. And helpful. Because of t e limitation on space, I realise that we are going to be able

to devote relatively little attention to cultural practices. They vary tremendously from region to region, and in accordance with the objective of the grower. We are not going to turn out a book like Chandler's, however, as valuable as it is; but he limits himself almost wholly to citing the research papers which have appeared, and these are so much inclined to be on special features, not practical discussion of varieties and how to grow them. I will try to work in, with my suggestions, as much cultural material based on observation and experience in tropical America as space will permit. I regret that we have to consider this latter point, but I know you and I agree that the book must not go above $7.50 (and better $6.50) in price. A ten dollar book would cut our tropical sales 50%, I believe. I wonder how many copies of Ochse, Dijkman and Soule have been sold to tropical American agriculturists at $35?

On another subject: I have just rec'd the Proceedings of our Venezuela meeting - 275 pages, and Ernest writes that it cost above $2000 to get it out. I figured Shell was going to publish it - they spent so much on the meeting they spend so much on the magnificent bulletins they issue, but they didnt, and Ernest says the Caribbean Region is pretty well out of funds. I believe we will have to come down to Proceedings of about the size we got out before Venezuela. Ernest says Bob Armour is getting busy, I suppose on the Jamaica proceedings, and is doing a fine job. He will. Whatever Bob tackles he does well and carefully. I think you and Jimenez will have to give him moral support on turning down lengthy papers, by refusing them (if not of wide enough interest) or abstracting them. Bob doesnt want to take all the kikks from young scientists who cant get their papers published elsewhere because of the expense.

Ever yours,

Antigua, 29 September 1965

Dear Herbert:

Herewith the Pineapple chapter, with my comments. I am assuming that you survived the wedding and are at home again. I will now work on the other material you have sent, and commence some of my own.

I have in my comments made the point (for your consideration) that the pineapple is the only major fruit on which we are having to use information from other sources to a large extent. Maybe you had some field experience with pines when you were in South Florida; I have never grown them on a scale largen than ourplanting at Zamorano - perhaps 500 plants. I assume you have taken most of the information from Puerto Rico which I suspect is our best source. I dont imagine the boys in Hawaii have published the sort of practical details needed by the <u>small</u> farmer im tropical America.

I think this chaper is a good example of what we are up against: To keep within the bounds we have set, we have to boil down our treatments of each fruit to what we consider the bare essentials. On looking over my Manual I realise how much more fun it was to romp around all over the world, with interesting tho not in most cases valuable items, as far as the grower is concerned. It made good reading - some folks have said - but we cant afford it today, nor do we have time for it. Nor has the reader time for it, perhaps. I do hope we can give him enough basic principles to help him avocado some of the costly mistakes. For example, not planting West Indian avocados at 5000 feet in Mexico or Guatemala.

Ever yours,

Comments on Chapter 3, The Pineapple.

In our preliminary outline we ended with the following statement: "Following sequence to be observed with respect to each important fruit: Origin and History, Races (where they exist) and Varieties; Propagation; Planting and Culture; Pests and diseases.

In the case of the Pineapple, you have put Varieties almost at the end, followed only by Pests. Should we not shift this section to the position above mentioned?

In our original outline, we did not include a section on Climate and Soil. You have done this with the Pineapple, and I believe this is a good addition. Should we not continue this with each fruit? I think leaving it out in the original memo was an oversight on my part.

But to go back to the beginning of your MS. Line 1, would it not be better to say that "the pineapple (Ananas comosus Merr., is commercially the most valuable of the horticultural fruits native to the Americas"?

Then, if we proceed to Races and Varieties, you have started by mentioning the three "races", Spanish, Cayenne and Queen". Before describing these, I wonder if it would not well to put in a little "local color", especially because the rest of the chapter is somewhat encyclopedic in character (and I think perhaps we should make this clear, by saying something of this sort: In many tropical American countries little scientific attention has been given to pineapple culture. In others, especially in Puerto Rico, the subject has in recent years received much attention, and many details in the following discussion are based on experience in that Island. Others have been taken from Hawaii, South Africa, Singapore and a few other regions, because it is believed they will be found useful to those contemplating the

commercial production of pineapples in countries where little horticultural attention has yet beem devoted to this crop. - I feel something of this sort might be appropriate, because this is one of the few cases where most of our information is not based on our personal observation. What do you think about this? (You may also wish to add Florida, of course, as a source of cultural information).

Now, after mention the three races (and I must confess I amnnot at all clear about placing all of the varieties grown in tropical America in one of these three groups) what do you think about bringing in the "local color" in some such manner as this:

In recent years, commercial production has become important in the State of Veracruz, Mexico, mainly for the production of fruit to be processed in the form of canned pineapples and other products. In the 1920's extensive plantation were made on the Pacific coast of Guatemala, using the Smooth Cayenne variety from Hawaii. Modern equipment was installed, but the project was a failure because the rich soils of that region produced a fruit of coarse texture and unsatisfactory canning quality. In this same region, however, though at a somewhat higher elevation, this variety is grown for local consumption in the fresh state, while in the vicinity of Palin, on the sloped of the Volcan de Agua at elevations 2round 4000 feet, a very fine variety is grown, also for local use. This is a rather small fruit, white fleshed, of delicious flavor. It can not be referred to any of the three forms, Smooth Cayenne, Red Spanish and Queen, which leads to the comment that pineapples varieties in tropical America have in very few cases received adequate study pomologically. Many have local names which do not agree with similar names applied to quite different varieties in other regions.

The varieties have commonly been grown in El Salvador, for

Milagro, near Guayaquil, Ecuador. It is difficult to classify these and many others. The region of Bahia, Brazil is famous for its fine pineapples, locally called Abacaxi.

local use only, are few in number and on the whole of rather inferior quality. The same is true of a variety grown in the region of San Pedro Sula, Honduras which appears to be the same as the locally well-known Montufar pineapple of the lower Motagua valley in Guatemala.

The region of Turrialba, in Costa Rica, is famous for its pineapples, which are of rather large size, white-fleshed, of excellent quality as fresh fruits; but when it was attemped to develop this variety for the export trade. it was found completely unsatisfactory. It was grown at not far from Siquerres, in a hot, very wet region; the fruit did not stand up well under transportation to the United States and did not turn out a satisfactory canned product. In Panama, the "sugar loaf" pineapple of Taboga Island is locally popular. It gets its name from its shape; the quality is excellent as a fresh fruit.

The Cambray pineapple of the Cauca Valley in Colombia is highly esteemed in that country, as is the variety grown in the region of Milagro, near Guayaquil, Ecuador. It is difficult to classify these and many others. The region of Bahia, Brazil is famous for its fine pineapples, locally called Abacaxi.

It is to be assumed that most of these varieties which are locally popular have been found not to have the qualities desired by the large companies which produce canned pineapples. Nor is it known in some cases just how much their popularity is due to the variety itself, and how much to favorable climatic conditions.

To proceed: I think something of this sort, and you can check with information at your disposal - and you may even want to add something more about varieties which have been grown in Florida - will pave the way for the esxcellent notes which follow, on climate soil and propagation and culture.

Forcing into bloom: Dont you think we might leave out the last paragraph? Do you think commercial pineapple growers are likely to go in for this treatment, to any great extent. I think the first two paragraphs are fine, but I really doubt that we need to go into too much detail. I would at last try to incorporate in the first two pp any items in the last paragraph which you think the average small planter would be likely to need.

Propagation and Planting, fine, though I wonder how much we should suggest the modern chemicals such as Demeton. If we look back ten years we dont see many of these in print, and if we look forward there may not be many either. And we want this book to be a standard text xxxx as well as a guide for planters for the next 20 years - as far as possible! I particularly have in mind the weed control business. Today they are recommending Diuron and Monuron. I would be inclined to say something like this: Efficient herbicides are on the market, and new and superior ones appear from time to time. Furthermore, the boys in Puerto Rico may be recommending Dimmon and Monuron, but how about those boys at Cagua who are working with the Shell products? (Maybe they are the Diuron and Monuron boys; I dont know!) but if you read La Hacienda or any other agri-hortucultura journal you will see advertised half a dozen herbicides, I imagine, each one guaranteed to be the best.

About Varieties, actually I do not know Natal Queen! Do we have it in tropical America? If so, what do we call it? If we do not have it, should we get it, and where? With exception of Smooth Cayenne and Red Spanish, I think we are in the dark regarding the identity of our varieties and their relationships. I have worried over this a good deal in past years, and tried to encourage study of varieties and variety trials. I once had 45 introductions at Tela but didnt get anywhere.

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE DEPARTMENT OF FRUIT CROPS

Sept. 30, 1965

Dear Wilson:

Having successfully survived the ordeal of getting a daughter married, we are again in Gainesville, enjoying the relative coolness induced by "hurricane" Debbie. Your good letter of September 17 was awaiting me here, with its many thoughtful comments. I hope soon to have all the mold wiped off of things and get started on revisions and new chapters.

It is hard to think of those 40° temperatures in Guatemala last January as having been your "summer", altho I well remember how good a blanket felt in Antigua in June. I will use "autumn" instead of "fall", as you suggest.

Maybe it is not necessary to classify oranges for this book! We can group them under "early", "midseason", and "late", without any morphological classes. Then in describing the Washington (Bahia) we can note its navel structure. We had not planned to say anything about blood oranges anyhow.

I'll go along with your ideas about recommending Cojima so long as that is proven to be satisfactory in Central America and the Florida method is not proven so there.

There is no doubt that the Caribbean Section must either increase dues or decrease the size of its volumes. If the

latter alternative is chosen, there will be a big problem of how to accomplish reduction. We could set a maximum number of pages for an author, and possibly allow him (or his employer) to buy more pages if he insists that he needs more. You can depend on me, and I think on Eduardo, to support strongly any curtailing activity Bob may suggest. But we shall probably need to decide on a policy and get membership approval before we can establish a limit on length.

The flower-painting woman is likely to need a lot more personal attention than the N.Y.B.G. tour, which mostly needs good prior arrangements. Hope you live thru it all and still find a little time for writing.

Sincerely
Herbert

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE

DEPARTMENT OF FRUIT CROPS

October 7, 1965

Dear Wilson:

The first thing when you get back, please send me the original typescript of the Citrus chapter. You were supposed to send it back to me when you received the revised carbon + Thermofax copy, but it slipped your mind. Now I need it because I have no typed copy except the revised pages, and I need the unrevised original to complete the chapter.

Hastily
Herb

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

May 5, 1965

Dear Wilson:

I had expected to be thru with the surgery by now, but my doctor was out of town all of the last week of April, and when he returned, May 10 was the earliest date I could get for the operation. I have made some good use of the undesirably available time by expanding the citrus chapter.

However, I realize that it was a mistake to have you take the original instead of the carbon copy, since it will be harder for the final typing to be done from that. If you will send it back, I will send you the carbons to date. I don't dare send them until I have the originals, since you warned me of uncertainty in postal delivery.

Hope you had a good homecoming and find some time to work on the book, since I know you have many other irons heating there than you ever had here.

Sincerely

Herb

(Box 12025)

Instead of sending revised manuscript back to me, I suggest sending only desired changes, citing page and paragraph. Both your criticisms and the additions you can make, based on your long experience in the tropics, will be most welcome.

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

June 16, 1965

Dear Wilson:

I was very glad to have your letter of the 15th today, with suggestions about the citrus chapter. There is no point in your revising the manuscript you have because it is so different from my later version. I enclose this and hope you will return me the manuscript you already have, so that I will have a complete original typescript. Otherwise I must have another made from my handwritten manuscript.

The nomenclatural synonymy which you wish has been introduced on page 4. Rangpur lime was never given any Latin name by Swingle. In discussing mandarins on p. 21, the explanation should make synonyms unnecessary for tangerines, but I have added for King and the satsumas. I think they make the nomenclature clumsy, and perhaps should be relegated to footnotes.

Varietal names do not seem to me always to merit a paragraph to themselves. I don't think the discussion of tangerine varieties on p. 21 would be improved by 1-sentence paragraphs for Dancy, Cleo, and Ponkan. Likewise on pp. 2+3, Jaffa, Queen, and Hamlin would get terribly short paragraphs. Washington, Valencia, Pineapple, and Temple head separate paragraphs quite properly. Do you think we ought to expand discussion of Jaffa, Queen, Hamlin, Dancy, Ponkan, and Cleo so that each would have a respectable looking paragraph to itself? I wonder if I ought to include Meyer lemon in the lemon section?

UNIVERSITY OF FLORIDA
GAINESVILLE, 32603

COLLEGE OF AGRICULTURE

DEPARTMENT OF FRUIT CROPS

Oct. 15, 1965

Dear Wilson:

I am glad to acknowledge the arrival of the Citrus manuscripts today, but we still do not have our signals clear. I did indeed intend that you keep the carbon copies I sent you and give me criticisms and amendments separately. The trouble was, I had originally given you the ribbon copy on Citrus, and since I had later sent you the carbon copy with revisions, I was left with only my pencil draft. I would like to keep my ribbon copies and send you carbons, so I can revise and retype more easily, and get you can always have a copy on hand.

The Pineapple chapter has been revised, and I am sending you back the revised carbon (or thermofax). Too bad they changed paper color on me for the revisions.

Of course, if you find it easier to make comments on the carbon copies and return them, that is fine by me. But I hope not to have both original and carbon in the air together again.

I am well along with Leeuwas, and now that I have a typed copy to work from, I will get on with Citrus revision.

As ever
Herbert

UNIVERSITY OF FLORIDA
GAINESVILLE, 32603

COLLEGE OF AGRICULTURE DEPARTMENT OF FRUIT CROPS

Dear Wilson: Oct. 25, 1965

Herewith the Guava chapter for your critical comments. I have nearly finished the Papaya and Passiflora chapter, and have the revised Citrus chapter all in one piece, tho not completely retyped. I have been spending my afternoons in repainting my house this last week, and with a meeting or concert every night, I have not been able to make much progress in writing.

I was surprised to have John Watkins call me the other evening to tell me he was working on "Ornamental Plants in Tropical America". He had not seemed much interested, I believe, when he was down there last.

Mary Ellen's Bob has finally landed a teaching job, after 2 months of manual labor. She will be up at Superior, Wise., right next to Duluth, where he will teach at one of the 8 Wisconsin State Universities.

Hoping all is well,

Cordially yours,

Herb

Antigua, 30 October 1965

Dear Herbert:

I think the Guava chapter is really excellent, just right. I have made a few corrections, mainly typographical errors, on the MS which I return herewith, and would like to offer the following comments:

As seen in the tropics (for example in Cuba, where wild guavas have become serious pests in many pasture lands) guavas are usually large shrubs, so I think it might be well to call this species a large shrub or small tree. I dont think I have ever seen one 30 feet high but I am sure it <u>might</u> reach this height. But certainly it does not do so commonly.

Those figures on acreage of tropical fruits from India. They give the impression - in this case for example - that there are <u>plantations</u> totalling 100,000 acres. I suspect what they do is this: figure that there enough scattered plants and small plantings to total 100,000 acres if they were in orchard form. I think it might be well to dodge on this point. I think the Indians have done the same thing with their figures on mangos. I think it gives a rather false impression. If we counted all the scattered mango trees in Guatemala it might give us a figure of 10,000 acres, let us say, but actually there is not a single planting here of even ten acres.

On page 4, about putting the seeds for 5 minutes in boiling water. If you boiled the seeds for five minutes wouldnt it kill them? I dont know, but I am sure you do. I would be inclined to say, put them for five minutes in very hot water. You will know best about this.

On p. 5, you say 10 to 15 tons of fruit year year. I assume you mean <u>per acre</u>. Is this correct? We had best make it clear.

On p. 8, about the jaboticaba. F.C.Hoehne, in Frutas Indigenas, page 55, mentions three species, M. jaboticaba, M. cauliflora, and M. trunciflora. See figures on p. 59. I have been under the impression that the large-fruited jaboticaba is M. jaboticaba, and the small-fruited one M. cauliflora. What do you know about this?

On p. 12, you say "10 bu. of fruit". This will be understood by our North American readers but I doubt that all readers in the tropics are familiarr with this abbreviation of <u>bushels</u>. Not only this, but many people down here do not know what a bushel is. Could we use some other term - for example "500 lbs" of fruit?

Ever yours,

Malling Merton
~~XX25~~ XXV
atacado, pero los
otros no.
4 years old
104 106 109
111 not infested
at 4 yrs old

Fuertes drop
here from June
To ——?

UNIVERSITY OF FLORIDA
GAINESVILLE

COLLEGE OF AGRICULTURE — DEPARTMENT OF FRUIT CROPS

October 5, 1965

Dear Wilson:

We are most sorry to hear of the tragic loss of Nancy's husband, but glad you could go to her side. It may be some time before you can return to Antigua, but I will try to have something awaiting you.

The suggestions about pineapples are excellent, and I am glad to incorporate them with one exception. The paragraph on methods of forcing bloom seems necessary to me. In Puerto Rico, Queensland, South Africa, and Florida, as well as in Hawaii, growers are using these techniques, and I think we cannot afford to omit them from our book.

The problem of assigning local varieties to one of the three recognized races is certainly difficult. Sugarloaf is said to be a Spanish type, but Pernambuco = Eleuthera = Abacaxi was put by Hume (1904) in the Queen group and by Collins (1960) in Spanish. Maybe we had better forget races, since we cannot classify all varieties certainly, and just describe important varieties. I like the "race" idea, as it appeals to my sense of orderliness, but if we cannot put some varieties in a particular race for lack of information, perhaps there is no merit in describing races.

As for herbicides, not all of them are safe for pineapples. I think we ought to give at least some proven ones, using a

non-proprietary name if possible, such as monuron, which has such trade names as Karmex W and CMU. Shell probably has its trade-named product of this chemical.

Natal Green has long been grown in Florida, brought in from South Africa. It is a fine dessert fruit and is even canned extensively in Natal, but is small in size. It probably ought to tried in Central America, but the large size of Cayena Lisa will probably outweigh any quality difference. The small size and fine quality are advantages for grocery store sales in Florida.

I will rearrange the order to bring Varieties in after History, and I will incorporate the excellent "local color" which you suggest.

Our son, Willard, had his car bashed in front and back, driving from Berkeley to Riverside, by the car behind, which could (or did) not stop quickly enough when he had to stop for the car ahead. Fortunately he suffered no personal injury. We were fortunate in over 5000 miles of driving this summer not to have any collision.

Cordially yours,

Herbert

Chapter 7. The Cherimoya and its Relatives

First paragraph. I am quite sure the cherimoya was not grown in Mexico and Central America before the Discovery. I used to think it was and published to this effect in the Pomona College Journal of Economic Botany back about 1911. Someone picked me up on it and subsequent investigation convinced me that I was wrong. It may have been one of those fruits carried by the early missionaries from north to south and vice versa - the Mexican avocado and the capulin to S A, the cherimoya to Mexico.

I have always felt we could consider the cherimoya about as cold-resistant as the lemon. Not less than the lemon. This is based on experience in California.

You say "High humidity during the blooming period makes pollination germination better and may encourage insect pollinating activity". I dont believe this is the whole story. In moist weather - i.e. high humidity - I believe the pistil- remain receptive longer - thus they can wait for the anthers to dehisce. I think you hit it right when you said "high temperatures and low humidity cause the stigmas to dry out before pollen reaches them." I made a brief study of this at Almuñecar, and I didnt feel that encouragment of insect activity was a factor. I would like to add here something like this: "The most abundant crops of cherimoyas which have been reported are those which occur on the Mediterranean coast of Spain, where temperatures are never extremely high and humidity is never low."

UNIVERSITY OF FLORIDA
GAINESVILLE, 32603

COLLEGE OF AGRICULTURE DEPARTMENT OF FRUIT CROPS

Nov. 9, 1965

Dear Wilson:

Yesterday I received the Pineapple and Guava chapters, with your perceptive comments. I had not realized what a poor job of proofreading I had done in my haste to get the typescript back to the girls for a Xerox copy to send you.

There are certainly many orchard plantings of guava in India, but I agree with you that the great majority of trees are in small "gardens" or even in dooryards. Still, the total is impressive. I have changed the wording to "the equivalent of 100,000 acres".

The boiling water treatment for seeds I took from my late friend W. B. Hayes "Fruit Growing in India". He grew guavas at Allahabad and I have confidence in his statements of experience, tho I know it sounds drastic.

The taxonomy of jaboticabas is something I do not really know anything about, but I have been very skeptical about species differentiation based on fruit size. I have seen bushes with large fruits (Grandis) and with smaller ones (Sabara), but leaf, twig, and fruit characters other than size did not seem

different. I remember Blake's Persea species, and Pittier's Ocotea species, and even Swingle's 3 species of Fortunella without any real basis. So I prefer to use only M. cauliflora for any jaboticabas grown in Florida, and to avoid getting out on a limb about other possible species being in Brazil. If you wish, we can add, "According to Hoehne, there are two other species of Myrciaria in Brazil whose fruits are also included under the name jaboticaba." But I do not recommend this.

I know you are glad to have the N.Y.B.G. tour finished. Do you still have the lady botanist to shepherd?

The girls have had the manuscript for Papaya and Passion fruit for two weeks, and I go hopefully to the office daily to see if they are finished. They are kept very busy with regular departmental work this fall, whereas last spring they had some slack times.

I went to Miami to the FSHS meetings last week. John presided very ably over the Krome section. Incidentally, I saw Bill Krome for the first time in two years, and though he looked very fit. Unfortunately, Isabelle does not attend the meetings any more and I did not have time to go to Homestead.

With best regards,

Sincerely

Herbert

Nov. 16, 1965

Dear Wilson:

I am very sorry I failed to include page 4 of the Sapotilla chapter. I found it in the typescript pages still, and enclose it for your comments.

Cherimoya chapter!

It was unkind of you to invalidate my beautiful theory as to why the ilama is not happy in Florida by citing Retalhuleu. It is pleasanter to ignore facts!

I note that you crossed out the statement that the sapote is not known in truly wild condition, but I believe this to be factual and would like to retain it unless you know of valid objections. It is in line also with your experience, you say.

Here in Florida I have often found 2 or 3 seeds in sapote fruits, although a single seed is more common. As to Loudes, the distinguished author of the Manual says there are 5, and other authorities agree. I will change the wording to emphasize 1 seed as usual.

The name injerto has always puzzled me, since I can find no dictionary giving any meaning except "graft", and no sapotaceous species was ever grafted in Central America. If it has, as you indicate, colloquial usage to mean "mixture", I can see some basis for the use of the name, although it is still a little indefinite.

I have included mention of seedless sapodillas (the one at Homestead came from Cuba as I remember), and of a few clones propagated by nurseries.

It is very hard to believe that Humboldt saw sapotes wild in the forests of the Orinoco, considering the distribution of the species as otherwise recorded, but I have not seen the original descriptions in the Nova Genera Plantarum. Humboldt was indeed one of the first proponents of the theory that bananas were here before 1492, although he bases his view largely on Garcilaso's statement of pre-Conquest culture.

You have made a number of valuable emendations in the Cherimoya chapter. I have measured cherimoya seeds up to 3/4 inch, and thought the cylindrical ilama seeds had been an inch long. But I defer to your much more intimate acquaintance with them, as it is many years since I had any to measure and I have no records.

As ever,

Herb

Antigua, 1 December 1965

Dr Herbert S Wolfe,
Gainesville, Florida.

Dear Herb:

Now having the decks clear for action - the visiting firemen having left, -let us return to our muttons. Your letters of November 9 and 16 first.

I still wonder abou the "biling water treatment" for guava seeds and would rather dodge it. Let's get the boys down at Homestead to try it before we go along with it!

As for the jaboticabas, I believe we may well be up against another case of a splitter. You have seen jaboticabas with large fruits and so have I, right there in Florida. I suppose we might do well to mention that Hoehne, whom I take (because of his name!) to be a good botanist considers that there are three species, we are not going in for taxonomy in this book. But we must protect ourselves from the splitters, I assume. I guess - I hope - you and I are lumpers. Some good botanists are, also. Take a look at the enclosed copy of a letter I wrote to Mrs Blum (which please hold for me to use when I get up there, of which more anon). The botanists have made too many avocados. Working with one or two or even three sheets in the herbarium, they cant help it. But if you know avocados in the field and have seen all the intergradations, and all the varied forms, then you are bound to decide that it is not worth while to split too much. Dont you think so?

Now to yours of the 16th pxmo ppdo. I do not know what has happened to the zapote in Florida. Standley says it has only one seed - but of course that five-locule business. Engler and Prantl have it that way.

Maybe that wonderful climate of Florida, regarding which the papers comment so frequently, puts more of the locules to work. But I am sure if you ask any native of tropical America how many seeds there are in a zapote, he will say "one". I am going to check up on this a little more, among my friends here. Incidentally, Garcilaso de la Vega did not seem to think the aguacate was known in Peru until brought there from the province of the Paltas in Ecuador, but there is arecent book out, which shows pretty clearly that it was on the coast of Peru, well down toward the south, in pre-Columbian days. This puts me on the spot, since I have long been following Garcilaso. It is not the first time I have been put on the spot. Last night I was going thru Standley and Steyermark and find that Standley says I think the cherimoya is not native here in Central America. He (Standley) I am sure does not think so either, but he seems to be doubtful. I am not. It becomes naturalised so easily. Look how the mango has behaved in Jamaica. But I still cannot see how Garcilas got the idea that the banana is indigenous in tropical America. I guess he had not read Oviedo. There was not a copy of Oviedo in the University of Florida library in his day (I believe you will recall that I probably have the only one in Gainesville!).

Thanks for sending the missing page on zapotes. I dont have any comments of value on this, except that when we talk about the fertilizer requirements we are thinking of Florida more than tropical America. It will be a long time before anybody fertilizes a zapote tree down here, or a mango. And when we come to the latter, I think we will make it clear that in our soils mangos do not want much added nitrogen, unless they are to be grown as shade trees. I would be inclied to leave out mention of fruit flies in zapotes because I have never seen any, but doubtless you have found reference to this in the literature.

Which brings me to another point: You are much more up to date

on the literature than I am. I appreciate this, as we say in Florida. I think you are doing a wonderful job in bringing together information from all parts of the world. I wish we were not so limited as to space. We cannot get around this. But I do want to bring in as much horticultural information as possible, based on experience here in tropical America. I have been trying to do this in my comments. I enclose some on the lychee chapter. Iffeel sure you will go along with me in this idea. The more "local color" we can put in - the more practical information based on experience down here - the more useful the book will be when it is put into Spanish for Latin American readers - and I have this in mind all the time, for I am sure the book will not be off the press a year before we will be having it translated - and we might well be thinking about who will do this.

The only defect in Chandler's "Evergreen Orchards" is that he had to depend so largely on the literature, which in many cases consisted in the published results of "research" in certain areas, not applicable everywhere perhaps, and on specialised subjects. We are giving to our book a tropical American orientation - though I begin to wonder if we can - within the limits of space - treat cultural details sufficiently so that we can call the book "Fruit Culture in Tropical America". We may have to settle for something like "Fruits for Tropical America". But we can discuss all this when I get up there, which will be soon, for I plan to fly up to Miami on 17 December and be in Gainesville by Christmas; then stay there for three months or so until we have Helen Haines at work on a nice cover design.

Ever yours,

Chapter 8 - The Lychee and Its Relatives.

Last paragraph on first page, I would change to read something like this (my interest in "local color")

The lychee is really a subtropical, not a tropical fruit tree, though it will not withstand more frost than the orange. It has not yet been planted extensively in tropical America, though a few trees were growing in Ecuador about fifty years ago, and since 1925 experimental plantings have been made in Mexico, Guatemala, El Salvador, Honduras and the West Indies. (Note: I suspect there were a few in the West Indies much earlier but I have no data). It is chiefly successful at latitudes between 20 and 25 degrees from the equator, at low elevations, if the climate is dry enough during part of the year, and up to 5000 feet in Guatemala. The best conditions seem to be those in semi-arid climates at elevations around 3000 or 4000 feet.

In rain forest regions, as on the Atlantic coast of Central America, the trees are unfruitful though they grow well. They need a rest period, which in the native home of the species is furnished by cool weather, but can be substituted to a satisfactory degree by a dry season of several months duration. As in northern Honduras at practically sea level, where, however, if the fruit matures during very dry weather it cracks upon ripening.

The trees will endure long dry periods if irrigated as with Citrus. Continuously wet soil results in no production of fruit, as we found here in Antigua (where the water table was constantly high in our experimental plot); but at Guatemala City thirty year old trees have done beautifully, except that they have proved to be erratic bearers, producing good crops in alternate years or even at longer periods. The same has been true at Penajachel, 5000 feet; but we have to remember

that the only variety planted in Central America so far has been the Brewster; we may do better with Mauritius or some other. I understand tht there are more than 25 introductions now on trial at Homestead; out of this collection we may get something good.

I would go into a little more detail regarding air layers or marcots, as developed by Colonel Grove at Sarasota. The point you make about keeping the marcots, after removal from the parent tree, under shade and in moist atmosphere, before transplanting to the field, is vital, even in a moist climate such as Lancetilla. They certainly should have 6 to 8 months before going into the field, as you point out.

It is not worth while, as yet, to make a search for superior seedlings in the American tropics, as I have never seen any seedlings here in bearing. I doubt that it is worth while to suggest that seedlings be planted with improvement in mind, tho of course that is the way in which good varieties have originated - i.e. Groff, tho I have heard that this variety is not now considered so good as first hoped.

I would mention that there is a variety known as Amboina, which came to Honduras from the island of that name in 1927, which has proved to be very productive even in a climate hot and wet all the year round; it is so different from otherlychees known in the Americas as to suggest a hybrid origin.

The RAMBUTAN has proved well adapted to hot wet conditions as at Lancetilla, bearing heavy crops every year. It deserves wider cultivation, and attention should be given to selection of superior varieties which may occur as seedlings. I cannot see that rambutan fruits have more rag than the lychee, if grown in a wet climate. I think this was true of fruits grown at Zamorano, 2500 feet, in a dry climate. I would think that about the upper limit for this tree - or maybe 3000 feet in a wet climate. This is one of those fruits which can become very useful in

the tropical American rain forest coastal regions - along with the pulasan, the durian (for those who like it) several others which you may have in mind.

PULASAN. I am not sure we can say this is inferior to the rambutan, nor that it has much "rag" (if in the right climate). The flesh is not quite yellowish; it can only be said to be yellowish white. I would really think it better to say that this and the rambutan have white flesh, similar to that of the lychee but not so tender in texture.

While the longan is inferior to the lychee, no doubt about that, there seem to be varieties in China, not yet known in tropical America, which are really good and worthy of cultivation down here, especially because they are mpre productive. I believe several have been introduced at Homestead but I do not think they have fruited as yet. I remember seeing an article in one of the reports of the Florida Lychee Assn, by a Chinese who was I believe at Lake Alfred, who made a strong case for good Longan varieties. You might look it up and perhaps elaborate a little bit. We have fruired longans in Central America and I suppose the same has been done in the West Indies. I have a fine young tree here in my garden, 5000 feet. The altitudinal range should be a great as that of the lychee. The Longan has grown more successfully at Zamorano, 2500 feet, than the lychee under conditions of a long dry season and very little irrigation.

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

AGRICULTURAL MISSION TO PERU

REPLY TO:
N. C. STATE UNIVERSITY MISSION
U. S. EMBASSY – USAID
LIMA, PERU

March 16, 1968
L-18-FP-68

Dr. Wilson Popenoe
1722 N.W. 2nd. Ave.
Gainsville, Fla. 32601
U.S.A.

Dear Wilson:

I came down here expecting to work under Damon Boynton, but found on arrival that he had already gone to India for 8 months and that I was expected to fill his shoes. That would be a tall order for anyone, and was especially difficult because of my almost total ignorance of Peruvian horticulture and geography. You can well imagine that I have been reading furiously. There were well developed plans for extensive fruit improvement program, but since both the U.S. and the Peruvian governments drastically cut the funds for AID, I have not had to implement these plans. My principal project is to help my Peruvian colleagues develop bulletins on culture of various fruits, especially tropical and subtropical ones.

Since coming here, I have been mindful of your request that I be on the lookout for information on deciduous fruits. It is still something of a shock to see apples and oranges growing in the same orchard, as I have many times done in the coastal valleys I have visited. Of course, the apple trees are very much dwarfed and are limited to varieties of low chilling requirement. On looking thru Boynton's files, I was especially interested to find a manuscript on chilling which he had prepared a year ago but never published. From it I excerpt a few items which I hope will interest you.

In coastal Peru, there is what should be insufficient chilling even in the most southern latitudes. At Tacna, the mean minimum for the 4 coldest months is 50°F, and near Lima the mean min. is 57°F in apple-growing areas. Yet Winter Banana and Hoover are produced commercially, although internal quality is not high and delayed foliation is evident. By withholding irrigation during the winter months and applying DNOC 2 weeks before the first spring irrigation, the growers are able to compensate for lack of chilling in these low-chilling varieties, but not with such high-chilling varieties as Red and Golden Delicious. The mean maxima for the 4 winter months range from a normal (for apples) 64°F at La Molina to 78°F at Ica, while for the 4 warmest months they range from 77°F at Tacna to 88°F at Ica. By way of contrast, the mean minimum of 40°F at Quetzaltenango for the 4 coldest months gives ample chilling, but the mean

maximum for the 4 warmest months of 64° F is a little cool.

I hope you are finding time to work on the book and that you are making progress. Mary joins me in sending best regards.

Cordially yours,

H. S. Wolfe
Co-leader Fruit Program
N.C. State Univ. Mission

HSW/mp.

Gainesville, 16 April 1968

Dear Herb,

Many thanks for your letter. I had heard that Damon had gone over to India for a time, but I think the local folks are to be comgratulated for having someone in his place who has the experience with tropical fruits that you have. But I am really sorry that they are not implementing a plantings program. Same old story, I guess. And I just heard from Don Fiester that the avocado nursery which the Ministerio had established near Antigua froze to the ground, 52,000 plants. Not as bad as it sounds, fortunately; not many of the seedlings had been grafted and those were grafted were propagations of local seedlings of unknown value.

I am getting ahead slowly with the book, but in a way I am rather glad for I am bringing together a lot of new information on numerous fruits, e.g. the macadamia which is the plato del dia in Central America. Marañones also, though I dont have too much faith in their commercial future. I think those lads out in Goa will shuck cashew nuts cheaper than the salvadoreños. I am still getting information re lychee culture; just about to settle for the carbohydrate/nitrogen ration as I am in connection with mangos and several other fruits. I advance the hypothesis on the same basis as the archeologists advance theirs - nobody can prove I am wrong.

My best to Mary and yourself, and to eat a lot of that wonderful Lima grub <u>a mi salud</u> as we say in Guatemala.

Ever yours sincerely,

Gainesville, Florida 16 April 1968

Dr Herbert S Wolfe
USAID Mission, Lima Peru.

Dear Herb:

Many thanks for the information about apples in Peruccontained in your letter of just a month ago. I wonder if you can answer a few questions which will help me round up the material on this fruit for our book.

In the first place, which is the first valley south of Lima in which they have apples commercially? I assume there no apples north of Lima, is that right? I seem to recall that I saw a small orchard not many miles south of Lima, pretty close to the beach.

You say that the trees are very much dwarfed and are limited to varieties of low chilling requirements You mention Winter Banana and Hoover. What is Hoover? I have never heard of it and it is not in the literature which I have. Could it be Huidobro from Chile, which I got in 1920 and sent to Washington? I am very much interested in this Hoover business. Can you run it down through any of thw people who are growing it? I dont know when it ripens down there, probably earlier than this, but if you could get three specimens and send them up by air parcel post we might be able to indentify the variety.

I notice that Damon says, in the paper he wrote for the Antigua meeting (1962) that the success of apples in the Cañete region may be due in part do the use of quince rootstocks. Is this a common practice? Ifsso, it is very interesting. He mentions, and you mention in your letter, the usé of DNOC as a spray two weeks before the first spring irrigation. I wonder if this is standard practice, or has just beem done experimentally by some of the técnicos.

I assume that you drive down the coast every once in a while, and may be able to check up on these and other points. Perhaps there are some other varieties in the Cañete valley. I think I told you that way back about 1921 or 1922 I made arrangements with t e Leguia Government to employ Ralph Gray of California to start an experiment station of sorts in the Cañete valley; I dont know just what he did there, but I imagine he introduced some fruit trees from California. Maybe that is how Winter Banana got its start in Peru. I would also assume that trees were brought in from Chile, where they were much interested in Huidobro at that time. I cant quite see how Huidobro became Hoover, of course, but didnt Wealthy become Juarez in Guatemala? Stranger things have happened. And didnt the Methley plum become Española, and Clapp Favorite become Larga? God moves in most mysterious ways, His wonders to perform.

Faithfully yours,

Wilson Popenoe

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

AGRICULTURAL MISSION TO PERU

REPLY TO:
N. C. STATE UNIVERSITY MISSION
U. S. EMBASSY – USAID
LIMA, PERU

May 8, 1968
L-46-FP-68

Dr. Wilson Popenoe
Antigua, Guatemala

Dear Wilson:

A note from John has informed me of the crisis which required you to transfer your residence. I hope that you are able to find some time for work on the book, tho I know you have many interruptions there.

Thus far I have not been able to learn anything about the origin of the Hoover apple. It is not included in Brooks and Olmos's listing of new varieties, but since the library here does not have Beach: The Apples of New York, I cannot check on it as an old variety. However, it is not the same as Huidobro, since both Chile and Argentina list both among their varieties of low quality. Here it is exceeded in importance only by Winter Banana, but apples are only of small importance anyhow.

I have not been able to accomplish much of anything specific thus far. Just as I felt that I could start work on bulletins, the Technical Director of SIPA (which includes Experimentación, Fomento Agrícola and Extensión) asked me to ride herd on a group of technicians charged with developing a Plan Frutícola Nacional. We are in the third week of sessions and the end is still out of sight. It is probably good and necessary, but it is not what I want to do or can do best.

You ask about apple locations. While most are in coastal valleys south of Lima, with Cañete far in the lead, there are a few small plantings as far north as Chimbote, 300 km. above Lima, and some 100 km. north of Lima are some very flourishing orchards, where orange and avocado are grown even more extensively. The first orchards south are at Mala, half way to Cañete and right along the highway. These are probably what you saw.

Quince has been the predominant stock for apples, resulting in great dwarfing. There is interest now, but not much experience, in using apple seedlings for greater vigor, and in our program we intend to try the Malling stocks too. DNOC seems to be used by some commercial growers.

I was able last month to drive as far south as Tacna, but in 5 days of travel, we hardly spent 5 hours in orchards. The distance are great and the roads not always good, even on the Pan Am highway. There is 50 miles of it between Arequipa and Moquegua which is very bad, not only unpaved but winding and narrow up the sides of quebradas to cross to another valley. We were interested chiefly in mango and avocado, and did not look at apples at all.

From what I have seen (there is no bulletin on apples), Winter Banana is by far the leading variety. However, both Red and Striped, probably is second. There are many plantings of criolla types, Pero-manzano and San Antonio, and small numbers of Pettingill and White Winter Pearmain. Trials of Delicious, Golden Delicious, etc. have not given great encouragement so far.

There has been overplanting of Washington orange, to the neglect of Valencia. Unfortunately, Hamlin and Pineapple have not seemed to fill in the gap between them. We do not get the sequence of maturity here that we do in Florida. Avocado in the budded growers are chiefly Fuerte and Nabal, both yielding well. I hope to introduce some WI varieties of good quality, as the seedlings grown here are not very good.

I hope later this month to go up the north coast to the border, and in June to get over into the inter-Andean valleys where tropical fruits are produced in abundance.

Mary joins in best wishes.

Sincerely,

Herb

H. S. Wolfe
Co-leader Fruit Program

HSW/mp.

Lima

June 23, 1968

Dear Wilson:

It will be another month before we receive a G'ville paper with details, but a friend has written us that Hugh had a bad accident out at his farm and may lose a leg. We hope this early prognosis is not final and that he may come out whole. But Mary Lud & I want to let you know of our concern at once. It seems as if your family problems were already grievous enough without this added worry.

Winter has set in here, and the sun is almost never visible. The temperature isn't really low, but of course there is no heating in the apartments except by small electric or kerosene heaters, and only close to them is it ever warm. We remember pleasantly the fireplace in your study and the guest apartment in Antigua, and wish there were one here.

Hoping that you have found some time for work, I am

Sincerely yours

Herb

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

AGRICULTURAL MISSION TO PERU

REPLY TO:
N. C. STATE UNIVERSITY MISSION
U. S. EMBASSY – USAID
LIMA, PERU

EDIFICIO DEL MINISTERIO DE TRABAJO
AV. SALAVERRY – PISO 10
LIMA, PERU

CABLE: NCA MISSION
TELEPHONE: 45147

July 26, 1968

Dr. Wilson Popenoe
Antigua, Guatemala.

Dear Wilson:

I was glad to learn more exactly how Hugh suffered his terrible accident, and was filled with admiration for his hardihood in getting himself to a farm house. A man who arrived last week to work on rice, Pedro Sanchez, told me he had visited Hugh in the hospital the previous week and had found him in good spirits.

The apple season here is mainly January and April, and right now there are none in the market. My colleagues tell me that they think you definitely should try Hoover in Guatemala. It should thrive under the same conditions as Winter Banana, and there are both red and striped forms against the yellow color only of W.B. As I have observed apple plantings, the two varieties are very similar in vigor, productivity, and season. Curiously, Smock says Winter Banana is a good eating apple and poor for cooking; here the exact reverse is true. And to me Hoover is a good cooking apple but not high quality for eating either. I'll be glad to hear what you learn from Geneva about it.

A couple of weeks ago I mailed you a copy of Morin's "Cultivo de Frutas Tropicales", which goes to you with my compliments as a very small repayment of the many kindnesses we have received from you. Unfortunately, Carlos tends to make his fruit books a review of the available literature, and gives a minimum of first hand information.

We would sure like that fireplace, but for the past month we have gotten along very comfortably with kerosene and electric heaters. Fortunately for us, Peru had an unusual number of sunny days so far this winter.

With warm regards from Mary and myself,

Sincerely yours,

Herb

HSW/mpk.

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

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October 29, 1968
L-92-FP-68

Dr. Wilson Popenoe
Antigua, Guatemala

Dear Wilson:

That was some very interesting and rather surprising information which you were able to unearth about the origin of the Hoover apple. Who would ever have thought of South Carolina as its starting place?

I had not realized until I looked at the date this morning how long I had let your fine letter wait for reply. For the last 25 days, ever since the golpe militar, we have been in a state of suspended animation so far as AID was concerned. I could only make occasional, short visits to my office, and had to do what I could at home. This morning we had the welcome news that everything is back to normal now. We knew Friday that the U.S.A. had recognized the Junta, but not until today was the AID status clarified. It will be a relif to be able to work regularly again.

Since last I wrote you I have been able to make several trips to the selva regions. One, to Iquitos, was purely a touristic affair to satisfy Mary's desire to say she had seen and been on the Amazon. We took the launch trip down river to see more or less primitive Indians use a blowgun, and paid an exorbitant price for it. Like Key West, Iquitos needs to be visited only once. But we found much of interest for a fruit man at Pucallpa and Tingo María, and last month we saw another selva area around Tarapoto. The sierra regions are still little known to me so far as fruits are concerned. When we visited Cuzco last year we were interested only in Inca relicts, and the fruit production of the Urubamba valley was not considered. Indeed it would have been very hard for me to have learned about it even if I had tried, for lack of contacts. Now I look forward to spending a few days in that area and perhaps at Cajamarca.

The principal result to which I can point after 8 months is a bulletin on citrus culture which I finished just before the golpe. But nobody prophesies how long it will take to get it in print. Now I am working on mangos. The Plan Frutícola Nacional which absorbed all our time from April to June has been dormant since then, and might as well remain so as far as I am concerned!

The North Carolina State University is providing technical assistance to Peruvian Agriculture through the Ministry of Agriculture and the Universidad Agraria under a contract with the Agency for International Development (USAID)

We completed all the Experimentación planning back in June, and have gone ahead to put as much of it into practice as funds would permit. Last year there were big plans for an agricultural loan, but Congess eliminated these and the Peruvian government seems to have very little funds for agricultural research. Of course it can spend millions on unnecessary pursuit planes. So we make progress slowly. The men in the Experiment Station are miserably underpaid, and the situation must be far more frustrating to them than to me, for I will go back home next year and they must live with it.

The murder of the ambassador there was a most infortunate act, which I hope did not make you feel very uneasy. We were uneasy for you, anyhow. Last week I saw Roy Crist, who was here for a week, and had an encouraging report from him about Hugh. So I hope you have been less worried than you might easily have been.

Mary sends warm regards and asks me to say again that we have a guest room which we would be happy to have you occupy.

Cordially,

Herb

HSW/mpk

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March 6, 1969
L-40-FP-69

Dr. Wilson Popenoe
Antigua, Guatemala.

Dear Wilson:

I have not heard from you in many months, altho I am never sure that my letters reach you or yours always reach me. But a letter from Ree Armour yesterday tells us that the Casa del Oidor once again has a mistress, and Mary and I wish to offer congratulations. We were in Gainesville during almost all of January and I had a long visit with Hugh, but altho we spoke of you, he did not tell me of the new lease on life which you had taken.

Our period of leave at home was very pleasant, both as to weather and as to the warm welcome of friends, and we were relieved to find our house in excellent condition after a year without occupancy. The only fly in the ointment was an enforced lie-over in Miami because of a bit of red tape required by Braniff, which AID officials here said was unnecessary. We sat in the airport from 7 p.m. to 1:30 a.m., hoping for release to come from Lima, and then were forced to take a $ 30 room for the rest of the night. Eventually we arrived here at 11:55 p.m. instead of 7:20 a.m. of the same day, and efforts to get financial reimbursement from Braniff have not even produced an answer.

Now we feel very uncertain as to haw long we will be here, in view of the IPC affair and the intransigeant attitude of the Junta. Grabbing all the assets of IPC without any compensation is "upholding the dignity of Peru" but withholding U.S. AID and purchase of sugar because of this robbery is "economic aggression". It is not only the Soviets who use words in peculiar meanings! We are carrying on our program as if things were normal, except that we are starting nothing new until after April 9, and if a break occurs we will just stop in our tracks. I have just finished a mango bulletin, and may get one written on avocados.

With all good wishes from Mary and myself,

Cordially yours,

Herbert

H. S. Wolfe

P.S. Is our book completely abandoned?

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