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5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Contact: Archives
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

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

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

CORNELL UNIVERSITY
THE GRADUATE SCHOOL
ITHACA, NEW YORK

OFFICE OF THE DEAN
125 EDMUND EZRA DAY HALL

January 12, 1960

Dr. Wilson Poponoe
Antigua, Guatemala
Central America

Dear Dr. Poponoe:

Thanks very much for the copy of your letter to Ernest Casseres.

I am delighted to know that you and Ernest are working along in prospect of a four weeks' school which will concern itself with deciduous fruit-growing in the tropics. I certainly wish that in one way or another I could participate in such a school. Frankly, I am sure that I would learn far more than I could teach, but it would be a great privilege to be associated with such a development at this time. On the other hand, as far as the penetrating questions that Ernest gave to me are concerned, I am unable to say firmly what I conceive in the future for deciduous fruit trees in highland tropics. My observations, which are far more limited than yours, still make me hesitate to conclude that there are important opportunities for economic production of such fruits between latitudes 20 north and south. Obviously, within that broad equatorial band there are special climatic situations which combine to satisfy the primary requirement for periodicity of growth that those fruit species have to have so strongly. Special climatic conditions like long winter dry season and cloud-belt formation, as well as relatively cool temperatures and also chemical treatments as gibberellic acid and with some nitro compounds can partially serve this purpose. But the fact remains that these adjustments go contrary to the evolutionary development of the deciduous fruit species which, because of our ornery natures, we wish to introduce to an unnatural environment. Thus it is going to be necessary not only to establish the varieties that are best adapted to tropical conditions but also to develop new ones which combine environmental adaptations with the best market qualities. This appears to me to be a long-term job, and as yet I have not seen an institution in Latin America which finds it possible to devote the long period of time and the heavy investment that will be required in the selection and improvement of deciduous varieties adapted to tropical conditions.

To me, then, the most useful development might seem to be a conference of a group of specialists whose purpose is not extension education but rather a sober consideration of the present situation in

terms of genetic materials and economic possibilities, and to outline the procedures that may be required for laying a sound basis for the development for such horticultural industries in the tropical regions.

I would appreciate hearing from you if you care to carry on correspondence about this subject, which I know is of mutual interest to us.

With kindest regards,

Sincerely yours,

Damon mwm

Damon Boynton
Dean

DB:mwm

cc: Mr. Ernest Casseres

Antigua, Guatemala, 24 October 1960

Dr Damon Boynton, Dean
The Graduate School, Cornell University
Ithaca N Y

Dear Damon:

I hope you didnt get the idea that I have lost interest in temperate zone fruits for the tropical highlands, just because I did not reply to your interesting letter of 12 January last. The fact is, there was not much to say at that time. Ernest Casseres and I gave up the idea of a symposium, because of economic problems, but wehhavent lost interest in the work, by any means. I am suggesting that we have a symposium - something like the excellent one on climate which you chaps staged at Turrialba, when next the Caribbean Region meets, which should be about next Easter.

In the meantime, we are really making some progress down this way. I dont know what they are doing in Mexico, though I do know that Guy Adriance is interested. Here in Guatemala we are going ahead with observations on the behavior of the temperate zone fruits at varying elevations and in climates of varying rainfall. In Salvador, don Francisco de Sola has spent quite a lot of money introducing trees from California and Florida, and planting them at his experimental finca "Los Andes" on the Volcan de Santa Ana, elevations ranging from about 5200 to 6500 feet. At my suggestion he got a lot of trees from California and Florida almost five years ago; I am afraid lack of nitrogen in the soil has held them back materially. We have thought it might be some other factor, but Malcomb, the soilsman with the Point Four group told me recently he thinks nitrogen is the main factor.

In May I was asked to go to Nicaragua, where I looked for a suitable location for an experimental planting. About the best we could find was

Santa Lastenia, near Jinotega, elevation about 5200 feet. This will do for plums and peaches; not so hot for apples and pears (and Indont use the word hot in sensu strictu, but in sensu gringo). The Instituto de Fomento Nacional promises to start an experiment planting this winter when trees can be obtained from the States.

I hear the ICA boys are starting a project in Costa Rica, over somewhere around Zarcero or San Ramón, which is the only area I would consider promising; the slopes of Irazú and Turrialba are too wet. I have no direct information regarding this project, as yet.

The program I outlined for Venezuela last year seems likely to be put on foot this winter. This would involve a good nursery, perhaps at Mérida, and experimnetal plantings at higher levels; the trouble in Venezuela is going to be that they do not have many good soils at such elevations as those of Guatemala and Mexico. I doubt that we can get much good land at 6000 or higher.

A new organization in Colombia has asked me to come down there and get things started. I have told them I know Colombia como la palma de mi mano, and as soon as they are ready to get to work I will recommend the varieties they ought to plant. And I have been in touch with the lads in Haiti, who have asked for recommendations as to varieties. I was in Peru two months ago and of course what knocks us off our feet is the way apples behave right on the seacoast, 50 miles or less south of Lima. Just about the same latitude South as Honduras is North, and I wish you would show me some fine apple crops on our Honduran coast, at a spot where I can hear the surf beating on the shore. And speaking of Honduras - I forgot to mention that we have at Escuela Agrícola Panamericana, in the old crater on top of Uyuca, what George Darrow says is the finest collection anywhere, of temperate zone fruits selected for their low chilling

requirements. This project has been on foot now for about ten years and we have some very interesting results. I shall refer to some of them later - if you have not become fed up with this letter and dont want to read any more.

As I mentioned at that truly excellent symposium on climate in Turrialba (why, oh why, didnt we get that all down on paper and in print?) I am still in the horse and buggy days of tropical pomology. I go along with my old colleague Jim Kempton, who told me 20 years ago, Dont start the Honduran farmers on hybrid corn; start them on selections. Which we did, and we kicked up production at least 25% in many places. Hence I say, let's dont start the tropical American horticulturists on gibberellic acid; let's start them on varieties which experience has shown to be adaptable to some of our conditions I am going into this matter in some detail, because I think we have made quite a bit of progress. Sooner or later we shall get around to the use of chemical sprays to break the dormant period, but it is going to take Juan Garcia a long time to get money enough to buy a bank draft and send it to New York and then go into the Aduana and say "Where is my spray pump?" and have them say, "Pues ya va llegar" and then he goes back again and they tell him "Aqui está, pero le falta unps documentos". I am for starting out - and that is what I am doing now - by giving Juan Garcia a few grafted plum trees and then dropping in on him occasionally and telling him, Look Juan, this fine husky plant comes from the rootstock; you will have to cut it away if you want to get any fruit.

You say that you doubt there are "important opportunities for economic production of temperate zone fruits between latitudes 20 north and south". I suspect you are right, so far as large-scale production is concerned. But I have to confess that in connection

with these temperate zone fruits, I am more interested in seeing us produce what we need for local use than I am in anything else. You cannot go to even a small town in Venezuela without seeing a glass show case full of apples from the Yakima valley and pears from the Santa Clara and grapes from Fresno. Of course I have nothing against my compatriots of the Yakima Valley or those of the Santa Clara or the San Joaquin, but it would be so nice if we could just grow all these fruits - and others- ourselves.

You say we are up against a long-term job, which of course is correct; but we have really made some progress. Every year the markets of El Salvador are full of Santa Rosa plums grown here in Guatemala. Right now our markets are full of Winter Banana apples, grown in this country. I do not think experimental planting of fruit varieties offers any insurmountable obstacles, and in fact I think it is lined up in pretty fair shape. I am going to talk about fruit varieties a bit (At this point you can lay this letter aside and take it home to read on Sunday).

Apples. Obviously the most interesting of the temperate zone fruits. Winter Banana is the leader here in Guatemala. In Mexico I am inclined to think they go in more strongly for Golden Delicious - Ernest Casseres will know. When I was flying on KLM not long ago the stewardess brought me a nice yellow apple. I knew where it came from - the Puebla region. But I said to the gal, oh what lovely apples you grow at Boskoop. She laughed.

Winter Banana will take slightly lower elevations than most others - it is good here just above 6000 feet. Our folks dont like Golden Delicious; they pay a big premium for a red apple; hence Delicious and McIntosh and a few others. What we are after now is what George Darrow calls the Spanish Cider crabs and we call perotes.

I am chasing them all the way from here to Israel. There are few of them here, but George Darrow saw some trees near our school in Honduras at 44 hundred feet and more recently I saw a few, in bearing, at Jinotega in Nicaragua, barely 4000. They make good pies, or apple sauce - which reminds me of Ralph Allee's story of the Norwegian lumberyack up in Minnesota who said after lunch one day, "Dem wild blackberries make better apple sauce than prunes." A really good Siberian crab (~~that is what George says they are~~) would be worth while down here. We have not yet fruited the Transcendent Crab which George Roeding offers - which reminds me to say that I am getting a lot of help out of Roeding, and Taber of Glen Saint Mary.

Pears. These come next below apples in their chilling requirements, and there are plenty of them here in Guatemala, from 6000 ft upward; but if you want to know our opinion of them read what Hedrick says about Kieffer. There is one orchard of Bartlett near Quezaltenango which produces fine crops of excellent fruit. 7400 feet. I cant explain it, but there are a lot of things I cant explain. I am recommending Seckel as the only pear I would plant here until we have more information. As for those Florida sand pears, such as Pineapple, they grow and bear but what can you do with the fruit? You most certainly cannot eat it. Cooked, maybe you can, which reminds me of the Brazilian story, "What is the sweetest fruit in the world?" and the answer is "The avocado with plenty of sugar" for they do mash up their avocados and put in a lot of sugar and cracked ice and maybe a handfull of cinnamon.

Plums. Here is where we come in strong. This is and probably will continue to be our leader, among the temperate zone fruits. For the good plums are just about as good as the good peaches (fide Hedrick) and we sure can grow them, from 5000 ft upward. We have

practically all the good varieties here in Guatemala, with exception of the so-called Reina Claudia of Ecuador (which we have at our school in Honduras, doing beautifully). This Reina Claudia I believe has nothing to do with the Reine Claude group of Europe. I am convinced that it is a salicina or like many others, a salicina hybrid. A fine large clear yellow fruit, form, with excellent shipping qualities. Apparently self-fertile to a large degree at least, and about as good to eat as Santa Rosa.

The last-named is our leading commercial variety in Guatemala. No reason why it shouldnt be. Apparently self-fertile to a satisfactory degree. And then we have Satsuma, which I believe will produce fruit at slightly lower elevations than Sta Rosa. Maybe 4500 feet. And two miles from my home here, there is a small planting of Kelsey, which is the eatingest plum I have seen in these parts. George Roedingssays Wickson is just as good and a better keeper; it is in this country but like Kelsey, not at all common. What I am recommending right now is the planting of Santa Rosa, Satsuma, and Wickson if you only want three varieties(you can get them all from Roeding) and I would by all means add that spurious Reina Claudia from Ecuador except that it cannot yet behhad from any nursery here, and the last shipment of Reina Claudias we got from Ecuador contained Satsuma and Santa Rosa, practically everything except Reina Claudia.

Peaches. Here we are up against a problem. I thought those peaches from Florida with Peen-to or Honey blood would constitute a wonderful addition to our list of temperate zone fruits. I encouraged Francisco de Sola to buy a lot from Glen Saint Mary and plant them at his place in Salvador, at about 5500 feet. They have borne fruit, but the gente wont eat the fruit; they say it is dry and mealy and has no flavor. What they want is a clingstone of good large size,

hard as a rock (so the boys can play baseball with it until lunch time), with plenty of juice of sprightly flavor. I think I can rather understand the situation, and I believe what we should do is to get some of the best clings from California - which really should not be here as they but lets try them do not have the South Chinese blood - and then select from local our present seedlings the best, and propagate them. A month ago I saw some clings in the market of Quezaltenango which were as big as the canning clings of California. These must be of European background, but if they will grow here, we dont care. Peaches will come down to 5000 or even 4000 feet.

Grapes. We might as well forget the viniferas. My local friends keep on telling me that Guatemala would be a great wine-producing country if the King of Spain had not forbade the growing of grapes in Central America, to protect the Spanish wine industry. And my reply is, the King of Spain has been dead for 158 years so far as Guatemala is concerned, and still we have no European grapes, except for an occasional vine in a patio, against the warm wall. Our future like in American grapes and they do well in these countries. Isabella is the principal variety now grown (there are more than 50 acres of it in the Cauca valley of Colombia) but we can also grow - and should grow, Niagara (because it does so well) and Golden Muscat and Catawba and probably several others. I want to try the new Lake Emerald from Florida. These American grapes are successful from sea level up to 6000 feet or more.

Apricots and cherries are ausgeschlossen. Pecans will grow and bear but they are awfully slow; and the English walnuts take even more altitude. The encouraging thing about pecans is that in the vicinity of Orizaba, in Mexico, they are grown commercially - at an elevation of only 4000 to 4500 feet.

As for the berries, I am all for them. We have been somewhat handicapped because in season you can find plenty of wild blackberries in the markets. But over in Salvador, Francisco de Sola is really making a business out of growing Rubus glaucus for the market. Youngberries and Boysenberries do well here at 4000 ft and upward, but are not commonly grown; I believe we should do well to encourage the production of Rubus glaucus in various countries. The fruit ships and handles well and is just about as good as a red raspberry, - and the latter is hard to grow here because of diseases. As regards strawberries, when I first came here to Guatemala 40 years ago you could not buy one in the Guatemala City market. Now they are abundant and about 30 cents a pound; but we need better varieties, which is why I am recommending Klondike and more especially Missionary. Florida 90 is perhaps better eating but commercially it has not shown up so well.

And now to terminate: A good many of the data included above are in a letter which I wrote Ernest Cassers some months ago, copy to you, but I am so keenly interested in this project that I have taken the liberty of distracting your valuable attention (as they always say here); and I reiterate that I believe our next step, as a group interested in temperate zone fruits for the tropical highlands is to set aside one afternoon for a symposium, when our Caribbean region next meets; and I would say, if possible, have formal papers read and a good-looking stenographer sitting at one side, taking down the comments, which can be edited before publication - as they always have to be.

Sincerely,

Wilson Popenoe

ccDr Ernest A Cassères

CORNELL UNIVERSITY
THE GRADUATE SCHOOL
ITHACA, NEW YORK

OFFICE OF THE DEAN
125 EDMUND EZRA DAY HALL

November 2, 1960

Dr. Wilson Popenoe
Antigua, Guatemala

Dear Dr. Popenoe:

It is delightful to hear from you and I certainly appreciate receiving your detailed letter summarizing your experiences with deciduous fruit plants at high elevations in the tropics. I have thought many times since our pleasant meeting in Costa Rica that it was presumptious of me to make any statements at all concerning deciduous fruit plants in the tropics on the basis of so short a period of observation. You are in all ways a person to whom we should look for advise and detailed information this subject.

Since that time I have had little or no opportunity to make observations myself and am, therefore, not in a position to contribute to another round table on the subject. I do feel however that it is an important one and that there must be people interested in it who are living in the tropics and can make a substantial contribution to further discussion. Of those in more northern latitudes I believe that Dillon Brown at the University of California at Davis would be extremely helpful in a discussion of the heat units concept in relation to satisfaction of the chilling requirements. Walter Reuther, the head of the Department of Pomology at the Citrus Experiment Station, also has had a broad background of experience in temperate zone and subtropical horticulture and should be able to contribute a good deal. Perhaps one of these two people might be available for the Carribean section meeting at which another discussion would be appropriate.

With kindest regards,

Damon

Damon Boynton
Dean

DB:jbj

CORNELL UNIVERSITY
THE GRADUATE SCHOOL
ITHACA, NEW YORK

COPY

OFFICE OF THE DEAN
125 Edmund Ezra Day Hall

July 31, 1962

Dr. Herbert F. Pulsifer
Escuela Agricola Panamericana
Zamorano, Honduras

Dear Dean Pulsifer:

Mr. Leiva asked me to provide him with a summary of my reactions to the fruit planting in the Cloud Forest about Zamorano. They are as follows:

(1) The experimental planting of plum (P. salicina), apple (M. domestica and domestic crab), peach, loquat and avocado has been very valuable to horticulturists throughout the world in providing information on the adaptability of those species to such an environment.

(2) I would doubt the value of a continuation of this test. It seems clear that the plum varieties under the situation did better than did the varieties of the other species tested. The unsatisfactory performance of all other species except perhaps the crab makes it seem doubtful that exhaustive studies beyond this point would be profitable. Furthermore the ecological situation does not appear to represent the conditions under which temperate zone species of fruit are at their best -- in the tropical high altitude temperate zone.

(3) In addition to the limitations of the rather specialized climatic location, the fact that the site is so difficult to get to and that control of pests is practically impossible makes it relatively unsatisfactory for further selection work.

Sincerely yours,

(Sgd) Damon Boynton
Dean

13 September 1963

Dr Damon Boynton
Dean of the Graduate School
Cornell University, Ithaca, N.Y.

Dear Damon:

Overaan elongated lateral cane of Vitis vinifera L. I hear that you are going to Turrialba for a time. This may or may not be true; for the sake of tropical agriculture I hope it is; but not knowing just where you are at the moment I will address this to Ithaca.

I have intended for some time to write you, to thank you for the nice bouquet you threw at me in the last Proceedings of the Caribbean Region. This was appreciated, even if not deserved. I want to say also that your comments and suggestions are valuable. I hope there will be no dearth of younger men who will go on with the work.

Jorge Benitez and I wore out two tires on the Volkswagen this past summer, making three tours of the Guatemalan highlands to pick up information on the temperate zone fruits as they came in season. I think we got some really worth while information. We shall try to whip it into shape and publish it somewhere toward the end of the year. I will mention a few of our findings:

Apples. Looks like Red Delicious is a pretty good bet. Golden Delicious may be also but we dont know enough about it, and here is an interesting item. It seems that this and many other yellow fruits take on more color in the Guatemalan highlands than they do even in the nurserymens catalogs. I mean red color. Jorge has trees of Golden Delicious at Quezaltenango which we believe are true to name, and there is plenty of red coloring on the fruits. I would not dare believe this if we had not seen a similar tendency on other fruits. So we are not going to bother about Double Reds or Colora Yorks and so on. If we are correct in this observation, it is a piece of luck for we are finding that centroamericanos will pay much more for highly colored fruits than they will for yellow ones. For example, yellow plums were selling in Quezaltenango for 4 cents a lb, Santa Rosas for ten, and not only because of the difference in eating quality. In addition to the old standby, Winter Banana, which is likely to hold on in many places because of its very low chilling requirement, we are for Delicious, as mentioned, and for Gravenstein, in spite of what Ticho said of it. I believe the malformation he noted was caused by scab or something.

Pears. What a lot of fun we had running these down, and trying to straighten out the nomenclature. We are not sure of many varieties, but we do believe we have spotted Beurré Bosc and it is a winner in the Quezaltenango region. We found Bartlett at Totonicapan, and mighty fine eating at that, but it has not been successful in most places where it has been tried and we are afraid to recommend it as yet. We thinkwe have spotted Beurré d'Anjou and it is good, but Bosc seems to bear heavier crops. There are several other pears of excellent quality in the Quezaltenango region and at Tecpan, the identity of which we will probably never know, so Jorge will propagate some of them and name them Duchesse de Boynton

Dr. Damon Boynton, Turrialba, Costa Rica

I think we have pretty well straightened out the pears, so far as the two groups are concerned - European and Japanese, if you wish to call them that. During the war the latter were Oriental pears of course, just like the persimmons. Of the Japanese group we havestudied Kieffer, Pineapple, LeConte, Hood, Baldwin and Orient, and you can give me Baldwin every time, if I have to eat it myself. Kieffer goes thru a remarkable transformation when cooked, and should never be eaten otherwise. Pineapple is a fairly decent fruit but should not be called a pear; if it were a compound fruit with spiny leaves on the crown Pineapple would be the right name for it.

Plums. We know just about all we need to know in re the Japanese group, nearly all of which do well in Guatemala. You pays your money and takes your choice. But there are a lot of small plums around Quezaltenango which stump us. Are they mirabelles or cerasiferas. Solo Dios sabe, y El es muy callado. They may be seedlings or they may be sprouts from rootstocks of some of the imported plums. It doesnt matter much as they will not be propagated commercially; maybe they will be useful as rootstocks. I cannot go along with Ticho, as yet, that Sta Rosa stops bearing when it gets to be 12 to 15 yrs old. They say the same thing about the Haden mango in Florida, but I can show you Hadens at Maracay, Venezuela which produce good crops and which I know are thirty five years old as I saw them thirty five years ago myself. And I have not heard any kicks about Sta Rosa ceasing to bear in California when 12 to 15 years old, have you? I think this observation was based on specimens at one place only; it may be a pollination problem.

Peaches. Not much new to report, except that Armstrong's Saturn bore a fine crop at Jorge's place in Quezaltenango and is mighty good eating. Earligold allright, but lacking acidity. Jorge and I picked out three seedlings in Guatemala, and marked them for propagation. One a canning cling at Sta Maria de Jesus near Antigua, one a white freestone in the Quiché country and the other a white cling, both sprightly in flavor and mighty good eating. We will try to push ahead with selection of local seedlings at the same time as we import new peaches of low chilling.

I have just placed an order with Bountiful Ridge for a swell lot of hybrid crabs and some other things. The "Spanish cider crab" (fide Geo Darrow) at Güinope is ripe now, and it will take a lot of beating, as the British pomologists would say. Two inches in diameter, yellow with a red cheek, no astringency and quite fit to be eaten out of hand. Small size of course, but the lower you go the smaller the apples get, and this one grows at 4200 feet.

With the material I got last spring and what we are ordering now we are going to be pretty well lined up, so far as concerns U S material of low chilling requirement. Send down the plant breeders.

Warmest regards always,

Cordially yours

CORNELL UNIVERSITY
THE GRADUATE SCHOOL
ITHACA, NEW YORK

OFFICE OF THE DEAN
SAGE GRADUATE CENTER

March 23, 1964

Mr. Wilson Popenoe
Antigua, Guatemala
Central America

Dear Wilson:

I have made use of your latest paper on temperate zone fruits several times during the past months, and twice sat down to write you my thanks only to be interrupted.

The observations that you have made are very valuable to many people, and I hope that you and Jorge Benitez will continue to put your conclusions down on paper, so that they will become part of the horticultural literature.

I expect to take up a five year assignment at Turrialba starting next July 1. Both my wife and I look forward to the return to Costa Rica with great pleasure. I expect that my travels will give me opportunity to continue with some of the studies on ecology of fruit plants that have fascinated me over the years, and I hope that we can devote some attention to fruit species and varieties adapted to the wet tropics at Turrialba. It gives me a warm feeling to think that I can expect to see you in the course of this new work.

With kindest regards, I am

Sincerely yours,

Damon Boynton

Damon Boynton
Dean

DB:mm